

Noble Energy

Weld County, CO (NAD 83)

Sec. 23-T4N-R67W (Brandon-Sebastyen 23 PAD)

Sebastyen PC O23-63HC

Design: MWD Surveys

Sperry Drilling Services

Final Survey Report

15 April, 2013

Well Coordinates: 1,351,201.24 N, 3,176,951.69 E (40°17'44.56" N, 104°51'56.23" W)

Ground Level: 4,915.00 ft

Local Coordinate Origin: Centered on Well Sebastyen PC O23-63HC - Slot A2

Viewing Datum: KB=16' @ 4931.00ft (Precision 829)

TVDs to System: N

North Reference: Grid

Unit System: API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

HALLIBURTON

Design Report for Sebastyen PC O23-63HC - MWD Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (7100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
567.00	0.00	0.00	567.00	0.00	0.00	0.00	0.00
Tie On From Surface Casing Assumed Vertical							
639.00	0.35	345.63	639.00	0.21	-0.05	-0.09	0.49
First MWD Survey							
701.00	0.28	333.31	701.00	0.53	-0.17	-0.25	0.16
790.00	0.20	19.36	790.00	0.87	-0.22	-0.34	0.23
880.00	0.40	21.15	880.00	1.31	-0.05	-0.25	0.22
969.00	0.53	343.25	968.99	2.00	-0.06	-0.35	0.37
1,059.00	0.30	13.80	1,058.99	2.63	-0.12	-0.51	0.35
1,139.00	0.39	337.22	1,138.99	3.08	-0.18	-0.63	0.29
1,233.00	0.34	348.85	1,232.99	3.65	-0.35	-0.89	0.09
1,327.00	0.44	322.45	1,326.99	4.21	-0.63	-1.25	0.22
1,422.00	1.58	228.51	1,421.97	3.63	-1.83	-2.35	1.76
1,516.00	2.19	215.67	1,515.92	1.31	-3.85	-4.00	0.79
1,610.00	3.84	213.73	1,609.79	-2.77	-6.64	-6.16	1.76
1,705.00	4.19	212.86	1,704.56	-8.33	-10.29	-8.94	0.37
1,799.00	6.17	226.52	1,798.17	-14.69	-15.82	-13.46	2.47
1,893.00	7.95	221.81	1,891.46	-23.01	-23.82	-20.13	1.99
1,987.00	10.01	224.69	1,984.30	-33.66	-33.90	-28.51	2.24
2,081.00	12.36	222.68	2,076.51	-46.87	-46.47	-38.97	2.53
2,176.00	13.70	218.89	2,169.06	-63.10	-60.43	-50.35	1.67
2,239.00	12.55	217.45	2,230.41	-74.34	-69.27	-57.43	1.90
2,328.00	15.20	212.48	2,316.81	-91.87	-81.42	-66.83	3.26
2,418.00	15.50	213.97	2,403.60	-111.79	-94.48	-76.77	0.55
2,507.00	15.71	214.53	2,489.32	-131.58	-107.95	-87.14	0.29
2,597.00	15.87	217.25	2,575.93	-151.41	-122.31	-98.38	0.84
2,687.00	17.07	220.05	2,662.23	-171.32	-138.26	-111.19	1.60
2,776.00	16.92	215.02	2,747.35	-191.93	-154.09	-123.78	1.66
2,866.00	14.94	214.96	2,833.89	-212.16	-168.26	-134.77	2.20
2,955.00	14.62	219.34	2,919.95	-230.25	-181.95	-145.62	1.31
3,045.00	14.86	220.95	3,006.99	-247.75	-196.72	-157.61	0.53
3,135.00	15.70	218.02	3,093.81	-266.06	-211.78	-169.78	1.27
3,224.00	14.33	214.72	3,179.77	-284.61	-225.47	-180.56	1.81
3,314.00	13.64	223.06	3,267.11	-301.52	-239.06	-191.48	2.36
3,404.00	13.73	220.30	3,354.55	-317.41	-253.22	-203.10	0.73
3,493.00	14.35	220.61	3,440.89	-333.84	-267.23	-214.51	0.70
3,583.00	15.80	218.42	3,527.80	-351.91	-282.10	-226.53	1.73
3,672.00	16.62	217.80	3,613.26	-371.46	-297.43	-238.77	0.94
3,762.00	16.88	217.24	3,699.44	-392.03	-313.23	-251.33	0.34
3,852.00	18.20	216.43	3,785.25	-413.75	-329.48	-264.17	1.49
3,941.00	16.79	217.17	3,870.13	-435.17	-345.50	-276.82	1.60
4,031.00	15.55	218.18	3,956.57	-455.01	-360.82	-289.00	1.41
4,121.00	15.75	217.79	4,043.23	-474.15	-375.76	-300.93	0.25
4,210.00	13.40	217.37	4,129.36	-491.89	-389.42	-311.79	2.64
4,300.00	11.81	212.90	4,217.19	-507.92	-400.75	-320.61	2.07
4,390.00	9.75	214.90	4,305.60	-521.90	-410.12	-327.79	2.33
4,479.00	7.43	224.41	4,393.60	-532.19	-418.46	-334.50	3.05
4,569.00	5.89	219.48	4,482.99	-539.92	-425.47	-340.28	1.82
4,659.00	3.43	204.71	4,572.69	-545.93	-429.53	-343.41	3.02

Design Report for Sebastyen PC O23-63HC - MWD Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,748.00	1.81	164.27	4,661.60	-549.70	-430.26	-343.57	2.66
4,838.00	0.58	99.07	4,751.58	-551.14	-429.43	-342.53	1.84
4,927.00	0.47	68.42	4,840.58	-551.08	-428.64	-341.76	0.33
5,017.00	0.59	86.86	4,930.58	-550.92	-427.84	-340.99	0.23
5,107.00	0.40	61.13	5,020.57	-550.74	-427.10	-340.28	0.32
5,196.00	0.19	314.80	5,109.57	-550.48	-426.93	-340.16	0.55
5,286.00	0.25	3.97	5,199.57	-550.18	-427.02	-340.29	0.21
5,375.00	0.61	326.61	5,288.57	-549.59	-427.27	-340.63	0.49
5,465.00	0.44	309.04	5,378.57	-548.98	-427.80	-341.24	0.26
5,554.00	0.60	302.94	5,467.56	-548.51	-428.46	-341.96	0.19
5,644.00	0.78	273.11	5,557.56	-548.22	-429.47	-343.00	0.44
5,734.00	1.44	302.54	5,647.54	-547.58	-431.03	-344.64	0.95
5,824.00	1.56	293.50	5,737.51	-546.48	-433.11	-346.86	0.29
5,913.00	1.72	287.23	5,826.47	-545.60	-435.49	-349.35	0.27
6,003.00	0.37	266.05	5,916.45	-545.22	-437.07	-350.97	1.53
6,092.00	0.59	276.25	6,005.45	-545.19	-437.82	-351.71	0.26
6,182.00	1.08	305.71	6,095.44	-544.65	-438.97	-352.93	0.71
6,271.00	1.42	310.52	6,184.42	-543.44	-440.49	-354.61	0.40
6,361.00	0.50	322.07	6,274.41	-542.40	-441.57	-355.84	1.04
6,451.00	1.33	329.03	6,364.39	-541.20	-442.35	-356.79	0.93
6,540.00	0.55	79.04	6,453.39	-540.23	-442.47	-357.05	1.80
6,630.00	1.24	77.39	6,543.38	-539.94	-441.09	-355.73	0.77
6,675.00	3.55	84.31	6,588.33	-539.69	-439.23	-353.93	5.16
6,719.00	6.04	94.75	6,632.18	-539.75	-435.57	-350.30	5.97
6,764.00	7.79	104.65	6,676.85	-540.72	-430.26	-344.90	4.69
6,809.00	10.36	105.48	6,721.28	-542.57	-423.40	-337.85	5.72
6,854.00	12.76	105.33	6,765.37	-544.96	-414.71	-328.90	5.33
6,899.00	14.56	103.25	6,809.09	-547.57	-404.41	-318.32	4.15
6,944.00	16.13	96.66	6,852.49	-549.60	-392.70	-306.44	5.21
6,988.00	17.94	95.70	6,894.56	-550.98	-379.88	-293.56	4.16
7,033.00	21.56	95.03	6,936.90	-552.39	-364.74	-278.38	8.06
7,078.00	25.62	98.45	6,978.14	-554.55	-346.87	-260.39	9.52
7,123.00	29.93	97.04	7,017.94	-557.35	-326.10	-239.43	9.69
7,168.00	33.58	97.15	7,056.20	-560.28	-302.60	-215.76	8.11
7,212.00	38.57	93.48	7,091.76	-562.63	-276.82	-189.91	12.35
7,257.00	43.36	91.53	7,125.73	-563.89	-247.36	-160.59	11.02
7,302.00	48.18	92.58	7,157.11	-565.06	-215.14	-128.56	10.84
7,347.00	53.57	93.85	7,185.49	-567.03	-180.30	-93.82	12.18
7,392.00	58.12	96.77	7,210.75	-570.50	-143.24	-56.65	11.45
7,436.00	62.99	96.24	7,232.38	-574.84	-105.18	-18.37	11.12
7,481.00	67.43	95.26	7,251.24	-578.92	-64.55	22.42	10.06
7,526.00	72.46	93.66	7,266.67	-582.20	-22.42	64.57	11.67
7,571.00	77.07	94.23	7,278.49	-585.19	20.89	107.83	10.32
7,616.00	80.39	92.76	7,287.29	-587.88	64.93	151.78	8.04
7,660.00	84.00	91.93	7,293.26	-589.66	108.48	195.11	8.41
7,687.00	86.71	92.43	7,295.45	-590.68	135.37	221.85	10.21
7,727.00	87.56	92.23	7,297.45	-592.31	175.28	261.57	2.17
7" Casing Point Estimated from section lines 1287' FSL 671' FWL (Not a survey point)							
7,783.00	88.74	91.95	7,299.26	-594.35	231.22	317.18	2.17
7,872.00	90.25	89.98	7,300.04	-595.85	320.19	405.39	2.79
7,962.00	91.45	88.86	7,298.71	-594.93	410.17	494.23	1.82

Design Report for Sebastyen PC O23-63HC - MWD Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
8,051.00	87.90	87.75	7,299.21	-592.30	499.12	581.79	4.18
8,141.00	89.85	87.41	7,300.98	-588.50	589.02	670.12	2.20
8,231.00	90.37	87.59	7,300.80	-584.58	678.93	758.44	0.61
8,320.00	89.97	87.58	7,300.54	-580.83	767.85	845.81	0.45
8,410.00	88.74	88.96	7,301.55	-578.11	857.80	934.35	2.05
8,499.00	89.02	92.46	7,303.29	-579.21	946.76	1,022.49	3.94
8,589.00	86.55	91.54	7,306.77	-582.35	1,036.63	1,111.82	2.93
8,679.00	82.05	91.42	7,315.71	-584.66	1,126.13	1,200.67	5.00
8,768.00	83.17	89.94	7,327.16	-585.71	1,214.39	1,288.09	2.07
8,858.00	85.25	89.15	7,336.24	-585.00	1,303.92	1,376.52	2.47
8,947.00	89.23	90.35	7,340.52	-584.61	1,392.79	1,464.34	4.67
9,037.00	89.88	89.70	7,341.22	-584.65	1,482.79	1,553.34	1.02
9,127.00	90.52	92.18	7,340.91	-586.13	1,572.77	1,642.54	2.85
9,216.00	90.00	92.51	7,340.50	-589.77	1,661.69	1,731.01	0.69
9,306.00	87.38	91.00	7,342.56	-592.53	1,751.62	1,820.34	3.36
9,396.00	88.34	90.94	7,345.92	-594.05	1,841.54	1,909.49	1.07
9,485.00	89.38	90.27	7,347.69	-594.99	1,930.52	1,997.61	1.39
9,575.00	89.11	91.39	7,348.88	-596.29	2,020.50	2,086.78	1.28
9,664.00	89.35	92.70	7,350.07	-599.47	2,109.43	2,175.20	1.50
9,754.00	89.72	93.64	7,350.80	-604.44	2,199.29	2,264.80	1.12
9,844.00	89.48	93.33	7,351.43	-609.91	2,289.12	2,354.44	0.44
9,933.00	88.61	92.60	7,352.91	-614.52	2,377.99	2,443.00	1.28
10,023.00	87.84	92.88	7,355.70	-618.82	2,467.84	2,532.49	0.91
10,113.00	89.08	92.03	7,358.12	-622.67	2,557.72	2,621.94	1.67
10,202.00	89.91	91.37	7,358.91	-625.31	2,646.68	2,710.30	1.19
10,292.00	89.54	91.32	7,359.34	-627.42	2,736.65	2,799.59	0.41
10,381.00	88.40	91.96	7,360.94	-629.97	2,825.60	2,887.92	1.47
10,471.00	88.64	90.98	7,363.26	-632.28	2,915.54	2,977.20	1.12
10,561.00	89.44	90.72	7,364.77	-633.61	3,005.52	3,066.37	0.93
10,650.00	90.15	89.28	7,365.09	-633.61	3,094.51	3,154.37	1.80
10,740.00	89.14	88.79	7,365.65	-632.10	3,184.50	3,243.13	1.25
10,829.00	88.27	88.29	7,367.66	-629.83	3,273.44	3,330.75	1.13
10,919.00	89.38	89.90	7,369.50	-628.41	3,363.41	3,419.50	2.17
11,009.00	88.49	92.06	7,371.18	-629.95	3,453.38	3,508.69	2.60
11,098.00	88.40	90.56	7,373.59	-631.98	3,542.32	3,596.94	1.69
11,188.00	88.49	92.28	7,376.03	-634.21	3,632.25	3,686.20	1.91
11,278.00	89.44	92.19	7,377.66	-637.72	3,722.17	3,775.64	1.06
11,367.00	90.43	91.76	7,377.76	-640.79	3,811.11	3,864.05	1.21
11,457.00	89.44	91.34	7,377.86	-643.22	3,901.08	3,953.37	1.19
11,546.00	88.95	90.00	7,379.11	-644.26	3,990.06	4,041.52	1.60
11,636.00	88.86	89.67	7,380.83	-644.00	4,080.05	4,130.46	0.38
11,706.00	89.85	89.56	7,381.62	-643.53	4,150.04	4,199.60	1.42
Final Survey							
11,768.00	89.85	89.56	7,381.78	-643.06	4,212.04	4,260.83	0.00
Bit Projection at TD - Estimated BHL 1343' FSL 556' FEL							

Design Report for Sebastyen PC O23-63HC - MWD Surveys

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
567.00	567.00	0.00	0.00	Tie On From Surface Casing Assumed Vertical
639.00	639.00	0.21	-0.05	First MWD Survey
7,727.00	7,297.45	-592.31	175.28	7" Casing Point Estimated from section lines 1287' FSL 671' FWL (Not a survey point)
11,706.00	7,381.62	-643.53	4,150.04	Final Survey
11,768.00	7,381.78	-643.06	4,212.04	Bit Projection at TD
11,768.00	7,381.78	-643.06	4,212.04	Estimated BHL 1343' FSL 556' FEL

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
User	Sebastyen PC O23-63HN_PlanE - Rev0_BHL Tgt	98.57	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
567.00	7,727.00	MWD Surveys	MWD
7,727.00	11,768.00	MWD Surveys	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,727.00	7,297.45	7"	7	7-1/2

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
Brandon PC	0.00	0.00	0.00	21.92	8.21	1,351,223.16	3,176,959.90	40.295770	-104.865590
- actual wellpath misses target center by 23.41ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-17.79	-1,401.08	1,349,800.22	3,176,933.90		
Point 2				-129.79	2,901.92	1,354,103.03	3,176,821.90		
Point 3				4,230.21	2,830.92	1,354,032.04	3,181,181.72		
Point 4				4,308.21	-1,538.08	1,349,663.22	3,181,259.71		
Point 5				-17.79	-1,401.08	1,349,800.22	3,176,933.90		
Sebastyen PC	0.00	0.00	7,391.49	-665.35	4,211.56	1,350,535.92	3,181,163.07	40.293800	-104.850540
- actual wellpath misses target center by 24.31ft at 11767.38ft MD (7381.78 TVD, -643.06 N, 4211.41 E)									
- Point									
Brandon PC	0.00	0.00	0.00	21.92	8.21	1,351,223.16	3,176,959.90	40.295770	-104.865590
- actual wellpath misses target center by 23.41ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-477.79	-1,861.08	1,349,340.24	3,176,473.92		
Point 2				-589.79	3,361.92	1,354,563.01	3,176,361.92		
Point 3				4,690.21	3,290.92	1,354,492.02	3,181,641.70		
Point 4				4,768.21	-1,998.08	1,349,203.24	3,181,719.69		
Point 5				-477.79	-1,861.08	1,349,340.24	3,176,473.92		

North Reference Sheet for Sec. 23-T4N-R67W (Brandon-Sebastyen 23 PAD) - Sebastyen PC O23-63HC

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

Vertical Depths are relative to KB=16' @ 4931.00ft (Precision 829). Northing and Easting are relative to Sebastyen PC O23-63HC - Slot A2

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 -105.500000°; Longitude Origin: 0.000000°; Latitude Origin: 40.783333°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995715

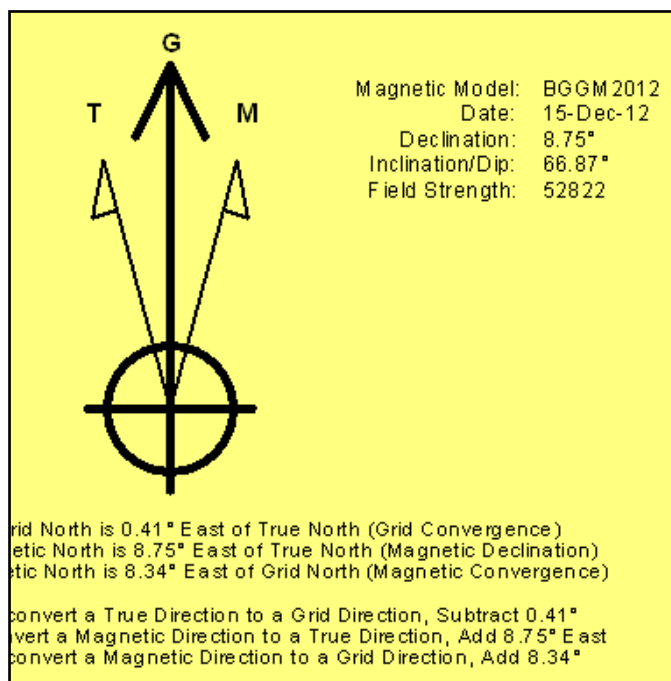
Grid Coordinates of Well: 1,351,201.24 ft N, 3,176,951.69 ft E

Geographical Coordinates of Well: 40°17' 44.56" N, 104°51' 56.23" W

Grid Convergence at Surface is: 0.41°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,768.00ft the Bottom Hole Displacement is 4,260.84ft in the Direction of 98.68°(Grid).

Magnetic Convergence at surface is: -8.34° (15 December 2012, , BGGM2012)



Project: Weld County, CO (NAD 83)
Site: Sec. 23-T4N-R67W (Brandon-Sebastyen 23 PAD)
Well: Sebastyen PC O23-63HC

Noble Energy

HALLIBURTON

Sperry Drilling



Azimuths to Grid North
True North: -0.41°
Magnetic North: 8.34°

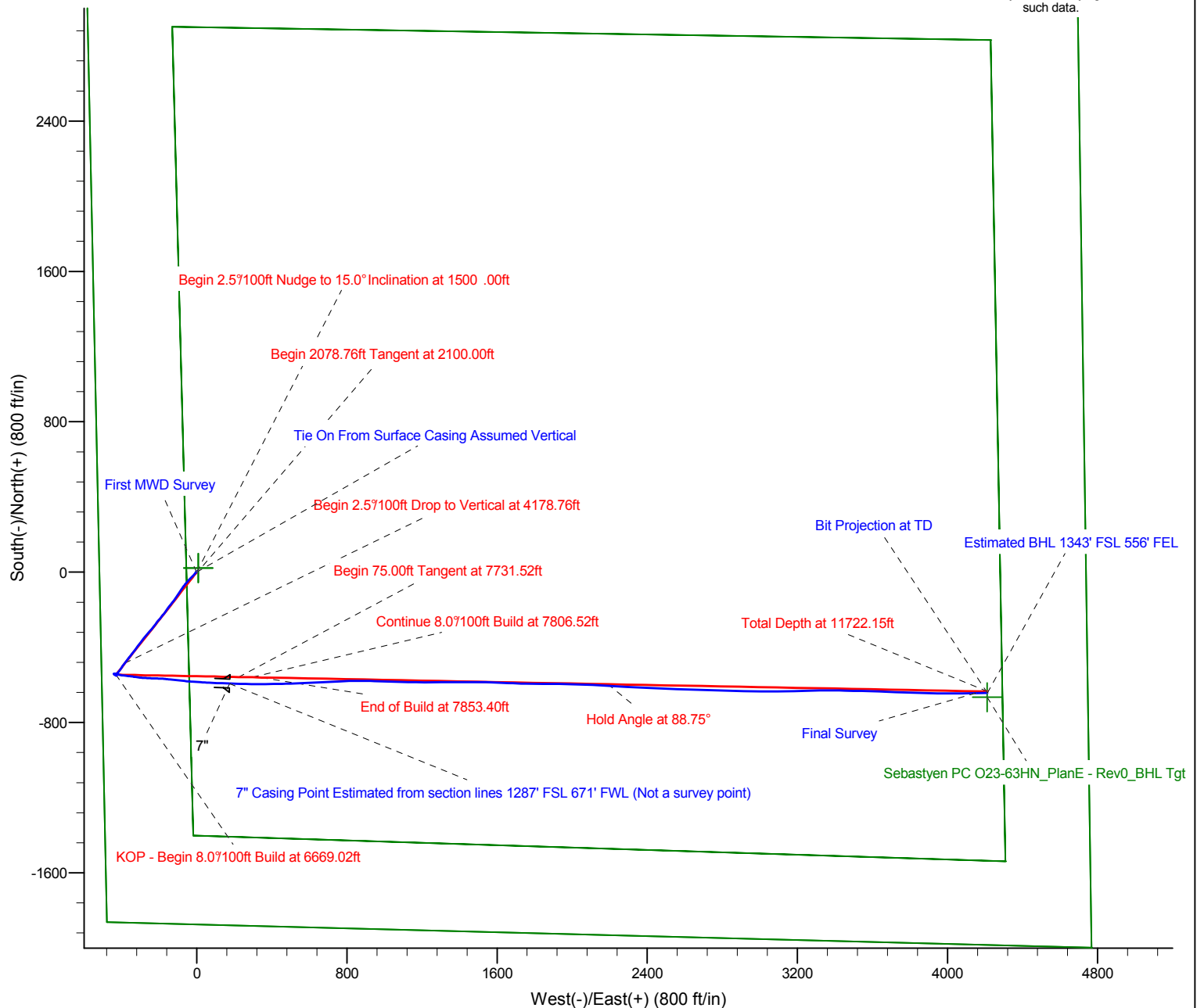
Magnetic Field
Strength: 52821.6snT
Dip Angle: 66.87°
Date: 12/15/2012
Model: BGGM2012

LEGEND

- Sebastyen PC O23-63HC, Plan E, Plan E - Rev 0 Proposal V0
- MWD Surveys

Permitted BHL: 1320' FSL, 535' FEL

Halliburton Energy Services, Inc. ("Halliburton") recently completed directional drilling and MWD operations at the Sebastyen PC O23-63HC well located at Weld County, CO. At the conclusion of the job Halliburton performed a final survey on the well. Noble Energy has requested that Halliburton provide them the distances from BHL to section lines from that final survey to allow Noble Energy to meet its requirements under Colorado law. These distances are generated by a mathematical algorithm based on rough data collected after the well is drilled. Halliburton considers it to be a rough estimate only and it is not to be relied upon in any application where accurate data is required. In consideration for Halliburton releasing this data to Noble Energy, Noble Energy agrees to release Halliburton from any consequences of it or anyone else relying on such data.

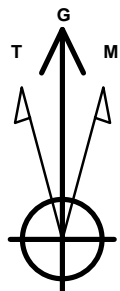


Project: Weld County, CO (NAD 83)
Site: Sec. 23-T4N-R67W (Brandon-Sebastyen 23 PAD)
Well: Sebastyen PC O23-63HC

Noble Energy

HALLIBURTON

Sperry Drilling



Azimuths to Grid North
True North: -0.41°
Magnetic North: 8.34°

Magnetic Field
Strength: 52821.6snT
Dip Angle: 66.87°
Date: 12/15/2012
Model: BGGM2012

LEGEND

— Sebastyen PC O23-63HC, Plan E, Plan E - Rev 0 Proposal V0
— MWD Surveys

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