

Bill Barrett Corp

Weld County, CO (NAD 1983)

Sec. 13-T6N-R62W

Dutch Lake 11-13H

Plan A

Design: Sperry Final Survey

Sperry Drilling Services Standard Report

16 January, 2013

Well Coordinates: 1,424,816.03 N, 3,339,834.56 E (40° 29' 35.14" N, 104° 16' 41.15" W)

Ground Level: 4,692.00 ft

Local Coordinate Origin:

Centered on Well Dutch Lake 11-13H

Viewing Datum:

KB=22' @ 4714.00ft (H&P 278)

TVDs to System:

N

North Reference:

Grid

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

HALLIBURTON

CERTIFIED SURVEY WORK SHEET

SSDS Job Number :	9880946
Start Date of Job :	11/14/2012
End Date of Job :	10/22/2012
Lead Directional Driller:	Steve Krueger
	Thomas Onyekwelu
Other SSDS DD's :	Justin Groom
	Jonathon Nichols
SSDS MWD Engineers :	Kyle Wass
	Chris Sorensen
	Juan Pablo Centeno

Single Shot (SS) Survey's : Provided by Sperry-Sun Drilling Services (SSDS) or third party vendor.

Examples of Survey Types:

Design Report for Dutch Lake 11-13H - Sperry Final Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00
882.00	0.00	0.000	882.00	0.00	0.00	0.00	0.00
Tie-On (Assumed Vertical) @ 882.00' MD							
917.00	0.48	13.590	917.00	0.14	0.03	-0.14	1.37
First Sperry MWD Survey @ 917.00' MD							
1,009.00	3.11	19.590	1,008.95	2.87	0.96	-2.84	2.86
1,099.00	6.09	20.890	1,098.65	9.63	3.48	-9.52	3.31
1,190.00	8.71	20.870	1,188.88	20.58	7.66	-20.34	2.88
1,280.00	9.44	20.240	1,277.75	33.87	12.64	-33.47	0.82
1,370.00	10.10	21.130	1,366.45	48.16	18.04	-47.59	0.75
1,462.00	8.00	25.970	1,457.30	61.44	23.75	-60.69	2.43
1,553.00	8.33	26.310	1,547.38	73.04	29.45	-72.12	0.37
1,644.00	6.96	23.670	1,637.57	84.00	34.58	-82.92	1.55
1,742.00	7.76	15.280	1,734.76	95.82	38.71	-94.61	1.37
1,838.00	7.11	9.020	1,829.95	107.94	41.35	-106.64	1.08
1,933.00	8.44	10.090	1,924.08	120.61	43.49	-119.24	1.41
2,029.00	7.83	4.520	2,019.11	134.07	45.24	-132.64	1.04
2,125.00	8.72	17.770	2,114.12	147.52	47.98	-146.00	2.19
2,221.00	7.36	21.710	2,209.18	160.16	52.47	-158.50	1.53
2,316.00	6.61	25.970	2,303.47	170.73	57.12	-168.92	0.96
2,412.00	8.03	21.270	2,398.69	181.95	61.97	-179.99	1.60
2,508.00	7.61	20.320	2,493.79	194.16	66.61	-192.05	0.46
2,604.00	7.39	17.600	2,588.97	206.00	70.69	-203.77	0.44
2,701.00	8.95	13.970	2,684.99	219.27	74.39	-216.92	1.69
2,797.00	9.29	11.250	2,779.77	234.12	77.71	-231.66	0.57
2,894.00	9.43	21.770	2,875.49	249.18	82.18	-246.58	1.77
2,989.00	8.51	22.210	2,969.33	262.91	87.73	-260.14	0.97
3,085.00	9.43	15.630	3,064.15	277.07	92.53	-274.14	1.43
3,182.00	7.91	6.850	3,160.05	291.35	95.47	-288.32	2.07
3,277.00	8.77	5.780	3,254.04	305.04	96.98	-301.97	0.92
3,373.00	9.64	14.760	3,348.81	320.10	99.76	-316.93	1.75
3,469.00	10.01	16.610	3,443.40	335.87	104.19	-332.56	0.51
3,565.00	10.54	13.070	3,537.86	352.41	108.57	-348.96	0.86
3,661.00	11.21	13.310	3,632.14	370.05	112.70	-366.47	0.70
3,757.00	10.63	21.860	3,726.41	387.35	118.14	-383.59	1.79
3,852.00	10.94	20.150	3,819.73	403.94	124.51	-399.99	0.47
3,950.00	9.07	27.550	3,916.24	419.52	131.29	-415.36	2.31
4,047.00	7.64	27.540	4,012.20	432.02	137.81	-427.65	1.47
4,142.00	6.73	27.430	4,106.46	442.56	143.29	-438.02	0.96
4,238.00	5.52	29.480	4,201.91	451.57	148.16	-446.88	1.28
4,335.00	4.44	33.790	4,298.54	458.75	152.54	-453.93	1.18
4,432.00	4.05	35.320	4,395.27	464.67	156.61	-459.71	0.42
4,529.00	3.12	60.060	4,492.09	468.78	160.88	-463.70	1.84
4,625.00	1.57	52.300	4,588.01	470.89	164.18	-465.70	1.64
4,721.00	1.49	37.420	4,683.97	472.69	165.98	-467.44	0.42
4,818.00	1.58	29.640	4,780.94	474.85	167.41	-469.56	0.23
4,914.00	0.29	119.850	4,876.93	475.88	168.27	-470.57	1.67
5,011.00	0.26	311.070	4,973.92	475.90	168.32	-470.59	0.56
5,106.00	0.63	339.520	5,068.92	476.53	167.97	-471.23	0.44
5,202.00	0.68	296.640	5,164.92	477.28	167.28	-472.00	0.50

Design Report for Dutch Lake 11-13H - Sperry Final Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,297.00	0.85	284.890	5,259.91	477.72	166.10	-472.47	0.24
5,393.00	0.03	29.920	5,355.90	477.92	165.42	-472.69	0.89
5,489.00	0.46	319.700	5,451.90	478.24	165.18	-473.02	0.47
5,584.00	0.77	312.310	5,546.90	478.96	164.47	-473.76	0.34
5,679.00	0.62	282.230	5,641.89	479.50	163.49	-474.33	0.41
5,727.00	2.45	192.420	5,689.88	478.55	163.02	-473.39	5.26
5,775.00	7.77	181.100	5,737.67	474.30	162.73	-469.16	11.23
5,823.00	12.83	177.670	5,784.88	465.72	162.89	-460.58	10.61
5,870.00	16.42	174.290	5,830.35	453.90	163.76	-448.73	7.85
5,918.00	20.19	176.300	5,875.91	438.87	164.97	-433.68	7.96
5,966.00	24.67	179.650	5,920.27	420.58	165.57	-415.38	9.70
6,014.00	27.73	181.710	5,963.34	399.40	165.29	-394.21	6.65
6,061.00	32.09	181.400	6,004.07	375.97	164.66	-370.82	9.28
6,109.00	37.02	181.160	6,043.59	348.76	164.06	-343.64	10.27
6,156.00	42.58	179.150	6,079.68	318.69	164.01	-313.58	12.14
6,204.00	49.49	178.430	6,112.99	284.18	164.75	-279.06	14.44
6,252.00	54.13	176.690	6,142.66	246.50	166.37	-241.35	10.08
6,300.00	57.18	175.950	6,169.73	206.95	168.92	-201.74	6.48
6,347.00	60.82	178.510	6,193.94	166.72	170.85	-161.47	9.04
6,395.00	64.97	181.360	6,215.81	124.01	170.88	-118.78	10.13
6,443.00	68.03	181.350	6,234.95	80.01	169.84	-74.83	6.38
6,491.00	69.69	181.260	6,252.26	35.25	168.82	-30.13	3.46
6,540.00	72.01	180.450	6,268.33	-11.03	168.13	16.11	4.99
6,588.00	73.92	180.090	6,282.39	-56.92	167.92	61.98	4.04
6,637.00	76.75	180.050	6,294.79	-104.32	167.86	109.35	5.78
6,685.00	81.44	178.690	6,303.87	-151.43	168.38	156.46	10.16
6,740.00	86.07	177.720	6,309.85	-206.06	170.09	211.12	8.60
6,845.00	89.69	177.180	6,313.74	-310.87	174.76	316.02	3.49
6,941.00	89.97	179.040	6,314.02	-406.81	177.93	412.01	1.96
7,037.00	91.14	178.610	6,313.09	-502.79	179.90	508.00	1.30
7,133.00	89.60	179.400	6,312.47	-598.77	181.56	603.99	1.80
7,229.00	90.40	179.540	6,312.47	-694.76	182.45	699.97	0.85
7,326.00	90.89	180.630	6,311.38	-791.75	182.31	796.91	1.23
7,423.00	89.51	179.520	6,311.04	-888.75	182.18	893.86	1.83
7,518.00	88.64	180.580	6,312.58	-983.73	182.10	988.80	1.44
7,615.00	90.12	180.990	6,313.63	-1,080.72	180.77	1,085.69	1.58
7,711.00	91.41	180.670	6,312.34	-1,176.70	179.38	1,181.59	1.38
7,808.00	89.85	180.520	6,311.28	-1,273.68	178.37	1,278.50	1.62
7,905.00	90.55	181.120	6,310.94	-1,370.67	176.98	1,375.40	0.95
8,001.00	90.59	182.190	6,309.98	-1,466.62	174.21	1,471.23	1.12
8,097.00	90.09	182.420	6,309.41	-1,562.54	170.35	1,566.99	0.57
8,194.00	89.97	184.020	6,309.36	-1,659.39	164.90	1,663.62	1.65
8,290.00	89.97	182.330	6,309.41	-1,755.24	159.59	1,759.26	1.76
8,387.00	89.85	179.170	6,309.57	-1,852.22	158.32	1,856.16	3.26
8,482.00	92.41	181.280	6,307.69	-1,947.18	157.94	1,951.07	3.49
8,578.00	93.98	180.140	6,302.34	-2,043.02	156.76	2,046.83	2.02
8,673.00	93.89	177.980	6,295.82	-2,137.78	158.31	2,141.59	2.27
8,769.00	93.08	177.410	6,289.99	-2,233.52	162.16	2,237.41	1.03
8,866.00	90.46	177.590	6,286.99	-2,330.38	166.39	2,334.35	2.71
8,961.00	87.66	177.470	6,288.55	-2,425.27	170.49	2,429.32	2.95
9,055.00	87.97	177.590	6,292.13	-2,519.11	174.53	2,523.24	0.35

Design Report for Dutch Lake 11-13H - Sperry Final Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
9,151.00	86.89	178.950	6,296.44	-2,614.97	177.43	2,619.14	1.81
9,246.00	87.44	178.550	6,301.14	-2,709.83	179.50	2,714.02	0.72
9,342.00	88.03	178.690	6,304.93	-2,805.72	181.81	2,809.94	0.63
9,437.00	88.64	178.260	6,307.69	-2,900.65	184.34	2,904.90	0.79
9,533.00	89.91	178.930	6,308.91	-2,996.61	186.69	3,000.89	1.50
9,628.00	90.83	177.900	6,308.29	-3,091.57	189.32	3,095.89	1.45
9,723.00	91.11	178.760	6,306.68	-3,186.52	192.09	3,190.87	0.95
9,820.00	90.46	178.540	6,305.36	-3,283.48	194.37	3,287.86	0.71
9,916.00	90.22	178.760	6,304.79	-3,379.45	196.63	3,383.85	0.34
10,013.00	89.88	180.080	6,304.70	-3,476.44	197.61	3,480.83	1.41
10,110.00	91.51	180.230	6,303.52	-3,573.43	197.35	3,577.77	1.69
10,204.00	90.06	180.110	6,302.24	-3,667.42	197.07	3,671.71	1.55
10,301.00	86.82	178.750	6,304.88	-3,764.36	198.04	3,768.63	3.62
10,397.00	86.61	178.450	6,310.38	-3,860.18	200.38	3,864.48	0.38
10,459.00	86.97	178.310	6,313.85	-3,922.06	202.13	3,926.38	0.62
Final Sperry MWD Survey @ 10459.00' MD							
10,515.00	86.97	178.310	6,316.81	-3,977.95	203.78	3,982.30	0.00
Straight Line Projection to TD @ 10515.00' MD							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
882.00	882.00	0.00	0.00	Tie-On (Assumed Vertical) @ 882.00' MD
917.00	917.00	0.14	0.03	First Sperry MWD Survey @ 917.00' MD
10,459.00	6,313.85	-3,922.06	202.13	Final Sperry MWD Survey @ 10459.00' MD
10,515.00	6,316.81	-3,977.95	203.78	Straight Line Projection to TD @ 10515.00' MD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Dutch Lake 11-13H_Plan A - Rev 0_BHL Tgt	178.265	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
882.00	10,515.00	Sperry MWD Surveys	MWD

Design Report for Dutch Lake 11-13H - Sperry Final Survey

Targets

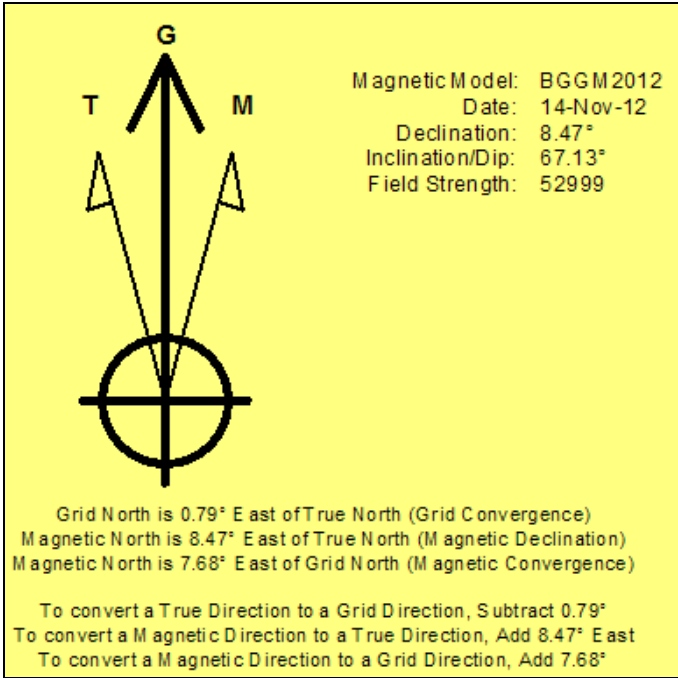
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Dutch Lake 11-13H_ - actual wellpath misses target center by 83.29ft at 10511.14ft MD (6316.61 TVD, -3974.10 N, 203.66 E) - Point	0.00	0.00	6,314.00	-3,976.69	120.46	1,420,839.48	3,339,955.02	40° 28' 55.830 N	104° 16' 40.300 W
Dutch Lake 11-13H_ - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,424,816.03	3,339,834.56	40° 29' 35.138 N	104° 16' 41.149 W
Point 1				-501.00	471.00	1,425,287.02	3,339,333.58		
Point 2				2,081.00	630.00	1,425,446.01	3,341,915.49		
Point 3				4,664.00	786.00	1,425,602.01	3,344,498.40		
Point 4				4,669.00	-1,838.00	1,422,978.10	3,344,503.40		
Point 5				4,674.00	-4,462.00	1,420,354.19	3,344,508.40		
Point 6				2,088.00	-4,539.00	1,420,277.19	3,341,922.49		
Point 7				-499.00	-4,615.00	1,420,201.19	3,339,335.58		
Point 8				-500.00	-2,070.00	1,422,746.10	3,339,334.58		
Point 9				-501.00	471.00	1,425,287.02	3,339,333.58		
Dutch Lake 11-13H_ - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,424,816.03	3,339,834.56	40° 29' 35.138 N	104° 16' 41.149 W
Point 1				99.00	-129.00	1,424,687.04	3,339,933.56		
Point 2				2,081.00	30.00	1,424,846.03	3,341,915.49		
Point 3				4,064.00	186.00	1,425,002.03	3,343,898.42		
Point 4				4,069.00	-1,838.00	1,422,978.10	3,343,903.42		
Point 5				4,074.00	-3,862.00	1,420,954.17	3,343,908.42		
Point 6				2,088.00	-3,939.00	1,420,877.17	3,341,922.49		
Point 7				101.00	-4,015.00	1,420,801.17	3,339,935.56		
Point 8				100.00	-2,070.00	1,422,746.10	3,339,934.56		
Point 9				99.00	-129.00	1,424,687.04	3,339,933.56		

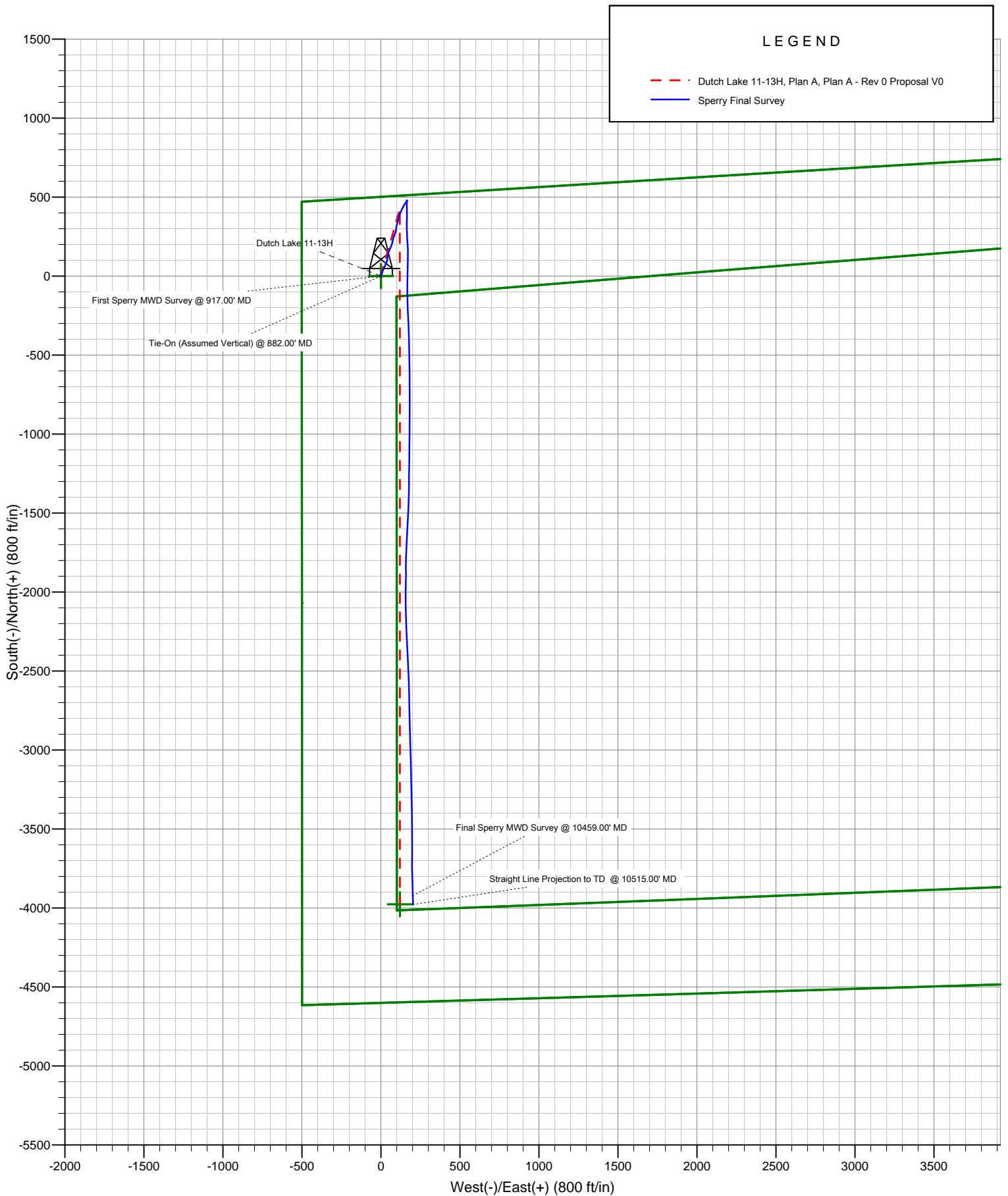
North Reference Sheet for Sec. 13-T6N-R62W - Dutch Lake 11-13H - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.
 Vertical Depths are relative to KB=22' @ 4714.00ft (H&P 278). Northing and Easting are relative to Dutch Lake 11-13H
 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: 0.99996577

Grid Coordinates of Well: 1,424,816.03 ft N, 3,339,834.56 ft E
 Geographical Coordinates of Well: 40° 29' 35.14" N, 104° 16' 41.15" W
 Grid Convergence at Surface is: 0.79°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,515.00ft
 the Bottom Hole Displacement is 3,983.17ft in the Direction of 177.07° (Grid).
 Magnetic Convergence at surface is: -7.68° (14 November 2012, , BGGM2012)





Project: Weld County, CO (NAD 1983)
Site: Sec. 13-T6N-R62W
Well: Dutch Lake 11-13H

Bill Barrett Corp

