

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 2-T2N-R65W

GREENLEAF 30N-2HZ

Plan A

Design: Actual Surveys

## Sperry Drilling Services

### Final Report

16 March, 2015

Well Coordinates: 1,302,935.37 N, 3,241,862.26 E (40° 09' 42.17" N, 104° 38' 04.61" W)

Ground Level: 4,854.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 73

Centered on Well GREENLEAF 30N-2HZ

RKB = 13' @ 4867.00usft (Ensign 145)

N

True

Dec-Deg - API - US Survey Feet - Custom

**HALLIBURTON**

Project: Weld County, CO (NAD 83)  
 Site: Sec. 2-T2N-R65W  
 Well: GREENLEAF 30N-2HZ  
 Wellbore: Plan A  
 Design: Actual Surveys



**HALLIBURTON**  
 Sperry Drilling

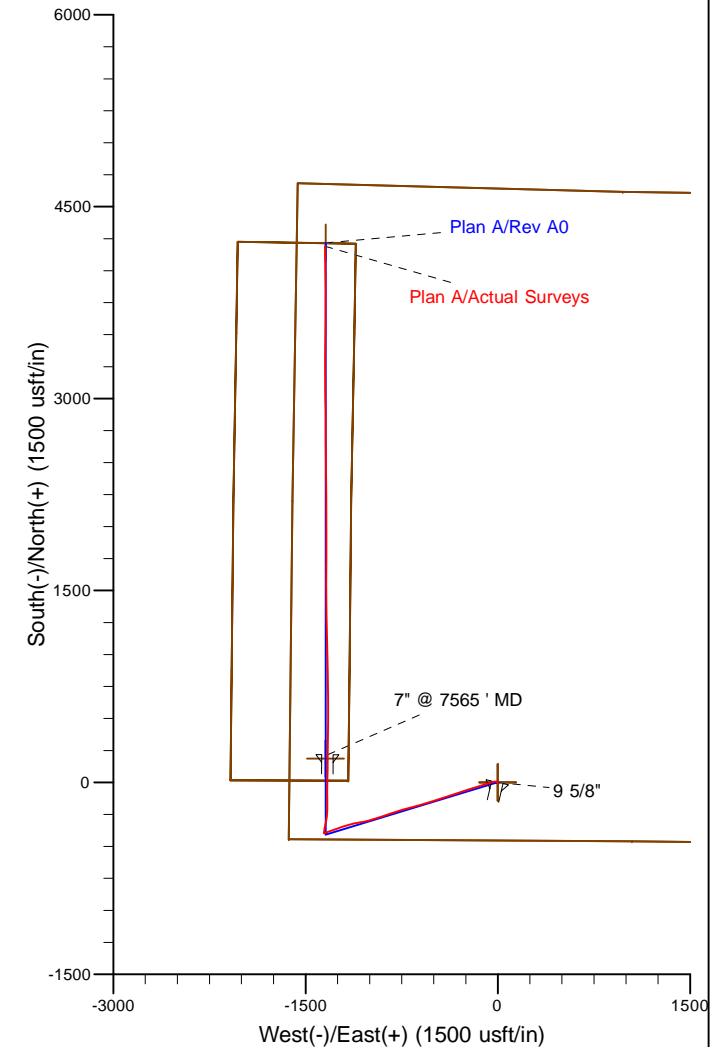
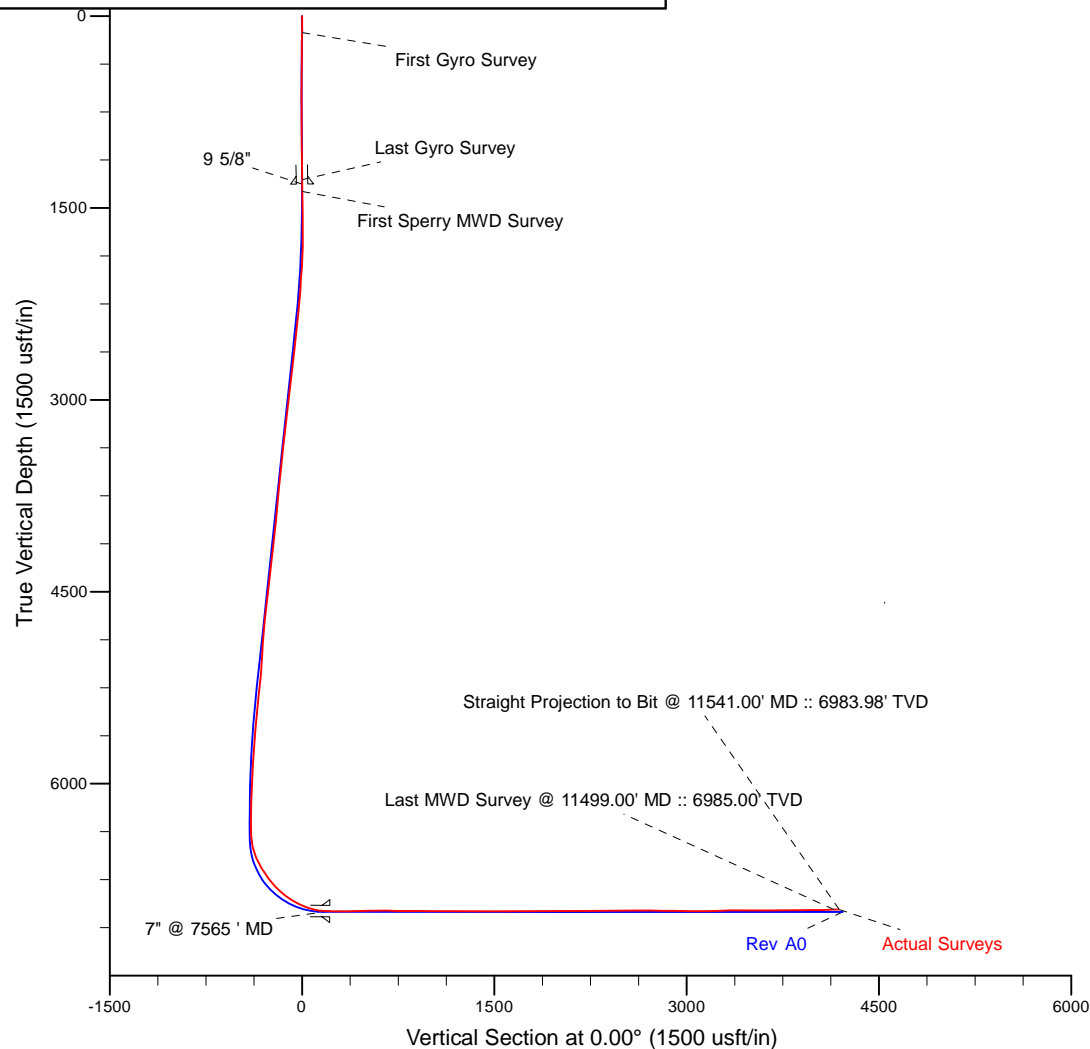
Platted SHL: 453' FSL, 1626' FWL  
 Platted Lat/Long: 40.161713N, 104.634614W  
 Location: Sec. 2-T2N-R65W

~ 7" Casing: 658.5' FSL 298.5' FWL  
 Lat/Long: 40.161717N, 104.634627W  
 State Planes - CO Northern: 1302936.65N, 3241858.55E  
 Location: Sec. 2-T2N-R65W

~ BHL: 492' FNL, 225' FWL  
 Lat/Long: 40.162308N, 104.639364W  
 State Planes - CO Northern: 1303139.25N, 3240532.76E  
 Location: Sec. 2-T2N-R65W

# LEGEND

- GREENLEAF 30N-2HZ, Plan A, Rev A0 V0
- Actual Surveys



WELL DETAILS: GREENLEAF 30N-2HZ

Ground Level: 4854.00  
 RKB = 13' @ 4867.00usft (Ensign 145)

Created By: Gordy Roth  
 Created On: 3/16/15

**Design Report for GREENLEAF 30N-2HZ - Actual Surveys**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
129.00	0.50	78.70	129.00	0.11	0.55	0.11	0.39
<b>First Gyro Survey</b>							
208.00	0.80	110.30	207.99	-0.01	1.41	-0.01	0.58
287.00	0.80	135.00	286.99	-0.59	2.31	-0.59	0.43
367.00	0.80	220.30	366.98	-1.42	2.35	-1.42	1.36
447.00	1.20	264.10	446.97	-1.93	1.15	-1.93	1.04
527.00	1.30	240.60	526.95	-2.46	-0.47	-2.46	0.65
607.00	1.40	245.90	606.93	-3.30	-2.15	-3.30	0.20
687.00	0.60	226.30	686.92	-3.99	-3.35	-3.99	1.07
767.00	0.20	190.20	766.91	-4.42	-3.68	-4.42	0.57
847.00	0.70	341.50	846.91	-4.09	-3.86	-4.09	1.10
927.00	1.10	345.20	926.90	-2.89	-4.21	-2.89	0.50
1,007.00	1.00	32.80	1,006.89	-1.56	-4.02	-1.56	1.07
1,087.00	0.40	350.00	1,086.88	-0.70	-3.69	-0.70	0.95
1,167.00	0.70	334.20	1,166.88	0.02	-3.96	0.02	0.42
1,247.00	0.60	42.00	1,246.88	0.77	-3.89	0.77	0.91
1,279.00	0.40	8.50	1,278.88	1.00	-3.76	1.00	1.08
<b>Last Gyro Survey - Tie-On to Surface Surveys @ 1279.00'MD</b>							
1,372.00	1.00	15.41	1,371.87	2.11	-3.50	2.11	0.65
<b>First Sperry MWD Survey</b>							
1,466.00	1.78	312.07	1,465.84	3.88	-4.36	3.88	1.71
1,559.00	3.50	290.05	1,558.74	5.82	-8.10	5.82	2.11
1,653.00	5.59	275.24	1,652.45	7.22	-15.36	7.22	2.53
1,746.00	6.88	264.73	1,744.90	7.12	-25.41	7.12	1.85
1,840.00	8.11	252.83	1,838.10	4.65	-37.36	4.65	2.10
1,933.00	9.79	251.18	1,929.96	0.16	-51.11	0.16	1.83
2,027.00	11.29	249.39	2,022.37	-5.66	-67.29	-5.66	1.63
2,120.00	13.82	254.71	2,113.15	-11.79	-86.53	-11.79	2.99
2,214.00	15.71	253.97	2,204.04	-18.27	-109.59	-18.27	2.02
2,308.00	17.93	252.85	2,294.01	-26.05	-135.65	-26.05	2.39
2,401.00	20.31	252.68	2,381.87	-35.08	-164.74	-35.08	2.56
2,491.00	19.38	251.44	2,466.53	-44.48	-193.81	-44.48	1.13
2,581.00	20.06	253.73	2,551.25	-53.56	-222.78	-53.56	1.14
2,671.00	19.03	253.48	2,636.06	-62.05	-251.67	-62.05	1.15
2,761.00	21.28	251.27	2,720.55	-71.47	-281.21	-71.47	2.64
2,851.00	20.96	251.31	2,804.50	-81.87	-311.92	-81.87	0.36
2,941.00	20.57	250.59	2,888.66	-92.29	-342.08	-92.29	0.52
3,031.00	19.78	251.11	2,973.14	-102.47	-371.40	-102.47	0.90
3,121.00	18.62	251.07	3,058.13	-112.06	-399.40	-112.06	1.29
3,211.00	19.48	252.79	3,143.20	-121.17	-427.33	-121.17	1.14
3,301.00	21.60	252.53	3,227.47	-130.58	-457.47	-130.58	2.36
3,391.00	19.76	252.62	3,311.67	-140.10	-487.79	-140.10	2.04
3,481.00	21.09	254.03	3,396.01	-149.10	-517.88	-149.10	1.58
3,571.00	19.11	252.90	3,480.52	-157.89	-547.53	-157.89	2.24
3,661.00	20.27	253.10	3,565.26	-166.75	-576.53	-166.75	1.29
3,751.00	18.73	252.94	3,650.10	-175.52	-605.26	-175.52	1.71
3,841.00	20.25	252.97	3,734.94	-184.32	-633.97	-184.32	1.69
3,931.00	20.23	255.79	3,819.38	-192.70	-663.95	-192.70	1.08
4,021.00	19.05	256.87	3,904.14	-199.86	-693.34	-199.86	1.37

**Design Report for GREENLEAF 30N-2HZ - Actual Surveys**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
4,111.00	20.28	255.13	3,988.89	-207.20	-722.72	-207.20	1.51
4,201.00	21.51	252.19	4,072.98	-216.25	-753.50	-216.25	1.80
4,291.00	20.89	252.70	4,156.88	-226.07	-784.53	-226.07	0.72
4,381.00	20.41	251.77	4,241.10	-235.75	-814.76	-235.75	0.65
4,471.00	19.78	251.07	4,325.62	-245.60	-844.07	-245.60	0.75
4,561.00	18.93	250.90	4,410.54	-255.32	-872.27	-255.32	0.95
4,651.00	21.04	252.84	4,495.11	-264.86	-901.51	-264.86	2.46
4,741.00	20.33	252.40	4,579.31	-274.36	-931.85	-274.36	0.81
4,831.00	19.99	252.61	4,663.80	-283.68	-961.43	-283.68	0.39
4,921.00	18.22	251.78	4,748.84	-292.68	-989.48	-292.68	1.99
5,011.00	18.61	255.14	4,834.23	-300.76	-1,016.72	-300.76	1.26
5,101.00	19.12	260.94	4,919.40	-306.77	-1,045.16	-306.77	2.16
5,191.00	19.23	260.44	5,004.41	-311.55	-1,074.33	-311.55	0.22
5,371.00	21.18	257.63	5,173.33	-323.44	-1,135.33	-323.44	1.21
5,461.00	20.01	252.44	5,257.58	-331.57	-1,165.90	-331.57	2.41
5,551.00	18.72	251.73	5,342.49	-340.74	-1,194.29	-340.74	1.46
5,641.00	16.18	251.55	5,428.34	-349.24	-1,219.91	-349.24	2.82
5,730.00	16.28	250.03	5,513.79	-357.42	-1,243.39	-357.42	0.49
5,820.00	14.53	250.64	5,600.56	-365.48	-1,265.90	-365.48	1.95
5,910.00	12.55	250.89	5,688.05	-372.42	-1,285.80	-372.42	2.20
6,000.00	10.76	250.49	5,776.19	-378.43	-1,302.96	-378.43	1.99
6,090.00	9.45	251.36	5,864.79	-383.60	-1,317.88	-383.60	1.47
6,180.00	7.78	251.13	5,953.77	-387.93	-1,330.64	-387.93	1.86
6,270.00	6.40	244.70	6,043.09	-392.04	-1,340.94	-392.04	1.77
6,360.00	4.50	248.35	6,132.68	-395.49	-1,348.76	-395.49	2.14
6,450.00	2.23	253.31	6,222.51	-397.29	-1,353.72	-397.29	2.54
6,540.00	0.42	291.86	6,312.49	-397.67	-1,355.70	-397.67	2.13
6,631.00	0.86	316.46	6,403.48	-397.05	-1,356.48	-397.05	0.56
6,721.00	12.97	9.05	6,492.68	-386.55	-1,355.35	-386.55	13.85
6,811.00	25.99	10.70	6,577.35	-357.07	-1,350.08	-357.07	14.48
6,901.00	28.20	9.83	6,657.47	-316.74	-1,342.79	-316.74	2.49
6,991.00	37.75	8.70	6,732.88	-268.44	-1,334.97	-268.44	10.63
7,081.00	43.24	1.18	6,801.34	-210.31	-1,330.17	-210.31	8.16
7,171.00	50.76	358.72	6,862.68	-144.54	-1,330.31	-144.54	8.59
7,261.00	56.81	0.45	6,915.83	-71.97	-1,330.79	-71.97	6.90
7,351.00	69.87	0.18	6,956.12	8.29	-1,330.36	8.29	14.51
7,441.00	74.79	1.70	6,983.44	94.00	-1,328.94	94.00	5.70
7,530.00	88.77	0.06	6,996.13	181.85	-1,327.61	181.85	15.81
7,636.00	91.26	0.77	6,996.10	287.84	-1,326.85	287.84	2.44
7,726.00	90.46	0.97	6,994.75	377.82	-1,325.48	377.82	0.92
7,816.00	90.80	0.89	6,993.76	467.80	-1,324.02	467.80	0.39
7,906.00	89.88	0.04	6,993.23	557.80	-1,323.29	557.80	1.39
7,996.00	89.14	359.40	6,994.00	647.79	-1,323.73	647.79	1.09
8,086.00	89.78	359.29	6,994.85	737.78	-1,324.76	737.78	0.72
8,176.00	89.69	358.69	6,995.26	827.77	-1,326.34	827.77	0.67
8,266.00	90.18	358.56	6,995.36	917.74	-1,328.50	917.74	0.56
8,356.00	89.41	359.57	6,995.69	1,007.73	-1,329.97	1,007.73	1.41
8,446.00	89.60	358.96	6,996.46	1,097.71	-1,331.13	1,097.71	0.71
8,536.00	89.88	358.76	6,996.87	1,187.70	-1,332.92	1,187.70	0.38
8,626.00	90.46	357.94	6,996.60	1,277.66	-1,335.51	1,277.66	1.12
8,716.00	89.69	359.61	6,996.49	1,367.63	-1,337.43	1,367.63	2.04

**Design Report for GREENLEAF 30N-2HZ - Actual Surveys**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
8,806.00	89.91	359.28	6,996.80	1,457.63	-1,338.30	1,457.63	0.44
8,896.00	89.26	0.55	6,997.45	1,547.62	-1,338.44	1,547.62	1.59
9,076.00	90.15	0.36	6,998.38	1,727.61	-1,337.01	1,727.61	0.51
9,166.00	91.05	0.12	6,997.44	1,817.61	-1,336.63	1,817.61	1.03
9,256.00	90.18	0.02	6,996.47	1,907.60	-1,336.52	1,907.60	0.97
9,346.00	90.59	359.98	6,995.87	1,997.60	-1,336.52	1,997.60	0.46
9,436.00	91.26	359.56	6,994.41	2,087.58	-1,336.88	2,087.58	0.88
9,525.00	89.75	359.62	6,993.63	2,176.58	-1,337.52	2,176.58	1.70
9,615.00	90.49	359.12	6,993.44	2,266.57	-1,338.51	2,266.57	0.99
9,705.00	90.22	359.51	6,992.88	2,356.56	-1,339.58	2,356.56	0.53
9,885.00	90.15	359.55	6,992.30	2,536.55	-1,341.06	2,536.55	0.04
9,975.00	90.62	358.86	6,991.70	2,626.54	-1,342.31	2,626.54	0.93
10,065.00	89.66	0.26	6,991.48	2,716.54	-1,343.00	2,716.54	1.89
10,155.00	88.95	359.47	6,992.57	2,806.53	-1,343.21	2,806.53	1.18
10,245.00	89.72	359.75	6,993.61	2,896.52	-1,343.82	2,896.52	0.91
10,335.00	88.49	358.80	6,995.02	2,986.50	-1,344.96	2,986.50	1.73
10,426.00	89.82	359.49	6,996.36	3,077.48	-1,346.32	3,077.48	1.65
10,516.00	91.26	0.22	6,995.51	3,167.47	-1,346.55	3,167.47	1.79
10,606.00	91.85	0.15	6,993.07	3,257.43	-1,346.26	3,257.43	0.66
10,696.00	90.99	359.54	6,990.84	3,347.41	-1,346.50	3,347.41	1.17
10,786.00	89.23	0.68	6,990.67	3,437.40	-1,346.33	3,437.40	2.33
10,876.00	90.06	0.58	6,991.23	3,527.39	-1,345.34	3,527.39	0.93
10,966.00	90.25	0.64	6,990.98	3,617.39	-1,344.38	3,617.39	0.22
11,056.00	90.15	359.93	6,990.67	3,707.38	-1,343.93	3,707.38	0.80
11,146.00	90.95	0.27	6,989.80	3,797.38	-1,343.78	3,797.38	0.97
11,236.00	91.17	359.94	6,988.14	3,887.36	-1,343.61	3,887.36	0.44
11,326.00	90.09	358.51	6,987.15	3,977.35	-1,344.83	3,977.35	1.99
11,416.00	90.71	359.51	6,986.52	4,067.33	-1,346.38	4,067.33	1.31
11,499.00	91.39	359.13	6,985.00	4,150.31	-1,347.37	4,150.31	0.94
<b>Last MWD Survey @ 11499.00' MD :: 6985.00' TVD</b>							
11,541.00	91.39	359.13	6,983.98	4,192.29	-1,348.01	4,192.29	0.00
<b>Straight Projection to Bit @ 11541.00' MD :: 6983.98' TVD</b>							

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
129.00	129.00	0.11	0.55	First Gyro Survey
1,279.00	1,278.88	1.00	-3.76	Last Gyro Survey
1,279.00	1,278.88	1.00	-3.76	Tie-On to Surface Surveys @ 1279.00'MD
1,372.00	1,371.87	2.11	-3.50	First Sperry MWD Survey
11,499.00	6,985.00	4,150.31	-1,347.37	Last MWD Survey @ 11499.00' MD :: 6985.00' TVD
11,541.00	6,983.98	4,192.29	-1,348.01	Straight Projection to Bit @ 11541.00' MD :: 6983.98' TVD

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
User	No Target (Freehand)	0.00	Slot	0.00	0.00	0.00

## Design Report for GREENLEAF 30N-2HZ - Actual Surveys

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
129.00	1,279.00	Cathedral Surface Surveys	MWD
1,279.00	7,530.00	MWD Vertical/Build Surveys	MWD+IFR1+SC
7,636.00	11,541.00	MWD Lateral Surveys	MWD+IFR1+SC

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,314.00	1,313.87	9 5/8"	9-5/8	13-3/4
7,565.00	6,996.63	7" @ 7565' MD	7	8-3/4

Wellbore Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
GREENLEAF 30N-2H; - actual wellpath misses target center by 0.01usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	0.01	0.00	1,302,935.38	3,241,862.26	40.161713	-104.634614
GREENLEAF 30N-2H; - actual wellpath misses target center by 0.01usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	0.00	0.01	0.00	1,302,935.38	3,241,862.26	40.161713	-104.634614
Point 1				0.00	16.91	-2,085.97	1,302,931.93	3,239,776.32	
Point 2				0.00	880.73	-2,077.02	1,303,795.76	3,239,776.84	
Point 3				0.00	2,204.56	-2,063.28	1,305,119.61	3,239,777.66	
Point 4				0.00	3,517.98	-2,040.53	1,306,433.13	3,239,787.59	
Point 5				0.00	4,226.30	-2,028.26	1,307,141.51	3,239,792.94	
Point 6				0.00	4,211.26	-1,108.35	1,307,135.45	3,240,712.92	
Point 7				0.00	3,510.79	-1,120.47	1,306,434.92	3,240,707.63	
Point 8				0.00	2,198.22	-1,143.22	1,305,122.25	3,240,697.70	
Point 9				0.00	876.21	-1,156.95	1,303,800.22	3,240,696.87	
Point 10				0.00	14.19	-1,165.91	1,302,938.19	3,240,696.32	
GREENLEAF 30N-2H; - actual wellpath misses target center by 0.01usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	0.00	0.01	0.00	1,302,935.38	3,241,862.26	40.161713	-104.634614
Point 1				0.00	4,683.28	-1,560.26	1,307,603.01	3,240,256.44	
Point 2				0.00	4,616.84	975.98	1,307,561.33	3,242,793.10	
Point 3				0.00	4,583.08	3,585.34	1,307,553.04	3,245,402.56	
Point 4				0.00	2,137.89	3,652.47	1,305,108.72	3,245,493.54	
Point 5				0.00	-477.12	3,724.28	1,302,494.65	3,245,590.87	
Point 6				0.00	-459.86	1,046.49	1,302,485.77	3,242,913.15	
Point 7				0.00	-442.92	-1,630.69	1,302,476.59	3,240,236.04	
Point 8				0.00	2,204.01	-1,603.20	1,305,123.55	3,240,237.70	
GREENLEAF 30N-2H; - actual wellpath misses target center by 18.33usft at 7534.02usft MD (6996.21 TVD, 185.88 N, -1327.61 E) - Point	0.00	0.00	7,002.00	186.00	-1,345.00	1,303,108.23	3,240,515.57	40.162223	-104.639426
GREENLEAF 30N-2H; - actual wellpath misses target center by 31.34usft at 11541.00usft MD (6983.98 TVD, 4192.29 N, -1348.01 E) - Point	0.00	0.00	7,002.00	4,217.51	-1,343.33	1,307,139.39	3,240,477.90	40.173290	-104.639421

Directional Difficulty Index

Average Dogleg over Survey:	1.97 °/100usft	Maximum Dogleg over Survey:	15.81 °/100usft at 7,530.00 usft
Net Tortousity applicable to Plans:	0.75 °/100usft	Directional Difficulty Index:	6.353

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Design Report for GREENLEAF 30N-2HZ - Actual Surveys

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Audit Info

North Reference Sheet for Sec. 2-T2N-R65W - GREENLEAF 30N-2HZ - Plan A

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

Vertical Depths are relative to RKB = 13' @ 4867.00usft (Ensign 145). Northing and Easting are relative to GREENLEAF 30N-2HZ

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: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995805

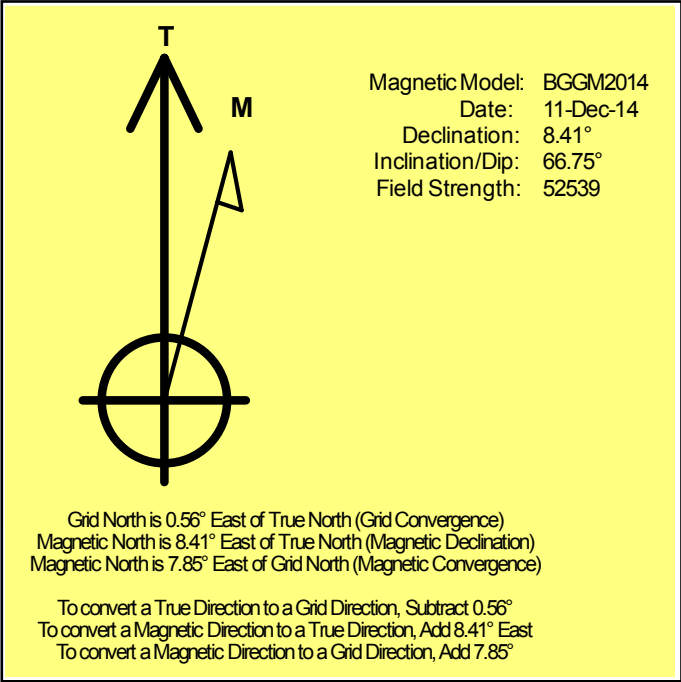
Grid Coordinates of Well: 1,302,935.37 usft N, 3,241,862.26 usft E

Geographical Coordinates of Well: 40° 09' 42.17" N, 104° 38' 04.61" W

Grid Convergence at Surface is: 0.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,541.00usft  
the Bottom Hole Displacement is 4,403.68usft in the Direction of 342.18° ( True).

Magnetic Convergence at surface is: -7.85° ( 11 December 2014, , BGGM2014)





# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 2-T2N-R65W

GREENLEAF 30N-2HZ

Plan A

Design: Actual Surveys

## Sperry Drilling Services

### Geodetic Report

24 February, 2015

Well Coordinates: 1,302,935.37 N, 3,241,862.26 E (40° 09' 42.17" N, 104° 38' 04.61" W)

Ground Level: 4,854.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 73

Centered on Well GREENLEAF 30N-2HZ

RKB = 13' @ 4867.00usft (Ensign 145)

N

True

API - US Survey Feet - Custom

**HALLIBURTON**

## Design Report for GREENLEAF 30N-2HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	40° 9' 42.167 N	104° 38' 4.610 W	1,302,935.37	3,241,862.26
129.00	0.50	78.70	129.00	0.11	0.55	40° 9' 42.168 N	104° 38' 4.603 W	1,302,935.49	3,241,862.82
208.00	0.80	110.30	207.99	-0.01	1.41	40° 9' 42.167 N	104° 38' 4.592 W	1,302,935.37	3,241,863.67
287.00	0.80	135.00	286.99	-0.59	2.31	40° 9' 42.161 N	104° 38' 4.581 W	1,302,934.80	3,241,864.58
367.00	0.80	220.30	366.98	-1.42	2.35	40° 9' 42.153 N	104° 38' 4.580 W	1,302,933.98	3,241,864.63
447.00	1.20	264.10	446.97	-1.93	1.15	40° 9' 42.148 N	104° 38' 4.596 W	1,302,933.46	3,241,863.44
527.00	1.30	240.60	526.95	-2.46	-0.47	40° 9' 42.142 N	104° 38' 4.616 W	1,302,932.91	3,241,861.82
607.00	1.40	245.90	606.93	-3.30	-2.15	40° 9' 42.134 N	104° 38' 4.638 W	1,302,932.05	3,241,860.14
687.00	0.60	226.30	686.92	-3.99	-3.35	40° 9' 42.127 N	104° 38' 4.654 W	1,302,931.35	3,241,858.96
767.00	0.20	190.20	766.91	-4.42	-3.68	40° 9' 42.123 N	104° 38' 4.658 W	1,302,930.92	3,241,858.63
847.00	0.70	341.50	846.91	-4.09	-3.86	40° 9' 42.126 N	104° 38' 4.660 W	1,302,931.24	3,241,858.45
927.00	1.10	345.20	926.90	-2.89	-4.21	40° 9' 42.138 N	104° 38' 4.665 W	1,302,932.44	3,241,858.09
1,007.00	1.00	32.80	1,006.89	-1.56	-4.02	40° 9' 42.151 N	104° 38' 4.662 W	1,302,933.77	3,241,858.26
1,087.00	0.40	350.00	1,086.88	-0.70	-3.69	40° 9' 42.160 N	104° 38' 4.658 W	1,302,934.64	3,241,858.58
1,167.00	0.70	334.20	1,166.88	0.02	-3.96	40° 9' 42.167 N	104° 38' 4.661 W	1,302,935.35	3,241,858.31
1,247.00	0.60	42.00	1,246.88	0.77	-3.89	40° 9' 42.174 N	104° 38' 4.660 W	1,302,936.10	3,241,858.37
1,279.00	0.40	8.50	1,278.88	1.00	-3.76	40° 9' 42.177 N	104° 38' 4.659 W	1,302,936.34	3,241,858.50
1,372.00	1.00	15.41	1,371.87	2.11	-3.50	40° 9' 42.188 N	104° 38' 4.655 W	1,302,937.45	3,241,858.75
1,466.00	1.78	312.07	1,465.84	3.88	-4.36	40° 9' 42.205 N	104° 38' 4.667 W	1,302,939.21	3,241,857.86
1,559.00	3.50	290.05	1,558.74	5.82	-8.10	40° 9' 42.224 N	104° 38' 4.715 W	1,302,941.11	3,241,854.11
1,653.00	5.59	275.24	1,652.45	7.22	-15.36	40° 9' 42.238 N	104° 38' 4.808 W	1,302,942.44	3,241,846.84
1,746.00	6.88	264.73	1,744.90	7.12	-25.41	40° 9' 42.237 N	104° 38' 4.938 W	1,302,942.25	3,241,836.78
1,840.00	8.11	252.83	1,838.10	4.65	-37.36	40° 9' 42.213 N	104° 38' 5.092 W	1,302,939.65	3,241,824.87
1,933.00	9.79	251.18	1,929.96	0.16	-51.11	40° 9' 42.168 N	104° 38' 5.269 W	1,302,935.03	3,241,811.16
2,027.00	11.29	249.39	2,022.37	-5.66	-67.29	40° 9' 42.111 N	104° 38' 5.477 W	1,302,929.06	3,241,795.04
2,120.00	13.82	254.71	2,113.15	-11.79	-86.53	40° 9' 42.050 N	104° 38' 5.725 W	1,302,922.74	3,241,775.86
2,214.00	15.71	253.97	2,204.04	-18.27	-109.59	40° 9' 41.986 N	104° 38' 6.022 W	1,302,916.04	3,241,752.86
2,308.00	17.93	252.85	2,294.01	-26.05	-135.65	40° 9' 41.909 N	104° 38' 6.358 W	1,302,908.00	3,241,726.88
2,401.00	20.31	252.68	2,381.87	-35.08	-164.74	40° 9' 41.820 N	104° 38' 6.732 W	1,302,898.69	3,241,697.88
2,491.00	19.38	251.44	2,466.53	-44.48	-193.81	40° 9' 41.727 N	104° 38' 7.107 W	1,302,889.00	3,241,668.91
2,581.00	20.06	253.73	2,551.25	-53.56	-222.78	40° 9' 41.637 N	104° 38' 7.480 W	1,302,879.65	3,241,640.02
2,671.00	19.03	253.48	2,636.06	-62.05	-251.67	40° 9' 41.553 N	104° 38' 7.852 W	1,302,870.87	3,241,611.22
2,761.00	21.28	251.27	2,720.55	-71.47	-281.21	40° 9' 41.460 N	104° 38' 8.232 W	1,302,861.16	3,241,581.78
2,851.00	20.96	251.31	2,804.50	-81.87	-311.92	40° 9' 41.358 N	104° 38' 8.628 W	1,302,850.46	3,241,551.17
2,941.00	20.57	250.59	2,888.66	-92.29	-342.08	40° 9' 41.255 N	104° 38' 9.016 W	1,302,839.75	3,241,521.11
3,031.00	19.78	251.11	2,973.14	-102.47	-371.40	40° 9' 41.154 N	104° 38' 9.394 W	1,302,829.28	3,241,491.89
3,121.00	18.62	251.07	3,058.13	-112.06	-399.40	40° 9' 41.059 N	104° 38' 9.755 W	1,302,819.42	3,241,463.99
3,211.00	19.48	252.79	3,143.20	-121.17	-427.33	40° 9' 40.969 N	104° 38' 10.114 W	1,302,810.05	3,241,436.16
3,301.00	21.60	252.53	3,227.47	-130.58	-457.47	40° 9' 40.876 N	104° 38' 10.503 W	1,302,800.34	3,241,406.11
3,391.00	19.76	252.62	3,311.67	-140.10	-487.79	40° 9' 40.782 N	104° 38' 10.893 W	1,302,790.53	3,241,375.88
3,481.00	21.09	254.03	3,396.01	-149.10	-517.88	40° 9' 40.693 N	104° 38' 11.281 W	1,302,781.23	3,241,345.89
3,571.00	19.11	252.90	3,480.52	-157.89	-547.53	40° 9' 40.606 N	104° 38' 11.663 W	1,302,772.16	3,241,316.32

## Design Report for GREENLEAF 30N-2HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
3,661.00	20.27	253.10	3,565.26	-166.75	-576.53	40° 9' 40.519 N	104° 38' 12.036 W	1,302,763.01	3,241,287.41
3,751.00	18.73	252.94	3,650.10	-175.52	-605.26	40° 9' 40.432 N	104° 38' 12.406 W	1,302,753.96	3,241,258.77
3,841.00	20.25	252.97	3,734.94	-184.32	-633.97	40° 9' 40.345 N	104° 38' 12.776 W	1,302,744.88	3,241,230.15
3,931.00	20.23	255.79	3,819.38	-192.70	-663.95	40° 9' 40.262 N	104° 38' 13.162 W	1,302,736.21	3,241,200.26
4,021.00	19.05	256.87	3,904.14	-199.86	-693.34	40° 9' 40.192 N	104° 38' 13.541 W	1,302,728.76	3,241,170.94
4,111.00	20.28	255.13	3,988.89	-207.20	-722.72	40° 9' 40.119 N	104° 38' 13.919 W	1,302,721.14	3,241,141.63
4,201.00	21.51	252.19	4,072.98	-216.25	-753.50	40° 9' 40.030 N	104° 38' 14.316 W	1,302,711.79	3,241,110.94
4,291.00	20.89	252.70	4,156.88	-226.07	-784.53	40° 9' 39.933 N	104° 38' 14.715 W	1,302,701.67	3,241,080.01
4,381.00	20.41	251.77	4,241.10	-235.75	-814.76	40° 9' 39.837 N	104° 38' 15.104 W	1,302,691.69	3,241,049.88
4,471.00	19.78	251.07	4,325.62	-245.60	-844.07	40° 9' 39.740 N	104° 38' 15.482 W	1,302,681.56	3,241,020.67
4,561.00	18.93	250.90	4,410.54	-255.32	-872.27	40° 9' 39.643 N	104° 38' 15.845 W	1,302,671.57	3,240,992.56
4,651.00	21.04	252.84	4,495.11	-264.86	-901.51	40° 9' 39.549 N	104° 38' 16.222 W	1,302,661.74	3,240,963.42
4,741.00	20.33	252.40	4,579.31	-274.36	-931.85	40° 9' 39.455 N	104° 38' 16.613 W	1,302,651.95	3,240,933.18
4,831.00	19.99	252.61	4,663.80	-283.68	-961.43	40° 9' 39.363 N	104° 38' 16.994 W	1,302,642.33	3,240,903.69
4,921.00	18.22	251.78	4,748.84	-292.68	-989.48	40° 9' 39.274 N	104° 38' 17.355 W	1,302,633.06	3,240,875.73
5,011.00	18.61	255.14	4,834.23	-300.76	-1,016.72	40° 9' 39.194 N	104° 38' 17.706 W	1,302,624.72	3,240,848.57
5,101.00	19.12	260.94	4,919.40	-306.77	-1,045.16	40° 9' 39.135 N	104° 38' 18.072 W	1,302,618.43	3,240,820.19
5,191.00	19.23	260.44	5,004.41	-311.55	-1,074.33	40° 9' 39.088 N	104° 38' 18.448 W	1,302,613.37	3,240,791.07
5,371.00	21.18	257.63	5,173.33	-323.44	-1,135.33	40° 9' 38.970 N	104° 38' 19.233 W	1,302,600.88	3,240,730.19
5,461.00	20.01	252.44	5,257.58	-331.57	-1,165.90	40° 9' 38.890 N	104° 38' 19.627 W	1,302,592.46	3,240,699.71
5,551.00	18.72	251.73	5,342.49	-340.74	-1,194.29	40° 9' 38.799 N	104° 38' 19.993 W	1,302,583.01	3,240,671.40
5,641.00	16.18	251.55	5,428.34	-349.24	-1,219.91	40° 9' 38.715 N	104° 38' 20.323 W	1,302,574.26	3,240,645.88
5,730.00	16.28	250.03	5,513.79	-357.42	-1,243.39	40° 9' 38.634 N	104° 38' 20.625 W	1,302,565.85	3,240,622.47
5,820.00	14.53	250.64	5,600.56	-365.48	-1,265.90	40° 9' 38.555 N	104° 38' 20.915 W	1,302,557.58	3,240,600.04
5,910.00	12.55	250.89	5,688.05	-372.42	-1,285.80	40° 9' 38.486 N	104° 38' 21.171 W	1,302,550.44	3,240,580.22
6,000.00	10.76	250.49	5,776.19	-378.43	-1,302.96	40° 9' 38.427 N	104° 38' 21.392 W	1,302,544.26	3,240,563.12
6,090.00	9.45	251.36	5,864.79	-383.60	-1,317.88	40° 9' 38.376 N	104° 38' 21.585 W	1,302,538.95	3,240,548.25
6,180.00	7.78	251.13	5,953.77	-387.93	-1,330.64	40° 9' 38.333 N	104° 38' 21.749 W	1,302,534.49	3,240,535.53
6,270.00	6.40	244.70	6,043.09	-392.04	-1,340.94	40° 9' 38.292 N	104° 38' 21.882 W	1,302,530.28	3,240,525.27
6,360.00	4.50	248.35	6,132.68	-395.49	-1,348.76	40° 9' 38.258 N	104° 38' 21.982 W	1,302,526.76	3,240,517.48
6,450.00	2.23	253.31	6,222.51	-397.29	-1,353.72	40° 9' 38.240 N	104° 38' 22.046 W	1,302,524.90	3,240,512.54
6,540.00	0.42	291.86	6,312.49	-397.67	-1,355.70	40° 9' 38.236 N	104° 38' 22.072 W	1,302,524.50	3,240,510.56
6,631.00	0.86	316.46	6,403.48	-397.05	-1,356.48	40° 9' 38.243 N	104° 38' 22.082 W	1,302,525.12	3,240,509.78
6,721.00	12.97	9.05	6,492.68	-386.55	-1,355.35	40° 9' 38.346 N	104° 38' 22.067 W	1,302,535.63	3,240,510.80
6,811.00	25.99	10.70	6,577.35	-357.07	-1,350.08	40° 9' 38.638 N	104° 38' 21.999 W	1,302,565.16	3,240,515.79
6,901.00	28.20	9.83	6,657.47	-316.74	-1,342.79	40° 9' 39.036 N	104° 38' 21.905 W	1,302,605.56	3,240,522.69
6,991.00	37.75	8.70	6,732.88	-268.44	-1,334.97	40° 9' 39.514 N	104° 38' 21.805 W	1,302,653.93	3,240,530.03
7,081.00	43.24	1.18	6,801.34	-210.31	-1,330.17	40° 9' 40.088 N	104° 38' 21.743 W	1,302,712.10	3,240,534.27
7,171.00	50.76	358.72	6,862.68	-144.54	-1,330.31	40° 9' 40.738 N	104° 38' 21.745 W	1,302,777.86	3,240,533.48
7,261.00	56.81	0.45	6,915.83	-71.97	-1,330.79	40° 9' 41.455 N	104° 38' 21.751 W	1,302,850.42	3,240,532.29
7,351.00	69.87	0.18	6,956.12	8.29	-1,330.36	40° 9' 42.248 N	104° 38' 21.746 W	1,302,930.68	3,240,531.94
7,441.00	74.79	1.70	6,983.44	94.00	-1,328.94	40° 9' 43.095 N	104° 38' 21.727 W	1,303,016.40	3,240,532.53

## Design Report for GREENLEAF 30N-2HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
7,530.00	88.77	0.06	6,996.13	181.85	-1,327.61	40° 9' 43.963 N	104° 38' 21.710 W	1,303,104.25	3,240,533.00
7,636.00	91.26	0.77	6,996.10	287.84	-1,326.85	40° 9' 45.011 N	104° 38' 21.700 W	1,303,210.24	3,240,532.73
7,726.00	90.46	0.97	6,994.75	377.82	-1,325.48	40° 9' 45.900 N	104° 38' 21.683 W	1,303,300.22	3,240,533.22
7,816.00	90.80	0.89	6,993.76	467.80	-1,324.02	40° 9' 46.789 N	104° 38' 21.664 W	1,303,390.21	3,240,533.80
7,906.00	89.88	0.04	6,993.23	557.80	-1,323.29	40° 9' 47.679 N	104° 38' 21.655 W	1,303,480.21	3,240,533.65
7,996.00	89.14	359.40	6,994.00	647.79	-1,323.73	40° 9' 48.568 N	104° 38' 21.661 W	1,303,570.19	3,240,532.33
8,086.00	89.78	359.29	6,994.85	737.78	-1,324.76	40° 9' 49.457 N	104° 38' 21.674 W	1,303,660.16	3,240,530.43
8,176.00	89.69	358.69	6,995.26	827.77	-1,326.34	40° 9' 50.346 N	104° 38' 21.694 W	1,303,750.12	3,240,527.96
8,266.00	90.18	358.56	6,995.36	917.74	-1,328.50	40° 9' 51.235 N	104° 38' 21.722 W	1,303,840.07	3,240,524.93
8,356.00	89.41	359.57	6,995.69	1,007.73	-1,329.97	40° 9' 52.125 N	104° 38' 21.741 W	1,303,930.03	3,240,522.58
8,446.00	89.60	358.96	6,996.46	1,097.71	-1,331.13	40° 9' 53.014 N	104° 38' 21.756 W	1,304,020.00	3,240,520.55
8,536.00	89.88	358.76	6,996.87	1,187.70	-1,332.92	40° 9' 53.903 N	104° 38' 21.779 W	1,304,109.95	3,240,517.88
8,626.00	90.46	357.94	6,996.60	1,277.66	-1,335.51	40° 9' 54.792 N	104° 38' 21.813 W	1,304,199.88	3,240,514.41
8,716.00	89.69	359.61	6,996.49	1,367.63	-1,337.43	40° 9' 55.681 N	104° 38' 21.838 W	1,304,289.83	3,240,511.61
8,806.00	89.91	359.28	6,996.80	1,457.63	-1,338.30	40° 9' 56.571 N	104° 38' 21.849 W	1,304,379.81	3,240,509.86
8,896.00	89.26	0.55	6,997.45	1,547.62	-1,338.44	40° 9' 57.460 N	104° 38' 21.851 W	1,304,469.79	3,240,508.84
9,076.00	90.15	0.36	6,998.38	1,727.61	-1,337.01	40° 9' 59.239 N	104° 38' 21.832 W	1,304,649.78	3,240,508.52
9,166.00	91.05	0.12	6,997.44	1,817.61	-1,336.63	40° 10' 0.128 N	104° 38' 21.828 W	1,304,739.77	3,240,508.02
9,256.00	90.18	0.02	6,996.47	1,907.60	-1,336.52	40° 10' 1.017 N	104° 38' 21.826 W	1,304,829.76	3,240,507.25
9,346.00	90.59	359.98	6,995.87	1,997.60	-1,336.52	40° 10' 1.907 N	104° 38' 21.826 W	1,304,919.75	3,240,506.37
9,436.00	91.26	359.56	6,994.41	2,087.58	-1,336.88	40° 10' 2.796 N	104° 38' 21.831 W	1,305,009.72	3,240,505.13
9,525.00	89.75	359.62	6,993.63	2,176.58	-1,337.52	40° 10' 3.675 N	104° 38' 21.839 W	1,305,098.70	3,240,503.63
9,615.00	90.49	359.12	6,993.44	2,266.57	-1,338.51	40° 10' 4.565 N	104° 38' 21.852 W	1,305,188.68	3,240,501.76
9,705.00	90.22	359.51	6,992.88	2,356.56	-1,339.58	40° 10' 5.454 N	104° 38' 21.866 W	1,305,278.65	3,240,499.80
9,885.00	90.15	359.55	6,992.30	2,536.55	-1,341.06	40° 10' 7.233 N	104° 38' 21.885 W	1,305,458.61	3,240,496.57
9,975.00	90.62	358.86	6,991.70	2,626.54	-1,342.31	40° 10' 8.122 N	104° 38' 21.901 W	1,305,548.58	3,240,494.44
10,065.00	89.66	0.26	6,991.48	2,716.54	-1,343.00	40° 10' 9.011 N	104° 38' 21.910 W	1,305,638.56	3,240,492.87
10,155.00	88.95	359.47	6,992.57	2,806.53	-1,343.21	40° 10' 9.901 N	104° 38' 21.913 W	1,305,728.54	3,240,491.78
10,245.00	89.72	359.75	6,993.61	2,896.52	-1,343.82	40° 10' 10.790 N	104° 38' 21.921 W	1,305,818.52	3,240,490.29
10,335.00	88.49	358.80	6,995.02	2,986.50	-1,344.96	40° 10' 11.679 N	104° 38' 21.936 W	1,305,908.48	3,240,488.28
10,426.00	89.82	359.49	6,996.36	3,077.48	-1,346.32	40° 10' 12.578 N	104° 38' 21.953 W	1,305,999.43	3,240,486.03
10,516.00	91.26	0.22	6,995.51	3,167.47	-1,346.55	40° 10' 13.467 N	104° 38' 21.956 W	1,306,089.42	3,240,484.93
10,606.00	91.85	0.15	6,993.07	3,257.43	-1,346.26	40° 10' 14.356 N	104° 38' 21.953 W	1,306,179.38	3,240,484.34
10,696.00	90.99	359.54	6,990.84	3,347.41	-1,346.50	40° 10' 15.246 N	104° 38' 21.956 W	1,306,269.34	3,240,483.22
10,786.00	89.23	0.68	6,990.67	3,437.40	-1,346.33	40° 10' 16.135 N	104° 38' 21.954 W	1,306,359.33	3,240,482.51
10,876.00	90.06	0.58	6,991.23	3,527.39	-1,345.34	40° 10' 17.024 N	104° 38' 21.941 W	1,306,449.32	3,240,482.62
10,966.00	90.25	0.64	6,990.98	3,617.39	-1,344.38	40° 10' 17.914 N	104° 38' 21.929 W	1,306,539.31	3,240,482.70
11,056.00	90.15	359.93	6,990.67	3,707.38	-1,343.93	40° 10' 18.803 N	104° 38' 21.923 W	1,306,629.31	3,240,482.27
11,146.00	90.95	0.27	6,989.80	3,797.38	-1,343.78	40° 10' 19.692 N	104° 38' 21.921 W	1,306,719.30	3,240,481.55
11,236.00	91.17	359.94	6,988.14	3,887.36	-1,343.61	40° 10' 20.581 N	104° 38' 21.919 W	1,306,809.28	3,240,480.84
11,326.00	90.09	358.51	6,987.15	3,977.35	-1,344.83	40° 10' 21.471 N	104° 38' 21.935 W	1,306,899.24	3,240,478.74
11,416.00	90.71	359.51	6,986.52	4,067.33	-1,346.38	40° 10' 22.360 N	104° 38' 21.955 W	1,306,989.20	3,240,476.31

## Design Report for GREENLEAF 30N-2HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
11,499.00	91.39	359.13	6,985.00	4,150.31	-1,347.37	40° 10' 23.180 N	104° 38' 21.968 W	1,307,072.16	3,240,474.52
11,541.00	91.39	359.13	6,983.98	4,192.29	-1,348.01	40° 10' 23.595 N	104° 38' 21.976 W	1,307,114.13	3,240,473.47

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
129.00	129.00	0.11	0.55	First Gyro Survey @ 129' MD
1,279.00	1,278.88	1.00	-3.76	Last Gyro Survey @ 1279' MD
1,372.00	1,371.87	2.11	-3.50	First Sperry MWD Survey @ 1372' MD
11,499.00	6,985.00	4,150.31	-1,347.37	Last Sperry MWD Survey @ 11499' MD
11,541.00	6,983.98	4,192.29	-1,348.01	Straight Line Projection to Bit @ 11541' MD

### Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	0.00	Slot	0.00	0.00	7.00

### Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
129.00	1,279.00	Actual Surveys	MWD
1,279.00	11,541.00	MWD Vertical/Build Surveys	MWD+IFR1+SC

### Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,314.00	1,313.87	9 5/8"	9-5/8	13-3/4
7,565.00	6,996.63	7"	7	8-3/4

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Design Report for GREENLEAF 30N-2HZ - Actual Surveys

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**Design Targets**

Shape	Target Name	TVD ( )	Northing ( )	Easting ( )	+N/-S	+E/-W	Created	Updated
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**Directional Difficulty Index**

Average Dogleg over Survey:	1.97 °/100usft	Maximum Dogleg over Survey:	15.81 °/100usft at 7,530.00 usft
Net Tortousity applicable to Plans:	0.75 °/100usft	Directional Difficulty Index:	6.353

**Audit Info**

**North Reference Sheet for Sec. 2-T2N-R65W - GREENLEAF 30N-2HZ - Plan A**

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

Vertical Depths are relative to RKB = 13' @ 4867.00usft (Ensign 145). Northing and Easting are relative to GREENLEAF 30N-2HZ

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: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995805

Grid Coordinates of Well: 1,302,935.37 usft N, 3,241,862.26 usft E

Geographical Coordinates of Well: 40° 09' 42.17" N, 104° 38' 04.61" W

Grid Convergence at Surface is: 0.56°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,541.00usft

the Bottom Hole Displacement is 4,403.68usft in the Direction of 342.18° ( True).

Magnetic Convergence at surface is: -7.85° (11 December 2014, , BGGM2014)

