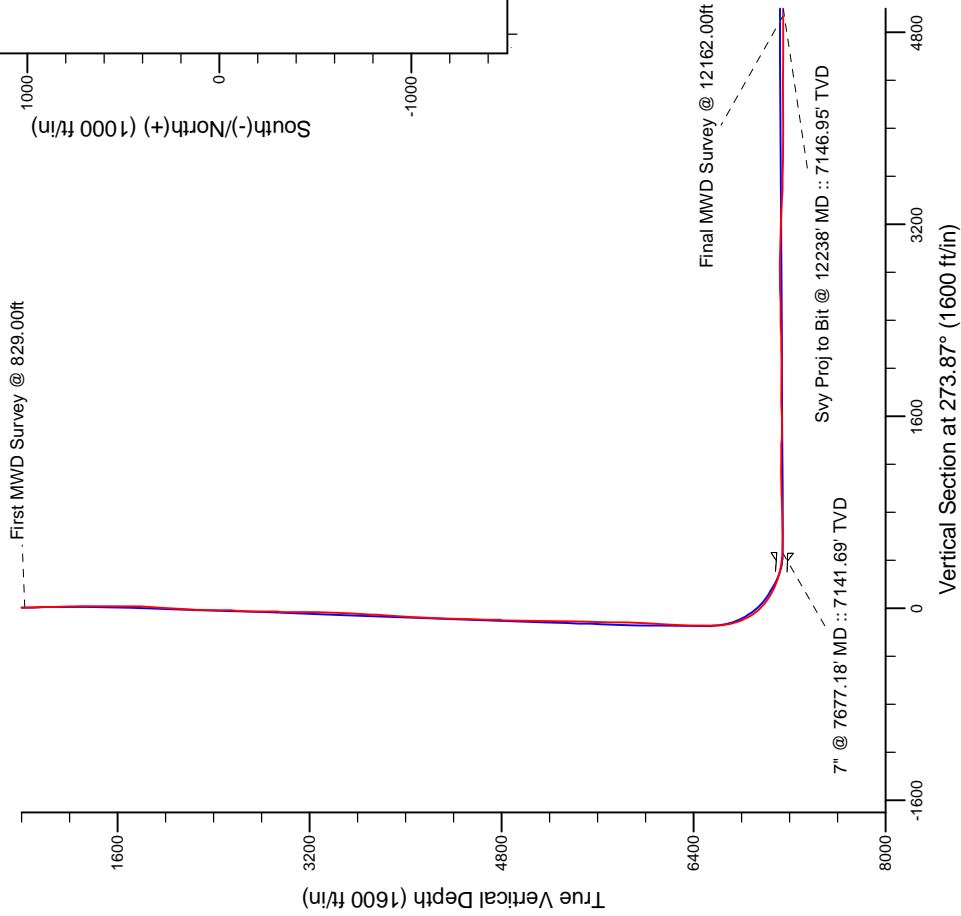
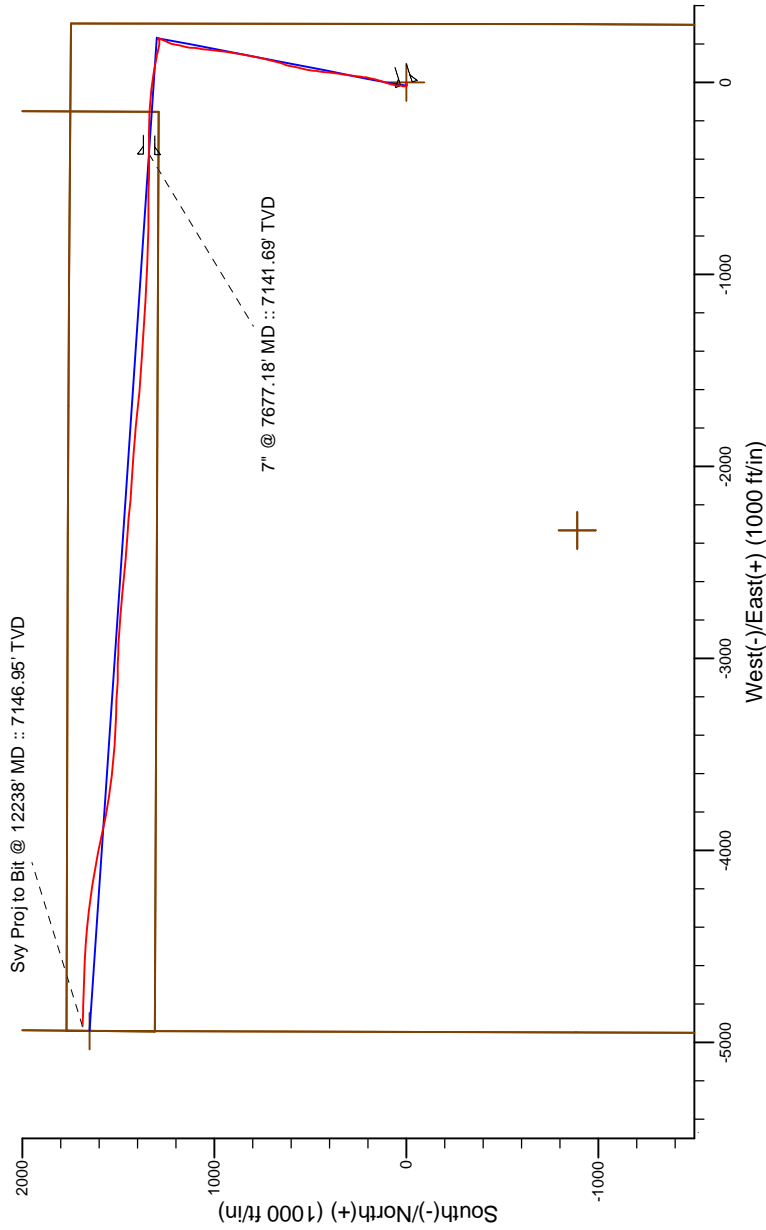


Project: Weld County, CO (NAD 83)  
 Site: Sec. 8-T3N-R66W  
 Well: Eisenach Federal 30N-8HZ  
 Wellbore: Plan A  
 Design: Actual Field Surveys



LEGEND

- Eisenach Federal 30N-8HZ, Plan A, Plan A1 V0
- Actual Field Surveys



7" Casing: ~410.51' FNL, ~681.44' FEL  
 Lat/Long: 40.245414 N, -104.794345 E  
 State Planes - CO Northern: 1,333,029.87' N, 3,196,978.17' E  
 Location: Sec. 8-T3N-R66W

BHL: ~84.09' FNL, ~25.47' FWL  
 Lat/Long: 40.246358 N, -104.810614 E  
 State Planes - CO Northern: 1,333,338.03' N, 3,192,434.38' E  
 Location: Sec. 8-T3N-R66W

WELL DETAILS: Eisenach Federal 30N-8HZ
RKB = 25' @ 4849.00ft (H&P 308)
Ground Level: -4824.00
Design: Actual Field Surveys (Eisenach Federal 30N-8HZ/Plan A)
Created By: Clint Eshelman
Reviewed: _____
Date: 08/29/2013
Date: _____

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8-T3N-R66W

Eisenach Federal 30N-8HZ

API # 05-123-37571

Plan A

Design: Actual Field Surveys

## Sperry Drilling Services

### Standard Report

29 August, 2013

Surface UWI : API # 05-123-37571

Well Coordinates: 1,331,693.01 N, 3,197,363.01 E (40° 14' 30.25" N, 104° 47' 34.82" W)

Ground Level: 4,824.00 ft

Local Coordinate Origin: Centered on Well Eisenach Federal 30N-8HZ

Viewing Datum: RKB = 25' @ 4849.00ft (H&P 308)

TVDs to System: N

North Reference: True

Unit System: API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

**HALLIBURTON**

**Design Report for Eisenach Federal 30N-8HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
125.00	0.16	18.15	125.00	0.13	0.04	-0.03	0.16
225.00	0.29	308.05	225.00	0.42	-0.11	0.14	0.28
325.00	0.62	248.09	325.00	0.38	-0.81	0.84	0.54
425.00	0.73	270.00	424.99	0.17	-1.95	1.96	0.28
525.00	1.29	241.65	524.97	-0.36	-3.58	3.55	0.73
616.00	1.07	259.37	615.96	-1.00	-5.32	5.24	0.47
<b>Tie-On to Gyros @ 616.00ft</b>							
691.70	1.16	252.01	691.64	-1.37	-6.74	6.63	0.22
<b>9 5/8" @ 691.7' MD :: 691.64' TVD</b>							
829.00	1.35	241.39	828.91	-2.57	-9.47	9.28	0.22
<b>First MWD Survey @ 829.00ft</b>							
920.00	1.48	233.88	919.88	-3.78	-11.36	11.08	0.25
1,012.00	1.34	274.14	1,011.85	-4.40	-13.40	13.07	1.06
1,104.00	2.88	323.71	1,103.80	-2.46	-15.84	15.64	2.45
1,196.00	3.93	351.39	1,195.64	2.52	-17.68	17.81	2.09
1,287.00	5.34	351.43	1,286.34	9.79	-18.78	19.39	1.55
1,378.00	5.64	7.45	1,376.93	18.41	-18.83	20.03	1.71
1,470.00	7.53	14.51	1,468.32	28.73	-16.73	18.63	2.23
1,562.00	8.45	359.20	1,559.43	41.33	-15.31	18.07	2.51
1,654.00	8.64	5.66	1,650.41	54.96	-14.73	18.40	1.06
1,746.00	9.90	11.93	1,741.21	69.58	-12.41	17.08	1.75
1,838.00	11.09	17.89	1,831.67	85.74	-8.06	13.83	1.75
1,929.00	12.93	18.66	1,920.68	103.72	-2.11	9.11	2.03
2,021.00	14.02	16.69	2,010.15	124.14	4.38	4.01	1.29
2,113.00	14.39	16.61	2,099.33	145.77	10.85	-0.99	0.40
2,204.00	16.22	15.18	2,187.10	168.88	17.41	-5.97	2.05
2,295.00	17.67	12.51	2,274.15	194.63	23.73	-10.54	1.81
2,387.00	16.71	8.00	2,362.04	221.36	28.60	-13.59	1.78
2,482.00	15.78	4.70	2,453.25	247.76	31.56	-14.76	1.38
2,577.00	16.76	8.47	2,544.45	274.18	34.63	-16.05	1.52
2,672.00	18.66	10.50	2,634.94	302.67	39.42	-18.90	2.10
2,766.00	18.95	8.65	2,723.93	332.55	44.46	-21.91	0.71
2,861.00	19.15	7.37	2,813.72	363.25	48.78	-24.15	0.49
2,956.00	19.45	6.58	2,903.38	394.42	52.59	-25.85	0.42
3,051.00	17.30	5.69	2,993.54	424.19	55.80	-27.04	2.28
3,146.00	16.24	5.06	3,084.49	451.48	58.37	-27.77	1.13
3,240.00	15.28	3.66	3,174.96	476.93	60.32	-27.99	1.10
3,335.00	15.87	9.36	3,266.48	502.24	63.23	-29.19	1.73
3,430.00	16.73	13.29	3,357.66	528.37	68.49	-32.67	1.47
3,525.00	16.02	13.59	3,448.81	554.42	74.71	-37.12	0.75
3,620.00	14.29	11.49	3,540.50	578.65	80.13	-40.89	1.91
3,715.00	14.83	12.16	3,632.45	602.03	85.03	-44.20	0.60
3,810.00	14.92	18.80	3,724.27	625.49	91.53	-49.10	1.80
3,905.00	16.95	18.43	3,815.62	650.21	99.85	-55.74	2.14
3,999.00	16.69	16.23	3,905.60	676.17	107.95	-62.07	0.73
4,094.00	16.42	14.91	3,996.66	702.24	115.22	-67.56	0.49
4,189.00	15.76	13.82	4,087.94	727.74	121.76	-72.36	0.76
4,284.00	18.01	12.24	4,178.84	754.63	127.95	-76.73	2.42

**Design Report for Eisenach Federal 30N-8HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,379.00	16.56	10.22	4,269.54	782.31	133.47	-80.37	1.65
4,474.00	16.01	8.57	4,360.73	808.58	137.82	-82.94	0.76
4,569.00	16.96	11.21	4,451.83	835.13	142.47	-85.78	1.27
4,664.00	17.06	11.40	4,542.67	862.38	147.92	-89.38	0.12
4,758.00	16.82	9.39	4,632.59	889.32	152.86	-92.49	0.67
4,853.00	15.81	7.59	4,723.77	915.71	156.81	-94.65	1.19
4,948.00	18.09	9.01	4,814.63	943.11	160.83	-96.81	2.44
5,043.00	17.49	6.37	4,905.09	971.86	164.73	-98.76	1.06
5,138.00	17.26	5.50	4,995.76	1,000.08	167.66	-99.78	0.37
5,233.00	16.31	3.70	5,086.71	1,027.42	169.87	-100.14	1.14
5,328.00	16.37	8.86	5,177.88	1,053.96	172.80	-101.27	1.53
5,422.00	15.02	7.02	5,268.37	1,079.14	176.33	-103.09	1.53
5,517.00	15.24	7.80	5,360.08	1,103.73	179.53	-104.62	0.32
5,612.00	13.51	4.94	5,452.10	1,127.16	182.18	-105.69	1.97
5,707.00	12.55	14.26	5,544.67	1,148.22	185.67	-107.75	2.43
5,802.00	13.38	14.77	5,637.24	1,168.85	191.02	-111.69	0.88
5,897.00	11.00	11.65	5,730.10	1,188.36	195.65	-115.00	2.60
5,991.00	9.45	8.59	5,822.60	1,204.77	198.62	-116.85	1.75
6,086.00	9.25	12.89	5,916.34	1,219.93	201.48	-118.69	0.76
6,181.00	10.75	20.28	6,009.90	1,235.68	206.26	-122.39	2.07
6,276.00	9.76	25.78	6,103.38	1,251.24	212.83	-127.90	1.46
6,371.00	7.77	23.74	6,197.27	1,264.37	218.92	-133.08	2.12
6,466.00	6.20	20.73	6,291.56	1,275.05	223.32	-136.76	1.70
6,560.00	5.15	22.02	6,385.10	1,283.71	226.70	-139.54	1.13
6,655.00	3.98	23.26	6,479.79	1,290.69	229.60	-141.96	1.24
6,702.00	2.28	24.77	6,526.72	1,293.04	230.64	-142.84	3.62
6,750.00	2.23	194.69	6,574.71	1,293.00	230.80	-143.01	9.36
6,797.00	6.54	233.26	6,621.57	1,290.52	228.42	-140.80	10.62
6,844.00	9.53	255.63	6,668.11	1,287.95	222.51	-135.07	9.09
6,891.00	14.09	261.36	6,714.11	1,286.12	213.07	-125.78	10.01
6,939.00	18.13	274.59	6,760.23	1,285.84	199.84	-112.60	11.32
6,986.00	23.69	285.33	6,804.13	1,288.93	183.43	-96.02	14.32
7,034.00	28.54	283.34	6,847.22	1,294.13	162.96	-75.24	10.27
7,081.00	33.35	281.19	6,887.52	1,299.23	139.35	-51.34	10.50
7,128.00	39.46	280.01	6,925.33	1,304.33	111.94	-23.65	13.08
7,175.00	45.32	280.11	6,960.03	1,309.87	80.75	7.84	12.47
7,222.00	51.10	278.65	6,991.34	1,315.56	46.19	42.70	12.51
7,269.00	55.68	278.15	7,019.36	1,321.06	8.88	80.30	9.78
7,317.00	60.10	277.20	7,044.87	1,326.48	-31.40	120.86	9.36
7,364.00	64.14	275.10	7,066.84	1,330.92	-72.70	162.36	9.46
7,411.00	68.44	273.68	7,085.74	1,334.20	-115.59	205.38	9.56
7,458.00	71.33	271.90	7,101.90	1,336.34	-159.67	249.50	7.10
7,506.00	73.49	271.00	7,116.40	1,337.50	-205.41	295.21	4.84
7,553.00	78.00	270.83	7,127.98	1,338.23	-250.94	340.69	9.60
7,600.00	82.55	270.72	7,135.91	1,338.85	-297.25	386.94	9.68
7,632.00	86.08	270.94	7,139.08	1,339.31	-329.08	418.73	11.05
7,677.18	87.29	270.68	7,141.69	1,339.95	-374.18	463.77	2.75
<b>7" @ 7677.18' MD :: 7141.69' TVD</b>							
7,778.00	90.00	270.09	7,144.07	1,340.62	-474.96	564.36	2.75
7,872.00	90.87	270.64	7,143.36	1,341.22	-568.96	658.18	1.09
7,967.00	91.54	270.97	7,141.36	1,342.56	-663.93	753.03	0.79

**Design Report for Eisenach Federal 30N-8HZ - Actual Field Surveys**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
8,062.00	92.78	271.21	7,137.78	1,344.36	-758.84	847.84	1.33
8,157.00	91.61	271.41	7,134.14	1,346.53	-853.74	942.68	1.25
8,252.00	91.11	271.55	7,131.89	1,348.99	-948.68	1,037.57	0.55
8,347.00	89.69	272.85	7,131.23	1,352.63	-1,043.61	1,132.52	2.03
8,442.00	88.58	274.24	7,132.66	1,358.51	-1,138.41	1,227.50	1.87
8,537.00	89.88	273.28	7,133.94	1,364.73	-1,233.20	1,322.49	1.70
8,631.00	88.64	274.44	7,135.15	1,371.06	-1,326.97	1,416.48	1.81
8,726.00	90.68	273.32	7,135.71	1,377.49	-1,421.74	1,511.47	2.45
8,821.00	90.68	274.54	7,134.59	1,384.00	-1,516.51	1,606.46	1.28
8,915.00	90.37	274.79	7,133.73	1,391.64	-1,610.20	1,700.45	0.42
9,010.00	90.62	275.11	7,132.90	1,399.84	-1,704.84	1,795.43	0.43
9,104.00	90.00	275.86	7,132.40	1,408.83	-1,798.41	1,889.39	1.04
9,199.00	89.69	274.79	7,132.65	1,417.64	-1,892.99	1,984.36	1.17
9,293.00	90.12	273.35	7,132.81	1,424.31	-1,986.75	2,078.36	1.60
9,388.00	90.99	273.57	7,131.89	1,430.05	-2,081.58	2,173.35	0.94
9,482.00	91.05	274.46	7,130.22	1,436.63	-2,175.33	2,267.33	0.95
9,577.00	90.56	275.22	7,128.88	1,444.64	-2,269.98	2,362.31	0.95
9,672.00	90.80	274.84	7,127.75	1,452.97	-2,364.61	2,457.28	0.47
9,766.00	92.16	274.74	7,125.33	1,460.82	-2,458.25	2,551.24	1.45
9,861.00	91.67	275.44	7,122.15	1,469.24	-2,552.82	2,646.16	0.90
9,956.00	92.04	275.15	7,119.08	1,478.00	-2,647.36	2,741.08	0.49
10,051.00	88.64	274.64	7,118.51	1,486.11	-2,742.00	2,836.05	3.62
10,145.00	88.33	273.72	7,121.00	1,492.96	-2,835.72	2,930.01	1.03
10,240.00	88.70	273.00	7,123.46	1,498.52	-2,930.52	3,024.98	0.85
10,335.00	88.83	271.69	7,125.51	1,502.41	-3,025.42	3,119.92	1.39
10,430.00	87.10	271.36	7,128.88	1,504.94	-3,120.32	3,214.78	1.85
10,525.00	87.03	271.96	7,133.74	1,507.68	-3,215.15	3,309.58	0.64
10,619.00	87.90	272.54	7,137.90	1,511.37	-3,308.99	3,403.45	1.11
10,714.00	88.08	272.88	7,141.23	1,515.86	-3,403.82	3,498.37	0.40
10,809.00	88.64	274.99	7,143.95	1,522.38	-3,498.56	3,593.33	2.30
10,904.00	89.01	276.30	7,145.90	1,531.72	-3,593.07	3,688.26	1.43
10,999.00	89.63	278.36	7,147.03	1,543.84	-3,687.28	3,783.07	2.26
11,094.00	90.12	279.78	7,147.24	1,558.81	-3,781.09	3,877.68	1.58
11,189.00	89.88	282.02	7,147.24	1,576.78	-3,874.37	3,971.96	2.37
11,284.00	89.88	280.79	7,147.44	1,595.56	-3,967.50	4,066.14	1.29
11,379.00	90.06	280.52	7,147.49	1,613.13	-4,060.86	4,160.47	0.34
11,474.00	90.37	280.01	7,147.13	1,630.06	-4,154.34	4,254.88	0.63
11,569.00	89.94	276.96	7,146.87	1,644.07	-4,248.28	4,349.56	3.24
11,663.00	90.31	276.68	7,146.67	1,655.23	-4,341.62	4,443.44	0.49
11,758.00	89.94	275.36	7,146.46	1,665.20	-4,436.09	4,538.37	1.44
11,853.00	88.76	273.58	7,147.54	1,672.60	-4,530.79	4,633.35	2.25
11,947.00	89.57	271.77	7,148.91	1,676.99	-4,624.67	4,727.31	2.11
12,042.00	90.31	271.60	7,149.01	1,679.78	-4,719.63	4,822.24	0.80
12,136.00	90.62	271.38	7,148.24	1,682.22	-4,813.60	4,916.16	0.40
12,162.00	90.74	271.16	7,147.94	1,682.80	-4,839.59	4,942.13	0.96
<b>Final MWD Survey @ 12162.00ft</b>							
12,238.00	90.74	271.16	7,146.95	1,684.34	-4,915.57	5,018.04	0.00
<b>Svy Proj to Bit @ 12238' MD :: 7146.95' TVD</b>							

**Design Report for Eisenach Federal 30N-8HZ - Actual Field Surveys****Design Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
616.00	615.96	-1.00	-5.32	Tie-On to Gyros @ 616.00ft
829.00	828.91	-2.57	-9.47	First MWD Survey @ 829.00ft
12,162.00	7,147.94	1,682.80	-4,839.59	Final MWD Survey @ 12162.00ft
12,238.00	7,146.95	1,684.34	-4,915.57	Svy Proj to Bit @ 12238' MD :: 7146.95' TVD

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	273.87	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
25.00	616.00	MS Energy	NS-GYRO-MS
616.00	7,632.00	Vertical/Build	MWD
7,632.00	12,238.00	MWD Lateral	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
691.70	691.64	9 5/8" @ 691.7' MD :: 691.64' TVD	9-5/8	13-1/2
7,677.18	7,141.69	7" @ 7677.18' MD :: 7141.69' TVD	7	8-3/4

**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
Eisenach Federal 30	0.00	0.00	7,119.00	1,648.60	-4,940.19	1,333,302.10	3,192,410.05	40.246260	-104.810702
- actual wellpath misses target center by 51.62ft at 12238.00ft MD (7146.95 TVD, 1684.34 N, -4915.57 E)									
- Point									
Eisenach Federal 30	0.00	0.00	0.00	0.00	0.00	1,331,693.01	3,197,363.01	40.241736	-104.793005
- actual wellpath hits target center									
- Point									

**North Reference Sheet for Sec. 8-T3N-R66W - Eisenach Federal 30N-8HZ - 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 = 25' @ 4849.00ft (H&P 308). Northing and Easting are relative to Eisenach Federal 30N-8HZ

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: 0.99995686

Grid Coordinates of Well: 1,331,693.01 ft N, 3,197,363.01 ft E

Geographical Coordinates of Well: 40° 14' 30.25" N, 104° 47' 34.82" W

Grid Convergence at Surface is: 0.46°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,238.00ft the Bottom Hole Displacement is 5,196.13ft in the Direction of 288.91° (True).

Magnetic Convergence at surface is: -8.15° (22 July 2013, , BGGM2013)

