

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 21-T1N-R67W

Howard 28C-21HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

## Sperry Drilling Services

## Proposal Report

20 December, 2012

Well Coordinates: 1,254,499.44 N, 3,168,291.71 E (40° 01' 49.52" N, 104° 53' 56.45" W)

Ground Level: 5,023.00 ft

Local Coordinate Origin:

Centered on Well Howard 28C-21HZ

Viewing Datum:

RKB=17 @ 5040.00ft (Drilling Rig)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

**HALLIBURTON**

Project: Weld County, CO (NAD 83)  
 Site: Sec. 21-T1N-R67W  
 Well: Howard 28C-21HZ  
 Wellbore: Plan A Rev 0  
 Design: Plan A Rev 0 Permit

# Anadarko Petroleum Corp.

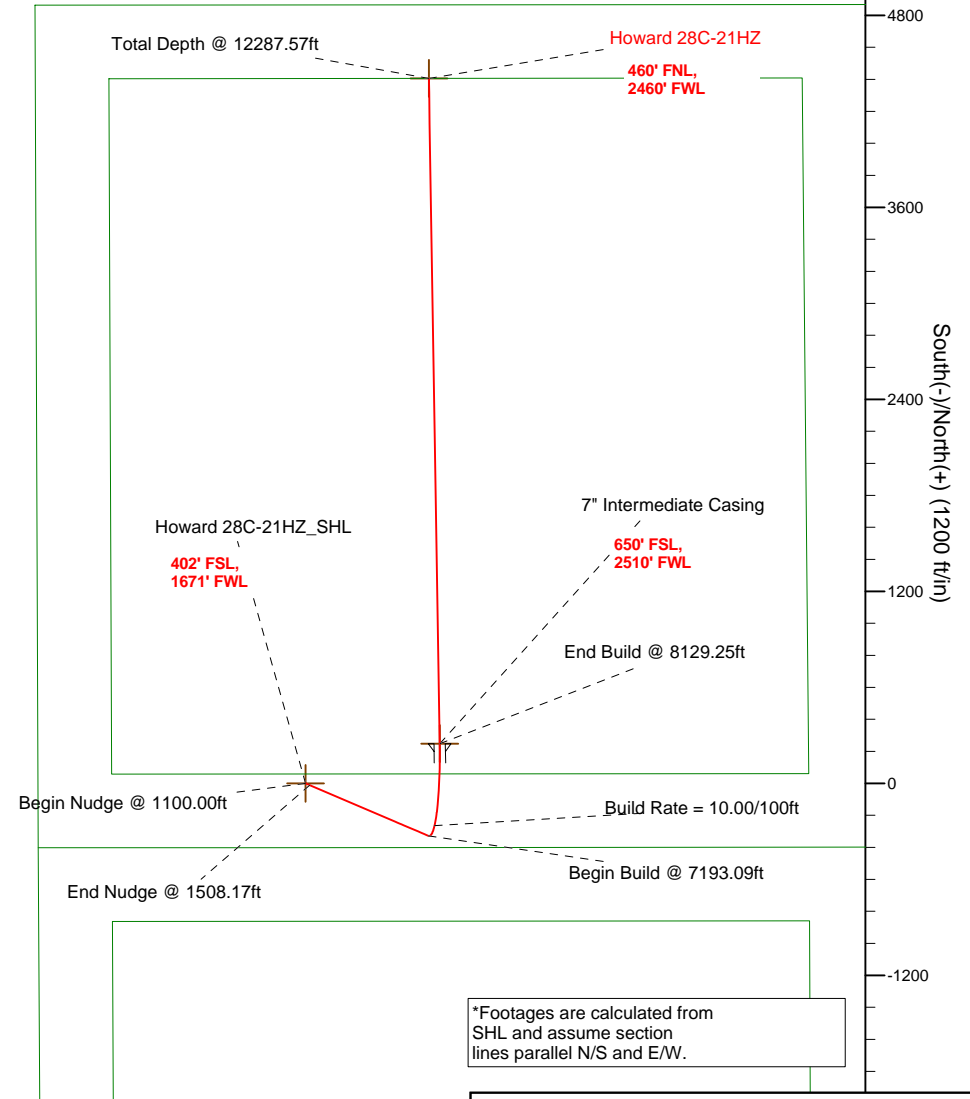
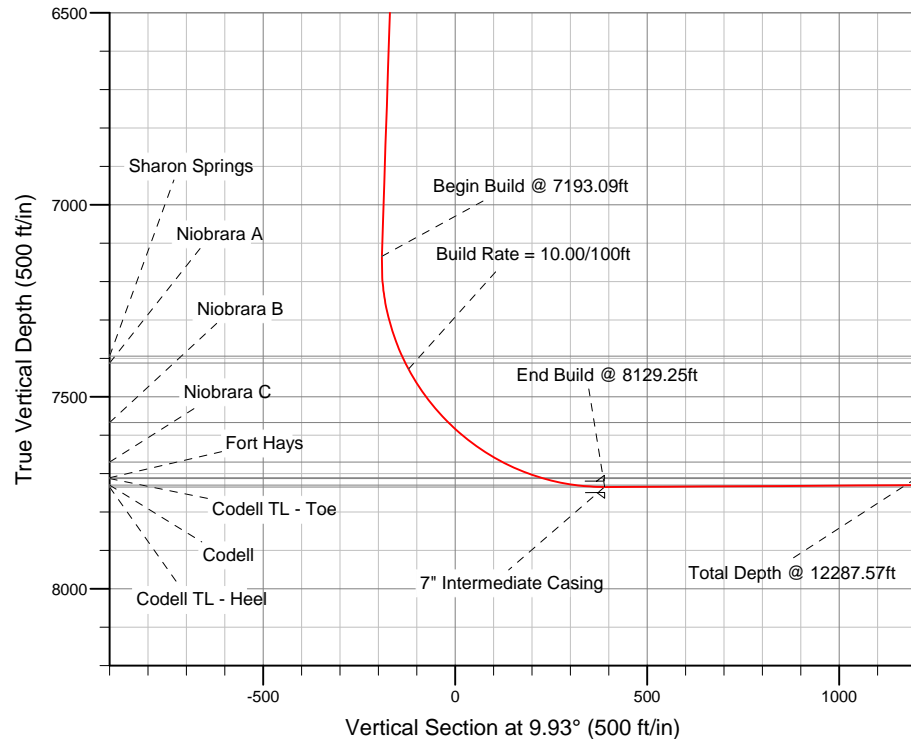
**HALLIBURTON**  
 Sperry Drilling

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00	
3	1508.17	8.16	113.11	1506.79	-11.39	26.70	2.00	113.11	-6.62	
4	7193.09	8.16	113.11	7134.10	-328.21	769.18	0.00	0.00	-190.59	
5	8129.25	90.30	359.07	7735.00	248.00	839.00	10.00	-113.78	389.03	Howard 28C-21HZ_CP
6	12287.57	90.30	359.07	7713.00	4405.71	771.65	0.00	0.00	4472.78	Howard 28C-21HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Howard 28C-21HZ_SHL	0.00	0.00	0.00	40.030423	-104.899015	Point
Howard 28C-21HZ_BHL	7713.00	4405.71	771.65	40.042517	-104.896259	Point
Howard 28C-21HZ_CP	7735.00	248.00	839.00	40.031104	-104.896019	Point



\*Footages are calculated from SHL and assume section lines parallel N/S and E/W.

WELL DETAILS: Howard 28C-21HZ

Ground Level: 5023.00 RKB=17 @ 5040.00ft (Drilling Rig)

Plan: Plan A Rev 0 Permit (Howard 28C-21HZ/Plan A Rev 0)

Created By: Fred Hartmann Date: 12/20/2012  
 Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

**Plan Report for Howard 28C-21HZ - Plan A Rev 0 Permit**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 1100.00ft</b>										
1,200.00	2.00	113.11	1,199.98	-0.68	1.61	-0.40	2.00	2.00	0.00	113.11
1,300.00	4.00	113.11	1,299.84	-2.74	6.42	-1.59	2.00	2.00	0.00	0.00
1,400.00	6.00	113.11	1,399.45	-6.16	14.43	-3.58	2.00	2.00	0.00	0.00
1,500.00	8.00	113.11	1,498.70	-10.94	25.64	-6.35	2.00	2.00	0.00	0.00
1,508.17	8.16	113.11	1,506.79	-11.39	26.70	-6.62	2.00	2.00	0.00	0.00
<b>End Nudge @ 1508.17ft</b>										
1,600.00	8.16	113.11	1,597.69	-16.51	38.69	-9.59	0.00	0.00	0.00	0.00
1,700.00	8.16	113.11	1,696.68	-22.08	51.75	-12.82	0.00	0.00	0.00	0.00
1,800.00	8.16	113.11	1,795.66	-27.66	64.81	-16.06	0.00	0.00	0.00	0.00
1,900.00	8.16	113.11	1,894.65	-33.23	77.87	-19.30	0.00	0.00	0.00	0.00
2,000.00	8.16	113.11	1,993.64	-38.80	90.93	-22.53	0.00	0.00	0.00	0.00
2,100.00	8.16	113.11	2,092.62	-44.38	104.00	-25.77	0.00	0.00	0.00	0.00
2,200.00	8.16	113.11	2,191.61	-49.95	117.06	-29.00	0.00	0.00	0.00	0.00
2,300.00	8.16	113.11	2,290.60	-55.52	130.12	-32.24	0.00	0.00	0.00	0.00
2,400.00	8.16	113.11	2,389.58	-61.09	143.18	-35.48	0.00	0.00	0.00	0.00
2,500.00	8.16	113.11	2,488.57	-66.67	156.24	-38.71	0.00	0.00	0.00	0.00
2,600.00	8.16	113.11	2,587.56	-72.24	169.30	-41.95	0.00	0.00	0.00	0.00
2,700.00	8.16	113.11	2,686.54	-77.81	182.36	-45.19	0.00	0.00	0.00	0.00
2,800.00	8.16	113.11	2,785.53	-83.39	195.42	-48.42	0.00	0.00	0.00	0.00
2,900.00	8.16	113.11	2,884.52	-88.96	208.48	-51.66	0.00	0.00	0.00	0.00
3,000.00	8.16	113.11	2,983.50	-94.53	221.54	-54.89	0.00	0.00	0.00	0.00
3,100.00	8.16	113.11	3,082.49	-100.10	234.60	-58.13	0.00	0.00	0.00	0.00
3,200.00	8.16	113.11	3,181.48	-105.68	247.66	-61.37	0.00	0.00	0.00	0.00
3,300.00	8.16	113.11	3,280.46	-111.25	260.72	-64.60	0.00	0.00	0.00	0.00
3,400.00	8.16	113.11	3,379.45	-116.82	273.78	-67.84	0.00	0.00	0.00	0.00
3,500.00	8.16	113.11	3,478.44	-122.40	286.84	-71.08	0.00	0.00	0.00	0.00
3,600.00	8.16	113.11	3,577.42	-127.97	299.90	-74.31	0.00	0.00	0.00	0.00
3,700.00	8.16	113.11	3,676.41	-133.54	312.96	-77.55	0.00	0.00	0.00	0.00
3,800.00	8.16	113.11	3,775.40	-139.12	326.02	-80.78	0.00	0.00	0.00	0.00
3,900.00	8.16	113.11	3,874.38	-144.69	339.08	-84.02	0.00	0.00	0.00	0.00
4,000.00	8.16	113.11	3,973.37	-150.26	352.14	-87.26	0.00	0.00	0.00	0.00
4,100.00	8.16	113.11	4,072.36	-155.83	365.20	-90.49	0.00	0.00	0.00	0.00
4,200.00	8.16	113.11	4,171.34	-161.41	378.26	-93.73	0.00	0.00	0.00	0.00
4,300.00	8.16	113.11	4,270.33	-166.98	391.33	-96.96	0.00	0.00	0.00	0.00
4,400.00	8.16	113.11	4,369.32	-172.55	404.39	-100.20	0.00	0.00	0.00	0.00
4,500.00	8.16	113.11	4,468.30	-178.13	417.45	-103.44	0.00	0.00	0.00	0.00
4,600.00	8.16	113.11	4,567.29	-183.70	430.51	-106.67	0.00	0.00	0.00	0.00
4,700.00	8.16	113.11	4,666.28	-189.27	443.57	-109.91	0.00	0.00	0.00	0.00
4,774.48	8.16	113.11	4,740.00	-193.42	453.29	-112.32	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,800.00	8.16	113.11	4,765.26	-194.84	456.63	-113.15	0.00	0.00	0.00	0.00
4,900.00	8.16	113.11	4,864.25	-200.42	469.69	-116.38	0.00	0.00	0.00	0.00
5,000.00	8.16	113.11	4,963.24	-205.99	482.75	-119.62	0.00	0.00	0.00	0.00
5,100.00	8.16	113.11	5,062.22	-211.56	495.81	-122.85	0.00	0.00	0.00	0.00
5,200.00	8.16	113.11	5,161.21	-217.14	508.87	-126.09	0.00	0.00	0.00	0.00

**Plan Report for Howard 28C-21HZ - Plan A Rev 0 Permit**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
5,300.00	8.16	113.11	5,260.20	-222.71	521.93	-129.33	0.00	0.00	0.00	0.00
5,400.00	8.16	113.11	5,359.18	-228.28	534.99	-132.56	0.00	0.00	0.00	0.00
5,500.00	8.16	113.11	5,458.17	-233.86	548.05	-135.80	0.00	0.00	0.00	0.00
5,600.00	8.16	113.11	5,557.16	-239.43	561.11	-139.04	0.00	0.00	0.00	0.00
5,700.00	8.16	113.11	5,656.14	-245.00	574.17	-142.27	0.00	0.00	0.00	0.00
5,800.00	8.16	113.11	5,755.13	-250.57	587.23	-145.51	0.00	0.00	0.00	0.00
5,900.00	8.16	113.11	5,854.12	-256.15	600.29	-148.74	0.00	0.00	0.00	0.00
6,000.00	8.16	113.11	5,953.10	-261.72	613.35	-151.98	0.00	0.00	0.00	0.00
6,100.00	8.16	113.11	6,052.09	-267.29	626.41	-155.22	0.00	0.00	0.00	0.00
6,200.00	8.16	113.11	6,151.08	-272.87	639.47	-158.45	0.00	0.00	0.00	0.00
6,300.00	8.16	113.11	6,250.06	-278.44	652.53	-161.69	0.00	0.00	0.00	0.00
6,400.00	8.16	113.11	6,349.05	-284.01	665.59	-164.92	0.00	0.00	0.00	0.00
6,500.00	8.16	113.11	6,448.04	-289.59	678.66	-168.16	0.00	0.00	0.00	0.00
6,600.00	8.16	113.11	6,547.02	-295.16	691.72	-171.40	0.00	0.00	0.00	0.00
6,700.00	8.16	113.11	6,646.01	-300.73	704.78	-174.63	0.00	0.00	0.00	0.00
6,800.00	8.16	113.11	6,745.00	-306.30	717.84	-177.87	0.00	0.00	0.00	0.00
6,900.00	8.16	113.11	6,843.98	-311.88	730.90	-181.11	0.00	0.00	0.00	0.00
7,000.00	8.16	113.11	6,942.97	-317.45	743.96	-184.34	0.00	0.00	0.00	0.00
7,100.00	8.16	113.11	7,041.96	-323.02	757.02	-187.58	0.00	0.00	0.00	0.00
7,193.09	8.16	113.11	7,134.11	-328.21	769.18	-190.59	0.00	0.00	0.00	0.00
<b>Begin Build @ 7193.09ft</b>										
7,200.00	7.91	108.51	7,140.95	-328.55	770.08	-190.77	10.01	-3.67	-66.60	-113.78
7,300.00	10.48	44.20	7,239.89	-324.20	782.98	-184.26	10.00	2.57	-64.30	-109.22
7,400.00	18.87	21.66	7,336.61	-302.60	795.32	-160.85	10.00	8.39	-22.54	-45.57
7,461.81	24.65	15.70	7,394.00	-280.88	802.51	-138.22	10.00	9.35	-9.63	-23.69
<b>Sharon Springs</b>										
7,481.77	26.56	14.31	7,412.00	-272.54	804.74	-129.62	10.00	9.54	-6.97	-18.15
<b>Niobrara A</b>										
7,500.00	28.30	13.20	7,428.18	-264.39	806.73	-121.25	10.00	9.59	-6.13	-16.90
<b>Build Rate = 10.00/100ft</b>										
7,600.00	38.01	8.76	7,511.81	-210.74	816.86	-66.65	10.00	9.71	-4.43	-15.91
7,673.89	45.26	6.57	7,567.00	-162.11	823.34	-17.64	10.00	9.81	-2.96	-12.18
<b>Niobrara B</b>										
7,700.00	47.83	5.93	7,584.96	-143.28	825.40	1.27	10.00	9.84	-2.47	-10.54
7,800.00	57.69	3.87	7,645.40	-64.06	832.10	80.46	10.00	9.86	-2.06	-10.10
7,849.41	62.58	3.01	7,670.00	-21.30	834.66	123.02	10.00	9.89	-1.73	-8.84
<b>Niobrara C</b>										
7,900.00	67.58	2.21	7,691.31	24.52	836.74	168.51	10.00	9.90	-1.58	-8.42
7,959.03	73.43	1.35	7,711.00	80.11	838.46	223.56	10.00	9.90	-1.46	-8.08
<b>Fort Hays</b>										
8,000.00	77.49	0.78	7,721.28	119.76	839.19	262.74	10.00	9.91	-1.39	-7.79
8,050.06	82.45	0.11	7,730.00	169.03	839.57	311.34	9.99	9.90	-1.34	-7.65
<b>Codell</b>										
8,100.00	87.40	359.45	7,734.41	218.76	839.38	360.29	10.01	9.93	-1.31	-7.53
8,123.13	89.70	359.15	7,735.00	241.89	839.09	383.02	10.00	9.92	-1.30	-7.47
<b>Codell TL - Heel</b>										
8,129.25	90.30	359.07	7,735.00	248.00	839.00	389.03	10.00	9.91	-1.30	-7.47
<b>End Build @ 8129.25ft - 7" Intermediate Casing - Howard 28C-21HZ_CP</b>										
8,200.00	90.30	359.07	7,734.63	318.74	837.85	458.51	0.00	0.00	0.00	-7.47
8,300.00	90.30	359.07	7,734.10	418.73	836.23	556.72	0.00	0.00	0.00	0.00
8,400.00	90.30	359.07	7,733.57	518.71	834.61	654.92	0.00	0.00	0.00	0.00
8,500.00	90.30	359.07	7,733.04	618.70	833.00	753.13	0.00	0.00	0.00	0.00
8,600.00	90.30	359.07	7,732.51	718.68	831.38	851.34	0.00	0.00	0.00	0.00
8,700.00	90.30	359.07	7,731.98	818.67	829.76	949.54	0.00	0.00	0.00	0.00
8,800.00	90.30	359.07	7,731.45	918.65	828.14	1,047.75	0.00	0.00	0.00	0.00
8,900.00	90.30	359.07	7,730.92	1,018.64	826.52	1,145.96	0.00	0.00	0.00	0.00
9,000.00	90.30	359.07	7,730.39	1,118.62	824.90	1,244.16	0.00	0.00	0.00	0.00
9,100.00	90.30	359.07	7,729.86	1,218.61	823.28	1,342.37	0.00	0.00	0.00	0.00
9,200.00	90.30	359.07	7,729.34	1,318.60	821.66	1,440.58	0.00	0.00	0.00	0.00

**Plan Report for Howard 28C-21HZ - Plan A Rev 0 Permit**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
9,300.00	90.30	359.07	7,728.81	1,418.58	820.04	1,538.78	0.00	0.00	0.00	0.00
9,400.00	90.30	359.07	7,728.28	1,518.57	818.42	1,636.99	0.00	0.00	0.00	0.00
9,500.00	90.30	359.07	7,727.75	1,618.55	816.80	1,735.20	0.00	0.00	0.00	0.00
9,600.00	90.30	359.07	7,727.22	1,718.54	815.18	1,833.40	0.00	0.00	0.00	0.00
9,700.00	90.30	359.07	7,726.69	1,818.52	813.56	1,931.61	0.00	0.00	0.00	0.00
9,800.00	90.30	359.07	7,726.16	1,918.51	811.94	2,029.82	0.00	0.00	0.00	0.00
9,900.00	90.30	359.07	7,725.63	2,018.49	810.32	2,128.03	0.00	0.00	0.00	0.00
10,000.00	90.30	359.07	7,725.10	2,118.48	808.70	2,226.23	0.00	0.00	0.00	0.00
10,100.00	90.30	359.07	7,724.57	2,218.46	807.08	2,324.44	0.00	0.00	0.00	0.00
10,200.00	90.30	359.07	7,724.04	2,318.45	805.46	2,422.65	0.00	0.00	0.00	0.00
10,300.00	90.30	359.07	7,723.52	2,418.44	803.84	2,520.85	0.00	0.00	0.00	0.00
10,400.00	90.30	359.07	7,722.99	2,518.42	802.22	2,619.06	0.00	0.00	0.00	0.00
10,500.00	90.30	359.07	7,722.46	2,618.41	800.60	2,717.27	0.00	0.00	0.00	0.00
10,600.00	90.30	359.07	7,721.93	2,718.39	798.98	2,815.47	0.00	0.00	0.00	0.00
10,700.00	90.30	359.07	7,721.40	2,818.38	797.36	2,913.68	0.00	0.00	0.00	0.00
10,800.00	90.30	359.07	7,720.87	2,918.36	795.74	3,011.89	0.00	0.00	0.00	0.00
10,900.00	90.30	359.07	7,720.34	3,018.35	794.12	3,110.09	0.00	0.00	0.00	0.00
11,000.00	90.30	359.07	7,719.81	3,118.33	792.50	3,208.30	0.00	0.00	0.00	0.00
11,100.00	90.30	359.07	7,719.28	3,218.32	790.88	3,306.51	0.00	0.00	0.00	0.00
11,200.00	90.30	359.07	7,718.75	3,318.31	789.26	3,404.71	0.00	0.00	0.00	0.00
11,300.00	90.30	359.07	7,718.22	3,418.29	787.64	3,502.92	0.00	0.00	0.00	0.00
11,400.00	90.30	359.07	7,717.70	3,518.28	786.03	3,601.13	0.00	0.00	0.00	0.00
11,500.00	90.30	359.07	7,717.17	3,618.26	784.41	3,699.34	0.00	0.00	0.00	0.00
11,600.00	90.30	359.07	7,716.64	3,718.25	782.79	3,797.54	0.00	0.00	0.00	0.00
11,700.00	90.30	359.07	7,716.11	3,818.23	781.17	3,895.75	0.00	0.00	0.00	0.00
11,800.00	90.30	359.07	7,715.58	3,918.22	779.55	3,993.96	0.00	0.00	0.00	0.00
11,900.00	90.30	359.07	7,715.05	4,018.20	777.93	4,092.16	0.00	0.00	0.00	0.00
12,000.00	90.30	359.07	7,714.52	4,118.19	776.31	4,190.37	0.00	0.00	0.00	0.00
12,100.00	90.30	359.07	7,713.99	4,218.17	774.69	4,288.58	0.00	0.00	0.00	0.00
12,200.00	90.30	359.07	7,713.46	4,318.16	773.07	4,386.78	0.00	0.00	0.00	0.00
12,287.56	90.30	359.07	7,713.00	4,405.71	771.65	4,472.77	0.00	0.00	0.00	0.00
<b>Codell TL - Toe</b>										
12,287.57	90.30	359.07	7,713.00	4,405.71	771.65	4,472.78	0.01	0.00	0.00	0.00
<b>Howard 28C-21HZ_BHL</b>										

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
1,100.00	1,100.00	0.00	0.00	Begin Nudge @ 1100.00ft
1,508.17	1,506.79	-11.39	26.70	End Nudge @ 1508.17ft
7,193.09	7,134.11	-328.21	769.18	Begin Build @ 7193.09ft
7,500.00	7,428.18	-264.39	806.73	Build Rate = 10.00/100ft
8,129.25	7,735.00	248.00	839.00	End Build @ 8129.25ft
12,287.57	7,713.00	4,405.72	771.65	Total Depth @ 12287.57ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	+E/-W (ft)	Start TVD (ft)
Target	Howard 28C-21HZ_BHL	9.93	Slot	0.00	0.00	0.00

**Plan Report for Howard 28C-21HZ - Plan A Rev 0 Permit****Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	8,129.25	Plan A Rev 0 Permit	MWD
8,129.25	12,287.57	Plan A Rev 0 Permit	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
8,129.25	7,735.00	7" Intermediate Casing	7	8-3/4

**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,774.48	4,740.00	Sussex		0.00	
7,461.81	7,394.00	Sharon Springs		0.00	
7,481.77	7,412.00	Niobrara A		0.00	
7,673.89	7,567.00	Niobrara B		0.00	
7,849.41	7,670.00	Niobrara C		0.00	
7,959.03	7,711.00	Fort Hays		0.00	
8,050.06	7,730.00	Codell		0.00	
8,129.25	7,735.00	Codell TL - Heel		0.00	
12,287.56	7,713.00	Codell TL - Toe		0.00	

**Targets associated with this wellbore**

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Howard 28C-21HZ_SHL	0.00	0.00	0.00	Point
Howard 28C-21HZ_CP	7,735.00	248.00	839.00	Point
Howard 28C-21HZ_BHL	7,713.00	4,405.71	771.65	Point

## North Reference Sheet for Sec. 21-T1N-R67W - Howard 28C-21HZ - Plan A Rev 0

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

Vertical Depths are relative to RKB=17 @ 5040.00ft (Drilling Rig). Northing and Easting are relative to Howard 28C-21HZ

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 -105.50°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99996420

Grid Coordinates of Well: 1,254,499.44 ft N, 3,168,291.71 ft E

Geographical Coordinates of Well: 40° 01' 49.52" N, 104° 53' 56.45" W

Grid Convergence at Surface is: 0.39°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,287.57ft  
the Bottom Hole Displacement is 4,472.78ft in the Direction of 9.93° (True).

Magnetic Convergence at surface is: -8.36° (19 December 2012, , BGGM2012)

