

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 21-T1N-R67W

Howard 29C-21HZ

Plan C 0

Plan: Plan C 0 - PERMIT

Sperry Drilling Services

Proposal Report

16 May, 2013

Well Coordinates: 1,254,407.71 N, 3,168,140.55 E (40° 01' 48.63" N, 104° 53' 58.41" W)

Ground Level: 5,025.00 ft

Local Coordinate Origin:

Centered on Well Howard 29C-21HZ

Viewing Datum:

RKB=17 @ 5042.00ft (Drilling Rig)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

HALLIBURTON

Project: Weld County, CO (NAD 83)
 Site: Sec. 21-T1N-R67W
 Well: Howard 29C-21HZ
 Wellbore: Plan C 0
 Design: Plan C 0 - PERMIT

Anadarko Petroleum Corp.

HALLIBURTON
 Sperry Drilling

SECTION DETAILS

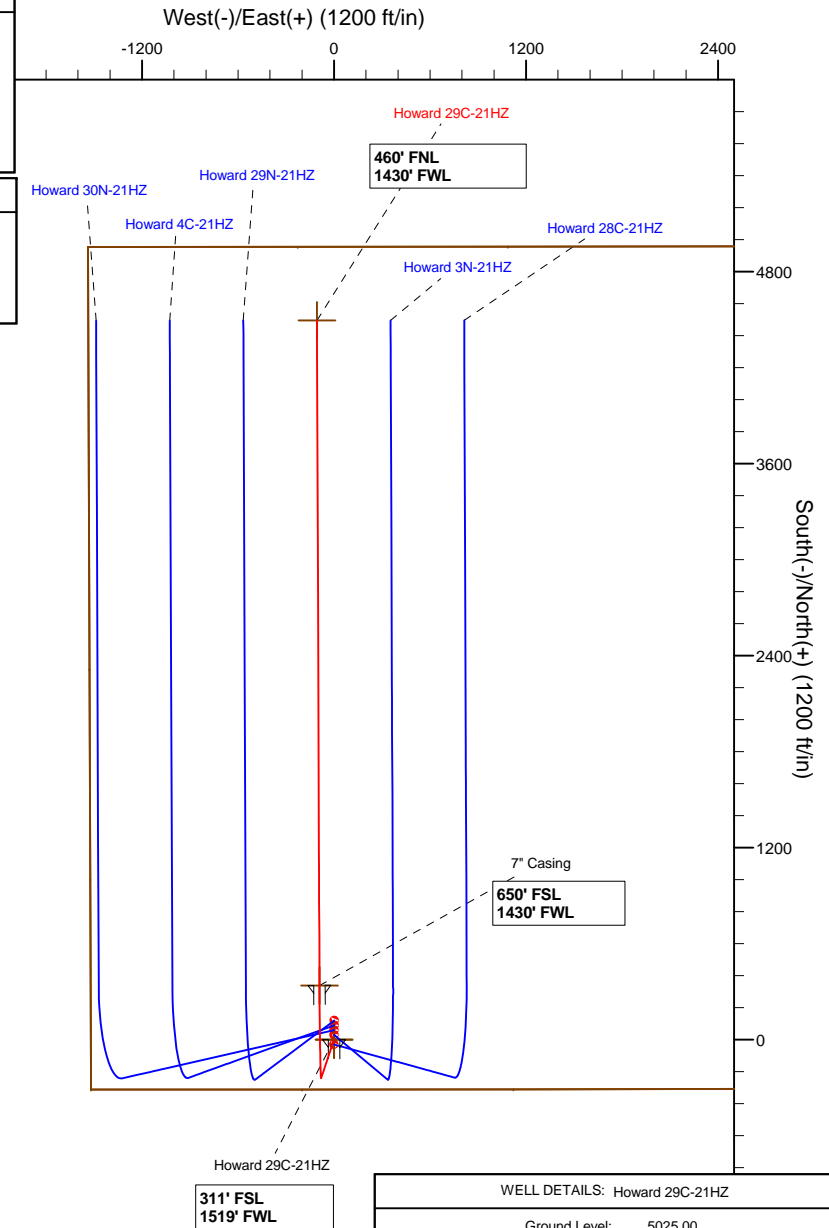
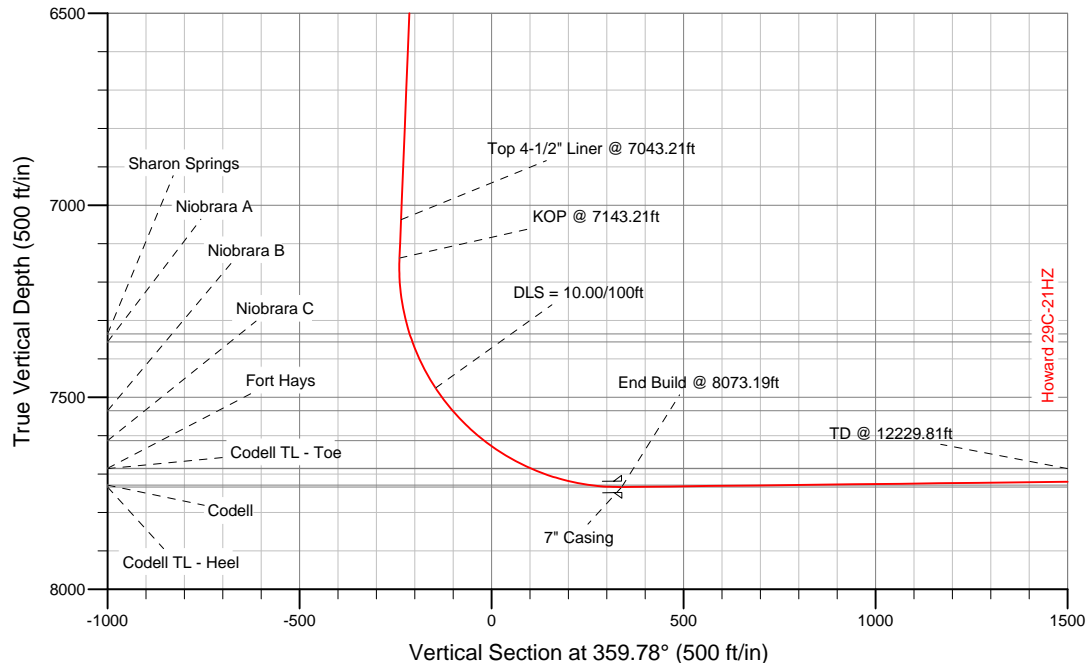
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	
3	1323.29	2.47	198.43	1323.25	-2.52	-0.84	2.00	198.43	-2.51	
4	7143.21	2.47	198.43	7137.78	-240.06	-79.98	0.00	0.00	-239.75	
5	8073.19	90.66	359.78	7734.00	339.00	-90.50	10.00	161.33	339.34	Howard 29C-21HZ_CP
6	12229.81	90.66	359.78	7686.00	4495.32	-106.40	0.00	0.00	4495.69	Howard 29C-21HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Howard 29C-21HZ_Sec	0.00	0.00	0.00	40.030174	-104.899557	Polygon
Howard 29C-21HZ_SHL	0.00	0.00	0.00	40.030174	-104.899557	Point
Howard 29C-21HZ_BHL	7686.00	4495.32	-106.40	40.042514	-104.899937	Point
Howard 29C-21HZ_CP	7734.00	339.00	-90.50	40.031105	-104.899880	Point

MD TVD Annotation

7043.21 7037.88 Top 4-1/2" Liner @ 7043.21ft
 7143.21 7137.78 KOP @ 7143.21ft



WELL DETAILS: Howard 29C-21HZ

Ground Level: 5025.00
 RKB=17 @ 5042.00ft (Drilling Rig)

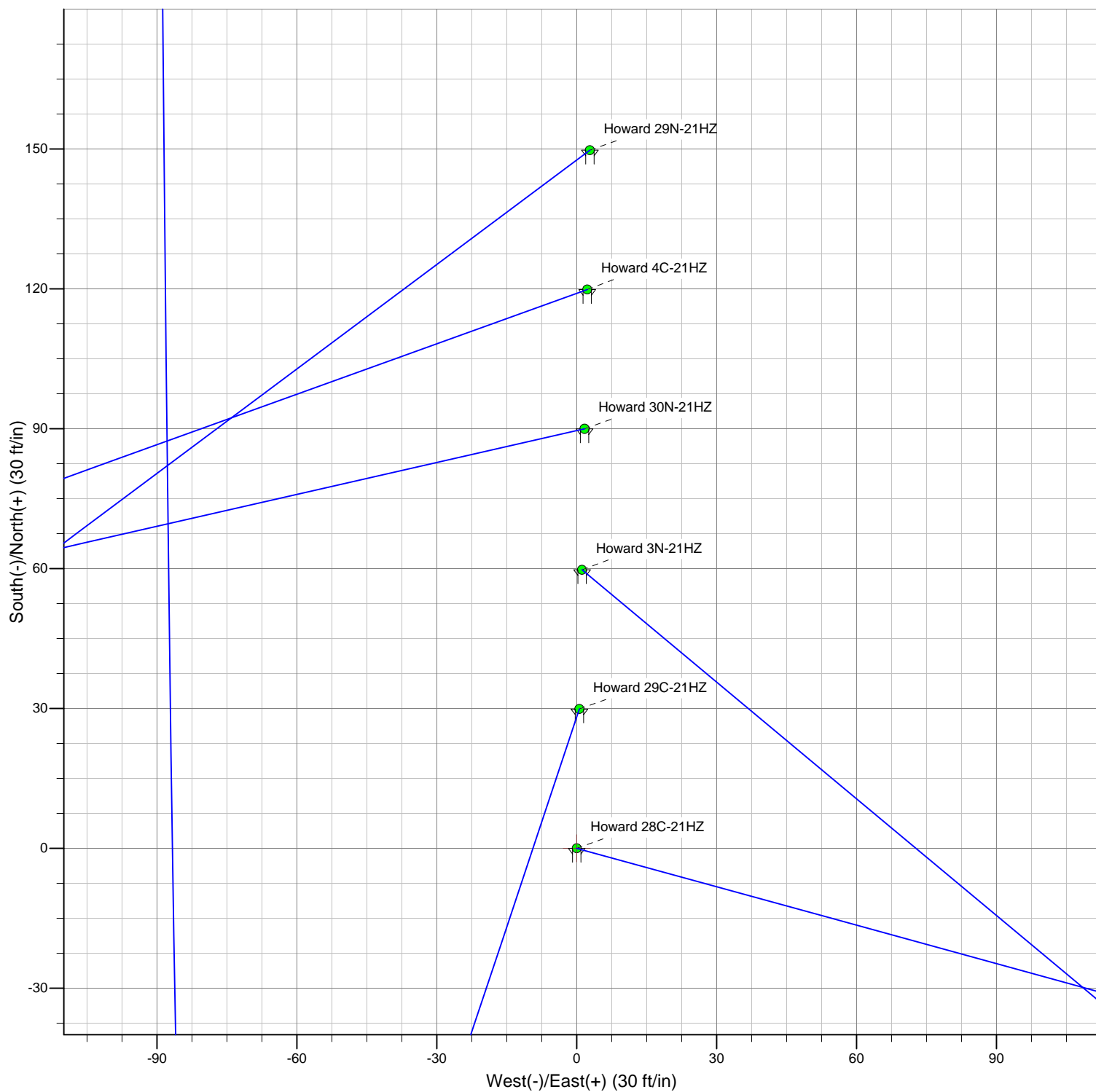
Plan: Plan C 0 - PERMIT (Howard 29C-21HZ/Plan C 0)

Created By: Fred Hartmann Date: 05/16/2013
 Reviewed: Date:

Project: Weld County, CO (NAD 83)
Site: Sec. 21-T1N-R67W
Pad: Howard 14-21HZ

Anadarko Petroleum Corp.

HALLIBURTON
Sperry Drilling



Azimuths to True North
Magnetic North: 8.70°

Magnetic Field
Strength: 52619.5snT
Dip Angle: 66.64°
Date: 05-16-2013
Model: BGGM2012

Plan Report for Howard 29C-21HZ - Plan C 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
803.00	0.00	0.00	803.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8" Casing										
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
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 1200.00ft										
1,300.00	2.00	198.43	1,299.98	-1.66	-0.55	-1.65	2.00	2.00	0.00	198.43
1,323.29	2.47	198.43	1,323.25	-2.52	-0.84	-2.51	2.00	2.00	0.00	0.00
End Nudge @ 1323.29ft										
1,400.00	2.47	198.43	1,399.89	-5.65	-1.88	-5.64	0.00	0.00	0.00	0.00
1,500.00	2.47	198.43	1,499.80	-9.73	-3.24	-9.72	0.00	0.00	0.00	0.00
1,600.00	2.47	198.43	1,599.71	-13.81	-4.60	-13.79	0.00	0.00	0.00	0.00
1,700.00	2.47	198.43	1,699.61	-17.89	-5.96	-17.87	0.00	0.00	0.00	0.00
1,800.00	2.47	198.43	1,799.52	-21.97	-7.32	-21.95	0.00	0.00	0.00	0.00
1,900.00	2.47	198.43	1,899.43	-26.06	-8.68	-26.02	0.00	0.00	0.00	0.00
2,000.00	2.47	198.43	1,999.34	-30.14	-10.04	-30.10	0.00	0.00	0.00	0.00
2,100.00	2.47	198.43	2,099.24	-34.22	-11.40	-34.17	0.00	0.00	0.00	0.00
2,200.00	2.47	198.43	2,199.15	-38.30	-12.76	-38.25	0.00	0.00	0.00	0.00
2,300.00	2.47	198.43	2,299.06	-42.38	-14.12	-42.33	0.00	0.00	0.00	0.00
2,400.00	2.47	198.43	2,398.97	-46.46	-15.48	-46.40	0.00	0.00	0.00	0.00
2,500.00	2.47	198.43	2,498.87	-50.54	-16.84	-50.48	0.00	0.00	0.00	0.00
2,600.00	2.47	198.43	2,598.78	-54.63	-18.20	-54.56	0.00	0.00	0.00	0.00
2,700.00	2.47	198.43	2,698.69	-58.71	-19.56	-58.63	0.00	0.00	0.00	0.00
2,800.00	2.47	198.43	2,798.59	-62.79	-20.92	-62.71	0.00	0.00	0.00	0.00
2,900.00	2.47	198.43	2,898.50	-66.87	-22.28	-66.79	0.00	0.00	0.00	0.00
3,000.00	2.47	198.43	2,998.41	-70.95	-23.64	-70.86	0.00	0.00	0.00	0.00
3,100.00	2.47	198.43	3,098.32	-75.03	-25.00	-74.94	0.00	0.00	0.00	0.00
3,200.00	2.47	198.43	3,198.22	-79.12	-26.36	-79.01	0.00	0.00	0.00	0.00
3,300.00	2.47	198.43	3,298.13	-83.20	-27.72	-83.09	0.00	0.00	0.00	0.00
3,400.00	2.47	198.43	3,398.04	-87.28	-29.08	-87.17	0.00	0.00	0.00	0.00
3,500.00	2.47	198.43	3,497.95	-91.36	-30.44	-91.24	0.00	0.00	0.00	0.00
3,600.00	2.47	198.43	3,597.85	-95.44	-31.80	-95.32	0.00	0.00	0.00	0.00
3,700.00	2.47	198.43	3,697.76	-99.52	-33.16	-99.40	0.00	0.00	0.00	0.00
3,800.00	2.47	198.43	3,797.67	-103.61	-34.52	-103.47	0.00	0.00	0.00	0.00
3,900.00	2.47	198.43	3,897.58	-107.69	-35.88	-107.55	0.00	0.00	0.00	0.00
3,995.51	2.47	198.43	3,993.00	-111.59	-37.18	-111.44	0.00	0.00	0.00	0.00
Parkman										
4,000.00	2.47	198.43	3,997.48	-111.77	-37.24	-111.62	0.00	0.00	0.00	0.00
4,100.00	2.47	198.43	4,097.39	-115.85	-38.60	-115.70	0.00	0.00	0.00	0.00
4,200.00	2.47	198.43	4,197.30	-119.93	-39.96	-119.78	0.00	0.00	0.00	0.00
4,300.00	2.47	198.43	4,297.21	-124.01	-41.32	-123.85	0.00	0.00	0.00	0.00
4,400.00	2.47	198.43	4,397.11	-128.10	-42.68	-127.93	0.00	0.00	0.00	0.00
4,500.00	2.47	198.43	4,497.02	-132.18	-44.04	-132.01	0.00	0.00	0.00	0.00
4,600.00	2.47	198.43	4,596.93	-136.26	-45.40	-136.08	0.00	0.00	0.00	0.00
4,700.00	2.47	198.43	4,696.84	-140.34	-46.76	-140.16	0.00	0.00	0.00	0.00
4,745.21	2.47	198.43	4,742.00	-142.18	-47.37	-142.00	0.00	0.00	0.00	0.00
Sussex										
4,800.00	2.47	198.43	4,796.74	-144.42	-48.12	-144.24	0.00	0.00	0.00	0.00

Plan Report for Howard 29C-21HZ - Plan C 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 (°)
4,900.00	2.47	198.43	4,896.65	-148.50	-49.48	-148.31	0.00	0.00	0.00	0.00
5,000.00	2.47	198.43	4,996.56	-152.58	-50.84	-152.39	0.00	0.00	0.00	0.00
5,100.00	2.47	198.43	5,096.47	-156.67	-52.20	-156.46	0.00	0.00	0.00	0.00
5,200.00	2.47	198.43	5,196.37	-160.75	-53.56	-160.54	0.00	0.00	0.00	0.00
5,300.00	2.47	198.43	5,296.28	-164.83	-54.92	-164.62	0.00	0.00	0.00	0.00
5,400.00	2.47	198.43	5,396.19	-168.91	-56.28	-168.69	0.00	0.00	0.00	0.00
5,500.00	2.47	198.43	5,496.09	-172.99	-57.64	-172.77	0.00	0.00	0.00	0.00
5,600.00	2.47	198.43	5,596.00	-177.07	-59.00	-176.85	0.00	0.00	0.00	0.00
5,700.00	2.47	198.43	5,695.91	-181.16	-60.36	-180.92	0.00	0.00	0.00	0.00
5,800.00	2.47	198.43	5,795.82	-185.24	-61.72	-185.00	0.00	0.00	0.00	0.00
5,900.00	2.47	198.43	5,895.72	-189.32	-63.08	-189.08	0.00	0.00	0.00	0.00
6,000.00	2.47	198.43	5,995.63	-193.40	-64.44	-193.15	0.00	0.00	0.00	0.00
6,100.00	2.47	198.43	6,095.54	-197.48	-65.79	-197.23	0.00	0.00	0.00	0.00
6,200.00	2.47	198.43	6,195.45	-201.56	-67.15	-201.30	0.00	0.00	0.00	0.00
6,300.00	2.47	198.43	6,295.35	-205.65	-68.51	-205.38	0.00	0.00	0.00	0.00
6,400.00	2.47	198.43	6,395.26	-209.73	-69.87	-209.46	0.00	0.00	0.00	0.00
6,500.00	2.47	198.43	6,495.17	-213.81	-71.23	-213.53	0.00	0.00	0.00	0.00
6,600.00	2.47	198.43	6,595.08	-217.89	-72.59	-217.61	0.00	0.00	0.00	0.00
6,700.00	2.47	198.43	6,694.98	-221.97	-73.95	-221.69	0.00	0.00	0.00	0.00
6,800.00	2.47	198.43	6,794.89	-226.05	-75.31	-225.76	0.00	0.00	0.00	0.00
6,900.00	2.47	198.43	6,894.80	-230.13	-76.67	-229.84	0.00	0.00	0.00	0.00
7,000.00	2.47	198.43	6,994.71	-234.22	-78.03	-233.91	0.00	0.00	0.00	0.00
7,043.21	2.47	198.43	7,037.88	-235.98	-78.62	-235.68	0.00	0.00	0.00	0.00
Top 4-1/2" Liner @ 7043.21ft										
7,100.00	2.47	198.43	7,094.61	-238.30	-79.39	-237.99	0.00	0.00	0.00	0.00
7,143.21	2.47	198.43	7,137.78	-240.06	-79.98	-239.75	0.00	0.00	0.00	0.00
KOP @ 7143.21ft										
7,200.00	3.43	346.50	7,194.54	-239.57	-80.76	-239.25	10.00	1.71	260.75	161.33
7,300.00	13.37	356.45	7,293.35	-225.08	-82.18	-224.76	10.00	9.93	9.94	13.29
7,343.24	17.68	357.30	7,335.00	-213.53	-82.80	-213.21	10.00	9.99	1.96	3.42
Sharon Springs										
7,365.42	19.90	357.59	7,356.00	-206.39	-83.12	-206.07	10.00	9.99	1.33	2.60
Niobrara A										
7,400.00	23.36	357.94	7,388.14	-193.65	-83.61	-193.33	10.00	9.99	1.02	2.32
7,500.00	33.35	358.57	7,476.03	-146.25	-85.01	-145.92	10.00	10.00	0.63	1.99
DLS = 10.00/100ft										
7,573.93	40.74	358.86	7,535.00	-101.74	-86.00	-101.41	10.00	10.00	0.38	1.44
Niobrara B										
7,600.00	43.35	358.94	7,554.36	-84.29	-86.34	-83.96	10.00	10.00	0.31	1.21
7,687.24	52.07	359.16	7,613.00	-19.83	-87.40	-19.49	10.00	10.00	0.25	1.15
Niobrara C										
7,700.00	53.35	359.18	7,620.73	-9.68	-87.55	-9.34	10.00	10.00	0.22	1.00
7,800.00	63.35	359.38	7,673.14	75.33	-88.61	75.67	10.00	10.00	0.19	0.98
7,827.78	66.12	359.42	7,685.00	100.45	-88.87	100.79	10.00	10.00	0.17	0.88
Fort Hays										
7,900.00	73.34	359.54	7,710.00	168.15	-89.49	168.49	10.00	10.00	0.16	0.86
7,990.53	82.40	359.67	7,729.00	256.56	-90.10	256.91	10.00	10.00	0.14	0.82
Codell										
8,000.00	83.34	359.68	7,730.18	265.96	-90.16	266.31	10.00	10.00	0.14	0.80
8,073.19	90.66	359.78	7,734.00	339.00	-90.50	339.34	10.00	10.00	0.14	0.79
End Build @ 8073.19ft - Codell TL - Heel - 7" Casing - Howard 29C-21HZ_CP										
8,100.00	90.66	359.78	7,733.69	365.81	-90.60	366.16	0.00	0.00	0.00	0.79
8,200.00	90.66	359.78	7,732.54	465.80	-90.98	466.15	0.00	0.00	0.00	0.00
8,300.00	90.66	359.78	7,731.38	565.80	-91.37	566.14	0.00	0.00	0.00	0.00
8,400.00	90.66	359.78	7,730.23	665.79	-91.75	666.14	0.00	0.00	0.00	0.00
8,500.00	90.66	359.78	7,729.07	765.78	-92.13	766.13	0.00	0.00	0.00	0.00
8,600.00	90.66	359.78	7,727.92	865.77	-92.51	866.12	0.00	0.00	0.00	0.00
8,700.00	90.66	359.78	7,726.76	965.77	-92.90	966.12	0.00	0.00	0.00	0.00

Plan Report for Howard 29C-21HZ - Plan C 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 (°)
8,800.00	90.66	359.78	7,725.61	1,065.76	-93.28	1,066.11	0.00	0.00	0.00	0.00
8,900.00	90.66	359.78	7,724.45	1,165.75	-93.66	1,166.10	0.00	0.00	0.00	0.00
9,000.00	90.66	359.78	7,723.30	1,265.74	-94.04	1,266.10	0.00	0.00	0.00	0.00
9,100.00	90.66	359.78	7,722.14	1,365.74	-94.43	1,366.09	0.00	0.00	0.00	0.00
9,200.00	90.66	359.78	7,720.99	1,465.73	-94.81	1,466.08	0.00	0.00	0.00	0.00
9,300.00	90.66	359.78	7,719.83	1,565.72	-95.19	1,566.08	0.00	0.00	0.00	0.00
9,400.00	90.66	359.78	7,718.68	1,665.71	-95.57	1,666.07	0.00	0.00	0.00	0.00
9,500.00	90.66	359.78	7,717.52	1,765.71	-95.96	1,766.06	0.00	0.00	0.00	0.00
9,600.00	90.66	359.78	7,716.37	1,865.70	-96.34	1,866.06	0.00	0.00	0.00	0.00
9,700.00	90.66	359.78	7,715.21	1,965.69	-96.72	1,966.05	0.00	0.00	0.00	0.00
9,800.00	90.66	359.78	7,714.06	2,065.69	-97.10	2,066.04	0.00	0.00	0.00	0.00
9,900.00	90.66	359.78	7,712.90	2,165.68	-97.49	2,166.04	0.00	0.00	0.00	0.00
10,000.00	90.66	359.78	7,711.75	2,265.67	-97.87	2,266.03	0.00	0.00	0.00	0.00
10,100.00	90.66	359.78	7,710.59	2,365.66	-98.25	2,366.02	0.00	0.00	0.00	0.00
10,200.00	90.66	359.78	7,709.44	2,465.66	-98.63	2,466.02	0.00	0.00	0.00	0.00
10,300.00	90.66	359.78	7,708.29	2,565.65	-99.02	2,566.01	0.00	0.00	0.00	0.00
10,400.00	90.66	359.78	7,707.13	2,665.64	-99.40	2,666.00	0.00	0.00	0.00	0.00
10,500.00	90.66	359.78	7,705.98	2,765.63	-99.78	2,766.00	0.00	0.00	0.00	0.00
10,600.00	90.66	359.78	7,704.82	2,865.63	-100.16	2,865.99	0.00	0.00	0.00	0.00
10,700.00	90.66	359.78	7,703.67	2,965.62	-100.55	2,965.98	0.00	0.00	0.00	0.00
10,800.00	90.66	359.78	7,702.51	3,065.61	-100.93	3,065.98	0.00	0.00	0.00	0.00
10,900.00	90.66	359.78	7,701.36	3,165.60	-101.31	3,165.97	0.00	0.00	0.00	0.00
11,000.00	90.66	359.78	7,700.20	3,265.60	-101.69	3,265.96	0.00	0.00	0.00	0.00
11,100.00	90.66	359.78	7,699.05	3,365.59	-102.08	3,365.96	0.00	0.00	0.00	0.00
11,200.00	90.66	359.78	7,697.89	3,465.58	-102.46	3,465.95	0.00	0.00	0.00	0.00
11,300.00	90.66	359.78	7,696.74	3,565.57	-102.84	3,565.94	0.00	0.00	0.00	0.00
11,400.00	90.66	359.78	7,695.58	3,665.57	-103.22	3,665.94	0.00	0.00	0.00	0.00
11,500.00	90.66	359.78	7,694.43	3,765.56	-103.60	3,765.93	0.00	0.00	0.00	0.00
11,600.00	90.66	359.78	7,693.27	3,865.55	-103.99	3,865.92	0.00	0.00	0.00	0.00
11,700.00	90.66	359.78	7,692.12	3,965.54	-104.37	3,965.92	0.00	0.00	0.00	0.00
11,800.00	90.66	359.78	7,690.96	4,065.54	-104.75	4,065.91	0.00	0.00	0.00	0.00
11,900.00	90.66	359.78	7,689.81	4,165.53	-105.13	4,165.90	0.00	0.00	0.00	0.00
12,000.00	90.66	359.78	7,688.65	4,265.52	-105.52	4,265.90	0.00	0.00	0.00	0.00
12,100.00	90.66	359.78	7,687.50	4,365.51	-105.90	4,365.89	0.00	0.00	0.00	0.00
12,200.00	90.66	359.78	7,686.34	4,465.51	-106.28	4,465.88	0.00	0.00	0.00	0.00
12,229.80	90.66	359.78	7,686.00	4,495.31	-106.40	4,495.68	0.00	0.00	0.00	0.00
Codell TL - Toe										
12,229.81	90.66	359.78	7,686.00	4,495.32	-106.40	4,495.69	0.01	0.00	0.00	0.00
TD @ 12229.81ft - Howard 29C-21HZ_BHL										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N-S (ft)	+E-W (ft)	
1,200.00	1,200.00	0.00	0.00	Begin Nudge @ 1200.00ft
1,323.29	1,323.25	-2.52	-0.84	End Nudge @ 1323.29ft
7,043.21	7,037.88	-235.98	-78.62	Top 4-1/2" Liner @ 7043.21ft
7,143.21	7,137.78	-240.06	-79.98	KOP @ 7143.21ft
7,500.00	7,476.03	-146.25	-85.01	DLS = 10.00/100ft
8,073.19	7,734.00	339.00	-90.50	End Build @ 8073.19ft
12,229.81	7,686.00	4,495.32	-106.40	TD @ 12229.81ft

Plan Report for Howard 29C-21HZ - Plan C 0 - PERMIT

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	359.78	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	12,229.81	Plan C 0 - PERMIT	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
803.00	803.00	9 5/8" Casing	9-5/8	13-1/2
8,073.19	7,734.00	7" Casing	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,995.51	3,993.00	Parkman		0.00	
4,745.21	4,742.00	Sussex		0.00	
7,343.24	7,335.00	Sharon Springs		0.00	
7,365.42	7,356.00	Niobrara A		0.00	
7,573.93	7,535.00	Niobrara B		0.00	
7,687.24	7,613.00	Niobrara C		0.00	
7,827.78	7,685.00	Fort Hays		0.00	
7,990.53	7,729.00	Codell		0.00	
8,073.19	7,734.00	Codell TL - Heel		0.00	
12,229.80	7,686.00	Codell TL - Toe		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Howard 29C-21HZ_CP	7,734.00	339.00	-90.50	Point
Howard 29C-21HZ_Sec	0.00	0.00	0.00	Polygon
Howard 29C-21HZ_BHL	7,686.00	4,495.32	-106.40	Point
Howard 29C-21HZ_SHL	0.00	0.00	0.00	Point

North Reference Sheet for Sec. 21-T1N-R67W - Howard 29C-21HZ - Plan C 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 @ 5042.00ft (Drilling Rig). Northing and Easting are relative to Howard 29C-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: 0.99996422

Grid Coordinates of Well: 1,254,407.71 ft N, 3,168,140.55 ft E
 Geographical Coordinates of Well: 40° 01' 48.63" N, 104° 53' 58.41" W
 Grid Convergence at Surface is: 0.39°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,229.81ft
 the Bottom Hole Displacement is 4,496.57ft in the Direction of 358.64° (True).

Magnetic Convergence at surface is: -8.31° (16 May 2013, , BGGM2012)

