

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 17-T1N-R67W

Griffiths 35C-20HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

## Sperry Drilling Services

# Proposal Report

11 September, 2012

Well Coordinates: 1,264,176.19 N, 3,161,981.55 E (40° 03' 25.57" N, 104° 55' 16.76" W)

Ground Level: 5,069.00 ft

Local Coordinate Origin:	Centered on Well Griffiths 35C-20HZ
Viewing Datum:	RKB=17 @ 5086.00ft (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. 17-T1N-R67W  
 Well: Griffiths 35C-20HZ  
 Wellbore: Plan A Rev 0  
 Design: Plan A Rev 0 Permit

# Anadarko Petroleum Corp.



### SECTION DETAILS

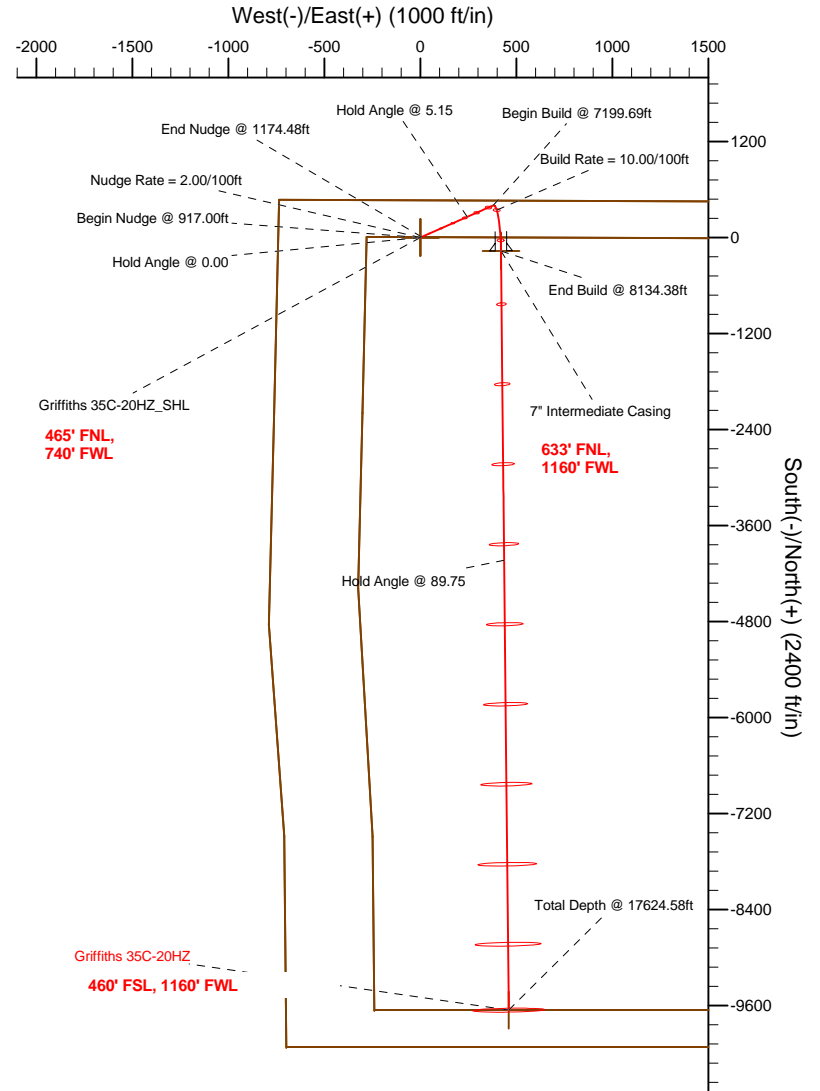
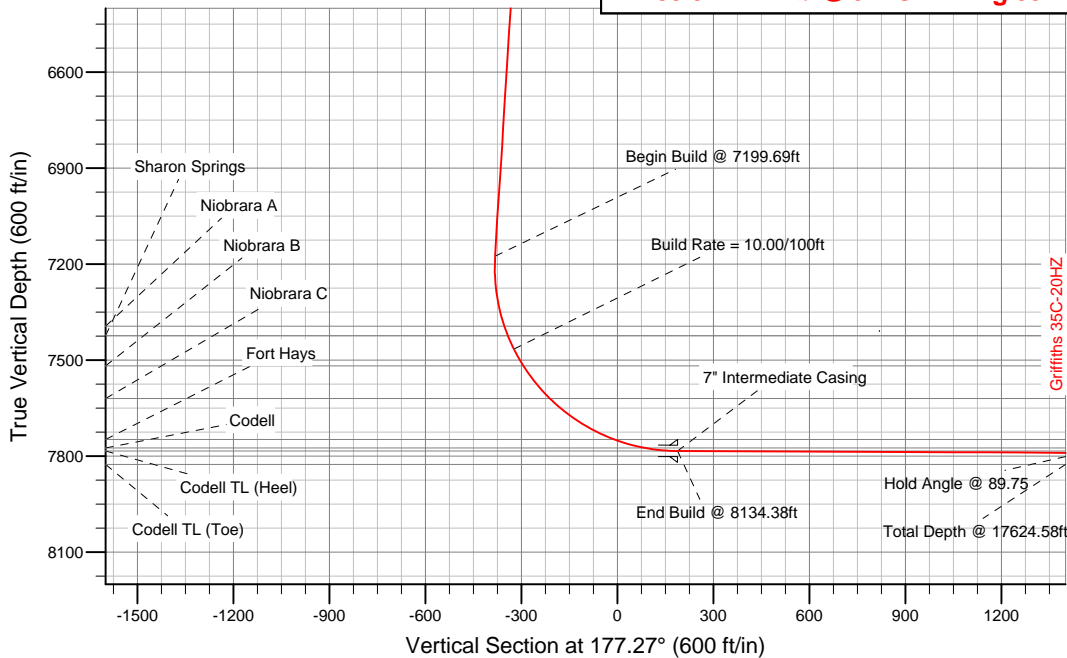
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	917.00	0.00	0.00	917.00	0.00	0.00	0.00	0.00	0.00	
3	1174.48	5.15	43.44	1174.13	8.40	7.95	2.00	43.44	-8.01	
4	7199.69	5.15	43.44	7175.03	401.05	379.82	0.00	0.00	-382.50	
5	8134.38	89.75	179.75	7784.00	-168.00	420.00	10.00	136.21	187.82	Griffiths 35C-20HZ_Casing Point
6	17624.58	89.75	179.75	7826.00	-9658.03	460.66	0.00	0.00	9669.01	Griffiths 35C-20HZ_BHL

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Griffiths 35C-20HZ_Section Lines	0.00	0.00	0.00	40.057102	-104.921323	Polygon
Griffiths 35C-20HZ_Setback Line	0.00	0.00	0.00	40.057102	-104.921323	Polygon
Griffiths 35C-20HZ_SHL	0.00	0.00	0.00	40.057102	-104.921323	Point
Griffiths 35C-20HZ_Casing Point	7784.00	-168.00	420.00	40.056641	-104.919823	Point
Griffiths 35C-20HZ_BHL	7826.00	-9658.03	460.66	40.030590	-104.919678	Point

### Target Line:

**7783.81' TVDkb @ 0° VS Drilling 89.75°**



### WELL DETAILS: Griffiths 35C-20HZ

Ground Level: 5069.00 RKB=17 @ 5086.00ft (Drilling Rig)

Plan: Plan A Rev 0 Permit (Griffiths 35C-20HZ/Plan A Rev 0)

Created By: Fred Hartmann Date: 09/11/2012  
 Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

**Plan Report for Griffiths 35C-20HZ - 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
<b>Griffiths 35C-20HZ_SHL - Griffiths 35C-20HZ_Section Lines - Griffiths 35C-20HZ_Setback Line</b>										
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
<b>Hold Angle @ 0.00</b>										
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
917.00	0.00	0.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 917.00ft</b>										
1,000.00	1.66	43.44	999.99	0.87	0.83	-0.83	2.00	2.00	0.00	43.44
<b>Nudge Rate = 2.00/100ft</b>										
1,100.00	3.66	43.44	1,099.88	4.24	4.02	-4.05	2.00	2.00	0.00	0.00
1,174.48	5.15	43.44	1,174.13	8.40	7.95	-8.01	2.00	2.00	0.00	0.00
<b>End Nudge @ 1174.48ft</b>										
1,200.00	5.15	43.44	1,199.55	10.06	9.53	-9.59	0.00	0.00	0.00	0.00
1,300.00	5.15	43.44	1,299.15	16.58	15.70	-15.81	0.00	0.00	0.00	0.00
1,400.00	5.15	43.44	1,398.74	23.09	21.87	-22.02	0.00	0.00	0.00	0.00
1,500.00	5.15	43.44	1,498.34	29.61	28.04	-28.24	0.00	0.00	0.00	0.00
1,600.00	5.15	43.44	1,597.94	36.13	34.21	-34.46	0.00	0.00	0.00	0.00
1,700.00	5.15	43.44	1,697.53	42.64	40.39	-40.67	0.00	0.00	0.00	0.00
1,800.00	5.15	43.44	1,797.13	49.16	46.56	-46.89	0.00	0.00	0.00	0.00
1,900.00	5.15	43.44	1,896.73	55.68	52.73	-53.10	0.00	0.00	0.00	0.00
2,000.00	5.15	43.44	1,996.32	62.19	58.90	-59.32	0.00	0.00	0.00	0.00
2,100.00	5.15	43.44	2,095.92	68.71	65.07	-65.53	0.00	0.00	0.00	0.00
2,200.00	5.15	43.44	2,195.51	75.23	71.25	-71.75	0.00	0.00	0.00	0.00
2,300.00	5.15	43.44	2,295.11	81.74	77.42	-77.96	0.00	0.00	0.00	0.00
2,400.00	5.15	43.44	2,394.71	88.26	83.59	-84.18	0.00	0.00	0.00	0.00
2,500.00	5.15	43.44	2,494.30	94.78	89.76	-90.39	0.00	0.00	0.00	0.00
2,600.00	5.15	43.44	2,593.90	101.30	95.93	-96.61	0.00	0.00	0.00	0.00
2,700.00	5.15	43.44	2,693.50	107.81	102.10	-102.82	0.00	0.00	0.00	0.00
2,800.00	5.15	43.44	2,793.09	114.33	108.28	-109.04	0.00	0.00	0.00	0.00
2,900.00	5.15	43.44	2,892.69	120.85	114.45	-115.26	0.00	0.00	0.00	0.00
3,000.00	5.15	43.44	2,992.29	127.36	120.62	-121.47	0.00	0.00	0.00	0.00
3,100.00	5.15	43.44	3,091.88	133.88	126.79	-127.69	0.00	0.00	0.00	0.00
3,200.00	5.15	43.44	3,191.48	140.40	132.96	-133.90	0.00	0.00	0.00	0.00
3,300.00	5.15	43.44	3,291.07	146.91	139.14	-140.12	0.00	0.00	0.00	0.00
3,400.00	5.15	43.44	3,390.67	153.43	145.31	-146.33	0.00	0.00	0.00	0.00
3,500.00	5.15	43.44	3,490.27	159.95	151.48	-152.55	0.00	0.00	0.00	0.00
3,600.00	5.15	43.44	3,589.86	166.46	157.65	-158.76	0.00	0.00	0.00	0.00
3,700.00	5.15	43.44	3,689.46	172.98	163.82	-164.98	0.00	0.00	0.00	0.00
3,800.00	5.15	43.44	3,789.06	179.50	170.00	-171.19	0.00	0.00	0.00	0.00
3,900.00	5.15	43.44	3,888.65	186.01	176.17	-177.41	0.00	0.00	0.00	0.00
4,000.00	5.15	43.44	3,988.25	192.53	182.34	-183.63	0.00	0.00	0.00	0.00
4,100.00	5.15	43.44	4,087.85	199.05	188.51	-189.84	0.00	0.00	0.00	0.00
4,200.00	5.15	43.44	4,187.44	205.57	194.68	-196.06	0.00	0.00	0.00	0.00
4,300.00	5.15	43.44	4,287.04	212.08	200.86	-202.27	0.00	0.00	0.00	0.00
4,400.00	5.15	43.44	4,386.63	218.60	207.03	-208.49	0.00	0.00	0.00	0.00
4,500.00	5.15	43.44	4,486.23	225.12	213.20	-214.70	0.00	0.00	0.00	0.00
4,582.10	5.15	43.44	4,568.00	230.47	218.27	-219.81	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,600.00	5.15	43.44	4,585.83	231.63	219.37	-220.92	0.00	0.00	0.00	0.00
4,700.00	5.15	43.44	4,685.42	238.15	225.54	-227.13	0.00	0.00	0.00	0.00
4,800.00	5.15	43.44	4,785.02	244.67	231.71	-233.35	0.00	0.00	0.00	0.00

**Plan Report for Griffiths 35C-20HZ - 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 (°)
4,900.00	5.15	43.44	4,884.62	251.18	237.89	-239.56	0.00	0.00	0.00	0.00
5,000.00	5.15	43.44	4,984.21	257.70	244.06	-245.78	0.00	0.00	0.00	0.00
<b>Hold Angle @ 5.15</b>										
5,100.00	5.15	43.44	5,083.81	264.22	250.23	-252.00	0.00	0.00	0.00	0.00
5,175.50	5.15	43.44	5,159.00	269.14	254.89	-256.69	0.00	0.00	0.00	0.00
<b>Shannon</b>										
5,200.00	5.15	43.44	5,183.41	270.73	256.40	-258.21	0.00	0.00	0.00	0.00
5,300.00	5.15	43.44	5,283.00	277.25	262.57	-264.43	0.00	0.00	0.00	0.00
5,400.00	5.15	43.44	5,382.60	283.77	268.75	-270.64	0.00	0.00	0.00	0.00
5,500.00	5.15	43.44	5,482.19	290.28	274.92	-276.86	0.00	0.00	0.00	0.00
5,600.00	5.15	43.44	5,581.79	296.80	281.09	-283.07	0.00	0.00	0.00	0.00
5,700.00	5.15	43.44	5,681.39	303.32	287.26	-289.29	0.00	0.00	0.00	0.00
5,800.00	5.15	43.44	5,780.98	309.84	293.43	-295.50	0.00	0.00	0.00	0.00
5,900.00	5.15	43.44	5,880.58	316.35	299.61	-301.72	0.00	0.00	0.00	0.00
6,000.00	5.15	43.44	5,980.18	322.87	305.78	-307.93	0.00	0.00	0.00	0.00
6,100.00	5.15	43.44	6,079.77	329.39	311.95	-314.15	0.00	0.00	0.00	0.00
6,200.00	5.15	43.44	6,179.37	335.90	318.12	-320.37	0.00	0.00	0.00	0.00
6,300.00	5.15	43.44	6,278.97	342.42	324.29	-326.58	0.00	0.00	0.00	0.00
6,400.00	5.15	43.44	6,378.56	348.94	330.46	-332.80	0.00	0.00	0.00	0.00
6,500.00	5.15	43.44	6,478.16	355.45	336.64	-339.01	0.00	0.00	0.00	0.00
6,600.00	5.15	43.44	6,577.75	361.97	342.81	-345.23	0.00	0.00	0.00	0.00
6,700.00	5.15	43.44	6,677.35	368.49	348.98	-351.44	0.00	0.00	0.00	0.00
6,800.00	5.15	43.44	6,776.95	375.00	355.15	-357.66	0.00	0.00	0.00	0.00
6,900.00	5.15	43.44	6,876.54	381.52	361.32	-363.87	0.00	0.00	0.00	0.00
7,000.00	5.15	43.44	6,976.14	388.04	367.50	-370.09	0.00	0.00	0.00	0.00
7,100.00	5.15	43.44	7,075.74	394.55	373.67	-376.30	0.00	0.00	0.00	0.00
7,199.69	5.15	43.44	7,175.02	401.05	379.82	-382.50	0.00	0.00	0.00	0.00
<b>Begin Build @ 7199.69ft</b>										
7,200.00	5.13	43.68	7,175.33	401.07	379.84	-382.52	9.84	-7.09	76.22	136.21
7,300.00	7.24	150.44	7,274.99	398.82	386.05	-379.97	10.00	2.11	106.76	135.98
7,400.00	16.68	167.78	7,372.73	379.26	392.21	-360.14	10.00	9.44	17.34	29.53
7,422.34	18.87	169.28	7,394.00	372.57	393.56	-353.40	10.00	9.79	6.69	12.50
<b>Niobrara A</b>										
7,453.28	21.91	170.87	7,423.00	361.96	395.41	-342.71	10.00	9.84	5.14	11.07
<b>Sharon Springs</b>										
7,500.00	26.53	172.61	7,465.60	342.99	398.14	-323.63	10.00	9.88	3.72	9.58
<b>Build Rate = 10.00/100ft</b>										
7,560.24	32.51	174.17	7,518.00	313.51	401.52	-294.03	10.00	9.92	2.58	7.99
<b>Niobrara B</b>										
7,600.00	36.46	174.94	7,550.76	291.11	403.64	-271.55	10.00	9.94	1.94	6.64
7,691.88	45.60	176.28	7,620.00	231.03	408.19	-211.32	10.00	9.95	1.46	6.00
<b>Niobrara C</b>										
7,700.00	46.41	176.37	7,625.64	225.20	408.57	-205.48	10.00	9.96	1.20	4.99
7,800.00	56.38	177.40	7,687.95	147.27	412.76	-127.43	10.00	9.97	1.02	4.92
7,900.00	66.36	178.21	7,735.81	59.67	416.09	-39.78	10.00	9.97	0.81	4.28
7,932.52	69.60	178.44	7,748.00	29.54	416.97	-9.64	10.00	9.98	0.72	3.89
<b>Fort Hays</b>										
8,000.00	76.34	178.90	7,767.76	-34.93	418.46	54.82	10.00	9.98	0.68	3.80
8,029.58	79.29	179.10	7,774.00	-63.83	418.96	83.72	10.00	9.98	0.65	3.66
<b>Codell</b>										
8,100.00	86.32	179.54	7,782.82	-133.65	419.79	153.50	10.00	9.98	0.63	3.62
8,134.38	89.75	179.75	7,784.00	-168.00	420.00	187.82	10.00	9.98	0.62	3.57
<b>End Build @ 8134.38ft - Codell TL (Heel) - 7" Intermediate Casing - Griffiths 35C-20HZ_Casing Point</b>										
8,200.00	89.75	179.75	7,784.29	-233.62	420.28	253.38	0.00	0.00	0.00	3.56
8,300.00	89.75	179.75	7,784.73	-333.62	420.71	353.28	0.00	0.00	0.00	0.00
8,400.00	89.75	179.75	7,785.18	-433.62	421.14	453.19	0.00	0.00	0.00	0.00
8,500.00	89.75	179.75	7,785.62	-533.62	421.57	553.09	0.00	0.00	0.00	0.00
8,600.00	89.75	179.75	7,786.06	-633.61	422.00	653.00	0.00	0.00	0.00	0.00

**Plan Report for Griffiths 35C-20HZ - 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 (°)
8,700.00	89.75	179.75	7,786.50	-733.61	422.42	752.90	0.00	0.00	0.00	0.00
8,800.00	89.75	179.75	7,786.95	-833.61	422.85	852.81	0.00	0.00	0.00	0.00
8,900.00	89.75	179.75	7,787.39	-933.61	423.28	952.71	0.00	0.00	0.00	0.00
9,000.00	89.75	179.75	7,787.83	-1,033.61	423.71	1,052.62	0.00	0.00	0.00	0.00
9,100.00	89.75	179.75	7,788.27	-1,133.60	424.14	1,152.52	0.00	0.00	0.00	0.00
9,200.00	89.75	179.75	7,788.72	-1,233.60	424.57	1,252.43	0.00	0.00	0.00	0.00
9,300.00	89.75	179.75	7,789.16	-1,333.60	424.99	1,352.33	0.00	0.00	0.00	0.00
9,400.00	89.75	179.75	7,789.60	-1,433.60	425.42	1,452.24	0.00	0.00	0.00	0.00
9,500.00	89.75	179.75	7,790.04	-1,533.60	425.85	1,552.14	0.00	0.00	0.00	0.00
9,600.00	89.75	179.75	7,790.49	-1,633.59	426.28	1,652.05	0.00	0.00	0.00	0.00
9,700.00	89.75	179.75	7,790.93	-1,733.59	426.71	1,751.95	0.00	0.00	0.00	0.00
9,800.00	89.75	179.75	7,791.37	-1,833.59	427.14	1,851.86	0.00	0.00	0.00	0.00
9,900.00	89.75	179.75	7,791.81	-1,933.59	427.57	1,951.76	0.00	0.00	0.00	0.00
10,000.00	89.75	179.75	7,792.26	-2,033.59	427.99	2,051.67	0.00	0.00	0.00	0.00
10,100.00	89.75	179.75	7,792.70	-2,133.59	428.42	2,151.57	0.00	0.00	0.00	0.00
10,200.00	89.75	179.75	7,793.14	-2,233.58	428.85	2,251.48	0.00	0.00	0.00	0.00
10,300.00	89.75	179.75	7,793.58	-2,333.58	429.28	2,351.38	0.00	0.00	0.00	0.00
10,400.00	89.75	179.75	7,794.03	-2,433.58	429.71	2,451.29	0.00	0.00	0.00	0.00
10,500.00	89.75	179.75	7,794.47	-2,533.58	430.14	2,551.19	0.00	0.00	0.00	0.00
10,600.00	89.75	179.75	7,794.91	-2,633.58	430.56	2,651.10	0.00	0.00	0.00	0.00
10,700.00	89.75	179.75	7,795.35	-2,733.57	430.99	2,751.00	0.00	0.00	0.00	0.00
10,800.00	89.75	179.75	7,795.80	-2,833.57	431.42	2,850.91	0.00	0.00	0.00	0.00
10,900.00	89.75	179.75	7,796.24	-2,933.57	431.85	2,950.81	0.00	0.00	0.00	0.00
11,000.00	89.75	179.75	7,796.68	-3,033.57	432.28	3,050.72	0.00	0.00	0.00	0.00
11,100.00	89.75	179.75	7,797.12	-3,133.57	432.71	3,150.62	0.00	0.00	0.00	0.00
11,200.00	89.75	179.75	7,797.57	-3,233.56	433.14	3,250.53	0.00	0.00	0.00	0.00
11,300.00	89.75	179.75	7,798.01	-3,333.56	433.56	3,350.43	0.00	0.00	0.00	0.00
11,400.00	89.75	179.75	7,798.45	-3,433.56	433.99	3,450.34	0.00	0.00	0.00	0.00
11,500.00	89.75	179.75	7,798.89	-3,533.56	434.42	3,550.24	0.00	0.00	0.00	0.00
11,600.00	89.75	179.75	7,799.34	-3,633.56	434.85	3,650.15	0.00	0.00	0.00	0.00
11,700.00	89.75	179.75	7,799.78	-3,733.56	435.28	3,750.05	0.00	0.00	0.00	0.00
11,800.00	89.75	179.75	7,800.22	-3,833.55	435.71	3,849.96	0.00	0.00	0.00	0.00
11,900.00	89.75	179.75	7,800.67	-3,933.55	436.13	3,949.86	0.00	0.00	0.00	0.00
12,000.00	89.75	179.75	7,801.11	-4,033.55	436.56	4,049.77	0.00	0.00	0.00	0.00
<b>Hold Angle @ 89.75</b>										
12,100.00	89.75	179.75	7,801.55	-4,133.55	436.99	4,149.67	0.00	0.00	0.00	0.00
12,200.00	89.75	179.75	7,801.99	-4,233.55	437.42	4,249.58	0.00	0.00	0.00	0.00
12,300.00	89.75	179.75	7,802.44	-4,333.54	437.85	4,349.48	0.00	0.00	0.00	0.00
12,400.00	89.75	179.75	7,802.88	-4,433.54	438.28	4,449.39	0.00	0.00	0.00	0.00
12,500.00	89.75	179.75	7,803.32	-4,533.54	438.71	4,549.29	0.00	0.00	0.00	0.00
12,600.00	89.75	179.75	7,803.76	-4,633.54	439.13	4,649.20	0.00	0.00	0.00	0.00
12,700.00	89.75	179.75	7,804.21	-4,733.54	439.56	4,749.10	0.00	0.00	0.00	0.00
12,800.00	89.75	179.75	7,804.65	-4,833.53	439.99	4,849.01	0.00	0.00	0.00	0.00
12,900.00	89.75	179.75	7,805.09	-4,933.53	440.42	4,948.91	0.00	0.00	0.00	0.00
13,000.00	89.75	179.75	7,805.53	-5,033.53	440.85	5,048.82	0.00	0.00	0.00	0.00
13,100.00	89.75	179.75	7,805.98	-5,133.53	441.28	5,148.72	0.00	0.00	0.00	0.00
13,200.00	89.75	179.75	7,806.42	-5,233.53	441.70	5,248.63	0.00	0.00	0.00	0.00
13,300.00	89.75	179.75	7,806.86	-5,333.52	442.13	5,348.53	0.00	0.00	0.00	0.00
13,400.00	89.75	179.75	7,807.30	-5,433.52	442.56	5,448.44	0.00	0.00	0.00	0.00
13,500.00	89.75	179.75	7,807.75	-5,533.52	442.99	5,548.34	0.00	0.00	0.00	0.00
13,600.00	89.75	179.75	7,808.19	-5,633.52	443.42	5,648.25	0.00	0.00	0.00	0.00
13,700.00	89.75	179.75	7,808.63	-5,733.52	443.85	5,748.15	0.00	0.00	0.00	0.00
13,800.00	89.75	179.75	7,809.07	-5,833.52	444.28	5,848.06	0.00	0.00	0.00	0.00
13,900.00	89.75	179.75	7,809.52	-5,933.51	444.70	5,947.96	0.00	0.00	0.00	0.00
14,000.00	89.75	179.75	7,809.96	-6,033.51	445.13	6,047.87	0.00	0.00	0.00	0.00
14,100.00	89.75	179.75	7,810.40	-6,133.51	445.56	6,147.77	0.00	0.00	0.00	0.00
14,200.00	89.75	179.75	7,810.84	-6,233.51	445.99	6,247.68	0.00	0.00	0.00	0.00
14,300.00	89.75	179.75	7,811.29	-6,333.51	446.42	6,347.58	0.00	0.00	0.00	0.00
14,400.00	89.75	179.75	7,811.73	-6,433.50	446.85	6,447.49	0.00	0.00	0.00	0.00

**Plan Report for Griffiths 35C-20HZ - 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 (°)
14,500.00	89.75	179.75	7,812.17	-6,533.50	447.28	6,547.39	0.00	0.00	0.00	0.00
14,600.00	89.75	179.75	7,812.61	-6,633.50	447.70	6,647.30	0.00	0.00	0.00	0.00
14,700.00	89.75	179.75	7,813.06	-6,733.50	448.13	6,747.20	0.00	0.00	0.00	0.00
14,800.00	89.75	179.75	7,813.50	-6,833.50	448.56	6,847.11	0.00	0.00	0.00	0.00
14,900.00	89.75	179.75	7,813.94	-6,933.49	448.99	6,947.01	0.00	0.00	0.00	0.00
15,000.00	89.75	179.75	7,814.38	-7,033.49	449.42	7,046.92	0.00	0.00	0.00	0.00
15,100.00	89.75	179.75	7,814.83	-7,133.49	449.85	7,146.82	0.00	0.00	0.00	0.00
15,200.00	89.75	179.75	7,815.27	-7,233.49	450.27	7,246.73	0.00	0.00	0.00	0.00
15,300.00	89.75	179.75	7,815.71	-7,333.49	450.70	7,346.63	0.00	0.00	0.00	0.00
15,400.00	89.75	179.75	7,816.15	-7,433.48	451.13	7,446.54	0.00	0.00	0.00	0.00
15,500.00	89.75	179.75	7,816.60	-7,533.48	451.56	7,546.44	0.00	0.00	0.00	0.00
15,600.00	89.75	179.75	7,817.04	-7,633.48	451.99	7,646.35	0.00	0.00	0.00	0.00
15,700.00	89.75	179.75	7,817.48	-7,733.48	452.42	7,746.25	0.00	0.00	0.00	0.00
15,800.00	89.75	179.75	7,817.93	-7,833.48	452.85	7,846.16	0.00	0.00	0.00	0.00
15,900.00	89.75	179.75	7,818.37	-7,933.48	453.27	7,946.06	0.00	0.00	0.00	0.00
16,000.00	89.75	179.75	7,818.81	-8,033.47	453.70	8,045.97	0.00	0.00	0.00	0.00
16,100.00	89.75	179.75	7,819.25	-8,133.47	454.13	8,145.87	0.00	0.00	0.00	0.00
16,200.00	89.75	179.75	7,819.70	-8,233.47	454.56	8,245.78	0.00	0.00	0.00	0.00
16,300.00	89.75	179.75	7,820.14	-8,333.47	454.99	8,345.68	0.00	0.00	0.00	0.00
16,400.00	89.75	179.75	7,820.58	-8,433.47	455.42	8,445.59	0.00	0.00	0.00	0.00
16,500.00	89.75	179.75	7,821.02	-8,533.46	455.84	8,545.49	0.00	0.00	0.00	0.00
16,600.00	89.75	179.75	7,821.47	-8,633.46	456.27	8,645.40	0.00	0.00	0.00	0.00
16,700.00	89.75	179.75	7,821.91	-8,733.46	456.70	8,745.30	0.00	0.00	0.00	0.00
16,800.00	89.75	179.75	7,822.35	-8,833.46	457.13	8,845.21	0.00	0.00	0.00	0.00
16,900.00	89.75	179.75	7,822.79	-8,933.46	457.56	8,945.11	0.00	0.00	0.00	0.00
17,000.00	89.75	179.75	7,823.24	-9,033.45	457.99	9,045.02	0.00	0.00	0.00	0.00
17,100.00	89.75	179.75	7,823.68	-9,133.45	458.42	9,144.92	0.00	0.00	0.00	0.00
17,200.00	89.75	179.75	7,824.12	-9,233.45	458.84	9,244.83	0.00	0.00	0.00	0.00
17,300.00	89.75	179.75	7,824.56	-9,333.45	459.27	9,344.73	0.00	0.00	0.00	0.00
17,400.00	89.75	179.75	7,825.01	-9,433.45	459.70	9,444.64	0.00	0.00	0.00	0.00
17,500.00	89.75	179.75	7,825.45	-9,533.44	460.13	9,544.54	0.00	0.00	0.00	0.00
17,600.00	89.75	179.75	7,825.89	-9,633.44	460.56	9,644.45	0.00	0.00	0.00	0.00
17,624.58	89.75	179.75	7,826.00	-9,658.02	460.66	9,669.00	0.00	0.00	0.00	0.00

**Total Depth @ 17624.58ft - Griffiths 35C-20HZ\_BHL****Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
400.00	400.00	0.00	0.00	Hold Angle @ 0.00
917.00	917.00	0.00	0.00	Begin Nudge @ 917.00ft
1,000.00	999.99	0.87	0.83	Nudge Rate = 2.00/100ft
1,174.48	1,174.13	8.40	7.95	End Nudge @ 1174.48ft
5,000.00	4,984.21	257.70	244.06	Hold Angle @ 5.15
7,199.69	7,175.02	401.05	379.82	Begin Build @ 7199.69ft
7,500.00	7,465.60	342.99	398.14	Build Rate = 10.00/100ft
8,134.38	7,784.00	-168.00	420.00	End Build @ 8134.38ft
12,000.00	7,801.11	-4,033.55	436.56	Hold Angle @ 89.75
17,624.58	7,826.00	-9,658.02	460.66	Total Depth @ 17624.58ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Griffiths 35C-20HZ_BHL	177.27	Slot	0.00	0.00	0.00

**Plan Report for Griffiths 35C-20HZ - Plan A Rev 0 Permit****Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	17,624.58	Plan A Rev 0 Permit	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
8,134.38	7,784.00	7" Intermediate Casing	7	8-3/4

**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,582.10	4,568.00	Sussex		0.00	
5,175.50	5,159.00	Shannon		0.00	
7,422.34	7,394.00	Niobrara A		0.00	
7,453.28	7,423.00	Sharon Springs		0.00	
7,560.24	7,518.00	Niobrara B		0.00	
7,691.88	7,620.00	Niobrara C		0.00	
7,932.52	7,748.00	Fort Hays		0.00	
8,029.58	7,774.00	Codell		0.00	
8,134.38	7,784.00	Codell TL (Heel)		0.00	
17,624.58	7,826.00	Codell TL (Toe)		0.00	

***Targets associated with this wellbore***

Target Name	TVD (ft)	+N-S (ft)	+E-W (ft)	Shape
Griffiths 35C-20HZ_BHL	7,826.00	-9,658.03	460.66	Point
Griffiths 35C-20HZ_Setback Line	0.00	0.00	0.00	Polygon
Griffiths 35C-20HZ_SHL	0.00	0.00	0.00	Point
Griffiths 35C-20HZ_Section Lines	0.00	0.00	0.00	Polygon
Griffiths 35C-20HZ_Casing Point	7,784.00	-168.00	420.00	Point

**North Reference Sheet for Sec. 17-T1N-R67W - Griffiths 35C-20HZ - 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 @ 5086.00ft (Drilling Rig). Northing and Easting are relative to Griffiths 35C-20HZ  
 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: 0.99996253

Grid Coordinates of Well: 1,264,176.19 ft N, 3,161,981.55 ft E  
 Geographical Coordinates of Well: 40° 03' 25.57" N, 104° 55' 16.76" W  
 Grid Convergence at Surface is: 0.37°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,624.58ft  
 the Bottom Hole Displacement is 9,669.00ft in the Direction of 177.27° (True).

Magnetic Convergence at surface is: -8.38° (30 August 2012, , BGGM2011)

