

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 17-T1N-R67W

Griffiths 13C-20HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

Sperry Drilling Services

Proposal Report

11 September, 2012

Well Coordinates: 1,264,176.78 N, 3,161,736.61 E (40° 03' 25.59" N, 104° 55' 19.91" W)

Ground Level: 5,071.00 ft

Local Coordinate Origin:

Centered on Well Griffiths 13C-20HZ

Viewing Datum:

RKB=17 @ 5088.00ft (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. 17-T1N-R67W
Well: Griffiths 13C-20HZ
Wellbore: Plan A Rev 0
Design: Plan A Rev 0 Permit

Anadarko Petroleum Corp.

HALLIBURTON
Sperry Drilling

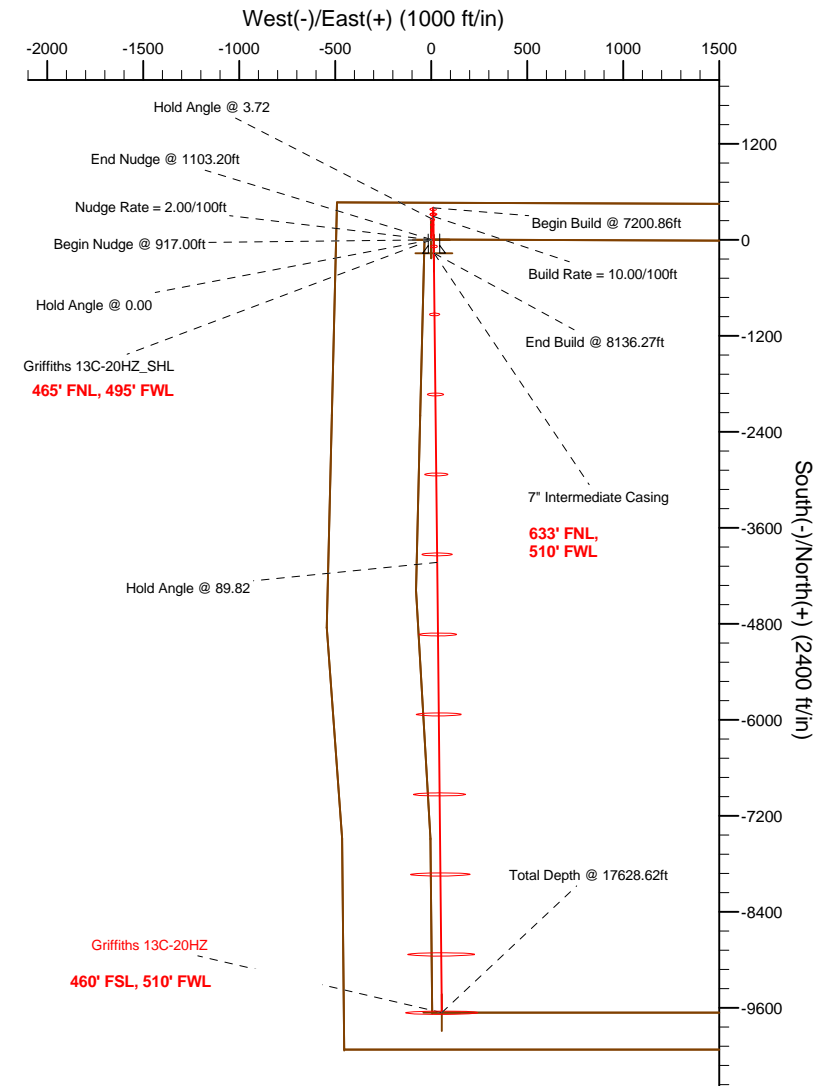
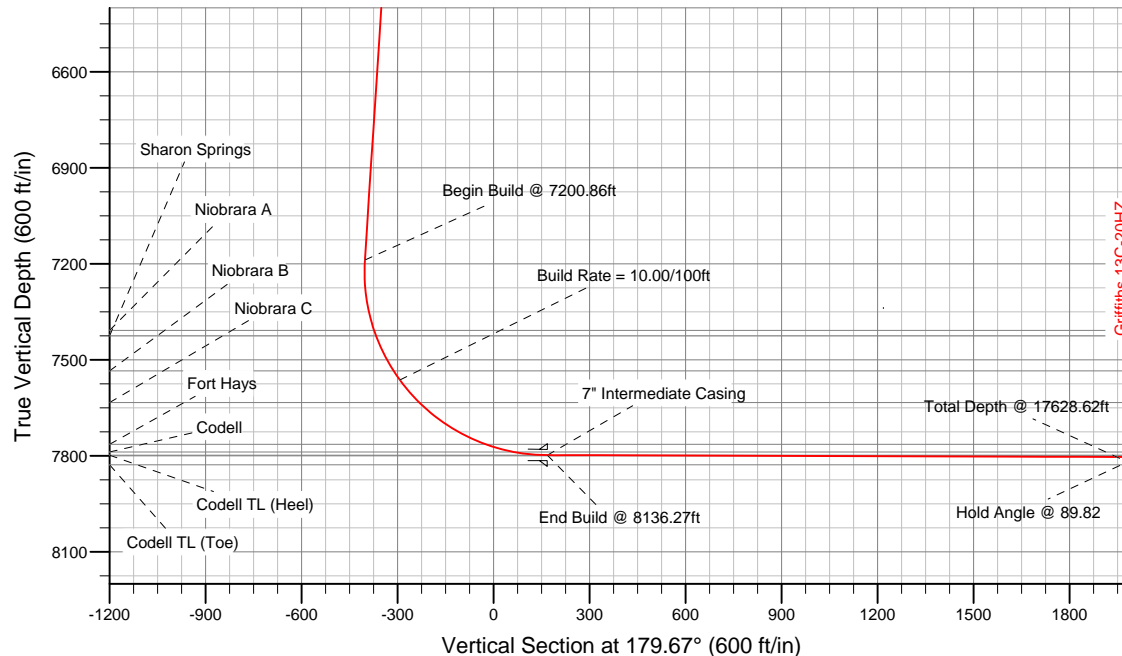
SECTION DETAILS

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	917.00	0.00	0.00	917.00	0.00	0.00	0.00	0.00	0.00	
3	1103.20	3.72	1.61	1103.07	6.05	0.17	2.00	1.61	-6.05	
4	7200.86	3.72	1.61	7187.85	401.93	11.27	0.00	0.00	-401.86	
5	8136.27	89.82	179.75	7798.00	-168.00	15.00	10.00	178.14	168.08	Griffiths 13C-20HZ_Casing Point
6	17628.62	89.82	179.75	7828.00	-9660.22	55.73	0.00	0.00	9660.38	Griffiths 13C-20HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Griffiths 13C-20HZ_Section Line	0.00	0.00	0.00	40.057108	-104.922198	Polygon
Griffiths 13C-20HZ_Setback Line	0.00	0.00	0.00	40.057108	-104.922198	Polygon
Griffiths 13C-20HZ_SHL	0.00	0.00	0.00	40.057108	-104.922198	Point
Griffiths 13C-20HZ_Casing Point	7798.00	-168.00	15.00	40.056647	-104.922144	Point
Griffiths 13C-20HZ_BHL	7828.00	-9660.22	55.73	40.030590	-104.921999	Point

Target Line:
7797.65' TVDkb @ 0' VS Drilling 89.82°



WELL DETAILS: Griffiths 13C-20HZ

Ground Level: 5071.00 RKB=17 @ 5088.00ft (Drilling Rig)

Plan: Plan A Rev 0 Permit (Griffiths 13C-20HZ/Plan A Rev 0)

Created By: Fred Hartmann Date: 09/11/2012
Reviewed: _____ Date: _____

Plan Report for Griffiths 13C-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
Griffiths 13C-20HZ_SHL - Griffiths 13C-20HZ_Section Line - Griffiths 13C-20HZ_Setback Line										
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
Hold Angle @ 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
917.00	0.00	0.00	917.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 917.00ft										
1,000.00	1.66	1.61	999.99	1.20	0.03	-1.20	2.00	2.00	0.00	1.61
Nudge Rate = 2.00/100ft										
1,100.00	3.66	1.61	1,099.88	5.84	0.16	-5.84	2.00	2.00	0.00	0.00
1,103.20	3.72	1.61	1,103.07	6.05	0.17	-6.05	2.00	2.00	0.00	0.00
End Nudge @ 1103.20ft										
1,200.00	3.72	1.61	1,199.66	12.33	0.35	-12.33	0.00	0.00	0.00	0.00
1,300.00	3.72	1.61	1,299.45	18.82	0.53	-18.82	0.00	0.00	0.00	0.00
1,400.00	3.72	1.61	1,399.24	25.32	0.71	-25.31	0.00	0.00	0.00	0.00
1,500.00	3.72	1.61	1,499.03	31.81	0.89	-31.80	0.00	0.00	0.00	0.00
1,600.00	3.72	1.61	1,598.82	38.30	1.07	-38.29	0.00	0.00	0.00	0.00
1,700.00	3.72	1.61	1,698.61	44.79	1.26	-44.78	0.00	0.00	0.00	0.00
1,800.00	3.72	1.61	1,798.40	51.29	1.44	-51.28	0.00	0.00	0.00	0.00
1,900.00	3.72	1.61	1,898.19	57.78	1.62	-57.77	0.00	0.00	0.00	0.00
2,000.00	3.72	1.61	1,997.98	64.27	1.80	-64.26	0.00	0.00	0.00	0.00
2,100.00	3.72	1.61	2,097.76	70.76	1.99	-70.75	0.00	0.00	0.00	0.00
2,200.00	3.72	1.61	2,197.55	77.25	2.17	-77.24	0.00	0.00	0.00	0.00
2,300.00	3.72	1.61	2,297.34	83.75	2.35	-83.73	0.00	0.00	0.00	0.00
2,400.00	3.72	1.61	2,397.13	90.24	2.53	-90.22	0.00	0.00	0.00	0.00
2,500.00	3.72	1.61	2,496.92	96.73	2.71	-96.71	0.00	0.00	0.00	0.00
2,600.00	3.72	1.61	2,596.71	103.22	2.90	-103.21	0.00	0.00	0.00	0.00
2,700.00	3.72	1.61	2,696.50	109.72	3.08	-109.70	0.00	0.00	0.00	0.00
2,800.00	3.72	1.61	2,796.29	116.21	3.26	-116.19	0.00	0.00	0.00	0.00
2,900.00	3.72	1.61	2,896.08	122.70	3.44	-122.68	0.00	0.00	0.00	0.00
3,000.00	3.72	1.61	2,995.86	129.19	3.62	-129.17	0.00	0.00	0.00	0.00
3,100.00	3.72	1.61	3,095.65	135.69	3.81	-135.66	0.00	0.00	0.00	0.00
3,200.00	3.72	1.61	3,195.44	142.18	3.99	-142.15	0.00	0.00	0.00	0.00
3,300.00	3.72	1.61	3,295.23	148.67	4.17	-148.64	0.00	0.00	0.00	0.00
3,400.00	3.72	1.61	3,395.02	155.16	4.35	-155.14	0.00	0.00	0.00	0.00
3,500.00	3.72	1.61	3,494.81	161.66	4.53	-161.63	0.00	0.00	0.00	0.00
3,600.00	3.72	1.61	3,594.60	168.15	4.72	-168.12	0.00	0.00	0.00	0.00
3,700.00	3.72	1.61	3,694.39	174.64	4.90	-174.61	0.00	0.00	0.00	0.00
3,800.00	3.72	1.61	3,794.17	181.13	5.08	-181.10	0.00	0.00	0.00	0.00
3,900.00	3.72	1.61	3,893.96	187.62	5.26	-187.59	0.00	0.00	0.00	0.00
4,000.00	3.72	1.61	3,993.75	194.12	5.45	-194.08	0.00	0.00	0.00	0.00
4,100.00	3.72	1.61	4,093.54	200.61	5.63	-200.57	0.00	0.00	0.00	0.00
4,200.00	3.72	1.61	4,193.33	207.10	5.81	-207.06	0.00	0.00	0.00	0.00
4,300.00	3.72	1.61	4,293.12	213.59	5.99	-213.56	0.00	0.00	0.00	0.00
4,400.00	3.72	1.61	4,392.91	220.09	6.17	-220.05	0.00	0.00	0.00	0.00
4,500.00	3.72	1.61	4,492.70	226.58	6.36	-226.54	0.00	0.00	0.00	0.00
4,577.47	3.72	1.61	4,570.00	231.61	6.50	-231.57	0.00	0.00	0.00	0.00
Sussex										
4,600.00	3.72	1.61	4,592.49	233.07	6.54	-233.03	0.00	0.00	0.00	0.00
4,700.00	3.72	1.61	4,692.27	239.56	6.72	-239.52	0.00	0.00	0.00	0.00
4,800.00	3.72	1.61	4,792.06	246.06	6.90	-246.01	0.00	0.00	0.00	0.00

Plan Report for Griffiths 13C-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	3.72	1.61	4,891.85	252.55	7.08	-252.50	0.00	0.00	0.00	0.00
5,000.00	3.72	1.61	4,991.64	259.04	7.27	-258.99	0.00	0.00	0.00	0.00
Hold Angle @ 3.72										
5,100.00	3.72	1.61	5,091.43	265.53	7.45	-265.49	0.00	0.00	0.00	0.00
5,169.72	3.72	1.61	5,161.00	270.06	7.58	-270.01	0.00	0.00	0.00	0.00
Shannon										
5,200.00	3.72	1.61	5,191.22	272.03	7.63	-271.98	0.00	0.00	0.00	0.00
5,300.00	3.72	1.61	5,291.01	278.52	7.81	-278.47	0.00	0.00	0.00	0.00
5,400.00	3.72	1.61	5,390.80	285.01	8.00	-284.96	0.00	0.00	0.00	0.00
5,500.00	3.72	1.61	5,490.59	291.50	8.18	-291.45	0.00	0.00	0.00	0.00
5,600.00	3.72	1.61	5,590.37	297.99	8.36	-297.94	0.00	0.00	0.00	0.00
5,700.00	3.72	1.61	5,690.16	304.49	8.54	-304.43	0.00	0.00	0.00	0.00
5,800.00	3.72	1.61	5,789.95	310.98	8.72	-310.92	0.00	0.00	0.00	0.00
5,900.00	3.72	1.61	5,889.74	317.47	8.91	-317.41	0.00	0.00	0.00	0.00
6,000.00	3.72	1.61	5,989.53	323.96	9.09	-323.91	0.00	0.00	0.00	0.00
6,100.00	3.72	1.61	6,089.32	330.46	9.27	-330.40	0.00	0.00	0.00	0.00
6,200.00	3.72	1.61	6,189.11	336.95	9.45	-336.89	0.00	0.00	0.00	0.00
6,300.00	3.72	1.61	6,288.90	343.44	9.63	-343.38	0.00	0.00	0.00	0.00
6,400.00	3.72	1.61	6,388.69	349.93	9.82	-349.87	0.00	0.00	0.00	0.00
6,500.00	3.72	1.61	6,488.47	356.43	10.00	-356.36	0.00	0.00	0.00	0.00
6,600.00	3.72	1.61	6,588.26	362.92	10.18	-362.85	0.00	0.00	0.00	0.00
6,700.00	3.72	1.61	6,688.05	369.41	10.36	-369.34	0.00	0.00	0.00	0.00
6,800.00	3.72	1.61	6,787.84	375.90	10.54	-375.84	0.00	0.00	0.00	0.00
6,900.00	3.72	1.61	6,887.63	382.39	10.73	-382.33	0.00	0.00	0.00	0.00
7,000.00	3.72	1.61	6,987.42	388.89	10.91	-388.82	0.00	0.00	0.00	0.00
7,100.00	3.72	1.61	7,087.21	395.38	11.09	-395.31	0.00	0.00	0.00	0.00
7,200.00	3.72	1.61	7,187.00	401.87	11.27	-401.80	0.00	0.00	0.00	0.00
7,200.86	3.72	1.61	7,187.85	401.93	11.27	-401.86	0.00	0.00	0.00	0.00
Begin Build @ 7200.86ft										
7,300.00	6.19	178.64	7,286.85	399.79	11.49	-399.72	10.00	2.49	178.57	178.14
7,400.00	16.19	179.34	7,384.82	380.41	11.78	-380.34	10.00	10.00	0.70	1.12
7,424.29	18.62	179.40	7,408.00	373.14	11.86	-373.07	10.00	10.00	0.24	0.43
Niobrara A										
7,442.33	20.43	179.43	7,425.00	367.12	11.92	-367.04	10.00	10.00	0.19	0.38
Sharon Springs										
7,500.00	26.19	179.51	7,477.94	344.31	12.13	-344.23	10.00	10.00	0.14	0.35
7,565.58	32.75	179.57	7,535.00	312.06	12.39	-311.99	10.00	10.00	0.09	0.27
Niobrara B										
7,600.00	36.19	179.59	7,563.37	292.58	12.53	-292.51	10.00	10.00	0.07	0.22
Build Rate = 10.00/100ft										
7,693.50	45.54	179.64	7,634.00	231.48	12.94	-231.40	10.00	10.00	0.05	0.20
Niobrara C										
7,700.00	46.19	179.64	7,638.53	226.81	12.97	-226.73	10.00	10.00	0.04	0.17
7,800.00	56.19	179.67	7,701.12	148.98	13.44	-148.90	10.00	10.00	0.03	0.17
7,900.00	66.19	179.70	7,749.25	61.47	13.91	-61.39	10.00	10.00	0.03	0.15
7,939.69	70.16	179.71	7,764.00	24.63	14.10	-24.55	10.00	10.00	0.02	0.13
Fort Hays										
8,000.00	76.19	179.72	7,781.45	-33.07	14.39	33.15	10.00	10.00	0.02	0.13
8,030.86	79.28	179.73	7,788.00	-63.22	14.53	63.30	10.00	10.00	0.02	0.12
Codell										
8,100.00	86.19	179.75	7,796.74	-131.76	14.84	131.84	10.00	10.00	0.02	0.12
8,136.27	89.82	179.75	7,798.00	-168.00	15.00	168.08	10.00	10.00	0.02	0.12
End Build @ 8136.27ft - Codell TL (Heel) - 7" Intermediate Casing - Griffiths 13C-20HZ_Casing Point										
8,200.00	89.82	179.75	7,798.20	-231.73	15.27	231.82	0.00	0.00	0.00	0.12
8,300.00	89.82	179.75	7,798.52	-331.73	15.70	331.82	0.00	0.00	0.00	0.00
8,400.00	89.82	179.75	7,798.83	-431.73	16.13	431.81	0.00	0.00	0.00	0.00
8,500.00	89.82	179.75	7,799.15	-531.73	16.56	531.81	0.00	0.00	0.00	0.00
8,600.00	89.82	179.75	7,799.47	-631.73	16.99	631.81	0.00	0.00	0.00	0.00

Plan Report for Griffiths 13C-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	89.82	179.75	7,799.78	-731.72	17.42	731.81	0.00	0.00	0.00	0.00
8,800.00	89.82	179.75	7,800.10	-831.72	17.85	831.81	0.00	0.00	0.00	0.00
8,900.00	89.82	179.75	7,800.41	-931.72	18.28	931.81	0.00	0.00	0.00	0.00
9,000.00	89.82	179.75	7,800.73	-1,031.72	18.71	1,031.81	0.00	0.00	0.00	0.00
9,100.00	89.82	179.75	7,801.05	-1,131.72	19.13	1,131.81	0.00	0.00	0.00	0.00
9,200.00	89.82	179.75	7,801.36	-1,231.72	19.56	1,231.81	0.00	0.00	0.00	0.00
9,300.00	89.82	179.75	7,801.68	-1,331.72	19.99	1,331.81	0.00	0.00	0.00	0.00
9,400.00	89.82	179.75	7,801.99	-1,431.71	20.42	1,431.81	0.00	0.00	0.00	0.00
9,500.00	89.82	179.75	7,802.31	-1,531.71	20.85	1,531.81	0.00	0.00	0.00	0.00
9,600.00	89.82	179.75	7,802.63	-1,631.71	21.28	1,631.81	0.00	0.00	0.00	0.00
9,700.00	89.82	179.75	7,802.94	-1,731.71	21.71	1,731.81	0.00	0.00	0.00	0.00
9,800.00	89.82	179.75	7,803.26	-1,831.71	22.14	1,831.81	0.00	0.00	0.00	0.00
9,900.00	89.82	179.75	7,803.57	-1,931.71	22.57	1,931.81	0.00	0.00	0.00	0.00
10,000.00	89.82	179.75	7,803.89	-2,031.71	23.00	2,031.80	0.00	0.00	0.00	0.00
10,100.00	89.82	179.75	7,804.21	-2,131.70	23.43	2,131.80	0.00	0.00	0.00	0.00
10,200.00	89.82	179.75	7,804.52	-2,231.70	23.85	2,231.80	0.00	0.00	0.00	0.00
10,300.00	89.82	179.75	7,804.84	-2,331.70	24.28	2,331.80	0.00	0.00	0.00	0.00
10,400.00	89.82	179.75	7,805.15	-2,431.70	24.71	2,431.80	0.00	0.00	0.00	0.00
10,500.00	89.82	179.75	7,805.47	-2,531.70	25.14	2,531.80	0.00	0.00	0.00	0.00
10,600.00	89.82	179.75	7,805.79	-2,631.70	25.57	2,631.80	0.00	0.00	0.00	0.00
10,700.00	89.82	179.75	7,806.10	-2,731.70	26.00	2,731.80	0.00	0.00	0.00	0.00
10,800.00	89.82	179.75	7,806.42	-2,831.69	26.43	2,831.80	0.00	0.00	0.00	0.00
10,900.00	89.82	179.75	7,806.73	-2,931.69	26.86	2,931.80	0.00	0.00	0.00	0.00
11,000.00	89.82	179.75	7,807.05	-3,031.69	27.29	3,031.80	0.00	0.00	0.00	0.00
11,100.00	89.82	179.75	7,807.37	-3,131.69	27.72	3,131.80	0.00	0.00	0.00	0.00
11,200.00	89.82	179.75	7,807.68	-3,231.69	28.15	3,231.80	0.00	0.00	0.00	0.00
11,300.00	89.82	179.75	7,808.00	-3,331.69	28.57	3,331.80	0.00	0.00	0.00	0.00
11,400.00	89.82	179.75	7,808.31	-3,431.69	29.00	3,431.80	0.00	0.00	0.00	0.00
11,500.00	89.82	179.75	7,808.63	-3,531.68	29.43	3,531.80	0.00	0.00	0.00	0.00
11,600.00	89.82	179.75	7,808.95	-3,631.68	29.86	3,631.80	0.00	0.00	0.00	0.00
11,700.00	89.82	179.75	7,809.26	-3,731.68	30.29	3,731.79	0.00	0.00	0.00	0.00
11,800.00	89.82	179.75	7,809.58	-3,831.68	30.72	3,831.79	0.00	0.00	0.00	0.00
11,900.00	89.82	179.75	7,809.90	-3,931.68	31.15	3,931.79	0.00	0.00	0.00	0.00
12,000.00	89.82	179.75	7,810.21	-4,031.68	31.58	4,031.79	0.00	0.00	0.00	0.00
Hold Angle @ 89.82										
12,100.00	89.82	179.75	7,810.53	-4,131.68	32.01	4,131.79	0.00	0.00	0.00	0.00
12,200.00	89.82	179.75	7,810.84	-4,231.67	32.44	4,231.79	0.00	0.00	0.00	0.00
12,300.00	89.82	179.75	7,811.16	-4,331.67	32.86	4,331.79	0.00	0.00	0.00	0.00
12,400.00	89.82	179.75	7,811.48	-4,431.67	33.29	4,431.79	0.00	0.00	0.00	0.00
12,500.00	89.82	179.75	7,811.79	-4,531.67	33.72	4,531.79	0.00	0.00	0.00	0.00
12,600.00	89.82	179.75	7,812.11	-4,631.67	34.15	4,631.79	0.00	0.00	0.00	0.00
12,700.00	89.82	179.75	7,812.42	-4,731.67	34.58	4,731.79	0.00	0.00	0.00	0.00
12,800.00	89.82	179.75	7,812.74	-4,831.67	35.01	4,831.79	0.00	0.00	0.00	0.00
12,900.00	89.82	179.75	7,813.06	-4,931.66	35.44	4,931.79	0.00	0.00	0.00	0.00
13,000.00	89.82	179.75	7,813.37	-5,031.66	35.87	5,031.79	0.00	0.00	0.00	0.00
13,100.00	89.82	179.75	7,813.69	-5,131.66	36.30	5,131.79	0.00	0.00	0.00	0.00
13,200.00	89.82	179.75	7,814.00	-5,231.66	36.73	5,231.79	0.00	0.00	0.00	0.00
13,300.00	89.82	179.75	7,814.32	-5,331.66	37.16	5,331.78	0.00	0.00	0.00	0.00
13,400.00	89.82	179.75	7,814.64	-5,431.66	37.58	5,431.78	0.00	0.00	0.00	0.00
13,500.00	89.82	179.75	7,814.95	-5,531.66	38.01	5,531.78	0.00	0.00	0.00	0.00
13,600.00	89.82	179.75	7,815.27	-5,631.65	38.44	5,631.78	0.00	0.00	0.00	0.00
13,700.00	89.82	179.75	7,815.58	-5,731.65	38.87	5,731.78	0.00	0.00	0.00	0.00
13,800.00	89.82	179.75	7,815.90	-5,831.65	39.30	5,831.78	0.00	0.00	0.00	0.00
13,900.00	89.82	179.75	7,816.22	-5,931.65	39.73	5,931.78	0.00	0.00	0.00	0.00
14,000.00	89.82	179.75	7,816.53	-6,031.65	40.16	6,031.78	0.00	0.00	0.00	0.00
14,100.00	89.82	179.75	7,816.85	-6,131.65	40.59	6,131.78	0.00	0.00	0.00	0.00
14,200.00	89.82	179.75	7,817.16	-6,231.65	41.02	6,231.78	0.00	0.00	0.00	0.00
14,300.00	89.82	179.75	7,817.48	-6,331.64	41.45	6,331.78	0.00	0.00	0.00	0.00
14,400.00	89.82	179.75	7,817.80	-6,431.64	41.88	6,431.78	0.00	0.00	0.00	0.00

Plan Report for Griffiths 13C-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	89.82	179.75	7,818.11	-6,531.64	42.30	6,531.78	0.00	0.00	0.00	0.00
14,600.00	89.82	179.75	7,818.43	-6,631.64	42.73	6,631.78	0.00	0.00	0.00	0.00
14,700.00	89.82	179.75	7,818.74	-6,731.64	43.16	6,731.78	0.00	0.00	0.00	0.00
14,800.00	89.82	179.75	7,819.06	-6,831.64	43.59	6,831.78	0.00	0.00	0.00	0.00
14,900.00	89.82	179.75	7,819.38	-6,931.64	44.02	6,931.78	0.00	0.00	0.00	0.00
15,000.00	89.82	179.75	7,819.69	-7,031.63	44.45	7,031.77	0.00	0.00	0.00	0.00
15,100.00	89.82	179.75	7,820.01	-7,131.63	44.88	7,131.77	0.00	0.00	0.00	0.00
15,200.00	89.82	179.75	7,820.32	-7,231.63	45.31	7,231.77	0.00	0.00	0.00	0.00
15,300.00	89.82	179.75	7,820.64	-7,331.63	45.74	7,331.77	0.00	0.00	0.00	0.00
15,400.00	89.82	179.75	7,820.96	-7,431.63	46.17	7,431.77	0.00	0.00	0.00	0.00
15,500.00	89.82	179.75	7,821.27	-7,531.63	46.59	7,531.77	0.00	0.00	0.00	0.00
15,600.00	89.82	179.75	7,821.59	-7,631.63	47.02	7,631.77	0.00	0.00	0.00	0.00
15,700.00	89.82	179.75	7,821.90	-7,731.63	47.45	7,731.77	0.00	0.00	0.00	0.00
15,800.00	89.82	179.75	7,822.22	-7,831.62	47.88	7,831.77	0.00	0.00	0.00	0.00
15,900.00	89.82	179.75	7,822.54	-7,931.62	48.31	7,931.77	0.00	0.00	0.00	0.00
16,000.00	89.82	179.75	7,822.85	-8,031.62	48.74	8,031.77	0.00	0.00	0.00	0.00
16,100.00	89.82	179.75	7,823.17	-8,131.62	49.17	8,131.77	0.00	0.00	0.00	0.00
16,200.00	89.82	179.75	7,823.48	-8,231.62	49.60	8,231.77	0.00	0.00	0.00	0.00
16,300.00	89.82	179.75	7,823.80	-8,331.62	50.03	8,331.77	0.00	0.00	0.00	0.00
16,400.00	89.82	179.75	7,824.12	-8,431.62	50.46	8,431.77	0.00	0.00	0.00	0.00
16,500.00	89.82	179.75	7,824.43	-8,531.61	50.89	8,531.77	0.00	0.00	0.00	0.00
16,600.00	89.82	179.75	7,824.75	-8,631.61	51.31	8,631.76	0.00	0.00	0.00	0.00
16,700.00	89.82	179.75	7,825.07	-8,731.61	51.74	8,731.76	0.00	0.00	0.00	0.00
16,800.00	89.82	179.75	7,825.38	-8,831.61	52.17	8,831.76	0.00	0.00	0.00	0.00
16,900.00	89.82	179.75	7,825.70	-8,931.61	52.60	8,931.76	0.00	0.00	0.00	0.00
17,000.00	89.82	179.75	7,826.01	-9,031.61	53.03	9,031.76	0.00	0.00	0.00	0.00
17,100.00	89.82	179.75	7,826.33	-9,131.61	53.46	9,131.76	0.00	0.00	0.00	0.00
17,200.00	89.82	179.75	7,826.65	-9,231.60	53.89	9,231.76	0.00	0.00	0.00	0.00
17,300.00	89.82	179.75	7,826.96	-9,331.60	54.32	9,331.76	0.00	0.00	0.00	0.00
17,400.00	89.82	179.75	7,827.28	-9,431.60	54.75	9,431.76	0.00	0.00	0.00	0.00
17,500.00	89.82	179.75	7,827.59	-9,531.60	55.18	9,531.76	0.00	0.00	0.00	0.00
17,600.00	89.82	179.75	7,827.91	-9,631.60	55.60	9,631.76	0.00	0.00	0.00	0.00
17,628.62	89.82	179.75	7,828.00	-9,660.22	55.73	9,660.38	0.00	0.00	0.00	0.00

Total Depth @ 17628.62ft - Griffiths 13C-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	1.20	0.03	Nudge Rate = 2.00/100ft
1,103.20	1,103.07	6.05	0.17	End Nudge @ 1103.20ft
5,000.00	4,991.64	259.04	7.27	Hold Angle @ 3.72
7,200.86	7,187.85	401.93	11.27	Begin Build @ 7200.86ft
7,600.00	7,563.37	292.58	12.53	Build Rate = 10.00/100ft
8,136.27	7,798.00	-168.00	15.00	End Build @ 8136.27ft
12,000.00	7,810.21	-4,031.68	31.58	Hold Angle @ 89.82
17,628.62	7,828.00	-9,660.22	55.73	Total Depth @ 17628.62ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Griffiths 13C-20HZ_BHL	179.67	Slot	0.00	0.00	0.00

Plan Report for Griffiths 13C-20HZ - Plan A Rev 0 Permit**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	17,628.62	Plan A Rev 0 Permit	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
8,136.27	7,798.00	7" Intermediate Casing	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,577.47	4,570.00	Sussex		0.00	
5,169.72	5,161.00	Shannon		0.00	
7,424.29	7,408.00	Niobrara A		0.00	
7,442.33	7,425.00	Sharon Springs		0.00	
7,565.58	7,535.00	Niobrara B		0.00	
7,693.50	7,634.00	Niobrara C		0.00	
7,939.69	7,764.00	Fort Hays		0.00	
8,030.86	7,788.00	Codell		0.00	
8,136.27	7,798.00	Codell TL (Heel)		0.00	
17,628.62	7,828.00	Codell TL (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Griffiths 13C-20HZ_SHL	0.00	0.00	0.00	Point
Griffiths 13C-20HZ_BHL	7,828.00	-9,660.22	55.73	Point
Griffiths 13C-20HZ_Setback Line	0.00	0.00	0.00	Polygon
Griffiths 13C-20HZ_Casing Point	7,798.00	-168.00	15.00	Point
Griffiths 13C-20HZ_Section Line	0.00	0.00	0.00	Polygon

North Reference Sheet for Sec. 17-T1N-R67W - Griffiths 13C-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 @ 5088.00ft (Drilling Rig). Northing and Easting are relative to Griffiths 13C-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: 1,264,176.78 ft N, 3,161,736.61 ft E
 Geographical Coordinates of Well: 40° 03' 25.59" N, 104° 55' 19.91" W
 Grid Convergence at Surface is: 0.37°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,628.62ft
 the Bottom Hole Displacement is 9,660.38ft in the Direction of 179.67° (True).

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

