

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 13-T3N-R66W

Brotemarkle 4N-13HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

## Sperry Drilling Services

## Proposal Report

26 September, 2012

Well Coordinates: 1,323,477.94 N, 3,215,100.04 E (40° 13' 07.61" N, 104° 43' 47.01" W)

Ground Level: 5,025.00 ft

Local Coordinate Origin:

Centered on Well Brotemarkle 4N-13HZ

Viewing Datum:

RKB=16 @ 5041.00ft (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. 13-T3N-R66W  
Well: Brotemarkle 4N-13HZ  
Wellbore: Plan A Rev 0  
Design: Plan A Rev 0 Permit

# Anadarko Petroleum Corp.

**HALLIBURTON**  
Sperry Drilling

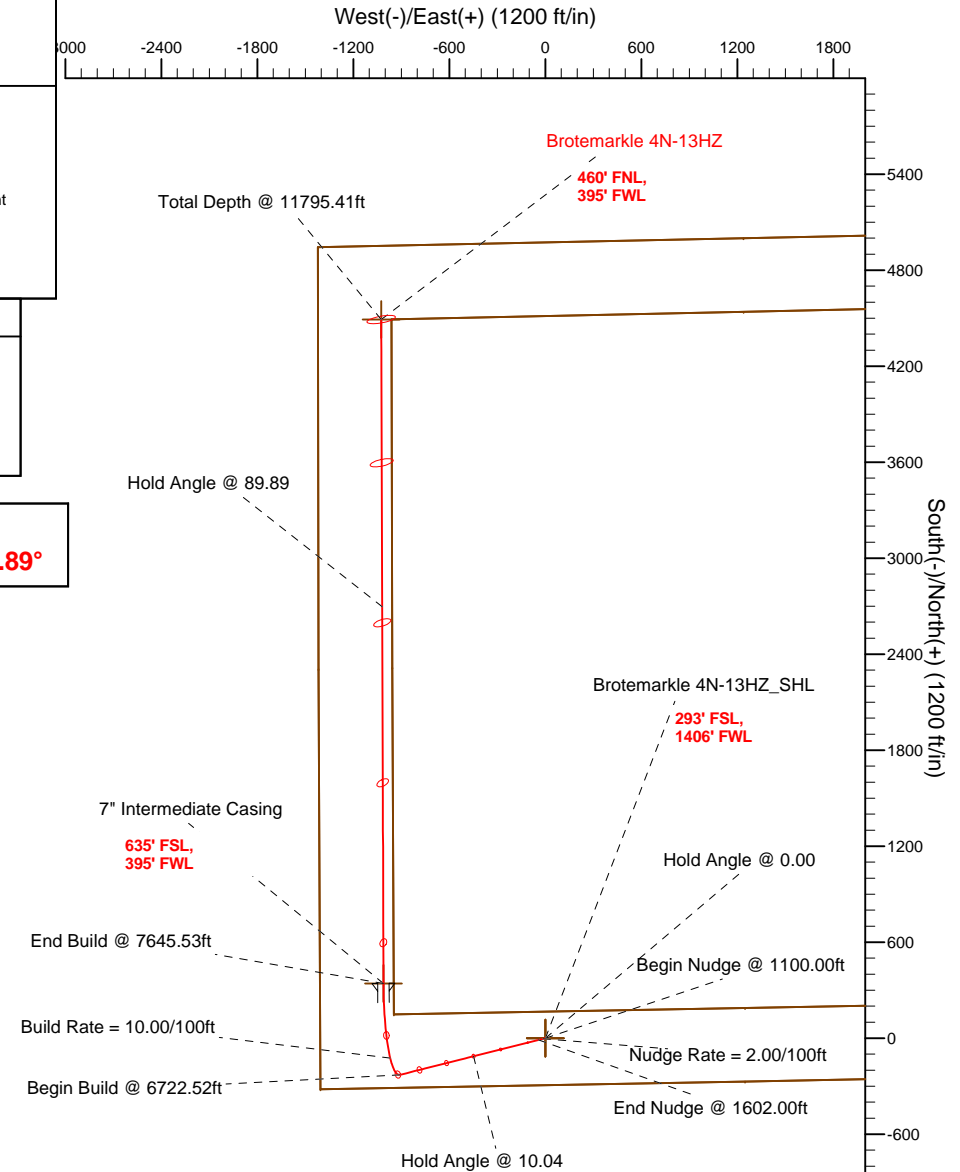
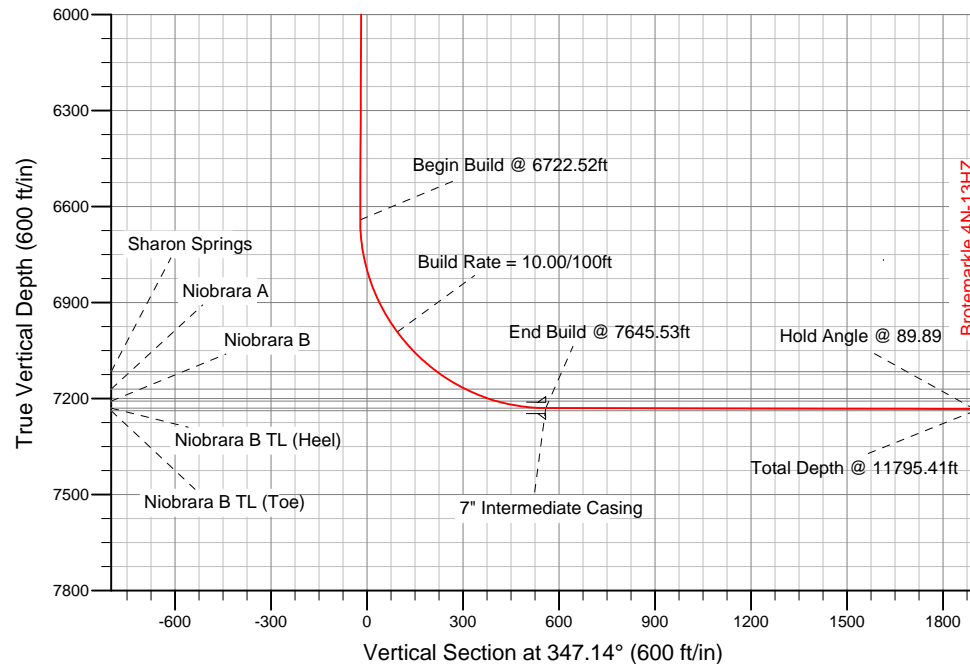
## SECTION DETAILS

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	1602.00	10.04	255.85	1599.43	-10.73	-42.54	2.00	255.85	-0.99	
4	6722.52	10.04	255.85	6641.54	-229.01	-908.12	0.00	0.00	-21.18	
5	7645.53	89.89	359.80	7230.00	342.00	-1011.00	10.00	103.77	558.40	Brotemarkle 4N-13HZ_Casing Point
6	11795.41	89.89	359.80	7238.00	4491.85	-1025.28	0.00	0.00	4607.37	Brotemarkle 4N-13HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Brotemarkle 4N-13HZ_Section Line	0.00	0.00	0.00	40.218780	-104.729726	Polygon
Brotemarkle 4N-13HZ_Setback Line	0.00	0.00	0.00	40.218780	-104.729726	Polygon
Brotemarkle 4N-13HZ_SHL	0.00	0.00	0.00	40.218780	-104.729726	Point
Brotemarkle 4N-13HZ_Casing Point	7230.00	342.00	-1011.00	40.219719	-104.733346	Point
Brotemarkle 4N-13HZ_BHL	7238.00	4491.85	-1025.28	40.231110	-104.733398	Point

**Target Line:**  
**7229.15' TVDkb @ 0° VS Drilling 89.89°**



## WELL DETAILS: Brotemarkle 4N-13HZ

Ground Level 5025.00 RKB=16 @ 5041.00ft (Drilling Rig)

Plan: Plan A Rev 0 Permit (Brotemarkle 4N-13HZ/Plan A Rev 0)

Created By: Fred Hartmann Date: 09/26/2012  
Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

**Plan Report for Brotemarkle 4N-13HZ - 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>Brotemarkle 4N-13HZ_SHL - Brotemarkle 4N-13HZ_Section Line - Brotemarkle 4N-13HZ_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
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
<b>Hold Angle @ 0.00</b>										
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
725.00	0.00	0.00	725.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills</b>										
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	255.85	1,199.98	-0.43	-1.69	-0.04	2.00	2.00	0.00	255.85
1,300.00	4.00	255.85	1,299.84	-1.71	-6.77	-0.16	2.00	2.00	0.00	0.00
1,400.00	6.00	255.85	1,399.45	-3.84	-15.22	-0.35	2.00	2.00	0.00	0.00
<b>Nudge Rate = 2.00/100ft</b>										
1,500.00	8.00	255.85	1,498.70	-6.82	-27.03	-0.63	2.00	2.00	0.00	0.00
1,600.00	10.00	255.85	1,597.47	-10.64	-42.20	-0.98	2.00	2.00	0.00	0.00
1,602.00	10.04	255.85	1,599.43	-10.73	-42.54	-0.99	2.00	2.00	0.00	0.00
<b>End Nudge @ 1602.00ft</b>										
1,700.00	10.04	255.85	1,695.93	-14.91	-59.10	-1.38	0.00	0.00	0.00	0.00
1,800.00	10.04	255.85	1,794.40	-19.17	-76.01	-1.77	0.00	0.00	0.00	0.00
1,900.00	10.04	255.85	1,892.87	-23.43	-92.91	-2.17	0.00	0.00	0.00	0.00
2,000.00	10.04	255.85	1,991.34	-27.69	-109.82	-2.56	0.00	0.00	0.00	0.00
2,100.00	10.04	255.85	2,089.81	-31.96	-126.72	-2.96	0.00	0.00	0.00	0.00
2,200.00	10.04	255.85	2,188.28	-36.22	-143.63	-3.35	0.00	0.00	0.00	0.00
2,300.00	10.04	255.85	2,286.75	-40.48	-160.53	-3.74	0.00	0.00	0.00	0.00
2,400.00	10.04	255.85	2,385.21	-44.75	-177.43	-4.14	0.00	0.00	0.00	0.00
2,500.00	10.04	255.85	2,483.68	-49.01	-194.34	-4.53	0.00	0.00	0.00	0.00
2,600.00	10.04	255.85	2,582.15	-53.27	-211.24	-4.93	0.00	0.00	0.00	0.00
2,700.00	10.04	255.85	2,680.62	-57.53	-228.15	-5.32	0.00	0.00	0.00	0.00
2,800.00	10.04	255.85	2,779.09	-61.80	-245.05	-5.72	0.00	0.00	0.00	0.00
2,900.00	10.04	255.85	2,877.56	-66.06	-261.96	-6.11	0.00	0.00	0.00	0.00
3,000.00	10.04	255.85	2,976.03	-70.32	-278.86	-6.51	0.00	0.00	0.00	0.00
3,100.00	10.04	255.85	3,074.50	-74.59	-295.76	-6.90	0.00	0.00	0.00	0.00
3,200.00	10.04	255.85	3,172.96	-78.85	-312.67	-7.29	0.00	0.00	0.00	0.00
3,300.00	10.04	255.85	3,271.43	-83.11	-329.57	-7.69	0.00	0.00	0.00	0.00
3,400.00	10.04	255.85	3,369.90	-87.38	-346.48	-8.08	0.00	0.00	0.00	0.00
3,500.00	10.04	255.85	3,468.37	-91.64	-363.38	-8.48	0.00	0.00	0.00	0.00
3,600.00	10.04	255.85	3,566.84	-95.90	-380.29	-8.87	0.00	0.00	0.00	0.00
3,700.00	10.04	255.85	3,665.31	-100.16	-397.19	-9.27	0.00	0.00	0.00	0.00
3,800.00	10.04	255.85	3,763.78	-104.43	-414.09	-9.66	0.00	0.00	0.00	0.00
3,900.00	10.04	255.85	3,862.24	-108.69	-431.00	-10.05	0.00	0.00	0.00	0.00
4,000.00	10.04	255.85	3,960.71	-112.95	-447.90	-10.45	0.00	0.00	0.00	0.00
<b>Hold Angle @ 10.04</b>										
4,088.64	10.04	255.85	4,048.00	-116.73	-462.89	-10.80	0.00	0.00	0.00	0.00
<b>Parkman</b>										
4,100.00	10.04	255.85	4,059.18	-117.22	-464.81	-10.84	0.00	0.00	0.00	0.00
4,200.00	10.04	255.85	4,157.65	-121.48	-481.71	-11.24	0.00	0.00	0.00	0.00
4,300.00	10.04	255.85	4,256.12	-125.74	-498.61	-11.63	0.00	0.00	0.00	0.00
4,400.00	10.04	255.85	4,354.59	-130.00	-515.52	-12.03	0.00	0.00	0.00	0.00
4,500.00	10.04	255.85	4,453.06	-134.27	-532.42	-12.42	0.00	0.00	0.00	0.00
4,582.20	10.04	255.85	4,534.00	-137.77	-546.32	-12.74	0.00	0.00	0.00	0.00

**Plan Report for Brotemarkle 4N-13HZ - 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 (°)
<b>Sussex</b>										
4,600.00	10.04	255.85	4,551.52	-138.53	-549.33	-12.81	0.00	0.00	0.00	0.00
4,700.00	10.04	255.85	4,649.99	-142.79	-566.23	-13.21	0.00	0.00	0.00	0.00
4,800.00	10.04	255.85	4,748.46	-147.06	-583.14	-13.60	0.00	0.00	0.00	0.00
4,900.00	10.04	255.85	4,846.93	-151.32	-600.04	-14.00	0.00	0.00	0.00	0.00
5,000.00	10.04	255.85	4,945.40	-155.58	-616.94	-14.39	0.00	0.00	0.00	0.00
5,100.00	10.04	255.85	5,043.87	-159.84	-633.85	-14.79	0.00	0.00	0.00	0.00
5,200.00	10.04	255.85	5,142.34	-164.11	-650.75	-15.18	0.00	0.00	0.00	0.00
5,300.00	10.04	255.85	5,240.81	-168.37	-667.66	-15.57	0.00	0.00	0.00	0.00
5,400.00	10.04	255.85	5,339.27	-172.63	-684.56	-15.97	0.00	0.00	0.00	0.00
5,500.00	10.04	255.85	5,437.74	-176.90	-701.47	-16.36	0.00	0.00	0.00	0.00
5,600.00	10.04	255.85	5,536.21	-181.16	-718.37	-16.76	0.00	0.00	0.00	0.00
5,700.00	10.04	255.85	5,634.68	-185.42	-735.27	-17.15	0.00	0.00	0.00	0.00
5,800.00	10.04	255.85	5,733.15	-189.69	-752.18	-17.55	0.00	0.00	0.00	0.00
5,900.00	10.04	255.85	5,831.62	-193.95	-769.08	-17.94	0.00	0.00	0.00	0.00
6,000.00	10.04	255.85	5,930.09	-198.21	-785.99	-18.34	0.00	0.00	0.00	0.00
6,100.00	10.04	255.85	6,028.55	-202.47	-802.89	-18.73	0.00	0.00	0.00	0.00
6,200.00	10.04	255.85	6,127.02	-206.74	-819.80	-19.12	0.00	0.00	0.00	0.00
6,300.00	10.04	255.85	6,225.49	-211.00	-836.70	-19.52	0.00	0.00	0.00	0.00
6,400.00	10.04	255.85	6,323.96	-215.26	-853.60	-19.91	0.00	0.00	0.00	0.00
6,500.00	10.04	255.85	6,422.43	-219.53	-870.51	-20.31	0.00	0.00	0.00	0.00
6,600.00	10.04	255.85	6,520.90	-223.79	-887.41	-20.70	0.00	0.00	0.00	0.00
6,700.00	10.04	255.85	6,619.37	-228.05	-904.32	-21.10	0.00	0.00	0.00	0.00
6,722.52	10.04	255.85	6,641.54	-229.01	-908.12	-21.18	0.00	0.00	0.00	0.00
<b>Begin Build @ 6722.52ft</b>										
6,800.00	11.10	298.70	6,717.82	-227.08	-921.23	-16.38	10.00	1.37	55.31	103.77
6,900.00	18.11	328.13	6,814.65	-209.21	-937.93	4.75	10.00	7.01	29.43	61.58
7,000.00	27.03	340.14	6,906.95	-174.56	-953.89	42.09	10.00	8.92	12.01	33.01
7,100.00	36.49	346.39	6,991.90	-124.16	-968.64	94.51	10.00	9.46	6.25	21.88
<b>Build Rate = 10.00/100ft</b>										
7,200.00	46.15	350.32	7,066.94	-59.56	-981.74	160.40	10.00	9.66	3.93	16.54
7,276.16	53.57	352.54	7,116.00	-2.03	-990.34	218.41	10.00	9.75	2.91	13.58
<b>Sharon Springs</b>										
7,300.00	55.91	353.14	7,129.76	17.29	-992.77	237.78	10.00	9.78	2.54	12.15
7,382.40	63.99	355.01	7,171.00	88.17	-1,000.07	308.51	10.00	9.81	2.27	11.80
<b>Niobrara A</b>										
7,400.00	65.71	355.38	7,178.48	104.05	-1,001.41	324.28	10.00	9.82	2.07	10.86
7,486.19	74.19	357.03	7,208.00	184.76	-1,006.73	404.15	10.00	9.84	1.92	10.71
<b>Niobrara B</b>										
7,500.00	75.55	357.28	7,211.61	198.08	-1,007.39	417.29	10.00	9.84	1.82	10.14
7,600.00	85.40	359.03	7,228.13	296.52	-1,010.54	513.96	10.00	9.85	1.75	10.07
7,645.53	89.89	359.80	7,230.00	342.00	-1,011.00	558.40	10.00	9.86	1.70	9.78
<b>End Build @ 7645.53ft - Niobrara B TL (Heel) - 7" Intermediate Casing - Brotemarkle 4N-13HZ_Casing Point</b>										
7,700.00	89.89	359.80	7,230.11	396.47	-1,011.19	611.55	0.00	0.00	0.00	9.75
7,800.00	89.89	359.80	7,230.30	496.47	-1,011.53	709.12	0.00	0.00	0.00	0.00
7,900.00	89.89	359.80	7,230.49	596.47	-1,011.88	806.69	0.00	0.00	0.00	0.00
8,000.00	89.89	359.80	7,230.68	696.47	-1,012.22	904.25	0.00	0.00	0.00	0.00
8,100.00	89.89	359.80	7,230.88	796.47	-1,012.56	1,001.82	0.00	0.00	0.00	0.00
8,200.00	89.89	359.80	7,231.07	896.47	-1,012.91	1,099.39	0.00	0.00	0.00	0.00
8,300.00	89.89	359.80	7,231.26	996.47	-1,013.25	1,196.96	0.00	0.00	0.00	0.00
8,400.00	89.89	359.80	7,231.45	1,096.46	-1,013.60	1,294.53	0.00	0.00	0.00	0.00
8,500.00	89.89	359.80	7,231.65	1,196.46	-1,013.94	1,392.10	0.00	0.00	0.00	0.00
8,600.00	89.89	359.80	7,231.84	1,296.46	-1,014.28	1,489.66	0.00	0.00	0.00	0.00
8,700.00	89.89	359.80	7,232.03	1,396.46	-1,014.63	1,587.23	0.00	0.00	0.00	0.00
8,800.00	89.89	359.80	7,232.23	1,496.46	-1,014.97	1,684.80	0.00	0.00	0.00	0.00
8,900.00	89.89	359.80	7,232.42	1,596.46	-1,015.32	1,782.37	0.00	0.00	0.00	0.00
9,000.00	89.89	359.80	7,232.61	1,696.46	-1,015.66	1,879.94	0.00	0.00	0.00	0.00
9,100.00	89.89	359.80	7,232.80	1,796.46	-1,016.01	1,977.51	0.00	0.00	0.00	0.00

**Plan Report for Brotemarkle 4N-13HZ - 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 (°)
9,200.00	89.89	359.80	7,233.00	1,896.46	-1,016.35	2,075.07	0.00	0.00	0.00	0.00
9,300.00	89.89	359.80	7,233.19	1,996.46	-1,016.69	2,172.64	0.00	0.00	0.00	0.00
9,400.00	89.89	359.80	7,233.38	2,096.46	-1,017.04	2,270.21	0.00	0.00	0.00	0.00
9,500.00	89.89	359.80	7,233.57	2,196.46	-1,017.38	2,367.78	0.00	0.00	0.00	0.00
9,600.00	89.89	359.80	7,233.77	2,296.46	-1,017.73	2,465.35	0.00	0.00	0.00	0.00
9,700.00	89.89	359.80	7,233.96	2,396.45	-1,018.07	2,562.92	0.00	0.00	0.00	0.00
9,800.00	89.89	359.80	7,234.15	2,496.45	-1,018.41	2,660.49	0.00	0.00	0.00	0.00
9,900.00	89.89	359.80	7,234.35	2,596.45	-1,018.76	2,758.05	0.00	0.00	0.00	0.00
10,000.00	89.89	359.80	7,234.54	2,696.45	-1,019.10	2,855.62	0.00	0.00	0.00	0.00
<b>Hold Angle @ 89.89</b>										
10,100.00	89.89	359.80	7,234.73	2,796.45	-1,019.45	2,953.19	0.00	0.00	0.00	0.00
10,200.00	89.89	359.80	7,234.92	2,896.45	-1,019.79	3,050.76	0.00	0.00	0.00	0.00
10,300.00	89.89	359.80	7,235.12	2,996.45	-1,020.14	3,148.33	0.00	0.00	0.00	0.00
10,400.00	89.89	359.80	7,235.31	3,096.45	-1,020.48	3,245.90	0.00	0.00	0.00	0.00
10,500.00	89.89	359.80	7,235.50	3,196.45	-1,020.82	3,343.46	0.00	0.00	0.00	0.00
10,600.00	89.89	359.80	7,235.70	3,296.45	-1,021.17	3,441.03	0.00	0.00	0.00	0.00
10,700.00	89.89	359.80	7,235.89	3,396.45	-1,021.51	3,538.60	0.00	0.00	0.00	0.00
10,800.00	89.89	359.80	7,236.08	3,496.45	-1,021.86	3,636.17	0.00	0.00	0.00	0.00
10,900.00	89.89	359.80	7,236.27	3,596.44	-1,022.20	3,733.74	0.00	0.00	0.00	0.00
11,000.00	89.89	359.80	7,236.47	3,696.44	-1,022.54	3,831.31	0.00	0.00	0.00	0.00
11,100.00	89.89	359.80	7,236.66	3,796.44	-1,022.89	3,928.87	0.00	0.00	0.00	0.00
11,200.00	89.89	359.80	7,236.85	3,896.44	-1,023.23	4,026.44	0.00	0.00	0.00	0.00
11,300.00	89.89	359.80	7,237.04	3,996.44	-1,023.58	4,124.01	0.00	0.00	0.00	0.00
11,400.00	89.89	359.80	7,237.24	4,096.44	-1,023.92	4,221.58	0.00	0.00	0.00	0.00
11,500.00	89.89	359.80	7,237.43	4,196.44	-1,024.27	4,319.15	0.00	0.00	0.00	0.00
11,600.00	89.89	359.80	7,237.62	4,296.44	-1,024.61	4,416.72	0.00	0.00	0.00	0.00
11,700.00	89.89	359.80	7,237.82	4,396.44	-1,024.95	4,514.28	0.00	0.00	0.00	0.00
11,795.40	89.89	359.80	7,238.00	4,491.84	-1,025.28	4,607.36	0.00	0.00	0.00	0.00
<b>Niobrara B TL (Toe)</b>										
11,795.41	89.89	359.80	7,238.00	4,491.85	-1,025.28	4,607.37	0.00	0.00	0.00	0.00
<b>Total Depth @ 11795.41ft - Brotemarkle 4N-13HZ_BHL</b>										

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
600.00	600.00	0.00	0.00	Hold Angle @ 0.00
1,100.00	1,100.00	0.00	0.00	Begin Nudge @ 1100.00ft
1,400.00	1,399.45	-3.84	-15.22	Nudge Rate = 2.00/100ft
1,602.00	1,599.43	-10.73	-42.54	End Nudge @ 1602.00ft
4,000.00	3,960.71	-112.95	-447.90	Hold Angle @ 10.04
6,722.52	6,641.54	-229.01	-908.12	Begin Build @ 6722.52ft
7,100.00	6,991.90	-124.16	-968.64	Build Rate = 10.00/100ft
7,645.53	7,230.00	342.00	-1,011.00	End Build @ 7645.53ft
10,000.00	7,234.54	2,696.45	-1,019.10	Hold Angle @ 89.89
11,795.41	7,238.00	4,491.85	-1,025.28	Total Depth @ 11795.41ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	+N/-S (ft)	+E/-W (ft)	Start TVD (ft)
Target	Brotemarkle 4N-13HZ_BHL	347.14	Slot	0.00	0.00	7,238.00

**Plan Report for Brotemarkle 4N-13HZ - Plan A Rev 0 Permit****Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	11,795.41	Plan A Rev 0 Permit	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,645.53	7,230.00	7" Intermediate Casing	7	8-3/4

**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
725.00	725.00	Fox Hills		0.00	
4,088.64	4,048.00	Parkman		0.00	
4,582.20	4,534.00	Sussex		0.00	
7,276.16	7,116.00	Sharon Springs		0.00	
7,382.40	7,171.00	Niobrara A		0.00	
7,486.19	7,208.00	Niobrara B		0.00	
7,645.53	7,230.00	Niobrara B TL (Heel)		0.00	
11,795.40	7,238.00	Niobrara B TL (Toe)		0.00	

**Targets associated with this wellbore**

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Brotemarkle 4N-13HZ_Casing Point	7,230.00	342.00	-1,011.00	Point
Brotemarkle 4N-13HZ_Section Line	0.00	0.00	0.00	Polygon
Brotemarkle 4N-13HZ_BHL	7,238.00	4,491.85	-1,025.28	Point
Brotemarkle 4N-13HZ_Setback Line	0.00	0.00	0.00	Polygon
Brotemarkle 4N-13HZ_SHL	0.00	0.00	0.00	Point

# North Reference Sheet for Sec. 13-T3N-R66W - Brotemarkle 4N-13HZ - 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=16 @ 5041.00ft (Drilling Rig). Northing and Easting are relative to Brotemarkle 4N-13HZ  
 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: 0.99995700

Grid Coordinates of Well: 1,323,477.94 ft N, 3,215,100.04 ft E  
 Geographical Coordinates of Well: 40° 13' 07.61" N, 104° 43' 47.01" W  
 Grid Convergence at Surface is: 0.50°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,795.41ft  
 the Bottom Hole Displacement is 4,607.37ft in the Direction of 347.14° (True).

Magnetic Convergence at surface is: -8.21° (26 September 2012, , BGGM2012)

