

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 34-T3N-R66W

Rattler 36N-3HZ

Plan B Rev 0

Plan: Plan B Rev 0 Permit

## Sperry Drilling Services

## Proposal Report

29 October, 2012

Well Coordinates: 1,307,418.94 N, 3,205,388.24 E (40° 10' 29.73" N, 104° 45' 53.92" W)

Ground Level: 4,991.00 ft

Local Coordinate Origin:

Centered on Well Rattler 36N-3HZ

Viewing Datum:

RKB=17 @ 5008.00ft (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. 34-T3N-R66W  
Well: Rattler 36N-3HZ  
Wellbore: Plan B Rev 0  
Design: Plan B Rev 0 Permit

# Anadarko Petroleum Corp.

**HALLIBURTON**  
Sperry Drilling

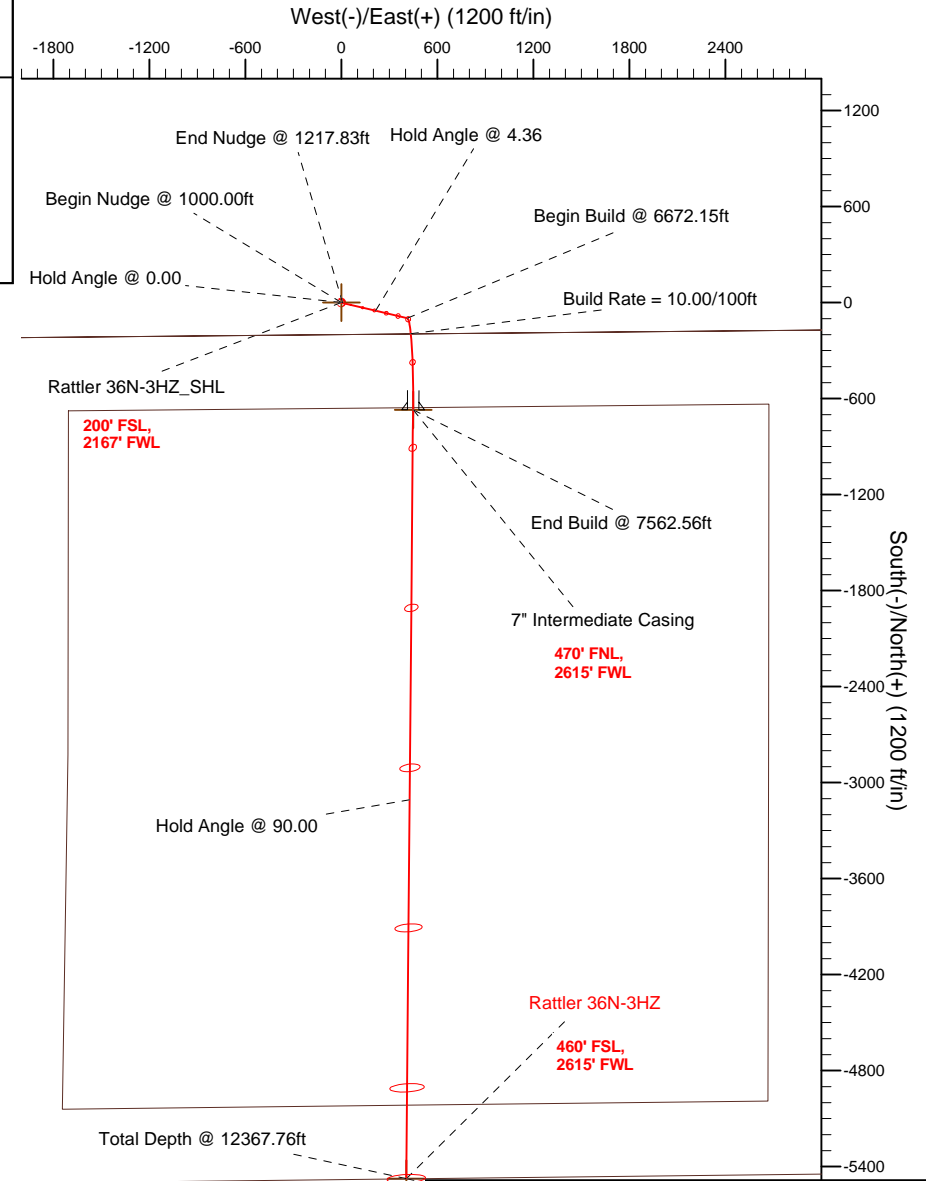
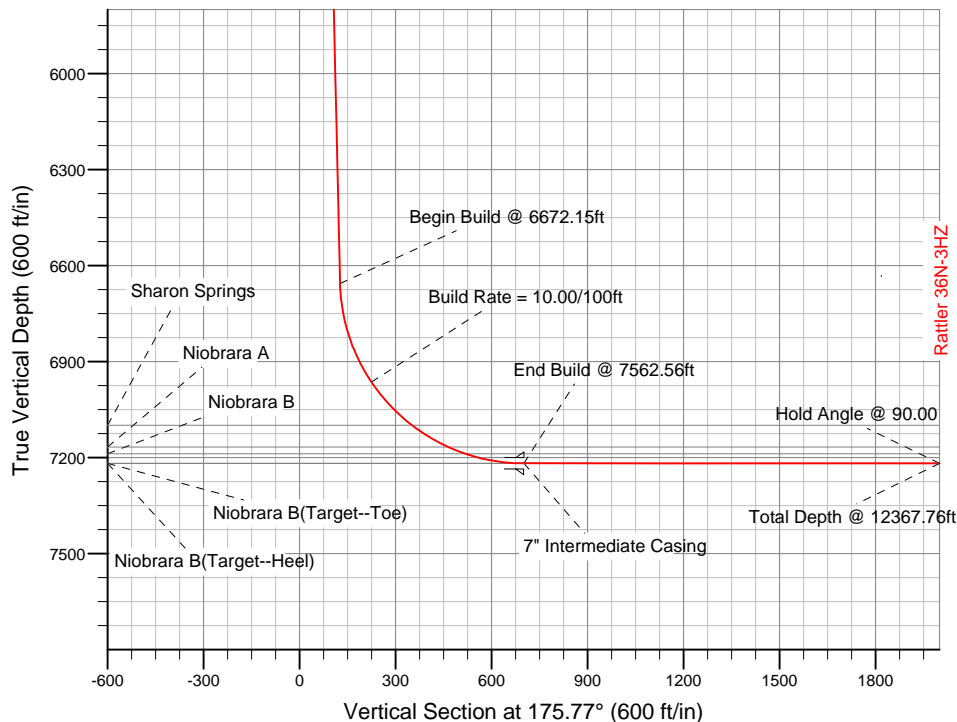
## SECTION DETAILS

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	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
3	1217.83	4.36	103.24	1217.62	-1.90	8.06	2.00	103.24	2.48	
4	6672.15	4.36	103.24	6656.18	-96.77	411.38	0.00	0.00	126.86	
5	7562.56	90.00	180.51	7218.00	-670.00	448.00	10.00	77.31	701.22	Rattler 36N-3HZ_Casing Point
6	12367.76	90.00	180.51	7218.00	-5475.01	405.01	0.00	0.00	5489.97	Rattler 36N-3HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Rattler 36N-3HZ_SHL	0.00	0.00	0.00	40.174924	-104.764979	Point
Rattler 36N-3HZ_BHL	7218.00	-5475.01	405.01	40.159895	-104.763530	Point
Rattler 36N-3HZ_Casing Point	7218.00	-670.00	448.00	40.173085	-104.763376	Point

**Target Line:**  
**7218' TVDkb @ 0' VS Drilling 90°**



## WELL DETAILS: Rattler 36N-3HZ

Ground Level: 4991.00 RKB=17 @ 5008.00ft (Drilling Rig)

Plan: Plan B Rev 0 Permit (Rattler 36N-3HZ/Plan B Rev 0)

Created By: Fred Hartmann Date: 10/25/2012  
Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

**Plan Report for Rattler 36N-3HZ - Plan B 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
<b>Hold Angle @ 0.00</b>										
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
<b>Begin Nudge @ 1000.00ft</b>										
1,100.00	2.00	103.24	1,099.98	-0.40	1.70	0.52	2.00	2.00	0.00	103.24
1,200.00	4.00	103.24	1,199.84	-1.60	6.79	2.09	2.00	2.00	0.00	0.00
1,217.83	4.36	103.24	1,217.62	-1.90	8.06	2.48	2.00	2.00	0.00	0.00
<b>End Nudge @ 1217.83ft</b>										
1,300.00	4.36	103.24	1,299.55	-3.32	14.13	4.36	0.00	0.00	0.00	0.00
1,400.00	4.36	103.24	1,399.26	-5.06	21.53	6.64	0.00	0.00	0.00	0.00
1,500.00	4.36	103.24	1,498.97	-6.80	28.92	8.92	0.00	0.00	0.00	0.00
1,600.00	4.36	103.24	1,598.69	-8.54	36.32	11.20	0.00	0.00	0.00	0.00
1,700.00	4.36	103.24	1,698.40	-10.28	43.71	13.48	0.00	0.00	0.00	0.00
1,800.00	4.36	103.24	1,798.11	-12.02	51.11	15.76	0.00	0.00	0.00	0.00
1,900.00	4.36	103.24	1,897.82	-13.76	58.50	18.04	0.00	0.00	0.00	0.00
2,000.00	4.36	103.24	1,997.53	-15.50	65.90	20.32	0.00	0.00	0.00	0.00
2,100.00	4.36	103.24	2,097.24	-17.24	73.29	22.60	0.00	0.00	0.00	0.00
2,200.00	4.36	103.24	2,196.95	-18.98	80.68	24.88	0.00	0.00	0.00	0.00
2,300.00	4.36	103.24	2,296.66	-20.72	88.08	27.16	0.00	0.00	0.00	0.00
2,400.00	4.36	103.24	2,396.37	-22.46	95.47	29.44	0.00	0.00	0.00	0.00
2,500.00	4.36	103.24	2,496.09	-24.20	102.87	31.72	0.00	0.00	0.00	0.00
2,600.00	4.36	103.24	2,595.80	-25.94	110.26	34.00	0.00	0.00	0.00	0.00
2,700.00	4.36	103.24	2,695.51	-27.68	117.66	36.28	0.00	0.00	0.00	0.00
2,800.00	4.36	103.24	2,795.22	-29.42	125.05	38.56	0.00	0.00	0.00	0.00
2,900.00	4.36	103.24	2,894.93	-31.16	132.45	40.84	0.00	0.00	0.00	0.00
3,000.00	4.36	103.24	2,994.64	-32.90	139.84	43.12	0.00	0.00	0.00	0.00
3,100.00	4.36	103.24	3,094.35	-34.64	147.23	45.40	0.00	0.00	0.00	0.00
3,200.00	4.36	103.24	3,194.06	-36.37	154.63	47.68	0.00	0.00	0.00	0.00
3,300.00	4.36	103.24	3,293.77	-38.11	162.02	49.96	0.00	0.00	0.00	0.00
3,400.00	4.36	103.24	3,393.49	-39.85	169.42	52.24	0.00	0.00	0.00	0.00
3,500.00	4.36	103.24	3,493.20	-41.59	176.81	54.52	0.00	0.00	0.00	0.00
3,600.00	4.36	103.24	3,592.91	-43.33	184.21	56.80	0.00	0.00	0.00	0.00
3,700.00	4.36	103.24	3,692.62	-45.07	191.60	59.08	0.00	0.00	0.00	0.00
3,800.00	4.36	103.24	3,792.33	-46.81	199.00	61.36	0.00	0.00	0.00	0.00
3,900.00	4.36	103.24	3,892.04	-48.55	206.39	63.64	0.00	0.00	0.00	0.00
4,000.00	4.36	103.24	3,991.75	-50.29	213.79	65.92	0.00	0.00	0.00	0.00
<b>Hold Angle @ 4.36</b>										
4,100.00	4.36	103.24	4,091.46	-52.03	221.18	68.21	0.00	0.00	0.00	0.00
4,177.76	4.36	103.24	4,169.00	-53.38	226.93	69.98	0.00	0.00	0.00	0.00
<b>Parkman</b>										
4,200.00	4.36	103.24	4,191.17	-53.77	228.57	70.49	0.00	0.00	0.00	0.00
4,300.00	4.36	103.24	4,290.88	-55.51	235.97	72.77	0.00	0.00	0.00	0.00
4,400.00	4.36	103.24	4,390.60	-57.25	243.36	75.05	0.00	0.00	0.00	0.00
4,414.45	4.36	103.24	4,405.00	-57.50	244.43	75.38	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,500.00	4.36	103.24	4,490.31	-58.99	250.76	77.33	0.00	0.00	0.00	0.00
4,600.00	4.36	103.24	4,590.02	-60.73	258.15	79.61	0.00	0.00	0.00	0.00
4,700.00	4.36	103.24	4,689.73	-62.47	265.55	81.89	0.00	0.00	0.00	0.00
4,800.00	4.36	103.24	4,789.44	-64.21	272.94	84.17	0.00	0.00	0.00	0.00

**Plan Report for Rattler 36N-3HZ - Plan B 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	4.36	103.24	4,889.15	-65.95	280.34	86.45	0.00	0.00	0.00	0.00
5,000.00	4.36	103.24	4,988.86	-67.69	287.73	88.73	0.00	0.00	0.00	0.00
5,100.00	4.36	103.24	5,088.57	-69.42	295.12	91.01	0.00	0.00	0.00	0.00
5,200.00	4.36	103.24	5,188.28	-71.16	302.52	93.29	0.00	0.00	0.00	0.00
5,300.00	4.36	103.24	5,288.00	-72.90	309.91	95.57	0.00	0.00	0.00	0.00
5,400.00	4.36	103.24	5,387.71	-74.64	317.31	97.85	0.00	0.00	0.00	0.00
5,500.00	4.36	103.24	5,487.42	-76.38	324.70	100.13	0.00	0.00	0.00	0.00
5,600.00	4.36	103.24	5,587.13	-78.12	332.10	102.41	0.00	0.00	0.00	0.00
5,700.00	4.36	103.24	5,686.84	-79.86	339.49	104.69	0.00	0.00	0.00	0.00
5,800.00	4.36	103.24	5,786.55	-81.60	346.89	106.97	0.00	0.00	0.00	0.00
5,900.00	4.36	103.24	5,886.26	-83.34	354.28	109.25	0.00	0.00	0.00	0.00
6,000.00	4.36	103.24	5,985.97	-85.08	361.67	111.53	0.00	0.00	0.00	0.00
6,100.00	4.36	103.24	6,085.68	-86.82	369.07	113.81	0.00	0.00	0.00	0.00
6,200.00	4.36	103.24	6,185.39	-88.56	376.46	116.09	0.00	0.00	0.00	0.00
6,300.00	4.36	103.24	6,285.11	-90.30	383.86	118.37	0.00	0.00	0.00	0.00
6,400.00	4.36	103.24	6,384.82	-92.04	391.25	120.65	0.00	0.00	0.00	0.00
6,500.00	4.36	103.24	6,484.53	-93.78	398.65	122.93	0.00	0.00	0.00	0.00
6,600.00	4.36	103.24	6,584.24	-95.52	406.04	125.21	0.00	0.00	0.00	0.00
6,672.15	4.36	103.24	6,656.18	-96.77	411.38	126.86	0.00	0.00	0.00	0.00
<b>Begin Build @ 6672.15ft</b>										
6,700.00	5.66	131.96	6,683.93	-97.93	413.43	128.17	10.00	4.69	103.12	77.31
6,800.00	14.37	163.66	6,782.37	-113.18	420.61	143.90	10.00	8.71	31.70	48.69
6,900.00	24.10	170.95	6,876.68	-145.33	427.33	176.46	10.00	9.73	7.29	17.37
7,000.00	33.98	174.18	6,964.01	-193.42	433.39	224.86	10.00	9.88	3.23	10.46
<b>Build Rate = 10.00/100ft</b>										
7,100.00	43.91	176.09	7,041.69	-255.97	438.60	287.63	10.00	9.93	1.90	7.62
7,186.04	52.47	177.24	7,099.00	-319.93	442.29	351.69	10.00	9.95	1.34	6.13
<b>Sharon Springs</b>										
7,200.00	53.86	177.40	7,107.37	-331.10	442.81	362.86	10.00	9.96	1.16	5.36
7,300.00	63.82	178.42	7,159.05	-416.50	445.89	448.26	10.00	9.96	1.02	5.27
7,318.64	65.68	178.59	7,167.00	-433.36	446.33	465.10	10.00	9.97	0.91	4.74
<b>Niobrara A</b>										
7,376.07	71.40	179.08	7,188.00	-486.77	447.41	518.45	10.00	9.97	0.86	4.66
<b>Niobrara B</b>										
7,400.00	73.79	179.27	7,195.16	-509.60	447.74	541.25	10.00	9.97	0.81	4.48
7,500.00	83.76	180.05	7,214.60	-607.56	448.31	638.98	10.00	9.97	0.77	4.43
7,562.50	89.99	180.51	7,218.00	-669.94	448.00	701.17	10.00	9.97	0.74	4.28
<b>Niobrara B(Target--Heel)</b>										
7,562.56	90.00	180.51	7,218.00	-670.00	448.00	701.22	9.93	9.90	0.74	4.25
<b>End Build @ 7562.56ft - 7" Intermediate Casing - Rattler 36N-3HZ_Casing Point</b>										
7,600.00	90.00	180.51	7,218.00	-707.44	447.67	738.54	0.00	0.00	0.00	4.25
7,700.00	90.00	180.51	7,218.00	-807.43	446.77	838.19	0.00	0.00	0.00	0.00
7,800.00	90.00	180.51	7,218.00	-907.43	445.88	937.85	0.00	0.00	0.00	0.00
7,900.00	90.00	180.51	7,218.00	-1,007.43	444.98	1,037.51	0.00	0.00	0.00	0.00
8,000.00	90.00	180.51	7,218.00	-1,107.42	444.09	1,137.17	0.00	0.00	0.00	0.00
8,100.00	90.00	180.51	7,218.00	-1,207.42	443.19	1,236.82	0.00	0.00	0.00	0.00
8,200.00	90.00	180.51	7,218.00	-1,307.41	442.30	1,336.48	0.00	0.00	0.00	0.00
8,300.00	90.00	180.51	7,218.00	-1,407.41	441.40	1,436.14	0.00	0.00	0.00	0.00
8,400.00	90.00	180.51	7,218.00	-1,507.41	440.51	1,535.80	0.00	0.00	0.00	0.00
8,500.00	90.00	180.51	7,218.00	-1,607.40	439.61	1,635.45	0.00	0.00	0.00	0.00
8,600.00	90.00	180.51	7,218.00	-1,707.40	438.72	1,735.11	0.00	0.00	0.00	0.00
8,700.00	90.00	180.51	7,218.00	-1,807.39	437.82	1,834.77	0.00	0.00	0.00	0.00
8,800.00	90.00	180.51	7,218.00	-1,907.39	436.93	1,934.43	0.00	0.00	0.00	0.00
8,900.00	90.00	180.51	7,218.00	-2,007.39	436.03	2,034.08	0.00	0.00	0.00	0.00
9,000.00	90.00	180.51	7,218.00	-2,107.38	435.14	2,133.74	0.00	0.00	0.00	0.00
9,100.00	90.00	180.51	7,218.00	-2,207.38	434.24	2,233.40	0.00	0.00	0.00	0.00
9,200.00	90.00	180.51	7,218.00	-2,307.37	433.35	2,333.06	0.00	0.00	0.00	0.00
9,300.00	90.00	180.51	7,218.00	-2,407.37	432.46	2,432.71	0.00	0.00	0.00	0.00
9,400.00	90.00	180.51	7,218.00	-2,507.37	431.56	2,532.37	0.00	0.00	0.00	0.00

**Plan Report for Rattler 36N-3HZ - Plan B 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 (°)
9,500.00	90.00	180.51	7,218.00	-2,607.36	430.67	2,632.03	0.00	0.00	0.00	0.00
9,600.00	90.00	180.51	7,218.00	-2,707.36	429.77	2,731.69	0.00	0.00	0.00	0.00
9,700.00	90.00	180.51	7,218.00	-2,807.35	428.88	2,831.34	0.00	0.00	0.00	0.00
9,800.00	90.00	180.51	7,218.00	-2,907.35	427.98	2,931.00	0.00	0.00	0.00	0.00
9,900.00	90.00	180.51	7,218.00	-3,007.35	427.09	3,030.66	0.00	0.00	0.00	0.00
10,000.00	90.00	180.51	7,218.00	-3,107.34	426.19	3,130.32	0.00	0.00	0.00	0.00
<b>Hold Angle @ 90.00</b>										
10,100.00	90.00	180.51	7,218.00	-3,207.34	425.30	3,229.97	0.00	0.00	0.00	0.00
10,200.00	90.00	180.51	7,218.00	-3,307.33	424.40	3,329.63	0.00	0.00	0.00	0.00
10,300.00	90.00	180.51	7,218.00	-3,407.33	423.51	3,429.29	0.00	0.00	0.00	0.00
10,400.00	90.00	180.51	7,218.00	-3,507.33	422.61	3,528.95	0.00	0.00	0.00	0.00
10,500.00	90.00	180.51	7,218.00	-3,607.32	421.72	3,628.60	0.00	0.00	0.00	0.00
10,600.00	90.00	180.51	7,218.00	-3,707.32	420.82	3,728.26	0.00	0.00	0.00	0.00
10,700.00	90.00	180.51	7,218.00	-3,807.31	419.93	3,827.92	0.00	0.00	0.00	0.00
10,800.00	90.00	180.51	7,218.00	-3,907.31	419.03	3,927.58	0.00	0.00	0.00	0.00
10,900.00	90.00	180.51	7,218.00	-4,007.31	418.14	4,027.23	0.00	0.00	0.00	0.00
11,000.00	90.00	180.51	7,218.00	-4,107.30	417.25	4,126.89	0.00	0.00	0.00	0.00
11,100.00	90.00	180.51	7,218.00	-4,207.30	416.35	4,226.55	0.00	0.00	0.00	0.00
11,200.00	90.00	180.51	7,218.00	-4,307.29	415.46	4,326.21	0.00	0.00	0.00	0.00
11,300.00	90.00	180.51	7,218.00	-4,407.29	414.56	4,425.86	0.00	0.00	0.00	0.00
11,400.00	90.00	180.51	7,218.00	-4,507.29	413.67	4,525.52	0.00	0.00	0.00	0.00
11,500.00	90.00	180.51	7,218.00	-4,607.28	412.77	4,625.18	0.00	0.00	0.00	0.00
11,600.00	90.00	180.51	7,218.00	-4,707.28	411.88	4,724.84	0.00	0.00	0.00	0.00
11,700.00	90.00	180.51	7,218.00	-4,807.27	410.98	4,824.49	0.00	0.00	0.00	0.00
11,800.00	90.00	180.51	7,218.00	-4,907.27	410.09	4,924.15	0.00	0.00	0.00	0.00
11,900.00	90.00	180.51	7,218.00	-5,007.27	409.19	5,023.81	0.00	0.00	0.00	0.00
12,000.00	90.00	180.51	7,218.00	-5,107.26	408.30	5,123.47	0.00	0.00	0.00	0.00
12,100.00	90.00	180.51	7,218.00	-5,207.26	407.40	5,223.12	0.00	0.00	0.00	0.00
12,200.00	90.00	180.51	7,218.00	-5,307.25	406.51	5,322.78	0.00	0.00	0.00	0.00
12,300.00	90.00	180.51	7,218.00	-5,407.25	405.61	5,422.44	0.00	0.00	0.00	0.00
12,367.75	90.00	180.51	7,218.00	-5,475.00	405.01	5,489.96	0.00	0.00	0.00	0.00
<b>Niobrara B(Target--Toe)</b>										
12,367.76	90.00	180.51	7,218.00	-5,475.01	405.01	5,489.97	0.00	0.00	0.00	0.00
<b>Total Depth @ 12367.76ft - Rattler 36N-3HZ_BHL</b>										

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
500.00	500.00	0.00	0.00	Hold Angle @ 0.00
1,000.00	1,000.00	0.00	0.00	Begin Nudge @ 1000.00ft
1,217.83	1,217.62	-1.90	8.06	End Nudge @ 1217.83ft
4,000.00	3,991.75	-50.29	213.79	Hold Angle @ 4.36
6,672.15	6,656.18	-96.77	411.38	Begin Build @ 6672.15ft
7,000.00	6,964.01	-193.42	433.39	Build Rate = 10.00/100ft
7,562.56	7,218.00	-670.00	448.00	End Build @ 7562.56ft
10,000.00	7,218.00	-3,107.34	426.19	Hold Angle @ 90.00
12,367.76	7,218.00	-5,475.01	405.01	Total Depth @ 12367.76ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Rattler 36N-3HZ_BHL	175.77	Slot	0.00	0.00	0.00

**Plan Report for Rattler 36N-3HZ - Plan B Rev 0 Permit****Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	7,562.56	Plan B Rev 0 Permit	MWD
7,562.56	12,367.76	Plan B Rev 0 Permit	MWD

**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,562.56	7,218.00	7" Intermediate Casing	7	8-3/4

**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,177.76	4,169.00	Parkman			
4,414.45	4,405.00	Sussex			
7,186.04	7,099.00	Sharon Springs			
7,318.64	7,167.00	Niobrara A			
7,376.07	7,188.00	Niobrara B			
7,562.50	7,218.00	Niobrara B(Target--Heel)			
12,367.75	7,218.00	Niobrara B(Target--Toe)		0.00	

**Targets associated with this wellbore**

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Rattler 36N-3HZ_Casing Point	7,218.00	-670.00	448.00	Point
Rattler 36N-3HZ_SHL	0.00	0.00	0.00	Point
Rattler 36N-3HZ_BHL	7,218.00	-5,475.01	405.01	Point

## North Reference Sheet for Sec. 34-T3N-R66W - Rattler 36N-3HZ - Plan B 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 @ 5008.00ft (Drilling Rig). Northing and Easting are relative to Rattler 36N-3HZ  
 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: 0.99995772

Grid Coordinates of Well: 1,307,418.94 ft N, 3,205,388.24 ft E  
 Geographical Coordinates of Well: 40° 10' 29.73" N, 104° 45' 53.92" W  
 Grid Convergence at Surface is: 0.47°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,367.76ft  
 the Bottom Hole Displacement is 5,489.97ft in the Direction of 175.77° (True).

Magnetic Convergence at surface is: -8.23° (25 October 2012, , BGGM2012)

