

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 15-T3N-R68W

RMF 30N-15HZ

Plan A

Plan: Rev A0 Permit

## Sperry Drilling Services

### Proposal Report

03 October, 2013

Well Coordinates: 1,327,558.52 N, 3,144,665.45 E (40° 13' 52.99" N, 104° 58' 54.70" W)

Ground Level: 4,970.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well RMF 30N-15HZ

RKB = 17' @ 4987.00usft (Drilling Rig)

N

True

Dec-Deg - API - US Survey Feet - Custom

**HALLIBURTON**

Project: Weld County, CO (NAD 83)  
 Site: Sec. 15-T3N-R68W  
 Well: RMF 30N-15HZ  
 Wellbore: Plan A  
 Design: Rev A0 Permit

# Anadarko Petroleum Corp.

**HALLIBURTON**  
 Sperry Drilling

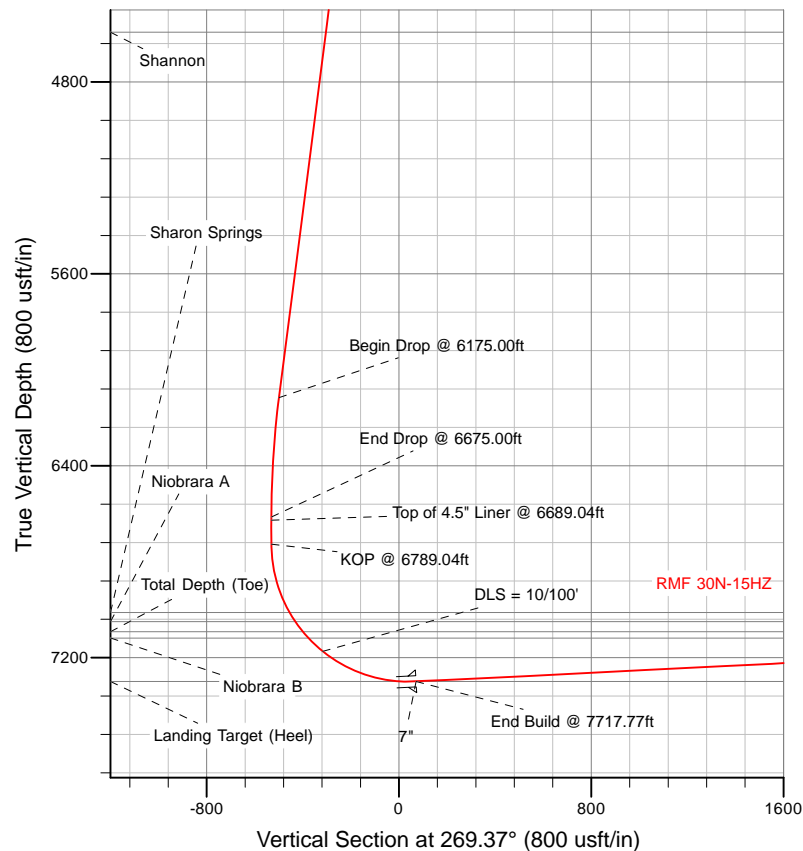
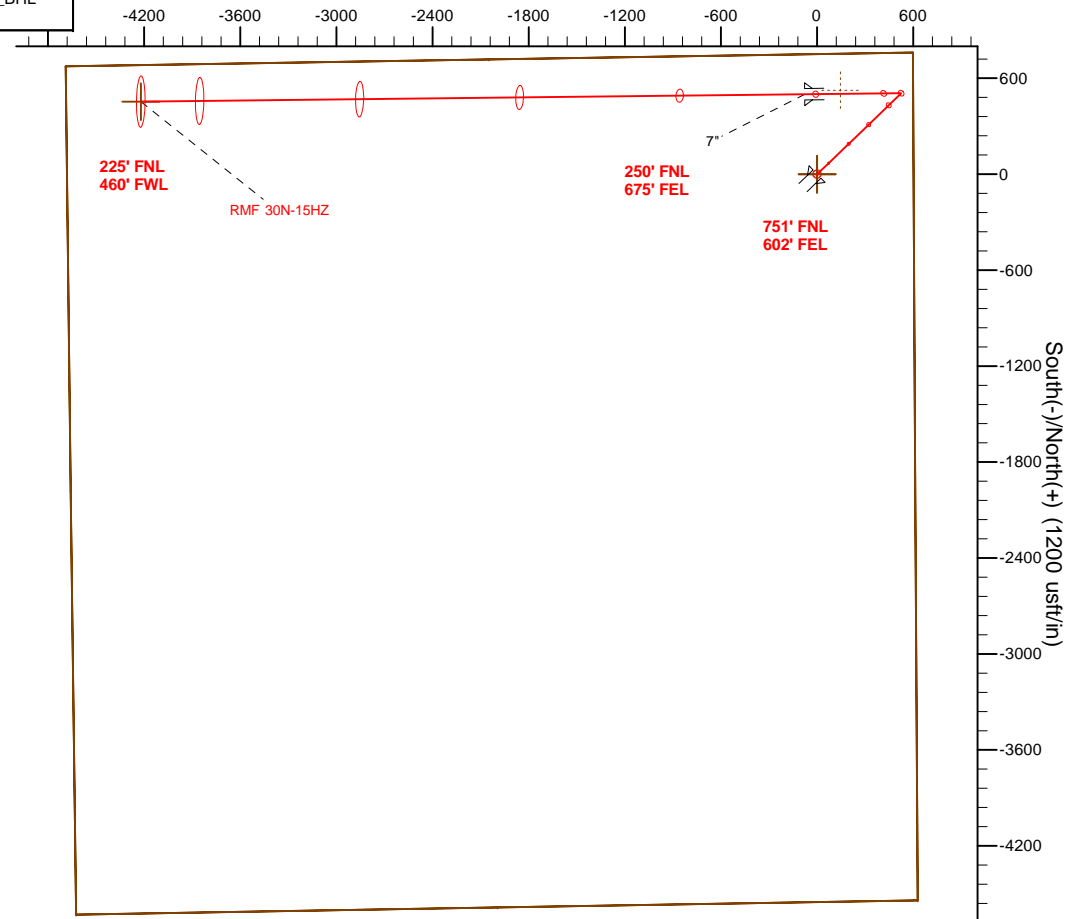
## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1975.00	0.00	0.00	1975.00	0.00	0.00	0.00	0.00	0.00	
3	2475.00	10.00	46.00	2472.47	30.23	31.31	2.00	46.00	-31.64	
4	6175.00	10.00	46.00	6116.25	476.55	493.48	0.00	0.00	-498.69	
5	6675.00	0.00	0.00	6613.72	506.78	524.79	2.00	180.00	-530.33	
6	6789.04	0.00	0.00	6727.76	506.78	524.79	0.00	0.00	-530.33	
7	7717.77	92.87	269.37	7300.00	500.17	-76.85	10.00	269.37	71.35	
8	11867.48	92.87	269.37	7092.00	454.65	-4221.10	0.00	0.00	4215.84	RMF 30N-15HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
RMF 30N-15HZ_SEC	0.00	0.00	0.00	40.231386	-104.981860	Polygon
RMF 30N-15HZ_SHL	0.00	0.00	0.00	40.231386	-104.981860	Point
RMF 30N-15HZ_BHL	7092.00	454.65	-4221.10	40.232633	-104.996978	Point
RMF 30N-15HZ_CP	7130.00	525.18	145.08	40.232828	-104.981340	Point

West(-)/East(+) (1200 usft/in)



TVD

MD

6627.76

6689.04

Top of 4.5" Liner @ 6689.04ft

6727.76

6789.04

KOP @ 6789.04ft

WELL DETAILS: RMF 30N-15HZ

Ground Level: 4970.00

RKB = 17' @ 4987.00usft (Drilling Rig)

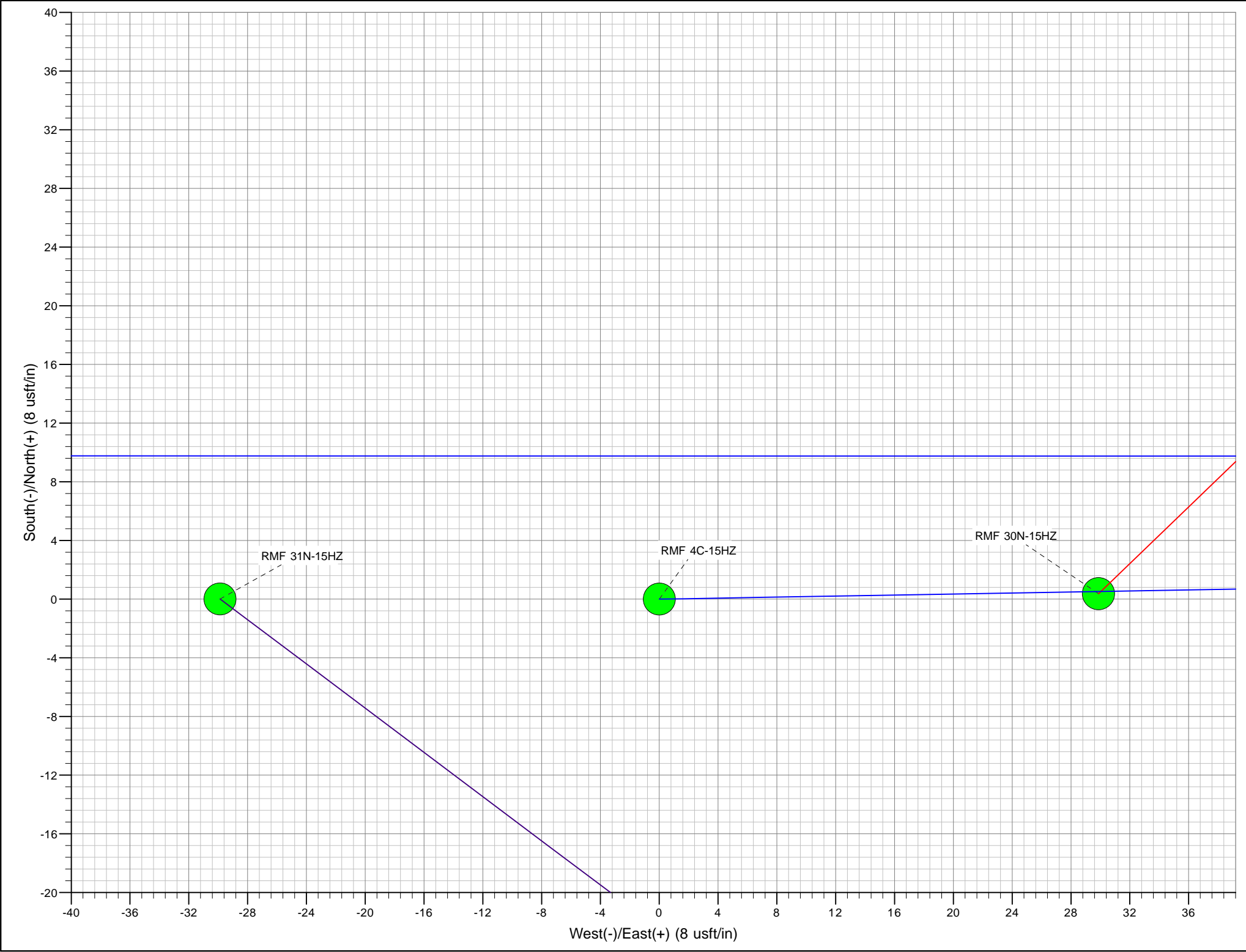
Plan: Rev A0 Permit (RMF 30N-15HZ/Plan A)

Created By: Clint Eshelman

Date: 10/3/2013

Reviewed: \_\_\_\_\_

Date: \_\_\_\_\_



**Plan Report for RMF 30N-15HZ - Rev A0 Permit**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	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>RMF 30N-15HZ_SHL - RMF 30N-15HZ_SEC</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
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
1,017.00	0.00	0.00	1,017.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills Base</b>										
1,067.00	0.00	0.00	1,067.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>										
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
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,975.00	0.00	0.00	1,975.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 1975.00ft</b>										
2,000.00	0.50	46.00	2,000.00	0.08	0.08	-0.08	2.00	2.00	0.00	46.00
2,100.00	2.50	46.00	2,099.96	1.89	1.96	-1.98	2.00	2.00	0.00	0.00
2,200.00	4.50	46.00	2,199.77	6.13	6.35	-6.42	2.00	2.00	0.00	0.00
2,300.00	6.50	46.00	2,299.30	12.79	13.25	-13.39	2.00	2.00	0.00	0.00
2,400.00	8.50	46.00	2,398.44	21.86	22.64	-22.87	2.00	2.00	0.00	0.00
2,475.00	10.00	46.00	2,472.47	30.23	31.31	-31.64	2.00	2.00	0.00	0.00
<b>End Nudge @ 2475.00ft</b>										
2,500.00	10.00	46.00	2,497.09	33.25	34.43	-34.79	0.00	0.00	0.00	0.00
2,600.00	10.00	46.00	2,595.57	45.31	46.92	-47.42	0.00	0.00	0.00	0.00
2,700.00	10.00	46.00	2,694.05	57.37	59.41	-60.04	0.00	0.00	0.00	0.00
2,800.00	10.00	46.00	2,792.53	69.44	71.90	-72.66	0.00	0.00	0.00	0.00
2,900.00	10.00	46.00	2,891.01	81.50	84.40	-85.29	0.00	0.00	0.00	0.00
3,000.00	10.00	46.00	2,989.49	93.56	96.89	-97.91	0.00	0.00	0.00	0.00
3,100.00	10.00	46.00	3,087.97	105.62	109.38	-110.53	0.00	0.00	0.00	0.00
3,200.00	10.00	46.00	3,186.45	117.69	121.87	-123.16	0.00	0.00	0.00	0.00
3,300.00	10.00	46.00	3,284.93	129.75	134.36	-135.78	0.00	0.00	0.00	0.00
3,400.00	10.00	46.00	3,383.41	141.81	146.85	-148.40	0.00	0.00	0.00	0.00
3,500.00	10.00	46.00	3,481.89	153.88	159.34	-161.02	0.00	0.00	0.00	0.00
3,600.00	10.00	46.00	3,580.37	165.94	171.83	-173.65	0.00	0.00	0.00	0.00
3,700.00	10.00	46.00	3,678.85	178.00	184.32	-186.27	0.00	0.00	0.00	0.00
3,800.00	10.00	46.00	3,777.34	190.06	196.82	-198.89	0.00	0.00	0.00	0.00
3,900.00	10.00	46.00	3,875.82	202.13	209.31	-211.52	0.00	0.00	0.00	0.00
4,000.00	10.00	46.00	3,974.30	214.19	221.80	-224.14	0.00	0.00	0.00	0.00
4,088.04	10.00	46.00	4,061.00	224.81	232.80	-235.25	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,100.00	10.00	46.00	4,072.78	226.25	234.29	-236.76	0.00	0.00	0.00	0.00
4,200.00	10.00	46.00	4,171.26	238.31	246.78	-249.39	0.00	0.00	0.00	0.00
4,300.00	10.00	46.00	4,269.74	250.38	259.27	-262.01	0.00	0.00	0.00	0.00
4,400.00	10.00	46.00	4,368.22	262.44	271.76	-274.63	0.00	0.00	0.00	0.00
4,500.00	10.00	46.00	4,466.70	274.50	284.25	-287.26	0.00	0.00	0.00	0.00
4,600.00	10.00	46.00	4,565.18	286.56	296.75	-299.88	0.00	0.00	0.00	0.00

**Plan Report for RMF 30N-15HZ - Rev A0 Permit**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
4,628.25	10.00	46.00	4,593.00	289.97	300.27	-303.44	0.00	0.00	0.00	0.00
<b>Shannon</b>										
4,700.00	10.00	46.00	4,663.66	298.63	309.24	-312.50	0.00	0.00	0.00	0.00
4,800.00	10.00	46.00	4,762.14	310.69	321.73	-325.12	0.00	0.00	0.00	0.00
4,900.00	10.00	46.00	4,860.62	322.75	334.22	-337.75	0.00	0.00	0.00	0.00
5,000.00	10.00	46.00	4,959.10	334.81	346.71	-350.37	0.00	0.00	0.00	0.00
5,100.00	10.00	46.00	5,057.59	346.88	359.20	-362.99	0.00	0.00	0.00	0.00
5,200.00	10.00	46.00	5,156.07	358.94	371.69	-375.62	0.00	0.00	0.00	0.00
5,300.00	10.00	46.00	5,254.55	371.00	384.18	-388.24	0.00	0.00	0.00	0.00
5,400.00	10.00	46.00	5,353.03	383.06	396.68	-400.86	0.00	0.00	0.00	0.00
5,500.00	10.00	46.00	5,451.51	395.13	409.17	-413.49	0.00	0.00	0.00	0.00
5,600.00	10.00	46.00	5,549.99	407.19	421.66	-426.11	0.00	0.00	0.00	0.00
5,700.00	10.00	46.00	5,648.47	419.25	434.15	-438.73	0.00	0.00	0.00	0.00
5,800.00	10.00	46.00	5,746.95	431.32	446.64	-451.36	0.00	0.00	0.00	0.00
5,900.00	10.00	46.00	5,845.43	443.38	459.13	-463.98	0.00	0.00	0.00	0.00
6,000.00	10.00	46.00	5,943.91	455.44	471.62	-476.60	0.00	0.00	0.00	0.00
6,100.00	10.00	46.00	6,042.39	467.50	484.11	-489.22	0.00	0.00	0.00	0.00
6,175.00	10.00	46.00	6,116.25	476.55	493.48	-498.69	0.00	0.00	0.00	0.00
<b>Begin Drop @ 6175.00ft</b>										
6,200.00	9.50	46.00	6,140.89	479.49	496.53	-501.77	2.00	-2.00	0.00	180.00
6,300.00	7.50	46.00	6,239.79	489.76	507.16	-512.51	2.00	-2.00	0.00	180.00
6,400.00	5.50	46.00	6,339.14	497.62	515.30	-520.74	2.00	-2.00	0.00	180.00
6,500.00	3.50	46.00	6,438.83	503.07	520.95	-526.45	2.00	-2.00	0.00	180.00
6,600.00	1.50	46.00	6,538.73	506.10	524.08	-529.62	2.00	-2.00	0.00	180.00
6,675.00	0.00	0.00	6,613.72	506.78	524.79	-530.33	2.00	-2.00	0.00	-180.00
<b>End Drop @ 6675.00ft</b>										
6,689.04	0.00	0.00	6,627.76	506.78	524.79	-530.33	0.00	0.00	0.00	0.00
<b>Top of 4.5" Liner @ 6689.04ft</b>										
6,700.00	0.00	0.00	6,638.72	506.78	524.79	-530.33	0.00	0.00	0.00	0.00
6,789.04	0.00	0.00	6,727.76	506.78	524.79	-530.33	0.00	0.00	0.00	0.00
<b>KOP @ 6789.04ft</b>										
6,800.00	1.10	269.37	6,738.72	506.78	524.68	-530.23	10.00	10.00	0.00	269.37
6,900.00	11.10	269.37	6,838.03	506.67	514.08	-519.62	10.00	10.00	0.00	0.00
7,000.00	21.10	269.37	6,933.99	506.36	486.39	-491.93	10.00	10.00	0.00	0.00
7,086.46	29.74	269.37	7,012.00	505.95	449.32	-454.85	10.00	10.00	0.00	0.00
<b>Sharon Springs</b>										
7,100.00	31.10	269.37	7,023.68	505.88	442.46	-448.00	10.00	10.00	0.00	0.00
7,131.27	34.22	269.37	7,050.00	505.69	425.59	-431.13	10.00	10.00	0.00	0.00
<b>Niobrara A</b>										
7,200.00	41.10	269.37	7,104.38	505.23	383.63	-389.16	10.00	10.00	0.00	0.00
7,219.70	43.07	269.37	7,119.00	505.09	370.42	-375.96	10.00	10.00	0.00	0.00
<b>Niobrara B</b>										
7,300.00	51.10	269.37	7,173.63	504.44	311.67	-317.20	10.00	10.00	0.00	0.00
<b>DLS = 10/100'</b>										
7,400.00	61.10	269.37	7,229.34	503.53	228.79	-234.31	10.00	10.00	0.00	0.00
7,436.09	64.71	269.37	7,245.78	503.18	196.66	-202.18	10.00	10.00	0.00	0.00
<b>RMF 30N-15HZ_CP</b>										
7,500.00	71.10	269.37	7,269.81	502.53	137.48	-143.00	10.00	10.00	0.00	0.00
7,600.00	81.10	269.37	7,293.81	501.46	40.54	-46.05	10.00	10.00	0.00	0.00
7,700.00	91.10	269.37	7,300.61	500.37	-59.09	53.59	10.00	10.00	0.00	0.00
7,717.77	92.87	269.37	7,300.00	500.17	-76.85	71.35	10.00	10.00	0.00	0.00
<b>End Build @ 7717.77ft - Landing Target (Heel) - 7"</b>										
7,800.00	92.87	269.37	7,295.88	499.27	-158.97	153.47	0.00	0.00	0.00	0.00
7,900.00	92.87	269.37	7,290.86	498.18	-258.84	253.35	0.00	0.00	0.00	0.00
8,000.00	92.87	269.37	7,285.85	497.08	-358.71	353.22	0.00	0.00	0.00	0.00
8,100.00	92.87	269.37	7,280.84	495.98	-458.58	453.10	0.00	0.00	0.00	0.00
8,200.00	92.87	269.37	7,275.83	494.88	-558.44	552.97	0.00	0.00	0.00	0.00
8,300.00	92.87	269.37	7,270.81	493.79	-658.31	652.84	0.00	0.00	0.00	0.00

**Plan Report for RMF 30N-15HZ - Rev A0 Permit**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
8,400.00	92.87	269.37	7,265.80	492.69	-758.18	752.72	0.00	0.00	0.00	0.00
8,500.00	92.87	269.37	7,260.79	491.59	-858.05	852.59	0.00	0.00	0.00	0.00
8,600.00	92.87	269.37	7,255.78	490.50	-957.92	952.47	0.00	0.00	0.00	0.00
8,700.00	92.87	269.37	7,250.76	489.40	-1,057.79	1,052.34	0.00	0.00	0.00	0.00
8,800.00	92.87	269.37	7,245.75	488.30	-1,157.65	1,152.22	0.00	0.00	0.00	0.00
8,900.00	92.87	269.37	7,240.74	487.21	-1,257.52	1,252.09	0.00	0.00	0.00	0.00
9,000.00	92.87	269.37	7,235.73	486.11	-1,357.39	1,351.96	0.00	0.00	0.00	0.00
9,100.00	92.87	269.37	7,230.72	485.01	-1,457.26	1,451.84	0.00	0.00	0.00	0.00
9,200.00	92.87	269.37	7,225.70	483.91	-1,557.13	1,551.71	0.00	0.00	0.00	0.00
9,300.00	92.87	269.37	7,220.69	482.82	-1,657.00	1,651.59	0.00	0.00	0.00	0.00
9,400.00	92.87	269.37	7,215.68	481.72	-1,756.86	1,751.46	0.00	0.00	0.00	0.00
9,500.00	92.87	269.37	7,210.67	480.62	-1,856.73	1,851.34	0.00	0.00	0.00	0.00
9,600.00	92.87	269.37	7,205.65	479.53	-1,956.60	1,951.21	0.00	0.00	0.00	0.00
9,700.00	92.87	269.37	7,200.64	478.43	-2,056.47	2,051.08	0.00	0.00	0.00	0.00
9,800.00	92.87	269.37	7,195.63	477.33	-2,156.34	2,150.96	0.00	0.00	0.00	0.00
9,900.00	92.87	269.37	7,190.62	476.23	-2,256.21	2,250.83	0.00	0.00	0.00	0.00
10,000.00	92.87	269.37	7,185.60	475.14	-2,356.07	2,350.71	0.00	0.00	0.00	0.00
10,100.00	92.87	269.37	7,180.59	474.04	-2,455.94	2,450.58	0.00	0.00	0.00	0.00
10,200.00	92.87	269.37	7,175.58	472.94	-2,555.81	2,550.46	0.00	0.00	0.00	0.00
10,300.00	92.87	269.37	7,170.57	471.85	-2,655.68	2,650.33	0.00	0.00	0.00	0.00
10,400.00	92.87	269.37	7,165.55	470.75	-2,755.55	2,750.20	0.00	0.00	0.00	0.00
10,500.00	92.87	269.37	7,160.54	469.65	-2,855.42	2,850.08	0.00	0.00	0.00	0.00
10,600.00	92.87	269.37	7,155.53	468.56	-2,955.28	2,949.95	0.00	0.00	0.00	0.00
10,700.00	92.87	269.37	7,150.52	467.46	-3,055.15	3,049.83	0.00	0.00	0.00	0.00
10,800.00	92.87	269.37	7,145.51	466.36	-3,155.02	3,149.70	0.00	0.00	0.00	0.00
10,900.00	92.87	269.37	7,140.49	465.26	-3,254.89	3,249.58	0.00	0.00	0.00	0.00
11,000.00	92.87	269.37	7,135.48	464.17	-3,354.76	3,349.45	0.00	0.00	0.00	0.00
11,100.00	92.87	269.37	7,130.47	463.07	-3,454.62	3,449.32	0.00	0.00	0.00	0.00
11,200.00	92.87	269.37	7,125.46	461.97	-3,554.49	3,549.20	0.00	0.00	0.00	0.00
11,300.00	92.87	269.37	7,120.44	460.88	-3,654.36	3,649.07	0.00	0.00	0.00	0.00
11,400.00	92.87	269.37	7,115.43	459.78	-3,754.23	3,748.95	0.00	0.00	0.00	0.00
11,500.00	92.87	269.37	7,110.42	458.68	-3,854.10	3,848.82	0.00	0.00	0.00	0.00
11,600.00	92.87	269.37	7,105.41	457.59	-3,953.97	3,948.70	0.00	0.00	0.00	0.00
11,700.00	92.87	269.37	7,100.39	456.49	-4,053.83	4,048.57	0.00	0.00	0.00	0.00
11,800.00	92.87	269.37	7,095.38	455.39	-4,153.70	4,148.44	0.00	0.00	0.00	0.00
11,867.48	92.87	269.37	7,092.00	454.65	-4,221.09	4,215.84	0.00	0.00	0.00	0.00

TD Well @ 11867.48ft - Total Depth (Toe) - RMF 30N-15HZ\_BHL

**Plan Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,975.00	1,975.00	0.00	0.00	Begin Nudge @ 1975.00ft
2,475.00	2,472.47	30.23	31.31	End Nudge @ 2475.00ft
6,175.00	6,116.25	476.55	493.48	Begin Drop @ 6175.00ft
6,675.00	6,613.72	506.78	524.79	End Drop @ 6675.00ft
6,689.04	6,627.76	506.78	524.79	Top of 4.5" Liner @ 6689.04ft
6,789.04	6,727.76	506.78	524.79	KOP @ 6789.04ft
7,300.00	7,173.63	504.44	311.67	DLS = 10/100'
7,717.77	7,300.00	500.17	-76.85	End Build @ 7717.77ft
11,867.48	7,092.00	454.65	-4,221.09	TD Well @ 11867.48ft

## Plan Report for RMF 30N-15HZ - Rev A0 Permit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	269.37	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,717.77	Rev A0 Permit	MWD
7,717.77	11,867.48	Rev A0 Permit	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,067.00	1,067.00	9 5/8"	9-5/8	13-1/2
7,717.77	7,300.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,017.00	1,017.00	Fox Hills Base		0.00	
4,088.04	4,061.00	Sussex		0.00	
4,628.25	4,593.00	Shannon		0.00	
7,086.46	7,012.00	Sharon Springs		0.00	
7,131.27	7,050.00	Niobrara A		0.00	
7,219.70	7,119.00	Niobrara B		0.00	
7,717.77	7,300.00	Landing Target (Heel)		0.00	
11,867.48	7,092.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
RMF 30N-15HZ_SHL	0.00	0.00	0.00	Point
RMF 30N-15HZ_SEC	0.00	0.00	0.00	Polygon
RMF 30N-15HZ_BHL	7,092.00	454.65	-4,221.10	Point
RMF 30N-15HZ_CP	7,130.00	525.18	145.08	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.95 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 7,717.77 usft
Net Tortousity applicable to Plans:	0.95 °/100usft	Directional Difficulty Index:	6.160

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**Plan Report for RMF 30N-15HZ - Rev A0 Permit**

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*Audit Info*



**North Reference Sheet for Sec. 15-T3N-R68W - RMF 30N-15HZ - Plan A**

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' @ 4987.00usft (Drilling Rig). Northing and Easting are relative to RMF 30N-15HZ  
 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: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995690

Grid Coordinates of Well: 1,327,558.52 usft N, 3,144,665.45 usft E  
 Geographical Coordinates of Well: 40° 13' 52.99" N, 104° 58' 54.70" W  
 Grid Convergence at Surface is: 0.33°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,867.48usft  
 the Bottom Hole Displacement is 4,245.51usft in the Direction of 276.15° ( True).  
 Magnetic Convergence at surface is: -8.35° ( 3 October 2013 , BGGM2013)

