

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8-T1N-R67W

NRC 1C-8HZ

Plan A

Plan: Rev A0 Permit

## Sperry Drilling Services

### Proposal Report

28 October, 2013

Well Coordinates: 1,264,982.21 N, 3,165,659.14 E (40° 03' 33.29" N, 104° 54' 29.40" W)

Ground Level: 5,074.00 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 NRC 1C-8HZ

RKB = 17' @ 5091.00usft (Drilling Rig)

N

True

Dec-Deg - API - US Survey Feet - Custom

**HALLIBURTON**

Project: Weld County, CO (NAD 83)  
Site: Sec. 8-T1N-R67W  
Well: NRC 1C-8HZ  
Wellbore: Plan A  
Design: Rev A0 Permit

# Anadarko Petroleum Corp.

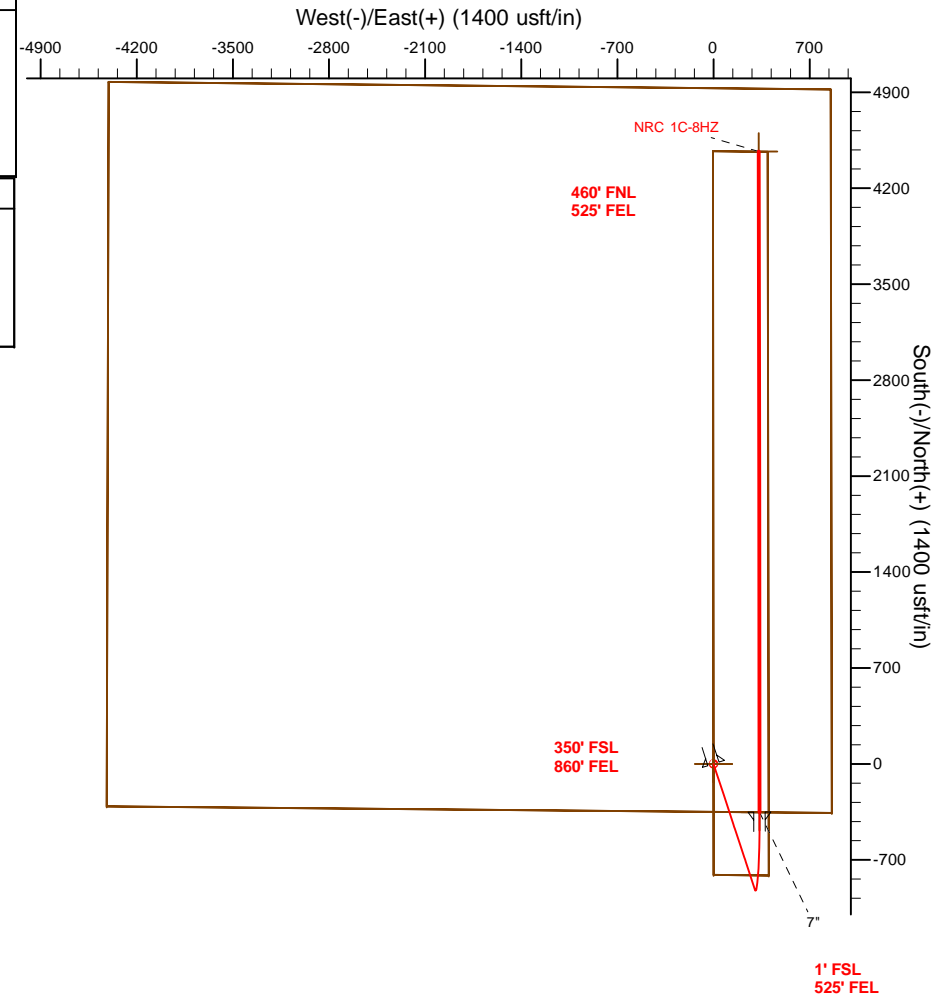
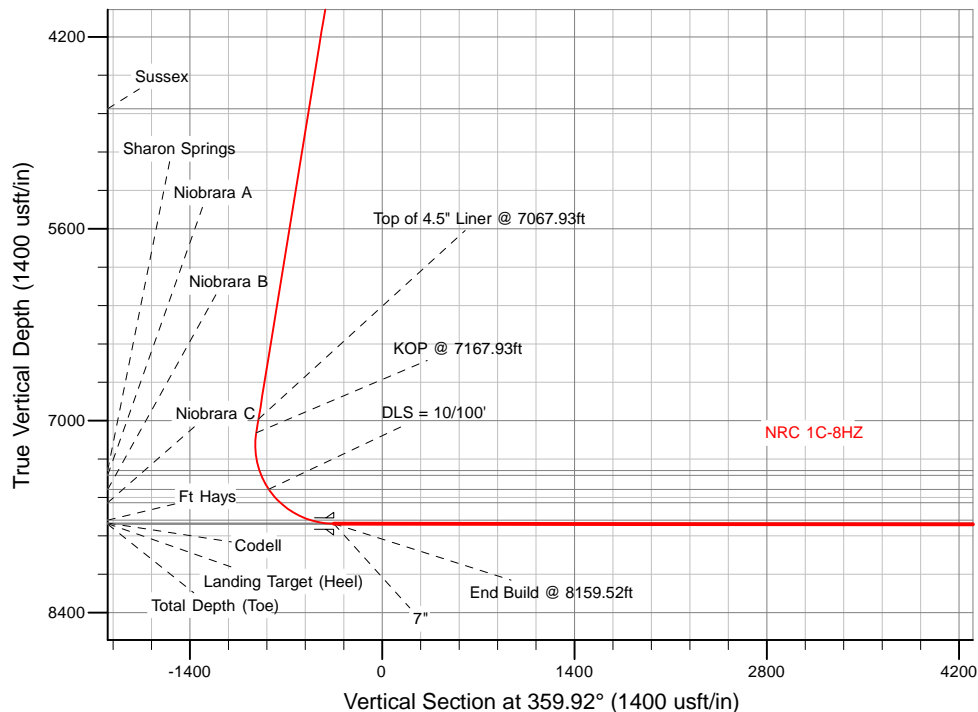
**HALLIBURTON**  
Sperry Drilling

## 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	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	
3	1685.14	9.70	161.83	1682.82	-38.94	12.78	2.00	161.83	-38.95	
4	7167.93	9.70	161.83	7087.18	-916.91	300.94	0.00	0.00	-917.33	
5	8159.52	89.94	359.92	7751.00	-351.89	335.35	10.00	-161.67	-352.36	NRC 1C-8HZ_CP
6	12978.00	89.94	359.92	7756.00	4466.57	328.57	0.00	0.00	4466.11	NRC 1C-8HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Polygon
NRC 1C-8HZ_LD	0.00	0.00	0.00	40.059248	-104.908166	Polygon
NRC 1C-8HZ_SEC	0.00	0.00	0.00	40.059248	-104.908166	Polygon
NRC 1C-8HZ_SHL	0.00	0.00	0.00	40.059248	-104.908166	Polygon
NRC 1C-8HZ_CP	7751.00	-351.89	335.35	40.058282	-104.908968	Point
NRC 1C-8HZ_BHL	7756.00	4466.57	328.57	40.071509	-104.906992	Point



TVD MD

6988.62 7067.93 Top of 4.5" Liner @ 7067.93ft  
7087.19 7167.93 KOP @ 7167.93ft

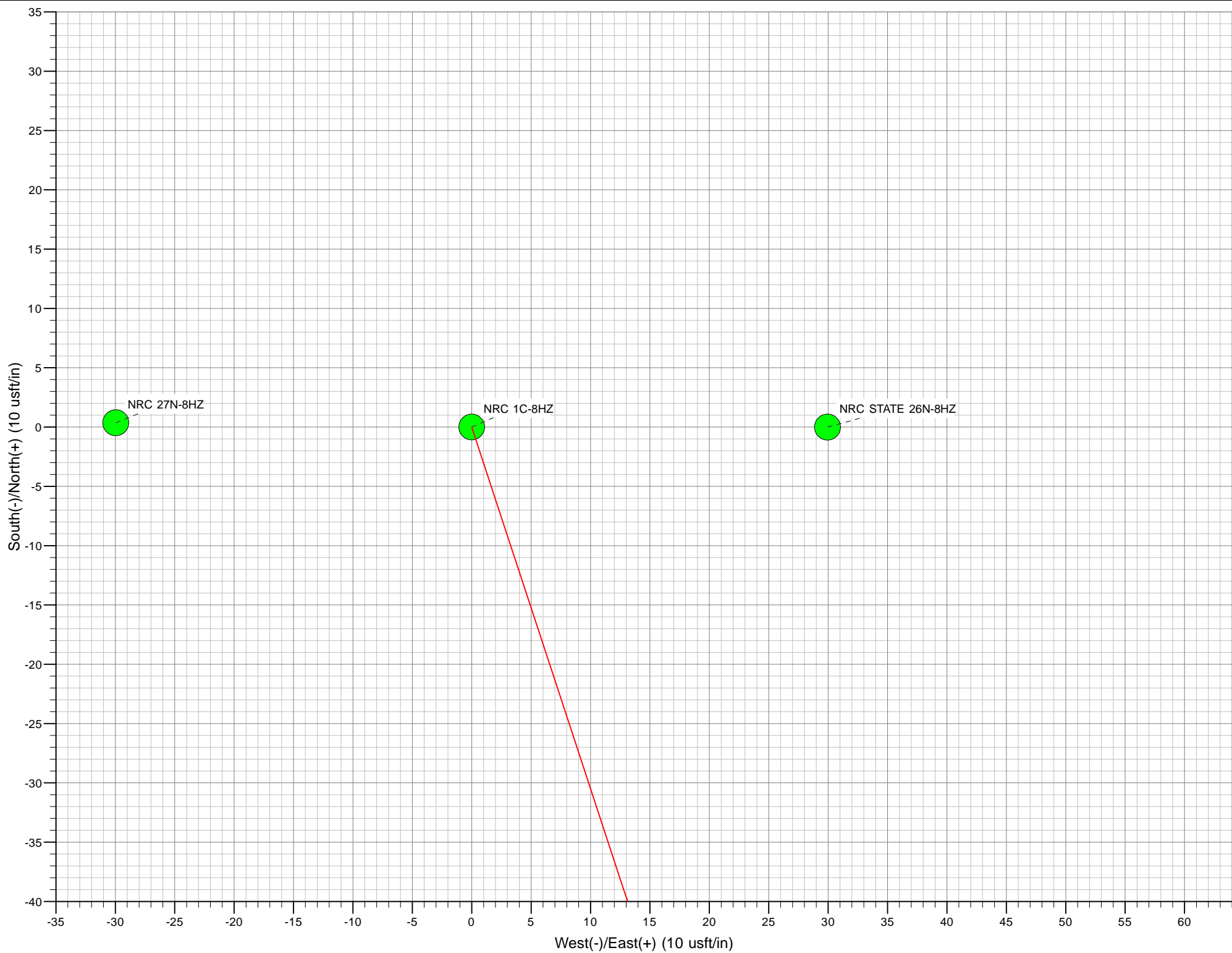
WELL DETAILS: NRC 1C-8HZ

Ground Level: 5074.00

RKB = 17' @ 5091.00usft (Drilling Rig)

Plan: Rev A0 Permit (NRC 1C-8HZ/Plan A)

Created By: Clint Eshelman Date: 10/28/2013  
Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_



**Plan Report for NRC 1C-8HZ - 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>NRC 1C-8HZ_SEC - NRC 1C-8HZ_SHL - NRC 1C-8HZ_LD</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
691.00	0.00	0.00	691.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills Base</b>										
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
741.00	0.00	0.00	741.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</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
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 1200.00ft</b>										
1,300.00	2.00	161.83	1,299.98	-1.66	0.54	-1.66	2.00	2.00	0.00	161.83
1,400.00	4.00	161.83	1,399.84	-6.63	2.18	-6.63	2.00	2.00	0.00	0.00
1,500.00	6.00	161.83	1,499.45	-14.91	4.89	-14.92	2.00	2.00	0.00	0.00
1,600.00	8.00	161.83	1,598.70	-26.49	8.69	-26.50	2.00	2.00	0.00	0.00
1,685.14	9.70	161.83	1,682.82	-38.94	12.78	-38.95	2.00	2.00	0.00	0.00
<b>End Nudge @ 1685.14ft</b>										
1,700.00	9.70	161.83	1,697.47	-41.32	13.56	-41.34	0.00	0.00	0.00	0.00
1,800.00	9.70	161.83	1,796.04	-57.33	18.82	-57.36	0.00	0.00	0.00	0.00
1,900.00	9.70	161.83	1,894.61	-73.34	24.07	-73.38	0.00	0.00	0.00	0.00
2,000.00	9.70	161.83	1,993.18	-89.36	29.33	-89.40	0.00	0.00	0.00	0.00
2,100.00	9.70	161.83	2,091.75	-105.37	34.58	-105.42	0.00	0.00	0.00	0.00
2,200.00	9.70	161.83	2,190.32	-121.38	39.84	-121.44	0.00	0.00	0.00	0.00
2,300.00	9.70	161.83	2,288.89	-137.40	45.09	-137.46	0.00	0.00	0.00	0.00
2,400.00	9.70	161.83	2,387.46	-153.41	50.35	-153.48	0.00	0.00	0.00	0.00
2,500.00	9.70	161.83	2,486.03	-169.42	55.61	-169.50	0.00	0.00	0.00	0.00
2,600.00	9.70	161.83	2,584.60	-185.43	60.86	-185.52	0.00	0.00	0.00	0.00
2,700.00	9.70	161.83	2,683.17	-201.45	66.12	-201.54	0.00	0.00	0.00	0.00
2,800.00	9.70	161.83	2,781.74	-217.46	71.37	-217.56	0.00	0.00	0.00	0.00
2,900.00	9.70	161.83	2,880.31	-233.47	76.63	-233.58	0.00	0.00	0.00	0.00
3,000.00	9.70	161.83	2,978.88	-249.49	81.88	-249.60	0.00	0.00	0.00	0.00
3,100.00	9.70	161.83	3,077.45	-265.50	87.14	-265.62	0.00	0.00	0.00	0.00
3,200.00	9.70	161.83	3,176.02	-281.51	92.40	-281.64	0.00	0.00	0.00	0.00
3,300.00	9.70	161.83	3,274.58	-297.53	97.65	-297.66	0.00	0.00	0.00	0.00
3,400.00	9.70	161.83	3,373.15	-313.54	102.91	-313.68	0.00	0.00	0.00	0.00
3,500.00	9.70	161.83	3,471.72	-329.55	108.16	-329.70	0.00	0.00	0.00	0.00
3,600.00	9.70	161.83	3,570.29	-345.57	113.42	-345.72	0.00	0.00	0.00	0.00
3,700.00	9.70	161.83	3,668.86	-361.58	118.67	-361.75	0.00	0.00	0.00	0.00
3,800.00	9.70	161.83	3,767.43	-377.59	123.93	-377.77	0.00	0.00	0.00	0.00
3,900.00	9.70	161.83	3,866.00	-393.61	129.19	-393.79	0.00	0.00	0.00	0.00
4,000.00	9.70	161.83	3,964.57	-409.62	134.44	-409.81	0.00	0.00	0.00	0.00
4,100.00	9.70	161.83	4,063.14	-425.63	139.70	-425.83	0.00	0.00	0.00	0.00
4,200.00	9.70	161.83	4,161.71	-441.65	144.95	-441.85	0.00	0.00	0.00	0.00
4,300.00	9.70	161.83	4,260.28	-457.66	150.21	-457.87	0.00	0.00	0.00	0.00
4,400.00	9.70	161.83	4,358.85	-473.67	155.46	-473.89	0.00	0.00	0.00	0.00
4,500.00	9.70	161.83	4,457.42	-489.69	160.72	-489.91	0.00	0.00	0.00	0.00
4,600.00	9.70	161.83	4,555.99	-505.70	165.98	-505.93	0.00	0.00	0.00	0.00
4,700.00	9.70	161.83	4,654.56	-521.71	171.23	-521.95	0.00	0.00	0.00	0.00
4,771.46	9.70	161.83	4,725.00	-533.16	174.99	-533.40	0.00	0.00	0.00	0.00
<b>Sussex</b>										

**Plan Report for NRC 1C-8HZ - 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 (°)
4,800.00	9.70	161.83	4,753.13	-537.72	176.49	-537.97	0.00	0.00	0.00	0.00
4,900.00	9.70	161.83	4,851.70	-553.74	181.74	-553.99	0.00	0.00	0.00	0.00
5,000.00	9.70	161.83	4,950.27	-569.75	187.00	-570.01	0.00	0.00	0.00	0.00
5,100.00	9.70	161.83	5,048.84	-585.76	192.25	-586.03	0.00	0.00	0.00	0.00
5,200.00	9.70	161.83	5,147.41	-601.78	197.51	-602.05	0.00	0.00	0.00	0.00
5,300.00	9.70	161.83	5,245.98	-617.79	202.77	-618.07	0.00	0.00	0.00	0.00
5,400.00	9.70	161.83	5,344.55	-633.80	208.02	-634.09	0.00	0.00	0.00	0.00
5,500.00	9.70	161.83	5,443.11	-649.82	213.28	-650.11	0.00	0.00	0.00	0.00
5,600.00	9.70	161.83	5,541.68	-665.83	218.53	-666.13	0.00	0.00	0.00	0.00
5,700.00	9.70	161.83	5,640.25	-681.84	223.79	-682.16	0.00	0.00	0.00	0.00
5,800.00	9.70	161.83	5,738.82	-697.86	229.04	-698.18	0.00	0.00	0.00	0.00
5,900.00	9.70	161.83	5,837.39	-713.87	234.30	-714.20	0.00	0.00	0.00	0.00
6,000.00	9.70	161.83	5,935.96	-729.88	239.56	-730.22	0.00	0.00	0.00	0.00
6,100.00	9.70	161.83	6,034.53	-745.90	244.81	-746.24	0.00	0.00	0.00	0.00
6,200.00	9.70	161.83	6,133.10	-761.91	250.07	-762.26	0.00	0.00	0.00	0.00
6,300.00	9.70	161.83	6,231.67	-777.92	255.32	-778.28	0.00	0.00	0.00	0.00
6,400.00	9.70	161.83	6,330.24	-793.94	260.58	-794.30	0.00	0.00	0.00	0.00
6,500.00	9.70	161.83	6,428.81	-809.95	265.83	-810.32	0.00	0.00	0.00	0.00
6,600.00	9.70	161.83	6,527.38	-825.96	271.09	-826.34	0.00	0.00	0.00	0.00
6,700.00	9.70	161.83	6,625.95	-841.98	276.35	-842.36	0.00	0.00	0.00	0.00
6,800.00	9.70	161.83	6,724.52	-857.99	281.60	-858.38	0.00	0.00	0.00	0.00
6,900.00	9.70	161.83	6,823.09	-874.00	286.86	-874.40	0.00	0.00	0.00	0.00
7,000.00	9.70	161.83	6,921.66	-890.02	292.11	-890.42	0.00	0.00	0.00	0.00
7,067.93	9.70	161.83	6,988.62	-900.89	295.68	-901.30	0.00	0.00	0.00	0.00
<b>Top of 4.5" Liner @ 7067.93ft</b>										
7,100.00	9.70	161.83	7,020.23	-906.03	297.37	-906.44	0.00	0.00	0.00	0.00
7,167.93	9.70	161.83	7,087.19	-916.91	300.94	-917.33	0.00	0.00	0.00	0.00
<b>KOP @ 7167.93ft</b>										
7,200.00	6.73	153.20	7,118.92	-921.15	302.63	-921.57	10.00	-9.26	-26.91	-161.67
7,300.00	5.01	37.16	7,218.64	-922.91	307.93	-923.34	10.00	-1.72	-116.04	-153.12
7,400.00	14.31	11.93	7,317.15	-907.30	313.13	-907.73	10.00	9.30	-25.23	-37.35
7,447.87	19.01	8.78	7,363.00	-893.80	315.55	-894.24	10.00	9.82	-6.58	-12.39
<b>Sharon Springs</b>										
7,485.33	22.72	7.20	7,398.00	-880.59	317.38	-881.03	10.00	9.89	-4.21	-9.37
<b>Niobrara A</b>										
7,500.00	24.17	6.71	7,411.46	-874.79	318.09	-875.24	10.00	9.91	-3.35	-7.89
7,600.00	34.11	4.41	7,498.69	-826.39	322.65	-826.84	10.00	9.94	-2.30	-7.44
<b>DLS = 10/100'</b>										
7,602.79	34.39	4.36	7,501.00	-824.82	322.77	-825.27	10.00	9.96	-1.67	-5.42
<b>Niobrara B</b>										
7,700.00	44.07	3.06	7,576.21	-763.54	326.67	-764.00	10.00	9.96	-1.34	-5.39
7,729.69	47.03	2.75	7,597.00	-742.38	327.75	-742.84	10.00	9.97	-1.04	-4.37
<b>Niobrara C</b>										
7,800.00	54.05	2.12	7,641.66	-688.18	330.04	-688.64	10.00	9.98	-0.89	-4.15
7,900.00	64.03	1.40	7,693.04	-602.58	332.64	-603.04	10.00	9.98	-0.72	-3.75
7,983.40	72.35	0.88	7,724.00	-525.23	334.17	-525.70	10.00	9.98	-0.62	-3.38
<b>Ft Hays</b>										
8,000.00	74.01	0.79	7,728.80	-509.34	334.40	-509.81	10.00	9.98	-0.58	-3.19
8,084.31	82.43	0.32	7,746.00	-426.88	335.19	-427.35	10.00	9.99	-0.55	-3.16
<b>Codell</b>										
8,100.00	84.00	0.24	7,747.85	-411.31	335.27	-411.77	10.00	9.99	-0.54	-3.07
8,159.52	89.94	359.92	7,751.00	-351.89	335.35	-352.36	10.00	9.99	-0.53	-3.06
<b>End Build @ 8159.52ft - Landing Target (Heel) - 7" - NRC 1C-8HZ_CP</b>										
8,200.00	89.94	359.92	7,751.04	-311.42	335.29	-311.88	0.00	0.00	0.00	-3.04
8,300.00	89.94	359.92	7,751.15	-211.42	335.15	-211.88	0.00	0.00	0.00	0.00
8,400.00	89.94	359.92	7,751.25	-111.42	335.01	-111.88	0.00	0.00	0.00	0.00
8,500.00	89.94	359.92	7,751.35	-11.42	334.87	-11.88	0.00	0.00	0.00	0.00
8,600.00	89.94	359.92	7,751.46	88.58	334.73	88.12	0.00	0.00	0.00	0.00

**Plan Report for NRC 1C-8HZ - 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 (°)
8,700.00	89.94	359.92	7,751.56	188.58	334.59	188.12	0.00	0.00	0.00	0.00
8,800.00	89.94	359.92	7,751.66	288.58	334.45	288.12	0.00	0.00	0.00	0.00
8,900.00	89.94	359.92	7,751.77	388.58	334.31	388.12	0.00	0.00	0.00	0.00
9,000.00	89.94	359.92	7,751.87	488.58	334.17	488.12	0.00	0.00	0.00	0.00
9,100.00	89.94	359.92	7,751.98	588.58	334.03	588.11	0.00	0.00	0.00	0.00
9,200.00	89.94	359.92	7,752.08	688.58	333.89	688.11	0.00	0.00	0.00	0.00
9,300.00	89.94	359.92	7,752.18	788.58	333.74	788.11	0.00	0.00	0.00	0.00
9,400.00	89.94	359.92	7,752.29	888.58	333.60	888.11	0.00	0.00	0.00	0.00
9,500.00	89.94	359.92	7,752.39	988.58	333.46	988.11	0.00	0.00	0.00	0.00
9,600.00	89.94	359.92	7,752.49	1,088.58	333.32	1,088.11	0.00	0.00	0.00	0.00
9,700.00	89.94	359.92	7,752.60	1,188.58	333.18	1,188.11	0.00	0.00	0.00	0.00
9,800.00	89.94	359.92	7,752.70	1,288.58	333.04	1,288.11	0.00	0.00	0.00	0.00
9,900.00	89.94	359.92	7,752.81	1,388.58	332.90	1,388.11	0.00	0.00	0.00	0.00
10,000.00	89.94	359.92	7,752.91	1,488.58	332.76	1,488.11	0.00	0.00	0.00	0.00
10,100.00	89.94	359.92	7,753.01	1,588.58	332.62	1,588.11	0.00	0.00	0.00	0.00
10,200.00	89.94	359.92	7,753.12	1,688.58	332.48	1,688.11	0.00	0.00	0.00	0.00
10,300.00	89.94	359.92	7,753.22	1,788.58	332.34	1,788.11	0.00	0.00	0.00	0.00
10,400.00	89.94	359.92	7,753.32	1,888.58	332.20	1,888.11	0.00	0.00	0.00	0.00
10,500.00	89.94	359.92	7,753.43	1,988.58	332.06	1,988.11	0.00	0.00	0.00	0.00
10,600.00	89.94	359.92	7,753.53	2,088.58	331.91	2,088.11	0.00	0.00	0.00	0.00
10,700.00	89.94	359.92	7,753.64	2,188.58	331.77	2,188.11	0.00	0.00	0.00	0.00
10,800.00	89.94	359.92	7,753.74	2,288.58	331.63	2,288.11	0.00	0.00	0.00	0.00
10,900.00	89.94	359.92	7,753.84	2,388.58	331.49	2,388.11	0.00	0.00	0.00	0.00
11,000.00	89.94	359.92	7,753.95	2,488.58	331.35	2,488.11	0.00	0.00	0.00	0.00
11,100.00	89.94	359.92	7,754.05	2,588.58	331.21	2,588.11	0.00	0.00	0.00	0.00
11,200.00	89.94	359.92	7,754.16	2,688.58	331.07	2,688.11	0.00	0.00	0.00	0.00
11,300.00	89.94	359.92	7,754.26	2,788.58	330.93	2,788.11	0.00	0.00	0.00	0.00
11,400.00	89.94	359.92	7,754.36	2,888.58	330.79	2,888.11	0.00	0.00	0.00	0.00
11,500.00	89.94	359.92	7,754.47	2,988.58	330.65	2,988.11	0.00	0.00	0.00	0.00
11,600.00	89.94	359.92	7,754.57	3,088.58	330.51	3,088.11	0.00	0.00	0.00	0.00
11,700.00	89.94	359.92	7,754.67	3,188.58	330.37	3,188.11	0.00	0.00	0.00	0.00
11,800.00	89.94	359.92	7,754.78	3,288.58	330.23	3,288.11	0.00	0.00	0.00	0.00
11,900.00	89.94	359.92	7,754.88	3,388.58	330.09	3,388.11	0.00	0.00	0.00	0.00
12,000.00	89.94	359.92	7,754.99	3,488.58	329.94	3,488.11	0.00	0.00	0.00	0.00
12,100.00	89.94	359.92	7,755.09	3,588.58	329.80	3,588.11	0.00	0.00	0.00	0.00
12,200.00	89.94	359.92	7,755.19	3,688.58	329.66	3,688.11	0.00	0.00	0.00	0.00
12,300.00	89.94	359.92	7,755.30	3,788.58	329.52	3,788.11	0.00	0.00	0.00	0.00
12,400.00	89.94	359.92	7,755.40	3,888.58	329.38	3,888.11	0.00	0.00	0.00	0.00
12,500.00	89.94	359.92	7,755.50	3,988.58	329.24	3,988.11	0.00	0.00	0.00	0.00
12,600.00	89.94	359.92	7,755.61	4,088.58	329.10	4,088.11	0.00	0.00	0.00	0.00
12,700.00	89.94	359.92	7,755.71	4,188.58	328.96	4,188.11	0.00	0.00	0.00	0.00
12,800.00	89.94	359.92	7,755.82	4,288.58	328.82	4,288.11	0.00	0.00	0.00	0.00
12,900.00	89.94	359.92	7,755.92	4,388.58	328.68	4,388.11	0.00	0.00	0.00	0.00
12,978.00	89.94	359.92	7,756.00	4,466.57	328.57	4,466.11	0.00	0.00	0.00	0.00

TD Well @ 12978.00ft - Total Depth (Toe) - NRC 1C-8HZ\_BHL

**Plan Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,200.00	1,200.00	0.00	0.00	Begin Nudge @ 1200.00ft
1,685.14	1,682.82	-38.94	12.78	End Nudge @ 1685.14ft
7,067.93	6,988.62	-900.89	295.68	Top of 4.5" Liner @ 7067.93ft
7,167.93	7,087.19	-916.91	300.94	KOP @ 7167.93ft
7,600.00	7,498.69	-826.39	322.65	DLS = 10/100'
8,159.52	7,751.00	-351.90	335.35	End Build @ 8159.52ft
12,978.00	7,756.00	4,466.57	328.57	TD Well @ 12978.00ft

## Plan Report for NRC 1C-8HZ - 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)	359.92	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	8,159.52	Rev A0 Permit	MWD
8,159.52	12,978.00	Rev A0 Permit	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
741.00	741.00	9 5/8"	9-5/8	13-1/2
8,159.52	7,751.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
691.00	691.00	Fox Hills Base			
4,771.46	4,725.00	Sussex			
7,447.87	7,363.00	Sharon Springs			
7,485.33	7,398.00	Niobrara A			
7,602.79	7,501.00	Niobrara B			
7,729.69	7,597.00	Niobrara C			
7,983.40	7,724.00	Ft Hays			
8,084.31	7,746.00	Codell			
8,159.52	7,751.00	Landing Target (Heel)			
12,978.00	7,756.00	Total Depth (Toe)			

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
NRC 1C-8HZ_SEC	0.00	0.00	0.00	Polygon
NRC 1C-8HZ_SHL	0.00	0.00	0.00	Point
NRC 1C-8HZ_LD	0.00	0.00	0.00	Polygon
NRC 1C-8HZ_CP	7,751.00	-351.89	335.35	Point
NRC 1C-8HZ_BHL	7,756.00	4,466.57	328.57	Point

**Plan Report for NRC 1C-8HZ - Rev A0 Permit**

**Directional Difficulty Index**

Average Dogleg over Survey:	0.84 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 8,159.52 usft
Net Tortosity applicable to Plans:	0.84 °/100usft	Directional Difficulty Index:	6.249

**Audit Info**

North Reference Sheet for Sec. 8-T1N-R67W - NRC 1C-8HZ - 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' @ 5091.00usft (Drilling Rig). Northing and Easting are relative to NRC 1C-8HZ  
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: 0.99996240

Grid Coordinates of Well: 1,264,982.21 usft N, 3,165,659.14 usft E  
Geographical Coordinates of Well: 40° 03' 33.29" N, 104° 54' 29.40" W  
Grid Convergence at Surface is: 0.38°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,978.00usft  
the Bottom Hole Displacement is 4,478.64usft in the Direction of 4.21° (True).  
Magnetic Convergence at surface is: -8.25° (24 October 2013, , BGGM2013)

