

Project: Weld County, CO (NAD 83)
Site: Sec. 9-T1N-R67W
Well: NRC 27N-4HZ
Wellbore: Plan A0
Design: Plan A0 - PERMIT



SECTION DETAILS

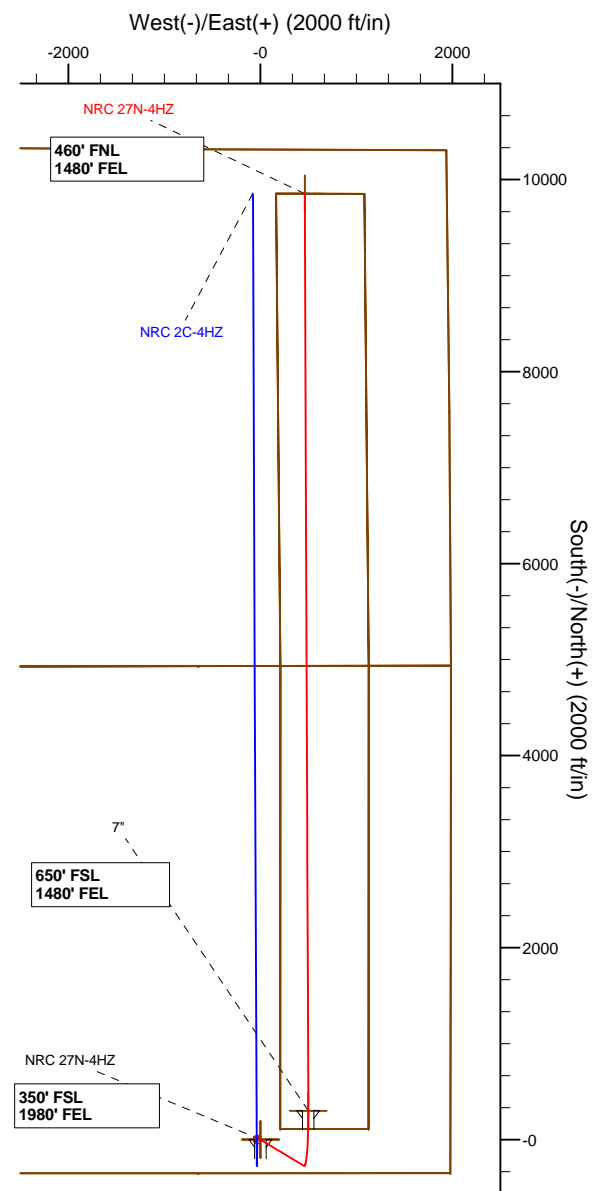
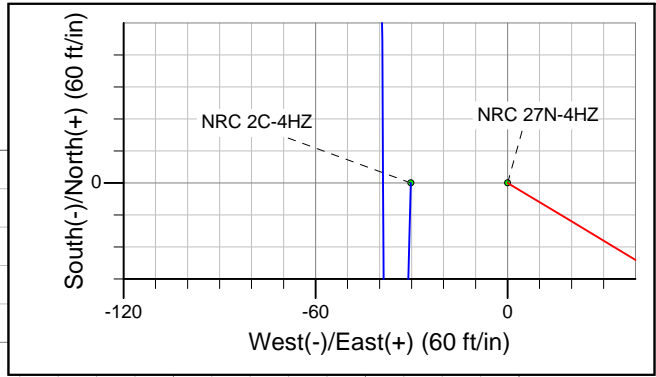
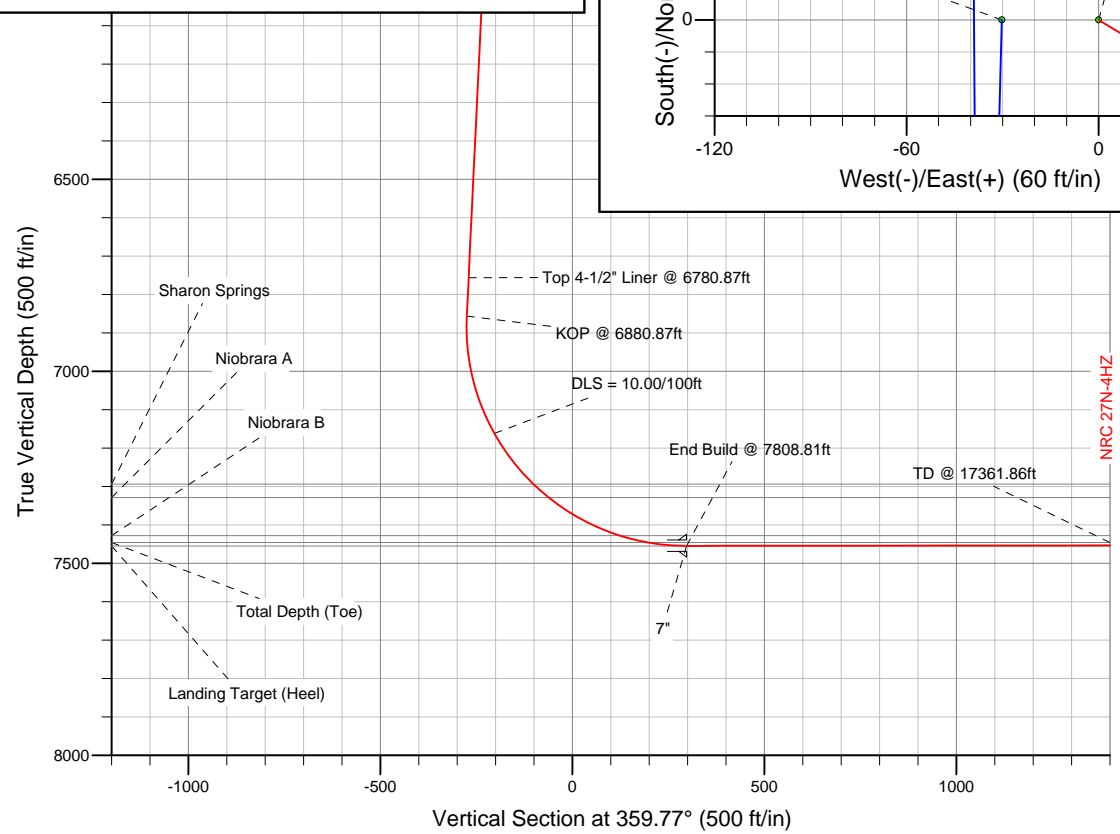
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
3	1264.72	5.29	120.98	1264.34	-6.29	10.48	2.00	120.98	-6.33	
4	6880.87	5.29	120.98	6856.53	-273.02	454.78	0.00	0.00	-274.85	
5	7808.81	90.05	359.77	7455.00	300.00	500.00	10.00	-121.09	297.99	NRC 27N-4HZ_tgt
6	17361.86	90.05	359.77	7446.00	9852.98	462.25	0.00	0.00	9851.04	NRC 27N-4HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
NRC 27N-4HZ_LD	0.00	0.00	0.00	40.059229	-104.893392	Polygon
NRC 27N-4HZ_Sec	0.00	0.00	0.00	40.059229	-104.893392	Polygon
NRC 27N-4HZ_SHL	0.00	0.00	0.00	40.059229	-104.893392	Point
NRC 27N-4HZ_BHL	7446.00	9852.98	462.25	40.086276	-104.891740	Point
NRC 27N-4HZ_tgt	7455.00	300.00	500.00	40.060052	-104.891606	Point

MD TVD

6780.87 6756.96 Top 4-1/2" Liner @ 6780.87ft
6880.87 6856.53 KOP @ 6880.87ft



WELL DETAILS: NRC 27N-4HZ	
Ground Level:	5030.00
RKB = 17 @ 5047.00ft (Drilling Rig)	
Plan: Plan A0 - PERMIT (NRC 27N-4HZ/Plan A0)	
Created By: Fred Hartmann Date: 07/24/2013	

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 9-T1N-R67W

NRC 27N-4HZ

Plan A0

Plan: Plan A0 - PERMIT

Sperry Drilling Services

Proposal Report

24 July, 2013

Well Coordinates: 1,265,003.23 N, 3,169,794.49 E (40° 03' 33.22" N, 104° 53' 36.21" W)

Ground Level: 5,030.00 ft

Local Coordinate Origin:

Centered on Well NRC 27N-4HZ

Viewing Datum:

RKB = 17 @ 5047.00ft (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

Plan Report for NRC 27N-4HZ - Plan A0 - 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
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
687.00	0.00	0.00	687.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
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
Begin Nudge @ 1000.00ft										
1,100.00	2.00	120.98	1,099.98	-0.90	1.50	-0.90	2.00	2.00	0.00	120.98
1,200.00	4.00	120.98	1,199.84	-3.59	5.98	-3.62	2.00	2.00	0.00	0.00
1,264.72	5.29	120.98	1,264.34	-6.29	10.48	-6.33	2.00	2.00	0.00	0.00
End Nudge @ 1264.72ft										
1,300.00	5.29	120.98	1,299.47	-7.97	13.27	-8.02	0.00	0.00	0.00	0.00
1,400.00	5.29	120.98	1,399.05	-12.72	21.18	-12.80	0.00	0.00	0.00	0.00
1,500.00	5.29	120.98	1,498.62	-17.47	29.09	-17.58	0.00	0.00	0.00	0.00
1,600.00	5.29	120.98	1,598.19	-22.21	37.00	-22.36	0.00	0.00	0.00	0.00
1,700.00	5.29	120.98	1,697.77	-26.96	44.91	-27.14	0.00	0.00	0.00	0.00
1,800.00	5.29	120.98	1,797.34	-31.71	52.83	-31.93	0.00	0.00	0.00	0.00
1,900.00	5.29	120.98	1,896.91	-36.46	60.74	-36.71	0.00	0.00	0.00	0.00
2,000.00	5.29	120.98	1,996.49	-41.21	68.65	-41.49	0.00	0.00	0.00	0.00
2,100.00	5.29	120.98	2,096.06	-45.96	76.56	-46.27	0.00	0.00	0.00	0.00
2,200.00	5.29	120.98	2,195.63	-50.71	84.47	-51.05	0.00	0.00	0.00	0.00
2,300.00	5.29	120.98	2,295.21	-55.46	92.38	-55.83	0.00	0.00	0.00	0.00
2,400.00	5.29	120.98	2,394.78	-60.21	100.29	-60.61	0.00	0.00	0.00	0.00
2,500.00	5.29	120.98	2,494.35	-64.96	108.20	-65.39	0.00	0.00	0.00	0.00
2,600.00	5.29	120.98	2,593.93	-69.71	116.12	-70.17	0.00	0.00	0.00	0.00
2,700.00	5.29	120.98	2,693.50	-74.46	124.03	-74.96	0.00	0.00	0.00	0.00
2,800.00	5.29	120.98	2,793.07	-79.21	131.94	-79.74	0.00	0.00	0.00	0.00
2,900.00	5.29	120.98	2,892.65	-83.96	139.85	-84.52	0.00	0.00	0.00	0.00
3,000.00	5.29	120.98	2,992.22	-88.71	147.76	-89.30	0.00	0.00	0.00	0.00
3,100.00	5.29	120.98	3,091.79	-93.46	155.67	-94.08	0.00	0.00	0.00	0.00
3,200.00	5.29	120.98	3,191.37	-98.20	163.58	-98.86	0.00	0.00	0.00	0.00
3,300.00	5.29	120.98	3,290.94	-102.95	171.49	-103.64	0.00	0.00	0.00	0.00
3,400.00	5.29	120.98	3,390.51	-107.70	179.41	-108.42	0.00	0.00	0.00	0.00
3,500.00	5.29	120.98	3,490.09	-112.45	187.32	-113.20	0.00	0.00	0.00	0.00
3,600.00	5.29	120.98	3,589.66	-117.20	195.23	-117.99	0.00	0.00	0.00	0.00
3,700.00	5.29	120.98	3,689.23	-121.95	203.14	-122.77	0.00	0.00	0.00	0.00
3,800.00	5.29	120.98	3,788.81	-126.70	211.05	-127.55	0.00	0.00	0.00	0.00
3,900.00	5.29	120.98	3,888.38	-131.45	218.96	-132.33	0.00	0.00	0.00	0.00
4,000.00	5.29	120.98	3,987.95	-136.20	226.87	-137.11	0.00	0.00	0.00	0.00
4,100.00	5.29	120.98	4,087.53	-140.95	234.78	-141.89	0.00	0.00	0.00	0.00
4,200.00	5.29	120.98	4,187.10	-145.70	242.69	-146.67	0.00	0.00	0.00	0.00
4,300.00	5.29	120.98	4,286.67	-150.45	250.61	-151.45	0.00	0.00	0.00	0.00
4,400.00	5.29	120.98	4,386.25	-155.20	258.52	-156.23	0.00	0.00	0.00	0.00
4,500.00	5.29	120.98	4,485.82	-159.95	266.43	-161.02	0.00	0.00	0.00	0.00
4,600.00	5.29	120.98	4,585.39	-164.70	274.34	-165.80	0.00	0.00	0.00	0.00
4,697.02	5.29	120.98	4,682.00	-169.30	282.01	-170.44	0.00	0.00	0.00	0.00
Sussex										
4,700.00	5.29	120.98	4,684.97	-169.45	282.25	-170.58	0.00	0.00	0.00	0.00
4,800.00	5.29	120.98	4,784.54	-174.20	290.16	-175.36	0.00	0.00	0.00	0.00
4,900.00	5.29	120.98	4,884.11	-178.94	298.07	-180.14	0.00	0.00	0.00	0.00
5,000.00	5.29	120.98	4,983.69	-183.69	305.98	-184.92	0.00	0.00	0.00	0.00

Plan Report for NRC 27N-4HZ - Plan A0 - 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 (°)
5,100.00	5.29	120.98	5,083.26	-188.44	313.90	-189.70	0.00	0.00	0.00	0.00
5,200.00	5.29	120.98	5,182.83	-193.19	321.81	-194.48	0.00	0.00	0.00	0.00
5,300.00	5.29	120.98	5,282.41	-197.94	329.72	-199.26	0.00	0.00	0.00	0.00
5,400.00	5.29	120.98	5,381.98	-202.69	337.63	-204.05	0.00	0.00	0.00	0.00
5,500.00	5.29	120.98	5,481.55	-207.44	345.54	-208.83	0.00	0.00	0.00	0.00
5,600.00	5.29	120.98	5,581.13	-212.19	353.45	-213.61	0.00	0.00	0.00	0.00
5,700.00	5.29	120.98	5,680.70	-216.94	361.36	-218.39	0.00	0.00	0.00	0.00
5,800.00	5.29	120.98	5,780.27	-221.69	369.27	-223.17	0.00	0.00	0.00	0.00
5,900.00	5.29	120.98	5,879.85	-226.44	377.19	-227.95	0.00	0.00	0.00	0.00
6,000.00	5.29	120.98	5,979.42	-231.19	385.10	-232.73	0.00	0.00	0.00	0.00
6,100.00	5.29	120.98	6,078.99	-235.94	393.01	-237.51	0.00	0.00	0.00	0.00
6,200.00	5.29	120.98	6,178.57	-240.69	400.92	-242.29	0.00	0.00	0.00	0.00
6,300.00	5.29	120.98	6,278.14	-245.44	408.83	-247.08	0.00	0.00	0.00	0.00
6,400.00	5.29	120.98	6,377.71	-250.19	416.74	-251.86	0.00	0.00	0.00	0.00
6,500.00	5.29	120.98	6,477.29	-254.93	424.65	-256.64	0.00	0.00	0.00	0.00
6,600.00	5.29	120.98	6,576.86	-259.68	432.56	-261.42	0.00	0.00	0.00	0.00
6,700.00	5.29	120.98	6,676.43	-264.43	440.47	-266.20	0.00	0.00	0.00	0.00
6,780.87	5.29	120.98	6,756.96	-268.27	446.87	-270.07	0.00	0.00	0.00	0.00
Top 4-1/2" Liner @ 6780.87ft										
6,800.00	5.29	120.98	6,776.01	-269.18	448.39	-270.98	0.00	0.00	0.00	0.00
6,880.87	5.29	120.98	6,856.53	-273.02	454.78	-274.85	0.00	0.00	0.00	0.00
KOP @ 6880.87ft										
6,900.00	4.61	100.13	6,875.59	-273.61	456.30	-275.44	10.00	-3.59	-109.00	-121.09
7,000.00	10.22	25.85	6,974.89	-266.31	464.14	-268.18	10.00	5.62	-74.28	-100.32
7,100.00	19.68	12.58	7,071.42	-241.83	471.70	-243.72	10.00	9.46	-13.27	-26.44
7,200.00	29.49	7.83	7,162.25	-200.91	478.74	-202.83	10.00	9.81	-4.75	-13.57
DLS = 10.00/100ft										
7,300.00	39.39	5.32	7,244.62	-144.78	485.05	-146.73	10.00	9.90	-2.52	-9.24
7,367.26	46.07	4.16	7,294.00	-99.32	488.79	-101.28	10.00	9.93	-1.72	-7.15
Sharon Springs										
7,400.00	49.33	3.68	7,316.03	-75.17	490.44	-77.13	10.00	9.94	-1.45	-6.30
7,420.32	51.35	3.41	7,329.00	-59.55	491.41	-61.52	10.00	9.95	-1.33	-5.98
Niobrara A										
7,500.00	59.28	2.48	7,374.31	5.83	494.74	3.84	10.00	9.95	-1.17	-5.81
7,600.00	69.24	1.50	7,417.68	95.74	497.83	93.74	10.00	9.96	-0.98	-5.27
7,631.39	72.37	1.22	7,428.00	125.37	498.54	123.37	10.00	9.96	-0.89	-4.85
Niobrara B										
7,700.00	79.21	0.64	7,444.83	191.83	499.61	189.83	10.00	9.97	-0.84	-4.76
7,800.00	89.18	359.84	7,454.94	291.19	500.03	289.18	10.00	9.97	-0.80	-4.61
7,808.81	90.05	359.77	7,455.00	300.00	500.00	297.99	10.00	9.97	-0.79	-4.53
End Build @ 7808.81ft - Landing Target (Heel) - 7" - NRC 27N-4HZ_tgt										
7,900.00	90.05	359.77	7,454.91	391.19	499.64	389.18	0.00	0.00	0.00	-4.53
8,000.00	90.05	359.77	7,454.82	491.19	499.24	489.18	0.00	0.00	0.00	0.00
8,100.00	90.05	359.77	7,454.73	591.19	498.85	589.18	0.00	0.00	0.00	0.00
8,200.00	90.05	359.77	7,454.63	691.19	498.45	689.18	0.00	0.00	0.00	0.00
8,300.00	90.05	359.77	7,454.54	791.19	498.06	789.18	0.00	0.00	0.00	0.00
8,400.00	90.05	359.77	7,454.44	891.19	497.66	889.18	0.00	0.00	0.00	0.00
8,500.00	90.05	359.77	7,454.35	991.19	497.27	989.18	0.00	0.00	0.00	0.00
8,600.00	90.05	359.77	7,454.25	1,091.19	496.87	1,089.18	0.00	0.00	0.00	0.00
8,700.00	90.05	359.77	7,454.16	1,191.18	496.48	1,189.18	0.00	0.00	0.00	0.00
8,800.00	90.05	359.77	7,454.07	1,291.18	496.08	1,289.18	0.00	0.00	0.00	0.00
8,900.00	90.05	359.77	7,453.97	1,391.18	495.69	1,389.18	0.00	0.00	0.00	0.00
9,000.00	90.05	359.77	7,453.88	1,491.18	495.29	1,489.18	0.00	0.00	0.00	0.00
9,100.00	90.05	359.77	7,453.78	1,591.18	494.90	1,589.18	0.00	0.00	0.00	0.00
9,200.00	90.05	359.77	7,453.69	1,691.18	494.50	1,689.18	0.00	0.00	0.00	0.00
9,300.00	90.05	359.77	7,453.60	1,791.18	494.11	1,789.18	0.00	0.00	0.00	0.00
9,400.00	90.05	359.77	7,453.50	1,891.18	493.71	1,889.18	0.00	0.00	0.00	0.00
9,500.00	90.05	359.77	7,453.41	1,991.18	493.32	1,989.18	0.00	0.00	0.00	0.00

Plan Report for NRC 27N-4HZ - Plan A0 - 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 (°)
9,600.00	90.05	359.77	7,453.31	2,091.18	492.92	2,089.18	0.00	0.00	0.00	0.00
9,700.00	90.05	359.77	7,453.22	2,191.18	492.53	2,189.18	0.00	0.00	0.00	0.00
9,800.00	90.05	359.77	7,453.12	2,291.18	492.13	2,289.18	0.00	0.00	0.00	0.00
9,900.00	90.05	359.77	7,453.03	2,391.17	491.74	2,389.18	0.00	0.00	0.00	0.00
10,000.00	90.05	359.77	7,452.94	2,491.17	491.34	2,489.18	0.00	0.00	0.00	0.00
10,100.00	90.05	359.77	7,452.84	2,591.17	490.95	2,589.18	0.00	0.00	0.00	0.00
10,200.00	90.05	359.77	7,452.75	2,691.17	490.55	2,689.18	0.00	0.00	0.00	0.00
10,300.00	90.05	359.77	7,452.65	2,791.17	490.15	2,789.18	0.00	0.00	0.00	0.00
10,400.00	90.05	359.77	7,452.56	2,891.17	489.76	2,889.18	0.00	0.00	0.00	0.00
10,500.00	90.05	359.77	7,452.46	2,991.17	489.36	2,989.18	0.00	0.00	0.00	0.00
10,600.00	90.05	359.77	7,452.37	3,091.17	488.97	3,089.18	0.00	0.00	0.00	0.00
10,700.00	90.05	359.77	7,452.28	3,191.17	488.57	3,189.18	0.00	0.00	0.00	0.00
10,800.00	90.05	359.77	7,452.18	3,291.17	488.18	3,289.18	0.00	0.00	0.00	0.00
10,900.00	90.05	359.77	7,452.09	3,391.17	487.78	3,389.18	0.00	0.00	0.00	0.00
11,000.00	90.05	359.77	7,451.99	3,491.17	487.39	3,489.18	0.00	0.00	0.00	0.00
11,100.00	90.05	359.77	7,451.90	3,591.16	486.99	3,589.18	0.00	0.00	0.00	0.00
11,200.00	90.05	359.77	7,451.81	3,691.16	486.60	3,689.18	0.00	0.00	0.00	0.00
11,300.00	90.05	359.77	7,451.71	3,791.16	486.20	3,789.18	0.00	0.00	0.00	0.00
11,400.00	90.05	359.77	7,451.62	3,891.16	485.81	3,889.18	0.00	0.00	0.00	0.00
11,500.00	90.05	359.77	7,451.52	3,991.16	485.41	3,989.18	0.00	0.00	0.00	0.00
11,600.00	90.05	359.77	7,451.43	4,091.16	485.02	4,089.18	0.00	0.00	0.00	0.00
11,700.00	90.05	359.77	7,451.33	4,191.16	484.62	4,189.18	0.00	0.00	0.00	0.00
11,800.00	90.05	359.77	7,451.24	4,291.16	484.23	4,289.18	0.00	0.00	0.00	0.00
11,900.00	90.05	359.77	7,451.15	4,391.16	483.83	4,389.18	0.00	0.00	0.00	0.00
12,000.00	90.05	359.77	7,451.05	4,491.16	483.44	4,489.18	0.00	0.00	0.00	0.00
12,100.00	90.05	359.77	7,450.96	4,591.16	483.04	4,589.18	0.00	0.00	0.00	0.00
12,200.00	90.05	359.77	7,450.86	4,691.16	482.65	4,689.18	0.00	0.00	0.00	0.00
12,300.00	90.05	359.77	7,450.77	4,791.15	482.25	4,789.18	0.00	0.00	0.00	0.00
12,400.00	90.05	359.77	7,450.67	4,891.15	481.86	4,889.18	0.00	0.00	0.00	0.00
12,500.00	90.05	359.77	7,450.58	4,991.15	481.46	4,989.18	0.00	0.00	0.00	0.00
12,600.00	90.05	359.77	7,450.49	5,091.15	481.06	5,089.18	0.00	0.00	0.00	0.00
12,700.00	90.05	359.77	7,450.39	5,191.15	480.67	5,189.18	0.00	0.00	0.00	0.00
12,800.00	90.05	359.77	7,450.30	5,291.15	480.27	5,289.18	0.00	0.00	0.00	0.00
12,900.00	90.05	359.77	7,450.20	5,391.15	479.88	5,389.18	0.00	0.00	0.00	0.00
13,000.00	90.05	359.77	7,450.11	5,491.15	479.48	5,489.18	0.00	0.00	0.00	0.00
13,100.00	90.05	359.77	7,450.02	5,591.15	479.09	5,589.18	0.00	0.00	0.00	0.00
13,200.00	90.05	359.77	7,449.92	5,691.15	478.69	5,689.18	0.00	0.00	0.00	0.00
13,300.00	90.05	359.77	7,449.83	5,791.15	478.30	5,789.18	0.00	0.00	0.00	0.00
13,400.00	90.05	359.77	7,449.73	5,891.15	477.90	5,889.18	0.00	0.00	0.00	0.00
13,500.00	90.05	359.77	7,449.64	5,991.14	477.51	5,989.18	0.00	0.00	0.00	0.00
13,600.00	90.05	359.77	7,449.54	6,091.14	477.11	6,089.18	0.00	0.00	0.00	0.00
13,700.00	90.05	359.77	7,449.45	6,191.14	476.72	6,189.18	0.00	0.00	0.00	0.00
13,800.00	90.05	359.77	7,449.36	6,291.14	476.32	6,289.18	0.00	0.00	0.00	0.00
13,900.00	90.05	359.77	7,449.26	6,391.14	475.93	6,389.18	0.00	0.00	0.00	0.00
14,000.00	90.05	359.77	7,449.17	6,491.14	475.53	6,489.18	0.00	0.00	0.00	0.00
14,100.00	90.05	359.77	7,449.07	6,591.14	475.14	6,589.18	0.00	0.00	0.00	0.00
14,200.00	90.05	359.77	7,448.98	6,691.14	474.74	6,689.18	0.00	0.00	0.00	0.00
14,300.00	90.05	359.77	7,448.88	6,791.14	474.35	6,789.18	0.00	0.00	0.00	0.00
14,400.00	90.05	359.77	7,448.79	6,891.14	473.95	6,889.18	0.00	0.00	0.00	0.00
14,500.00	90.05	359.77	7,448.70	6,991.14	473.56	6,989.18	0.00	0.00	0.00	0.00
14,600.00	90.05	359.77	7,448.60	7,091.14	473.16	7,089.18	0.00	0.00	0.00	0.00
14,700.00	90.05	359.77	7,448.51	7,191.13	472.77	7,189.18	0.00	0.00	0.00	0.00
14,800.00	90.05	359.77	7,448.41	7,291.13	472.37	7,289.18	0.00	0.00	0.00	0.00
14,900.00	90.05	359.77	7,448.32	7,391.13	471.98	7,389.18	0.00	0.00	0.00	0.00
15,000.00	90.05	359.77	7,448.23	7,491.13	471.58	7,489.18	0.00	0.00	0.00	0.00
15,100.00	90.05	359.77	7,448.13	7,591.13	471.18	7,589.18	0.00	0.00	0.00	0.00
15,200.00	90.05	359.77	7,448.04	7,691.13	470.79	7,689.18	0.00	0.00	0.00	0.00
15,300.00	90.05	359.77	7,447.94	7,791.13	470.39	7,789.18	0.00	0.00	0.00	0.00
15,400.00	90.05	359.77	7,447.85	7,891.13	470.00	7,889.18	0.00	0.00	0.00	0.00
15,500.00	90.05	359.77	7,447.75	7,991.13	469.60	7,989.18	0.00	0.00	0.00	0.00

Plan Report for NRC 27N-4HZ - Plan A0 - 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 (°)
15,600.00	90.05	359.77	7,447.66	8,091.13	469.21	8,089.18	0.00	0.00	0.00	0.00
15,700.00	90.05	359.77	7,447.57	8,191.13	468.81	8,189.18	0.00	0.00	0.00	0.00
15,800.00	90.05	359.77	7,447.47	8,291.13	468.42	8,289.18	0.00	0.00	0.00	0.00
15,900.00	90.05	359.77	7,447.38	8,391.12	468.02	8,389.18	0.00	0.00	0.00	0.00
16,000.00	90.05	359.77	7,447.28	8,491.12	467.63	8,489.18	0.00	0.00	0.00	0.00
16,100.00	90.05	359.77	7,447.19	8,591.12	467.23	8,589.18	0.00	0.00	0.00	0.00
16,200.00	90.05	359.77	7,447.09	8,691.12	466.84	8,689.18	0.00	0.00	0.00	0.00
16,300.00	90.05	359.77	7,447.00	8,791.12	466.44	8,789.18	0.00	0.00	0.00	0.00
16,400.00	90.05	359.77	7,446.91	8,891.12	466.05	8,889.18	0.00	0.00	0.00	0.00
16,500.00	90.05	359.77	7,446.81	8,991.12	465.65	8,989.18	0.00	0.00	0.00	0.00
16,600.00	90.05	359.77	7,446.72	9,091.12	465.26	9,089.18	0.00	0.00	0.00	0.00
16,700.00	90.05	359.77	7,446.62	9,191.12	464.86	9,189.18	0.00	0.00	0.00	0.00
16,800.00	90.05	359.77	7,446.53	9,291.12	464.47	9,289.18	0.00	0.00	0.00	0.00
16,900.00	90.05	359.77	7,446.44	9,391.12	464.07	9,389.18	0.00	0.00	0.00	0.00
17,000.00	90.05	359.77	7,446.34	9,491.12	463.68	9,489.18	0.00	0.00	0.00	0.00
17,100.00	90.05	359.77	7,446.25	9,591.12	463.28	9,589.18	0.00	0.00	0.00	0.00
17,200.00	90.05	359.77	7,446.15	9,691.11	462.89	9,689.18	0.00	0.00	0.00	0.00
17,300.00	90.05	359.77	7,446.06	9,791.11	462.49	9,789.18	0.00	0.00	0.00	0.00
17,361.85	90.05	359.77	7,446.00	9,852.96	462.25	9,851.03	0.00	0.00	0.00	0.00
Total Depth (Toe)										
17,361.86	90.05	359.77	7,446.00	9,852.97	462.25	9,851.04	0.00	0.00	0.00	0.00
TD @ 17361.86ft - NRC 27N-4HZ_BHL										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N-S (ft)	+E-W (ft)	
1,000.00	1,000.00	0.00	0.00	Begin Nudge @ 1000.00ft
1,264.72	1,264.34	-6.29	10.48	End Nudge @ 1264.72ft
6,780.87	6,756.96	-268.27	446.87	Top 4-1/2" Liner @ 6780.87ft
6,880.87	6,856.53	-273.02	454.78	KOP @ 6880.87ft
7,200.00	7,162.25	-200.91	478.74	DLS = 10.00/100ft
7,808.81	7,455.00	300.00	500.00	End Build @ 7808.81ft
17,361.86	7,446.00	9,852.97	462.25	TD @ 17361.86ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/S (ft)	+E-W (ft)	
User	No Target (Freehand)	359.77	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	17,361.86	Plan A0 - PERMIT	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
687.00	687.00	9 5/8"	9-5/8	13-1/2
7,808.81	7,455.00	7"	7	8-3/4

Plan Report for NRC 27N-4HZ - Plan A0 - PERMIT**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,697.02	4,682.00	Sussex		0.00	
7,367.26	7,294.00	Sharon Springs		0.00	
7,420.32	7,329.00	Niobrara A		0.00	
7,631.39	7,428.00	Niobrara B		0.00	
7,808.81	7,455.00	Landing Target (Heel)		0.00	
17,361.85	7,446.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
NRC 27N-4HZ_SHL	0.00	0.00	0.00	Point
NRC 27N-4HZ_LD	0.00	0.00	0.00	Polygon
NRC 27N-4HZ_BHL	7,446.00	9,852.98	462.25	Point
NRC 27N-4HZ_Sec	0.00	0.00	0.00	Polygon
NRC 27N-4HZ_tgt	7,455.00	300.00	500.00	Point

North Reference Sheet for Sec. 9-T1N-R67W - NRC 27N-4HZ - Plan A0

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 @ 5047.00ft (Drilling Rig). Northing and Easting are relative to NRC 27N-4HZ
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: 0.99996240

Grid Coordinates of Well: 1,265,003.23 ft N, 3,169,794.49 ft E
Geographical Coordinates of Well: 40° 03' 33.22" N, 104° 53' 36.21" W
Grid Convergence at Surface is: 0.39°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,361.86ft
the Bottom Hole Displacement is 9,863.81ft in the Direction of 2.69° (True).

Magnetic Convergence at surface is: -8.26° (24 July 2013, , BGGM2013)

