

Project: Weld County, CO (NAD 83)
Site: Sec. 9-T1N-R67W
Well: NRC 2C-4HZ
Wellbore: Plan A0
Design: Plan A0 - PERMIT



SECTION DETAILS

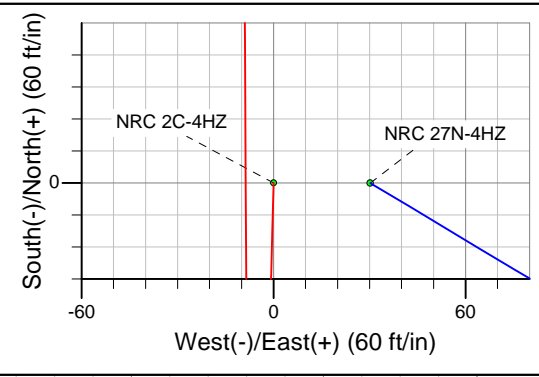
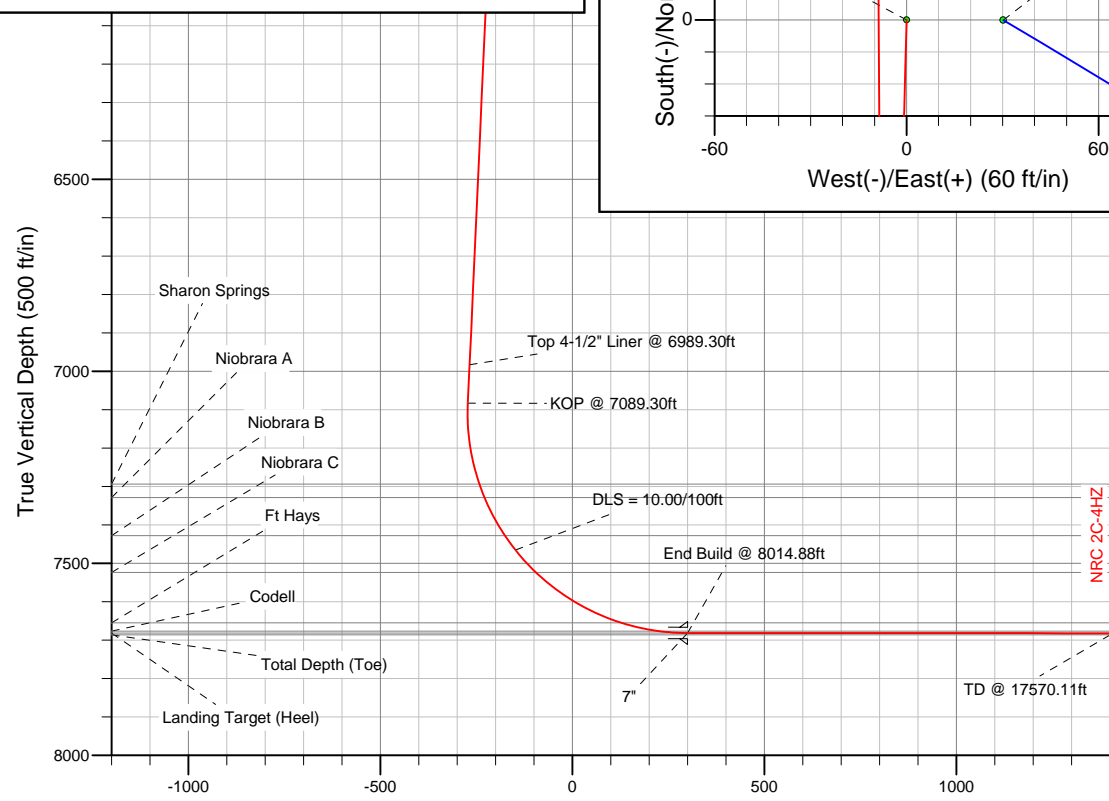
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
3	1129.46	2.59	181.46	1129.41	-2.92	-0.07	2.00	181.46		
4	7089.30	2.59	181.46	7083.17	-272.07	-6.94	0.00	0.00	-2.92	
5	8014.88	89.97	359.77	7682.00	300.00	-10.00	10.00	178.31	300.04	NRC 2C-4HZ_tgt
6	17570.11	89.97	359.77	7687.00	9855.15	-47.85	0.00	0.00	9855.27	NRC 2C-4HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

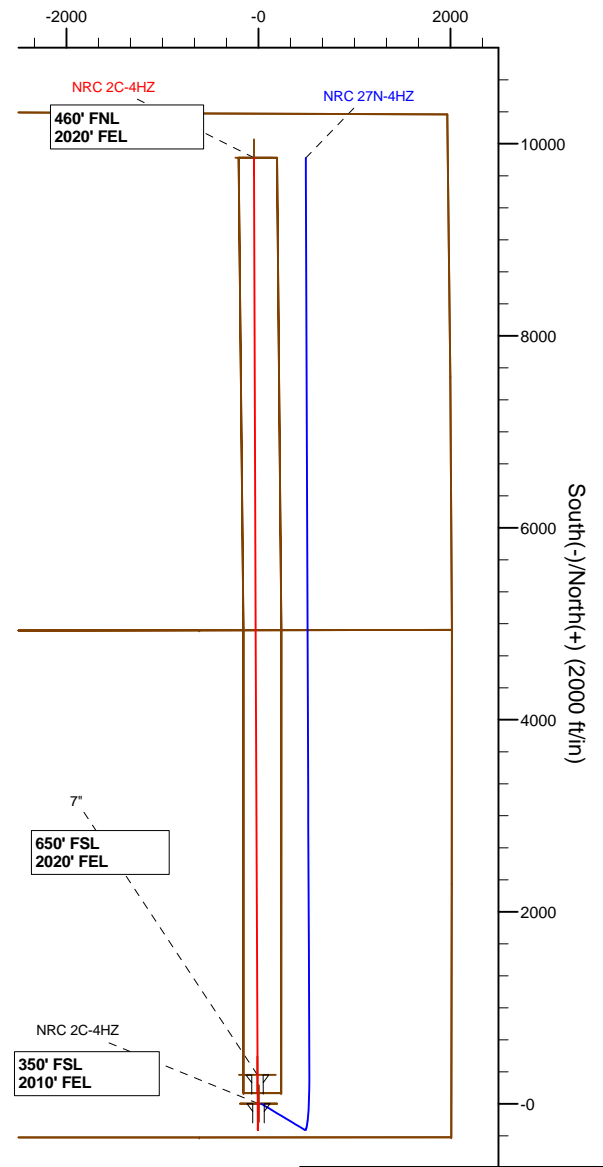
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
NRC 2C-4HZ_LD	0.00	0.00	0.00	40.059229	-104.893500	Polygon
NRC 2C-4HZ_Sec	0.00	0.00	0.00	40.059229	-104.893500	Polygon
NRC 2C-4HZ_SHL	0.00	0.00	0.00	40.059229	-104.893500	Point
NRC 2C-4HZ_tgt	7682.00	300.00	-10.00	40.060052	-104.893536	Point
NRC 2C-4HZ_BHL	7687.00	9855.15	-47.85	40.086282	-104.893671	Point

MD TVD

6989.30 6983.27 Top 4-1/2" Liner @ 6989.30ft
7089.30 7083.17 KOP @ 7089.30ft



West(-)/East(+) (2000 ft/in)



WELL DETAILS: NRC 2C-4HZ

Ground Level: 5030.00
RKB = 17 @ 5047.00ft (Drilling Rig)

Plan: Plan A0 - PERMIT (NRC 2C-4HZ/Plan A0)

Created By: Fred Hartmann Date: 07/24/2013

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 9-T1N-R67W

NRC 2C-4HZ

Plan A0

Plan: Plan A0 - PERMIT

Sperry Drilling Services

Proposal Report

24 July, 2013

Well Coordinates: 1,265,003.03 N, 3,169,764.26 E (40° 03' 33.22" N, 104° 53' 36.60" W)

Ground Level: 5,030.00 ft

Local Coordinate Origin:

Centered on Well NRC 2C-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 2C-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	181.46	1,099.98	-1.74	-0.04	-1.74	2.00	2.00	0.00	181.46
1,129.46	2.59	181.46	1,129.42	-2.92	-0.07	-2.92	2.00	2.00	0.00	0.00
End Nudge @ 1129.46ft										
1,200.00	2.59	181.46	1,199.88	-6.11	-0.16	-6.11	0.00	0.00	0.00	0.00
1,300.00	2.59	181.46	1,299.78	-10.63	-0.27	-10.62	0.00	0.00	0.00	0.00
1,400.00	2.59	181.46	1,399.68	-15.14	-0.39	-15.14	0.00	0.00	0.00	0.00
1,500.00	2.59	181.46	1,499.58	-19.66	-0.50	-19.65	0.00	0.00	0.00	0.00
1,600.00	2.59	181.46	1,599.48	-24.17	-0.62	-24.17	0.00	0.00	0.00	0.00
1,700.00	2.59	181.46	1,699.37	-28.69	-0.73	-28.69	0.00	0.00	0.00	0.00
1,800.00	2.59	181.46	1,799.27	-33.20	-0.85	-33.20	0.00	0.00	0.00	0.00
1,900.00	2.59	181.46	1,899.17	-37.72	-0.96	-37.72	0.00	0.00	0.00	0.00
2,000.00	2.59	181.46	1,999.07	-42.24	-1.08	-42.23	0.00	0.00	0.00	0.00
2,100.00	2.59	181.46	2,098.97	-46.75	-1.19	-46.75	0.00	0.00	0.00	0.00
2,200.00	2.59	181.46	2,198.86	-51.27	-1.31	-51.26	0.00	0.00	0.00	0.00
2,300.00	2.59	181.46	2,298.76	-55.78	-1.42	-55.78	0.00	0.00	0.00	0.00
2,400.00	2.59	181.46	2,398.66	-60.30	-1.54	-60.29	0.00	0.00	0.00	0.00
2,500.00	2.59	181.46	2,498.56	-64.82	-1.65	-64.81	0.00	0.00	0.00	0.00
2,600.00	2.59	181.46	2,598.45	-69.33	-1.77	-69.32	0.00	0.00	0.00	0.00
2,700.00	2.59	181.46	2,698.35	-73.85	-1.88	-73.84	0.00	0.00	0.00	0.00
2,800.00	2.59	181.46	2,798.25	-78.36	-2.00	-78.36	0.00	0.00	0.00	0.00
2,900.00	2.59	181.46	2,898.15	-82.88	-2.11	-82.87	0.00	0.00	0.00	0.00
3,000.00	2.59	181.46	2,998.05	-87.40	-2.23	-87.39	0.00	0.00	0.00	0.00
3,100.00	2.59	181.46	3,097.94	-91.91	-2.34	-91.90	0.00	0.00	0.00	0.00
3,200.00	2.59	181.46	3,197.84	-96.43	-2.46	-96.42	0.00	0.00	0.00	0.00
3,300.00	2.59	181.46	3,297.74	-100.94	-2.57	-100.93	0.00	0.00	0.00	0.00
3,400.00	2.59	181.46	3,397.64	-105.46	-2.69	-105.45	0.00	0.00	0.00	0.00
3,500.00	2.59	181.46	3,497.54	-109.98	-2.80	-109.96	0.00	0.00	0.00	0.00
3,600.00	2.59	181.46	3,597.43	-114.49	-2.92	-114.48	0.00	0.00	0.00	0.00
3,700.00	2.59	181.46	3,697.33	-119.01	-3.03	-118.99	0.00	0.00	0.00	0.00
3,800.00	2.59	181.46	3,797.23	-123.52	-3.15	-123.51	0.00	0.00	0.00	0.00
3,900.00	2.59	181.46	3,897.13	-128.04	-3.26	-128.03	0.00	0.00	0.00	0.00
4,000.00	2.59	181.46	3,997.03	-132.56	-3.38	-132.54	0.00	0.00	0.00	0.00
4,100.00	2.59	181.46	4,096.92	-137.07	-3.49	-137.06	0.00	0.00	0.00	0.00
4,200.00	2.59	181.46	4,196.82	-141.59	-3.61	-141.57	0.00	0.00	0.00	0.00
4,300.00	2.59	181.46	4,296.72	-146.10	-3.73	-146.09	0.00	0.00	0.00	0.00
4,400.00	2.59	181.46	4,396.62	-150.62	-3.84	-150.60	0.00	0.00	0.00	0.00
4,500.00	2.59	181.46	4,496.52	-155.13	-3.96	-155.12	0.00	0.00	0.00	0.00
4,600.00	2.59	181.46	4,596.41	-159.65	-4.07	-159.63	0.00	0.00	0.00	0.00
4,685.67	2.59	181.46	4,682.00	-163.52	-4.17	-163.50	0.00	0.00	0.00	0.00
Sussex										
4,700.00	2.59	181.46	4,696.31	-164.17	-4.19	-164.15	0.00	0.00	0.00	0.00
4,800.00	2.59	181.46	4,796.21	-168.68	-4.30	-168.66	0.00	0.00	0.00	0.00
4,900.00	2.59	181.46	4,896.11	-173.20	-4.42	-173.18	0.00	0.00	0.00	0.00
5,000.00	2.59	181.46	4,996.00	-177.71	-4.53	-177.69	0.00	0.00	0.00	0.00

Plan Report for NRC 2C-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	2.59	181.46	5,095.90	-182.23	-4.65	-182.21	0.00	0.00	0.00	0.00
5,200.00	2.59	181.46	5,195.80	-186.75	-4.76	-186.73	0.00	0.00	0.00	0.00
5,300.00	2.59	181.46	5,295.70	-191.26	-4.88	-191.24	0.00	0.00	0.00	0.00
5,400.00	2.59	181.46	5,395.60	-195.78	-4.99	-195.76	0.00	0.00	0.00	0.00
5,500.00	2.59	181.46	5,495.49	-200.29	-5.11	-200.27	0.00	0.00	0.00	0.00
5,600.00	2.59	181.46	5,595.39	-204.81	-5.22	-204.79	0.00	0.00	0.00	0.00
5,700.00	2.59	181.46	5,695.29	-209.33	-5.34	-209.30	0.00	0.00	0.00	0.00
5,800.00	2.59	181.46	5,795.19	-213.84	-5.45	-213.82	0.00	0.00	0.00	0.00
5,900.00	2.59	181.46	5,895.09	-218.36	-5.57	-218.33	0.00	0.00	0.00	0.00
6,000.00	2.59	181.46	5,994.98	-222.87	-5.68	-222.85	0.00	0.00	0.00	0.00
6,100.00	2.59	181.46	6,094.88	-227.39	-5.80	-227.36	0.00	0.00	0.00	0.00
6,200.00	2.59	181.46	6,194.78	-231.91	-5.91	-231.88	0.00	0.00	0.00	0.00
6,300.00	2.59	181.46	6,294.68	-236.42	-6.03	-236.40	0.00	0.00	0.00	0.00
6,400.00	2.59	181.46	6,394.58	-240.94	-6.14	-240.91	0.00	0.00	0.00	0.00
6,500.00	2.59	181.46	6,494.47	-245.45	-6.26	-245.43	0.00	0.00	0.00	0.00
6,600.00	2.59	181.46	6,594.37	-249.97	-6.37	-249.94	0.00	0.00	0.00	0.00
6,700.00	2.59	181.46	6,694.27	-254.49	-6.49	-254.46	0.00	0.00	0.00	0.00
6,800.00	2.59	181.46	6,794.17	-259.00	-6.60	-258.97	0.00	0.00	0.00	0.00
6,900.00	2.59	181.46	6,894.06	-263.52	-6.72	-263.49	0.00	0.00	0.00	0.00
6,989.30	2.59	181.46	6,983.27	-267.55	-6.82	-267.52	0.00	0.00	0.00	0.00
Top 4-1/2" Liner @ 6989.30ft										
7,000.00	2.59	181.46	6,993.96	-268.03	-6.83	-268.00	0.00	0.00	0.00	0.00
7,089.30	2.59	181.46	7,083.17	-272.07	-6.94	-272.04	0.00	0.00	0.00	0.00
KOP @ 7089.30ft										
7,100.00	1.52	182.65	7,093.86	-272.45	-6.95	-272.42	10.00	-9.99	11.11	178.31
7,200.00	8.48	359.26	7,193.55	-266.38	-7.11	-266.35	10.00	6.96	176.61	177.12
7,300.00	18.48	359.54	7,290.67	-243.10	-7.33	-243.07	10.00	10.00	0.28	0.52
7,303.51	18.83	359.55	7,294.00	-241.98	-7.34	-241.95	10.00	10.00	0.13	0.24
Sharon Springs										
7,340.93	22.58	359.59	7,329.00	-228.75	-7.44	-228.72	10.00	10.00	0.11	0.24
Niobrara A										
7,400.00	28.48	359.63	7,382.28	-203.31	-7.61	-203.27	10.00	10.00	0.07	0.20
7,453.45	33.83	359.66	7,428.00	-175.66	-7.78	-175.63	10.00	10.00	0.05	0.16
Niobrara B										
7,500.00	38.48	359.68	7,465.58	-148.21	-7.94	-148.18	10.00	10.00	0.04	0.14
DLS = 10.00/100ft										
7,579.23	46.41	359.70	7,524.00	-94.78	-8.23	-94.75	10.00	10.00	0.03	0.12
Niobrara C										
7,600.00	48.48	359.71	7,538.04	-79.48	-8.31	-79.45	10.00	10.00	0.02	0.11
7,700.00	58.48	359.73	7,597.48	0.78	-8.70	0.81	10.00	10.00	0.02	0.10
7,800.00	68.48	359.74	7,642.07	90.14	-9.12	90.18	10.00	10.00	0.02	0.09
7,838.58	72.34	359.75	7,655.00	126.49	-9.28	126.52	10.00	10.00	0.02	0.08
Ft Hays										
7,900.00	78.48	359.76	7,670.46	185.90	-9.53	185.93	10.00	10.00	0.01	0.08
7,939.43	82.43	359.76	7,677.00	224.77	-9.70	224.81	10.00	10.00	0.01	0.08
Codell										
8,000.00	88.48	359.77	7,681.80	285.12	-9.94	285.16	10.00	10.00	0.01	0.08
8,014.88	89.97	359.77	7,682.00	300.00	-10.00	300.04	10.00	10.00	0.01	0.08
End Build @ 8014.88ft - Landing Target (Heel) - 7" - NRC 2C-4HZ_tgt										
8,100.00	89.97	359.77	7,682.04	385.12	-10.34	385.16	0.00	0.00	0.00	0.08
8,200.00	89.97	359.77	7,682.10	485.12	-10.73	485.16	0.00	0.00	0.00	0.00
8,300.00	89.97	359.77	7,682.15	585.12	-11.13	585.16	0.00	0.00	0.00	0.00
8,400.00	89.97	359.77	7,682.20	685.12	-11.53	685.16	0.00	0.00	0.00	0.00
8,500.00	89.97	359.77	7,682.25	785.12	-11.92	785.16	0.00	0.00	0.00	0.00
8,600.00	89.97	359.77	7,682.31	885.12	-12.32	885.16	0.00	0.00	0.00	0.00
8,700.00	89.97	359.77	7,682.36	985.11	-12.71	985.16	0.00	0.00	0.00	0.00
8,800.00	89.97	359.77	7,682.41	1,085.11	-13.11	1,085.16	0.00	0.00	0.00	0.00
8,900.00	89.97	359.77	7,682.46	1,185.11	-13.51	1,185.16	0.00	0.00	0.00	0.00

Plan Report for NRC 2C-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 (°)
9,000.00	89.97	359.77	7,682.52	1,285.11	-13.90	1,285.16	0.00	0.00	0.00	0.00
9,100.00	89.97	359.77	7,682.57	1,385.11	-14.30	1,385.16	0.00	0.00	0.00	0.00
9,200.00	89.97	359.77	7,682.62	1,485.11	-14.69	1,485.16	0.00	0.00	0.00	0.00
9,300.00	89.97	359.77	7,682.67	1,585.11	-15.09	1,585.16	0.00	0.00	0.00	0.00
9,400.00	89.97	359.77	7,682.72	1,685.11	-15.49	1,685.16	0.00	0.00	0.00	0.00
9,500.00	89.97	359.77	7,682.78	1,785.11	-15.88	1,785.16	0.00	0.00	0.00	0.00
9,600.00	89.97	359.77	7,682.83	1,885.11	-16.28	1,885.16	0.00	0.00	0.00	0.00
9,700.00	89.97	359.77	7,682.88	1,985.11	-16.67	1,985.16	0.00	0.00	0.00	0.00
9,800.00	89.97	359.77	7,682.93	2,085.11	-17.07	2,085.16	0.00	0.00	0.00	0.00
9,900.00	89.97	359.77	7,682.99	2,185.10	-17.47	2,185.16	0.00	0.00	0.00	0.00
10,000.00	89.97	359.77	7,683.04	2,285.10	-17.86	2,285.16	0.00	0.00	0.00	0.00
10,100.00	89.97	359.77	7,683.09	2,385.10	-18.26	2,385.16	0.00	0.00	0.00	0.00
10,200.00	89.97	359.77	7,683.14	2,485.10	-18.66	2,485.16	0.00	0.00	0.00	0.00
10,300.00	89.97	359.77	7,683.20	2,585.10	-19.05	2,585.16	0.00	0.00	0.00	0.00
10,400.00	89.97	359.77	7,683.25	2,685.10	-19.45	2,685.16	0.00	0.00	0.00	0.00
10,500.00	89.97	359.77	7,683.30	2,785.10	-19.84	2,785.16	0.00	0.00	0.00	0.00
10,600.00	89.97	359.77	7,683.35	2,885.10	-20.24	2,885.16	0.00	0.00	0.00	0.00
10,700.00	89.97	359.77	7,683.41	2,985.10	-20.64	2,985.16	0.00	0.00	0.00	0.00
10,800.00	89.97	359.77	7,683.46	3,085.10	-21.03	3,085.16	0.00	0.00	0.00	0.00
10,900.00	89.97	359.77	7,683.51	3,185.10	-21.43	3,185.16	0.00	0.00	0.00	0.00
11,000.00	89.97	359.77	7,683.56	3,285.10	-21.82	3,285.16	0.00	0.00	0.00	0.00
11,100.00	89.97	359.77	7,683.61	3,385.10	-22.22	3,385.16	0.00	0.00	0.00	0.00
11,200.00	89.97	359.77	7,683.67	3,485.09	-22.62	3,485.16	0.00	0.00	0.00	0.00
11,300.00	89.97	359.77	7,683.72	3,585.09	-23.01	3,585.16	0.00	0.00	0.00	0.00
11,400.00	89.97	359.77	7,683.77	3,685.09	-23.41	3,685.16	0.00	0.00	0.00	0.00
11,500.00	89.97	359.77	7,683.82	3,785.09	-23.80	3,785.16	0.00	0.00	0.00	0.00
11,600.00	89.97	359.77	7,683.88	3,885.09	-24.20	3,885.16	0.00	0.00	0.00	0.00
11,700.00	89.97	359.77	7,683.93	3,985.09	-24.60	3,985.16	0.00	0.00	0.00	0.00
11,800.00	89.97	359.77	7,683.98	4,085.09	-24.99	4,085.16	0.00	0.00	0.00	0.00
11,900.00	89.97	359.77	7,684.03	4,185.09	-25.39	4,185.16	0.00	0.00	0.00	0.00
12,000.00	89.97	359.77	7,684.09	4,285.09	-25.78	4,285.16	0.00	0.00	0.00	0.00
12,100.00	89.97	359.77	7,684.14	4,385.09	-26.18	4,385.16	0.00	0.00	0.00	0.00
12,200.00	89.97	359.77	7,684.19	4,485.09	-26.58	4,485.16	0.00	0.00	0.00	0.00
12,300.00	89.97	359.77	7,684.24	4,585.09	-26.97	4,585.16	0.00	0.00	0.00	0.00
12,400.00	89.97	359.77	7,684.29	4,685.08	-27.37	4,685.16	0.00	0.00	0.00	0.00
12,500.00	89.97	359.77	7,684.35	4,785.08	-27.77	4,785.16	0.00	0.00	0.00	0.00
12,600.00	89.97	359.77	7,684.40	4,885.08	-28.16	4,885.16	0.00	0.00	0.00	0.00
12,700.00	89.97	359.77	7,684.45	4,985.08	-28.56	4,985.16	0.00	0.00	0.00	0.00
12,800.00	89.97	359.77	7,684.50	5,085.08	-28.95	5,085.16	0.00	0.00	0.00	0.00
12,900.00	89.97	359.77	7,684.56	5,185.08	-29.35	5,185.16	0.00	0.00	0.00	0.00
13,000.00	89.97	359.77	7,684.61	5,285.08	-29.75	5,285.16	0.00	0.00	0.00	0.00
13,100.00	89.97	359.77	7,684.66	5,385.08	-30.14	5,385.16	0.00	0.00	0.00	0.00
13,200.00	89.97	359.77	7,684.71	5,485.08	-30.54	5,485.16	0.00	0.00	0.00	0.00
13,300.00	89.97	359.77	7,684.77	5,585.08	-30.93	5,585.16	0.00	0.00	0.00	0.00
13,400.00	89.97	359.77	7,684.82	5,685.08	-31.33	5,685.16	0.00	0.00	0.00	0.00
13,500.00	89.97	359.77	7,684.87	5,785.08	-31.73	5,785.16	0.00	0.00	0.00	0.00
13,600.00	89.97	359.77	7,684.92	5,885.08	-32.12	5,885.16	0.00	0.00	0.00	0.00
13,700.00	89.97	359.77	7,684.97	5,985.07	-32.52	5,985.16	0.00	0.00	0.00	0.00
13,800.00	89.97	359.77	7,685.03	6,085.07	-32.91	6,085.16	0.00	0.00	0.00	0.00
13,900.00	89.97	359.77	7,685.08	6,185.07	-33.31	6,185.16	0.00	0.00	0.00	0.00
14,000.00	89.97	359.77	7,685.13	6,285.07	-33.71	6,285.16	0.00	0.00	0.00	0.00
14,100.00	89.97	359.77	7,685.18	6,385.07	-34.10	6,385.16	0.00	0.00	0.00	0.00
14,200.00	89.97	359.77	7,685.24	6,485.07	-34.50	6,485.16	0.00	0.00	0.00	0.00
14,300.00	89.97	359.77	7,685.29	6,585.07	-34.89	6,585.16	0.00	0.00	0.00	0.00
14,400.00	89.97	359.77	7,685.34	6,685.07	-35.29	6,685.16	0.00	0.00	0.00	0.00
14,500.00	89.97	359.77	7,685.39	6,785.07	-35.69	6,785.16	0.00	0.00	0.00	0.00
14,600.00	89.97	359.77	7,685.45	6,885.07	-36.08	6,885.16	0.00	0.00	0.00	0.00
14,700.00	89.97	359.77	7,685.50	6,985.07	-36.48	6,985.16	0.00	0.00	0.00	0.00
14,800.00	89.97	359.77	7,685.55	7,085.07	-36.88	7,085.16	0.00	0.00	0.00	0.00
14,900.00	89.97	359.77	7,685.60	7,185.06	-37.27	7,185.16	0.00	0.00	0.00	0.00

Plan Report for NRC 2C-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 (°)
15,000.00	89.97	359.77	7,685.66	7,285.06	-37.67	7,285.16	0.00	0.00	0.00	0.00
15,100.00	89.97	359.77	7,685.71	7,385.06	-38.06	7,385.16	0.00	0.00	0.00	0.00
15,200.00	89.97	359.77	7,685.76	7,485.06	-38.46	7,485.16	0.00	0.00	0.00	0.00
15,300.00	89.97	359.77	7,685.81	7,585.06	-38.86	7,585.16	0.00	0.00	0.00	0.00
15,400.00	89.97	359.77	7,685.86	7,685.06	-39.25	7,685.16	0.00	0.00	0.00	0.00
15,500.00	89.97	359.77	7,685.92	7,785.06	-39.65	7,785.16	0.00	0.00	0.00	0.00
15,600.00	89.97	359.77	7,685.97	7,885.06	-40.04	7,885.16	0.00	0.00	0.00	0.00
15,700.00	89.97	359.77	7,686.02	7,985.06	-40.44	7,985.16	0.00	0.00	0.00	0.00
15,800.00	89.97	359.77	7,686.07	8,085.06	-40.84	8,085.16	0.00	0.00	0.00	0.00
15,900.00	89.97	359.77	7,686.13	8,185.06	-41.23	8,185.16	0.00	0.00	0.00	0.00
16,000.00	89.97	359.77	7,686.18	8,285.06	-41.63	8,285.16	0.00	0.00	0.00	0.00
16,100.00	89.97	359.77	7,686.23	8,385.06	-42.02	8,385.16	0.00	0.00	0.00	0.00
16,200.00	89.97	359.77	7,686.28	8,485.05	-42.42	8,485.16	0.00	0.00	0.00	0.00
16,300.00	89.97	359.77	7,686.34	8,585.05	-42.82	8,585.16	0.00	0.00	0.00	0.00
16,400.00	89.97	359.77	7,686.39	8,685.05	-43.21	8,685.16	0.00	0.00	0.00	0.00
16,500.00	89.97	359.77	7,686.44	8,785.05	-43.61	8,785.16	0.00	0.00	0.00	0.00
16,600.00	89.97	359.77	7,686.49	8,885.05	-44.00	8,885.16	0.00	0.00	0.00	0.00
16,700.00	89.97	359.77	7,686.54	8,985.05	-44.40	8,985.16	0.00	0.00	0.00	0.00
16,800.00	89.97	359.77	7,686.60	9,085.05	-44.80	9,085.16	0.00	0.00	0.00	0.00
16,900.00	89.97	359.77	7,686.65	9,185.05	-45.19	9,185.16	0.00	0.00	0.00	0.00
17,000.00	89.97	359.77	7,686.70	9,285.05	-45.59	9,285.16	0.00	0.00	0.00	0.00
17,100.00	89.97	359.77	7,686.75	9,385.05	-45.99	9,385.16	0.00	0.00	0.00	0.00
17,200.00	89.97	359.77	7,686.81	9,485.05	-46.38	9,485.16	0.00	0.00	0.00	0.00
17,300.00	89.97	359.77	7,686.86	9,585.05	-46.78	9,585.16	0.00	0.00	0.00	0.00
17,400.00	89.97	359.77	7,686.91	9,685.04	-47.17	9,685.16	0.00	0.00	0.00	0.00
17,500.00	89.97	359.77	7,686.96	9,785.04	-47.57	9,785.16	0.00	0.00	0.00	0.00
17,570.10	89.97	359.77	7,687.00	9,855.14	-47.85	9,855.26	0.00	0.00	0.00	0.00
Total Depth (Toe)										
17,570.11	89.97	359.77	7,687.00	9,855.15	-47.85	9,855.27	0.00	0.00	0.00	0.00
NRC 2C-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
1,129.46	1,129.42	-2.92	-0.07	End Nudge @ 1129.46ft
6,989.30	6,983.27	-267.55	-6.82	Top 4-1/2" Liner @ 6989.30ft
7,089.30	7,083.17	-272.07	-6.94	KOP @ 7089.30ft
7,500.00	7,465.58	-148.21	-7.94	DLS = 10.00/100ft
8,014.88	7,682.00	300.00	-10.00	End Build @ 8014.88ft
17,570.11	7,687.00	9,855.15	-47.85	TD @ 17570.11ft

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	17,570.11	Plan A0 - PERMIT	MWD

Plan Report for NRC 2C-4HZ - Plan A0 - PERMIT**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
8,014.88	7,682.00	7"	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,685.67	4,682.00	Sussex		0.00	
7,303.51	7,294.00	Sharon Springs		0.00	
7,340.93	7,329.00	Niobrara A		0.00	
7,453.45	7,428.00	Niobrara B		0.00	
7,579.23	7,524.00	Niobrara C		0.00	
7,838.58	7,655.00	Ft Hays		0.00	
7,939.43	7,677.00	Codell		0.00	
8,014.88	7,682.00	Landing Target (Heel)		0.00	
17,570.10	7,687.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
NRC 2C-4HZ_Sec	0.00	0.00	0.00	Polygon
NRC 2C-4HZ_BHL	7,687.00	9,855.15	-47.85	Point
NRC 2C-4HZ_SHL	0.00	0.00	0.00	Point
NRC 2C-4HZ_tgt	7,682.00	300.00	-10.00	Point
NRC 2C-4HZ_LD	0.00	0.00	0.00	Polygon

North Reference Sheet for Sec. 9-T1N-R67W - NRC 2C-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 2C-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: 1,265,003.03 ft N, 3,169,764.26 ft E
Geographical Coordinates of Well: 40° 03' 33.22" N, 104° 53' 36.60" W
Grid Convergence at Surface is: 0.39°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,570.11ft
the Bottom Hole Displacement is 9,855.27ft in the Direction of 359.72° (True).

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

