

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 34-T2N-R65W

Sparboe 8C-3HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

## Sperry Drilling Services

### Proposal Report

01 August, 2012

Well Coordinates: 1,281,026.34 N, 3,239,662.69 E (40° 06' 05.87" N, 104° 38' 35.67" W)

Ground Level: 4,970.00 ft

Local Coordinate Origin:

Centered on Well Sparboe 8C-3HZ

Viewing Datum:

RKB=16ft @ 4986.00ft (Drilling Rig)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

**HALLIBURTON**

Project: Weld County, CO (NAD 83)  
Site: Sec. 34-T2N-R65W  
Well: Sparboe 8C-3HZ  
Wellbore: Plan A Rev 0  
Design: Plan A Rev 0 Permit

# Anadarko Petroleum Corp.

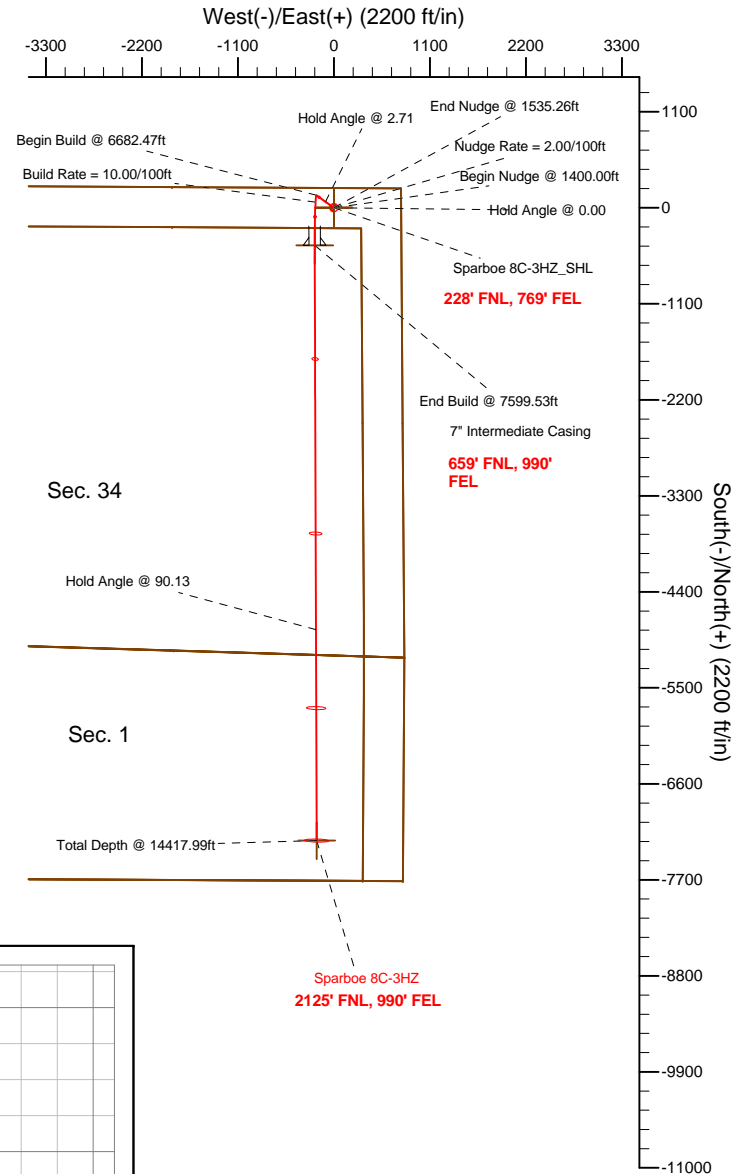
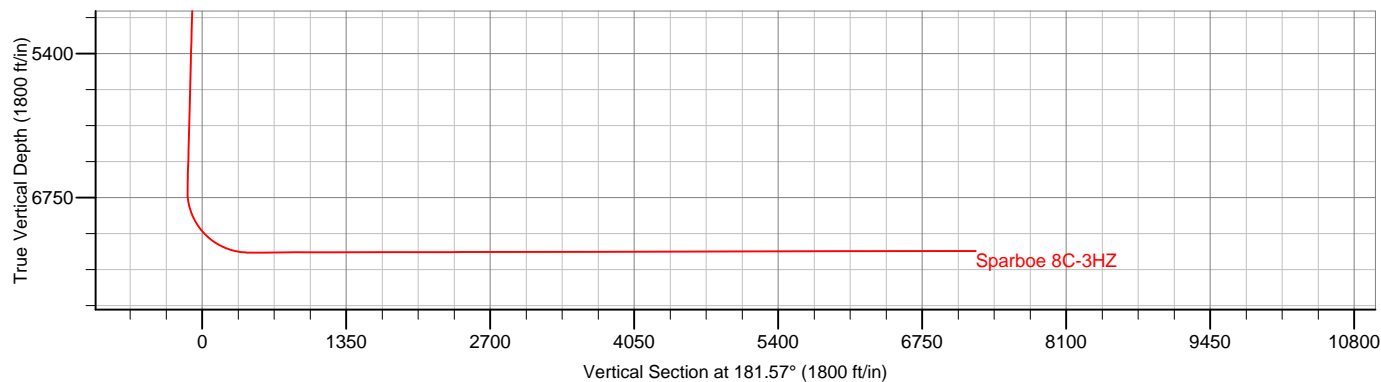
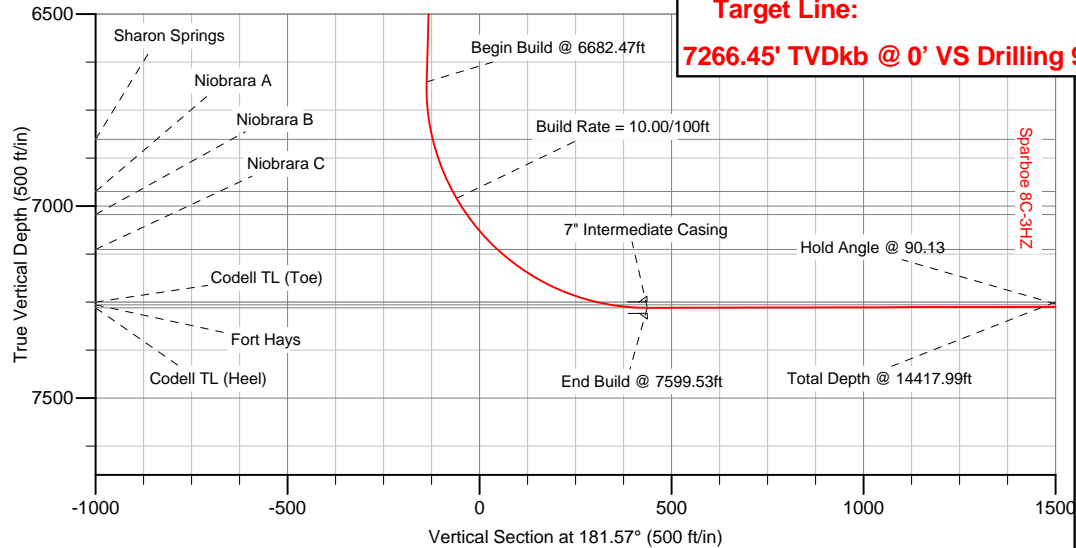
**HALLIBURTON**  
Sperry Drilling

## 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	1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	0.00	
3	1535.26	2.71	305.54	1535.21	1.86	-2.60	2.00	305.54	-1.78	
4	6682.47	2.71	305.54	6676.69	143.07	-200.26	0.00	0.00	-137.53	
5	7599.53	90.13	179.81	7265.00	-431.00	-221.00	10.00	-125.69	436.89	Sparboe 8C-3HZ_Casing Point
6	14417.99	90.13	179.81	7250.00	-7249.41	-198.68	0.00	0.00	7252.13	Sparboe 8C-3HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Sparboe 8C-3HZ_Sec 34/1 Line	0.00	0.00	0.00	40.101631	-104.643241	Polygon
Sparboe 8C-3HZ_Section Lines	0.00	0.00	0.00	40.101631	-104.643241	Polygon
Sparboe 8C-3HZ_Setback Lines	0.00	0.00	0.00	40.101631	-104.643241	Polygon
Sparboe 8C-3HZ_SHL	0.00	0.00	0.00	40.101631	-104.643241	Point
Sparboe 8C-3HZ_BHL	7250.00	-7249.41	-198.68	40.081731	-104.643951	Point
Sparboe 8C-3HZ_Casing Point	7265.00	-431.00	-221.00	40.100448	-104.644031	Point



## WELL DETAILS: Sparboe 8C-3HZ

Ground Level: 4970.00 RKB=16ft @ 4986.00ft (Drilling Rig)

Plan: Plan A Rev 0 Permit (Sparboe 8C-3HZ/Plan A Rev 0)

Created By: Fred Hartmann Date: 07/23/2012  
Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

**Plan Report for Sparboe 8C-3HZ - Plan A 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
<b>Sparboe 8C-3HZ_SHL - Sparboe 8C-3HZ_Sec 34/1 Line - Sparboe 8C-3HZ_Section Lines - Sparboe 8C-3HZ_Setback Lines</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
<b>Hold Angle @ 0.00</b>										
739.00	0.00	0.00	739.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills</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
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
<b>Begin Nudge @ 1400.00ft</b>										
1,500.00	2.00	305.54	1,499.98	1.01	-1.42	-0.98	2.00	2.00	0.00	305.54
<b>Nudge Rate = 2.00/100ft</b>										
1,535.26	2.71	305.54	1,535.21	1.86	-2.60	-1.78	2.00	2.00	0.00	0.00
<b>End Nudge @ 1535.26ft</b>										
1,600.00	2.71	305.54	1,599.88	3.63	-5.08	-3.49	0.00	0.00	0.00	0.00
1,700.00	2.71	305.54	1,699.77	6.38	-8.92	-6.13	0.00	0.00	0.00	0.00
1,800.00	2.71	305.54	1,799.65	9.12	-12.76	-8.77	0.00	0.00	0.00	0.00
1,900.00	2.71	305.54	1,899.54	11.86	-16.60	-11.40	0.00	0.00	0.00	0.00
2,000.00	2.71	305.54	1,999.43	14.61	-20.44	-14.04	0.00	0.00	0.00	0.00
2,100.00	2.71	305.54	2,099.32	17.35	-24.29	-16.68	0.00	0.00	0.00	0.00
2,200.00	2.71	305.54	2,199.21	20.09	-28.13	-19.32	0.00	0.00	0.00	0.00
2,300.00	2.71	305.54	2,299.10	22.84	-31.97	-21.95	0.00	0.00	0.00	0.00
2,400.00	2.71	305.54	2,398.99	25.58	-35.81	-24.59	0.00	0.00	0.00	0.00
2,500.00	2.71	305.54	2,498.87	28.32	-39.65	-27.23	0.00	0.00	0.00	0.00
2,600.00	2.71	305.54	2,598.76	31.07	-43.49	-29.86	0.00	0.00	0.00	0.00
2,700.00	2.71	305.54	2,698.65	33.81	-47.33	-32.50	0.00	0.00	0.00	0.00
2,800.00	2.71	305.54	2,798.54	36.55	-51.17	-35.14	0.00	0.00	0.00	0.00
2,900.00	2.71	305.54	2,898.43	39.30	-55.01	-37.78	0.00	0.00	0.00	0.00
3,000.00	2.71	305.54	2,998.32	42.04	-58.85	-40.41	0.00	0.00	0.00	0.00
3,100.00	2.71	305.54	3,098.21	44.78	-62.69	-43.05	0.00	0.00	0.00	0.00
3,200.00	2.71	305.54	3,198.09	47.53	-66.53	-45.69	0.00	0.00	0.00	0.00
3,300.00	2.71	305.54	3,297.98	50.27	-70.37	-48.33	0.00	0.00	0.00	0.00
3,400.00	2.71	305.54	3,397.87	53.02	-74.21	-50.96	0.00	0.00	0.00	0.00
3,500.00	2.71	305.54	3,497.76	55.76	-78.05	-53.60	0.00	0.00	0.00	0.00
3,600.00	2.71	305.54	3,597.65	58.50	-81.89	-56.24	0.00	0.00	0.00	0.00
3,700.00	2.71	305.54	3,697.54	61.25	-85.73	-58.87	0.00	0.00	0.00	0.00
3,800.00	2.71	305.54	3,797.43	63.99	-89.57	-61.51	0.00	0.00	0.00	0.00
3,900.00	2.71	305.54	3,897.31	66.73	-93.41	-64.15	0.00	0.00	0.00	0.00
4,000.00	2.71	305.54	3,997.20	69.48	-97.25	-66.79	0.00	0.00	0.00	0.00
<b>Hold Angle @ 2.71</b>										
4,100.00	2.71	305.54	4,097.09	72.22	-101.09	-69.42	0.00	0.00	0.00	0.00
4,200.00	2.71	305.54	4,196.98	74.96	-104.93	-72.06	0.00	0.00	0.00	0.00
4,300.00	2.71	305.54	4,296.87	77.71	-108.77	-74.70	0.00	0.00	0.00	0.00
4,400.00	2.71	305.54	4,396.76	80.45	-112.61	-77.34	0.00	0.00	0.00	0.00
4,500.00	2.71	305.54	4,496.65	83.19	-116.45	-79.97	0.00	0.00	0.00	0.00
4,600.00	2.71	305.54	4,596.53	85.94	-120.29	-82.61	0.00	0.00	0.00	0.00
4,700.00	2.71	305.54	4,696.42	88.68	-124.13	-85.25	0.00	0.00	0.00	0.00

**Plan Report for Sparboe 8C-3HZ - Plan A 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 (°)
4,800.00	2.71	305.54	4,796.31	91.42	-127.97	-87.88	0.00	0.00	0.00	0.00
4,900.00	2.71	305.54	4,896.20	94.17	-131.81	-90.52	0.00	0.00	0.00	0.00
4,988.90	2.71	305.54	4,985.00	96.61	-135.23	-92.87	0.00	0.00	0.00	0.00
<b>Sussex</b>										
5,000.00	2.71	305.54	4,996.09	96.91	-135.65	-93.16	0.00	0.00	0.00	0.00
5,100.00	2.71	305.54	5,095.98	99.66	-139.49	-95.80	0.00	0.00	0.00	0.00
5,200.00	2.71	305.54	5,195.87	102.40	-143.33	-98.43	0.00	0.00	0.00	0.00
5,300.00	2.71	305.54	5,295.75	105.14	-147.17	-101.07	0.00	0.00	0.00	0.00
5,400.00	2.71	305.54	5,395.64	107.89	-151.01	-103.71	0.00	0.00	0.00	0.00
5,500.00	2.71	305.54	5,495.53	110.63	-154.85	-106.35	0.00	0.00	0.00	0.00
5,600.00	2.71	305.54	5,595.42	113.37	-158.69	-108.98	0.00	0.00	0.00	0.00
5,700.00	2.71	305.54	5,695.31	116.12	-162.53	-111.62	0.00	0.00	0.00	0.00
5,800.00	2.71	305.54	5,795.20	118.86	-166.38	-114.26	0.00	0.00	0.00	0.00
5,900.00	2.71	305.54	5,895.09	121.60	-170.22	-116.89	0.00	0.00	0.00	0.00
6,000.00	2.71	305.54	5,994.97	124.35	-174.06	-119.53	0.00	0.00	0.00	0.00
6,100.00	2.71	305.54	6,094.86	127.09	-177.90	-122.17	0.00	0.00	0.00	0.00
6,200.00	2.71	305.54	6,194.75	129.83	-181.74	-124.81	0.00	0.00	0.00	0.00
6,300.00	2.71	305.54	6,294.64	132.58	-185.58	-127.44	0.00	0.00	0.00	0.00
6,400.00	2.71	305.54	6,394.53	135.32	-189.42	-130.08	0.00	0.00	0.00	0.00
6,500.00	2.71	305.54	6,494.42	138.06	-193.26	-132.72	0.00	0.00	0.00	0.00
6,600.00	2.71	305.54	6,594.31	140.81	-197.10	-135.36	0.00	0.00	0.00	0.00
6,682.47	2.71	305.54	6,676.68	143.07	-200.26	-137.53	0.00	0.00	0.00	0.00
<b>Begin Build @ 6682.47ft</b>										
6,700.00	2.20	265.30	6,694.20	143.28	-200.94	-137.72	10.00	-2.86	-229.57	-125.69
6,800.00	10.41	191.87	6,793.59	134.27	-204.72	-128.61	10.00	8.20	-73.42	-85.48
6,833.14	13.66	188.90	6,826.00	127.47	-205.94	-121.78	10.00	9.83	-8.98	-12.25
<b>Sharon Springs</b>										
6,900.00	20.29	185.77	6,889.91	108.11	-208.33	-102.36	10.00	9.91	-4.67	-9.34
6,979.11	28.16	183.93	6,962.00	75.79	-210.99	-69.98	10.00	9.96	-2.34	-6.35
<b>Niobrara A</b>										
7,000.00	30.25	183.59	6,980.23	65.62	-211.66	-59.80	10.00	9.97	-1.61	-4.66
<b>Build Rate = 10.00/100ft</b>										
7,049.66	35.20	182.93	7,022.00	38.83	-213.18	-32.97	10.00	9.97	-1.32	-4.36
<b>Niobrara B</b>										
7,100.00	40.22	182.42	7,061.81	8.08	-214.61	-2.20	10.00	9.98	-1.03	-3.81
7,170.92	47.30	181.85	7,113.00	-40.92	-216.41	46.83	10.00	9.98	-0.81	-3.40
<b>Niobrara C</b>										
7,200.00	50.21	181.65	7,132.17	-62.77	-217.08	68.69	10.00	9.99	-0.68	-2.99
7,300.00	60.20	181.08	7,189.16	-144.76	-219.00	150.70	10.00	9.99	-0.57	-2.86
7,400.00	70.19	180.61	7,231.06	-235.40	-220.32	241.35	10.00	9.99	-0.47	-2.53
7,500.00	80.18	180.20	7,256.60	-331.95	-220.99	337.88	10.00	9.99	-0.41	-2.33
7,502.36	80.42	180.19	7,257.00	-334.28	-221.00	340.21	10.00	9.99	-0.39	-2.23
<b>Fort Hays</b>										
7,599.53	90.13	179.81	7,265.00	-431.00	-221.00	436.89	10.00	9.99	-0.39	-2.23
<b>End Build @ 7599.53ft - Codell TL (Heel) - 7" Intermediate Casing - Sparboe 8C-3HZ Casing Point</b>										
7,600.00	90.13	179.81	7,265.00	-431.47	-221.00	437.37	0.09	0.09	0.00	-2.20
7,700.00	90.13	179.81	7,264.78	-531.47	-220.67	537.32	0.00	0.00	0.00	0.00
7,800.00	90.13	179.81	7,264.56	-631.47	-220.34	637.27	0.00	0.00	0.00	0.00
7,900.00	90.13	179.81	7,264.34	-731.47	-220.02	737.22	0.00	0.00	0.00	0.00
8,000.00	90.13	179.81	7,264.12	-831.47	-219.69	837.18	0.00	0.00	0.00	0.00
8,100.00	90.13	179.81	7,263.90	-931.47	-219.36	937.13	0.00	0.00	0.00	0.00
8,200.00	90.13	179.81	7,263.68	-1,031.47	-219.03	1,037.08	0.00	0.00	0.00	0.00
8,300.00	90.13	179.81	7,263.46	-1,131.47	-218.71	1,137.04	0.00	0.00	0.00	0.00
8,400.00	90.13	179.81	7,263.24	-1,231.47	-218.38	1,236.99	0.00	0.00	0.00	0.00
8,500.00	90.13	179.81	7,263.02	-1,331.47	-218.05	1,336.94	0.00	0.00	0.00	0.00
8,600.00	90.13	179.81	7,262.80	-1,431.47	-217.72	1,436.89	0.00	0.00	0.00	0.00
8,700.00	90.13	179.81	7,262.58	-1,531.47	-217.40	1,536.85	0.00	0.00	0.00	0.00
8,800.00	90.13	179.81	7,262.36	-1,631.46	-217.07	1,636.80	0.00	0.00	0.00	0.00
8,900.00	90.13	179.81	7,262.14	-1,731.46	-216.74	1,736.75	0.00	0.00	0.00	0.00

**Plan Report for Sparboe 8C-3HZ - Plan A 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 (°)
9,000.00	90.13	179.81	7,261.92	-1,831.46	-216.42	1,836.70	0.00	0.00	0.00	0.00
9,100.00	90.13	179.81	7,261.70	-1,931.46	-216.09	1,936.66	0.00	0.00	0.00	0.00
9,200.00	90.13	179.81	7,261.48	-2,031.46	-215.76	2,036.61	0.00	0.00	0.00	0.00
9,300.00	90.13	179.81	7,261.26	-2,131.46	-215.43	2,136.56	0.00	0.00	0.00	0.00
9,400.00	90.13	179.81	7,261.04	-2,231.46	-215.11	2,236.52	0.00	0.00	0.00	0.00
9,500.00	90.13	179.81	7,260.82	-2,331.46	-214.78	2,336.47	0.00	0.00	0.00	0.00
9,600.00	90.13	179.81	7,260.60	-2,431.46	-214.45	2,436.42	0.00	0.00	0.00	0.00
9,700.00	90.13	179.81	7,260.38	-2,531.46	-214.12	2,536.37	0.00	0.00	0.00	0.00
9,800.00	90.13	179.81	7,260.16	-2,631.46	-213.80	2,636.33	0.00	0.00	0.00	0.00
9,900.00	90.13	179.81	7,259.94	-2,731.46	-213.47	2,736.28	0.00	0.00	0.00	0.00
10,000.00	90.13	179.81	7,259.72	-2,831.46	-213.14	2,836.23	0.00	0.00	0.00	0.00
10,100.00	90.13	179.81	7,259.50	-2,931.45	-212.81	2,936.18	0.00	0.00	0.00	0.00
10,200.00	90.13	179.81	7,259.28	-3,031.45	-212.49	3,036.14	0.00	0.00	0.00	0.00
10,300.00	90.13	179.81	7,259.06	-3,131.45	-212.16	3,136.09	0.00	0.00	0.00	0.00
10,400.00	90.13	179.81	7,258.84	-3,231.45	-211.83	3,236.04	0.00	0.00	0.00	0.00
10,500.00	90.13	179.81	7,258.62	-3,331.45	-211.50	3,336.00	0.00	0.00	0.00	0.00
10,600.00	90.13	179.81	7,258.40	-3,431.45	-211.18	3,435.95	0.00	0.00	0.00	0.00
10,700.00	90.13	179.81	7,258.18	-3,531.45	-210.85	3,535.90	0.00	0.00	0.00	0.00
10,800.00	90.13	179.81	7,257.96	-3,631.45	-210.52	3,635.85	0.00	0.00	0.00	0.00
10,900.00	90.13	179.81	7,257.74	-3,731.45	-210.20	3,735.81	0.00	0.00	0.00	0.00
11,000.00	90.13	179.81	7,257.52	-3,831.45	-209.87	3,835.76	0.00	0.00	0.00	0.00
11,100.00	90.13	179.81	7,257.30	-3,931.45	-209.54	3,935.71	0.00	0.00	0.00	0.00
11,200.00	90.13	179.81	7,257.08	-4,031.45	-209.21	4,035.66	0.00	0.00	0.00	0.00
11,300.00	90.13	179.81	7,256.86	-4,131.45	-208.89	4,135.62	0.00	0.00	0.00	0.00
11,400.00	90.13	179.81	7,256.64	-4,231.44	-208.56	4,235.57	0.00	0.00	0.00	0.00
11,500.00	90.13	179.81	7,256.42	-4,331.44	-208.23	4,335.52	0.00	0.00	0.00	0.00
11,600.00	90.13	179.81	7,256.20	-4,431.44	-207.90	4,435.48	0.00	0.00	0.00	0.00
11,700.00	90.13	179.81	7,255.98	-4,531.44	-207.58	4,535.43	0.00	0.00	0.00	0.00
11,800.00	90.13	179.81	7,255.76	-4,631.44	-207.25	4,635.38	0.00	0.00	0.00	0.00
11,900.00	90.13	179.81	7,255.54	-4,731.44	-206.92	4,735.33	0.00	0.00	0.00	0.00
12,000.00	90.13	179.81	7,255.32	-4,831.44	-206.59	4,835.29	0.00	0.00	0.00	0.00
<b>Hold Angle @ 90.13</b>										
12,100.00	90.13	179.81	7,255.10	-4,931.44	-206.27	4,935.24	0.00	0.00	0.00	0.00
12,200.00	90.13	179.81	7,254.88	-5,031.44	-205.94	5,035.19	0.00	0.00	0.00	0.00
12,300.00	90.13	179.81	7,254.66	-5,131.44	-205.61	5,135.14	0.00	0.00	0.00	0.00
12,400.00	90.13	179.81	7,254.44	-5,231.44	-205.28	5,235.10	0.00	0.00	0.00	0.00
12,500.00	90.13	179.81	7,254.22	-5,331.44	-204.96	5,335.05	0.00	0.00	0.00	0.00
12,600.00	90.13	179.81	7,254.00	-5,431.44	-204.63	5,435.00	0.00	0.00	0.00	0.00
12,700.00	90.13	179.81	7,253.78	-5,531.43	-204.30	5,534.96	0.00	0.00	0.00	0.00
12,800.00	90.13	179.81	7,253.56	-5,631.43	-203.98	5,634.91	0.00	0.00	0.00	0.00
12,900.00	90.13	179.81	7,253.34	-5,731.43	-203.65	5,734.86	0.00	0.00	0.00	0.00
13,000.00	90.13	179.81	7,253.12	-5,831.43	-203.32	5,834.81	0.00	0.00	0.00	0.00
13,100.00	90.13	179.81	7,252.90	-5,931.43	-202.99	5,934.77	0.00	0.00	0.00	0.00
13,200.00	90.13	179.81	7,252.68	-6,031.43	-202.67	6,034.72	0.00	0.00	0.00	0.00
13,300.00	90.13	179.81	7,252.46	-6,131.43	-202.34	6,134.67	0.00	0.00	0.00	0.00
13,400.00	90.13	179.81	7,252.24	-6,231.43	-202.01	6,234.62	0.00	0.00	0.00	0.00
13,500.00	90.13	179.81	7,252.02	-6,331.43	-201.68	6,334.58	0.00	0.00	0.00	0.00
13,600.00	90.13	179.81	7,251.80	-6,431.43	-201.36	6,434.53	0.00	0.00	0.00	0.00
13,700.00	90.13	179.81	7,251.58	-6,531.43	-201.03	6,534.48	0.00	0.00	0.00	0.00
13,800.00	90.13	179.81	7,251.36	-6,631.43	-200.70	6,634.44	0.00	0.00	0.00	0.00
13,900.00	90.13	179.81	7,251.14	-6,731.43	-200.37	6,734.39	0.00	0.00	0.00	0.00
14,000.00	90.13	179.81	7,250.92	-6,831.42	-200.05	6,834.34	0.00	0.00	0.00	0.00
14,100.00	90.13	179.81	7,250.70	-6,931.42	-199.72	6,934.29	0.00	0.00	0.00	0.00
14,200.00	90.13	179.81	7,250.48	-7,031.42	-199.39	7,034.25	0.00	0.00	0.00	0.00
14,300.00	90.13	179.81	7,250.26	-7,131.42	-199.06	7,134.20	0.00	0.00	0.00	0.00
14,400.00	90.13	179.81	7,250.04	-7,231.42	-198.74	7,234.15	0.00	0.00	0.00	0.00
14,417.98	90.13	179.81	7,250.00	-7,249.40	-198.68	7,252.12	0.00	0.00	0.00	0.00
<b>Codell TL (Toe)</b>										
14,417.99	90.13	179.81	7,250.00	-7,249.41	-198.68	7,252.13	0.01	0.00	0.00	0.00

## Plan Report for Sparboe 8C-3HZ - Plan A 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 (°)
Sparboe 8C-3HZ_BHL										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
700.00	700.00	0.00	0.00	Hold Angle @ 0.00
1,400.00	1,400.00	0.00	0.00	Begin Nudge @ 1400.00ft
1,500.00	1,499.98	1.01	-1.42	Nudge Rate = 2.00/100ft
1,535.26	1,535.21	1.86	-2.60	End Nudge @ 1535.26ft
4,000.00	3,997.20	69.48	-97.25	Hold Angle @ 2.71
6,682.47	6,676.68	143.07	-200.26	Begin Build @ 6682.47ft
7,000.00	6,980.23	65.62	-211.66	Build Rate = 10.00/100ft
7,599.53	7,265.00	-431.00	-221.00	End Build @ 7599.53ft
12,000.00	7,255.32	-4,831.44	-206.59	Hold Angle @ 90.13
14,417.99	7,250.00	-7,249.41	-198.68	Total Depth @ 14417.99ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Sparboe 8C-3HZ_BHL	181.57	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	14,417.99	Plan A Rev 0 Permit	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,599.53	7,265.00	7" Intermediate Casing	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
739.00	739.00	Fox Hills		0.00	
4,988.90	4,985.00	Sussex		0.00	
6,833.14	6,826.00	Sharon Springs		0.00	
6,979.11	6,962.00	Niobrara A		0.00	
7,049.66	7,022.00	Niobrara B		0.00	
7,170.92	7,113.00	Niobrara C		0.00	
7,502.36	7,257.00	Fort Hays		0.00	
7,597.00	7,265.00	Codell TL (Heel)		0.00	
14,417.98	7,250.00	Codell TL (Toe)		0.00	

## Plan Report for Sparboe 8C-3HZ - Plan A Rev 0 Permit

### Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Sparboe 8C-3HZ_Sec 34/1 Line	0.00	0.00	0.00	Polygon
Sparboe 8C-3HZ_SHL	0.00	0.00	0.00	Point
Sparboe 8C-3HZ_Casing Point	7,265.00	-431.00	-221.00	Point
Sparboe 8C-3HZ_BHL	7,250.00	-7,249.41	-198.68	Point
Sparboe 8C-3HZ_Section Lines	0.00	0.00	0.00	Polygon
Sparboe 8C-3HZ_Setback Lines	0.00	0.00	0.00	Polygon

## North Reference Sheet for Sec. 34-T2N-R65W - Sparboe 8C-3HZ - Plan A 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=16ft @ 4986.00ft (Drilling Rig). Northing and Easting are relative to Sparboe 8C-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: 3,000,000.000644ft, False Northing: 1,000,000.001308ft, Scale Reduction: 0.99996022

Grid Coordinates of Well: 1,281,026.342874 ft N, 3,239,662.685245 ft E

Geographical Coordinates of Well: 40° 06' 05.87" N, 104° 38' 35.67" W

Grid Convergence at Surface is: 0.55°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,417.99ft  
the Bottom Hole Displacement is 7,252.13ft in the Direction of 181.57° (True).

Magnetic Convergence at surface is: -8.06° (26 July 2012, , BGGM2011)

