

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 34-T2N-R65W

Sparboe 40N-3HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

## Sperry Drilling Services

## Proposal Report

01 August, 2012

Well Coordinates: 1,281,025.83 N, 3,239,722.56 E (40° 06' 05.86" N, 104° 38' 34.90" W)

Ground Level: 4,970.00 ft

Local Coordinate Origin:

Centered on Well Sparboe 40N-3HZ

Viewing Datum:

RKB=16ft @ 4986.00ft (Drilling Rig)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

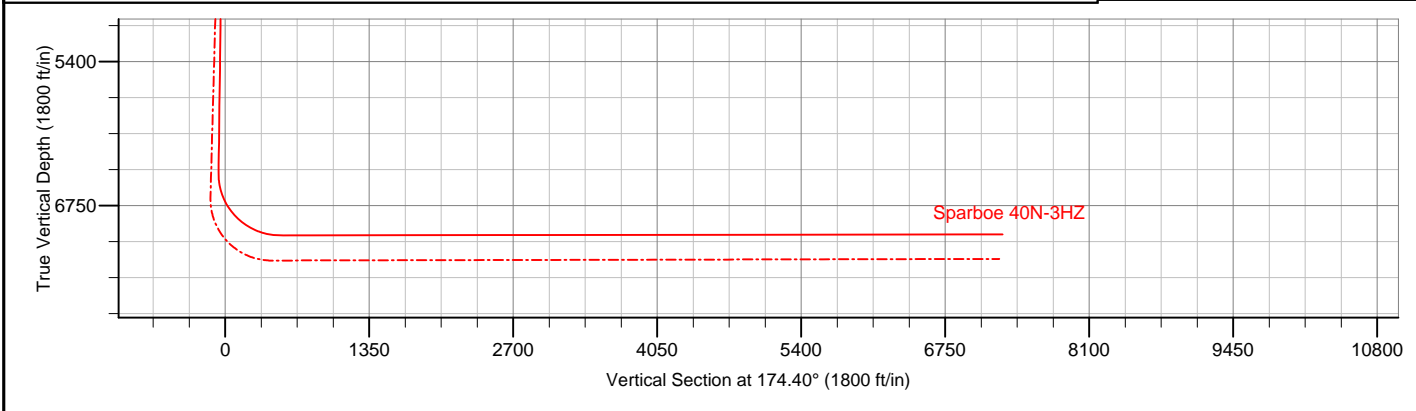
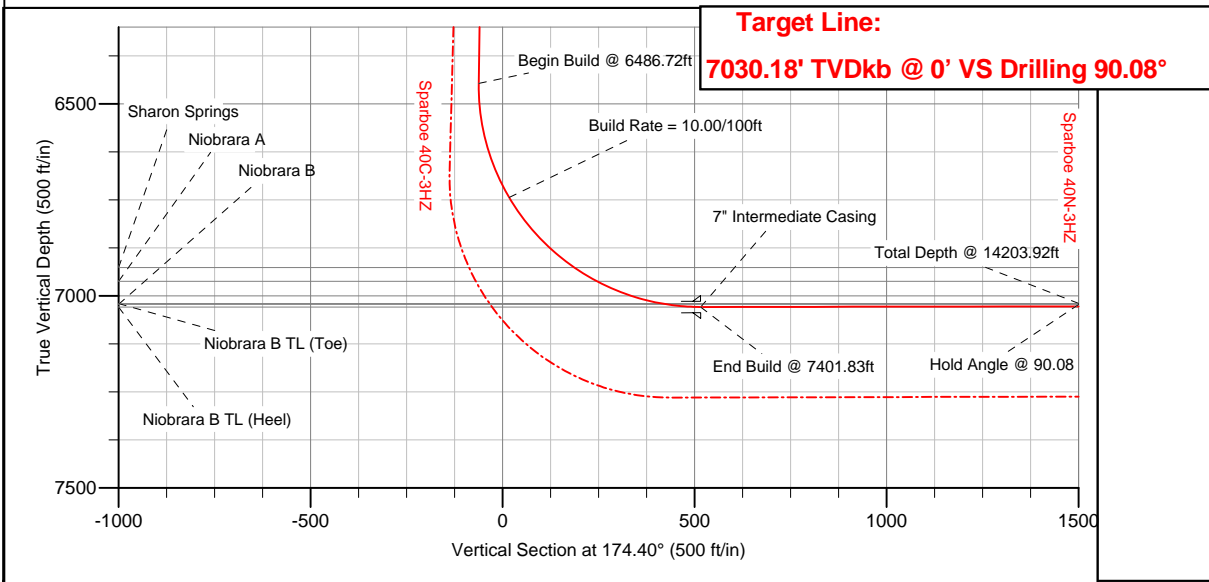
Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

**HALLIBURTON**

# Anadarko Petroleum Corp.

WELLBORE TARGET DETAILS (LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Sparboe 40N-3HZ_Sec 34/1 Line	0.00	0.00	0.00	40.101628	-104.643027	Polygon
Sparboe 40N-3HZ_Section Lines	0.00	0.00	0.00	40.101628	-104.643027	Polygon
Sparboe 40N-3HZ_Section Lines	0.00	0.00	0.00	40.101628	-104.643027	Polygon
Sparboe 40N-3HZ_SHL	0.00	0.00	0.00	40.101628	-104.643027	Point
Sparboe 40N-3HZ_BHL	7020.00	-7253.05	711.61	40.081718	-104.640484	Point
Sparboe 40N-3HZ_Casing Point	7029.00	-451.00	689.00	40.100390	-104.640564	Point



WELL DETAILS: Sparboe 40N-3HZ	
Ground Level: 4970.00	RKB=16ft @ 4986.00ft (Drilling Rig)
Plan: Plan A Rev 0 Permit (Sparboe 40N-3HZ/Plan A Rev 0)	
Created By: Fred Hartmann	Date: 07/23/2012
Reviewed: _____	_____

**Plan Report for Sparboe 40N-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 40N-3HZ_SHL - Sparboe 40N-3HZ_Sec 34/1 Line - Sparboe 40N-3HZ_Section Lines - Sparboe 40N-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
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 1500.00ft</b>										
1,600.00	2.00	78.70	1,599.98	0.34	1.71	-0.17	2.00	2.00	0.00	78.70
1,700.00	4.00	78.70	1,699.84	1.37	6.84	-0.69	2.00	2.00	0.00	0.00
<b>Nudge Rate = 2.00/100ft</b>										
1,800.00	6.00	78.70	1,799.45	3.07	15.39	-1.56	2.00	2.00	0.00	0.00
1,873.54	7.47	78.70	1,872.48	4.76	23.85	-2.41	2.00	2.00	0.00	0.00
<b>End Nudge @ 1873.54ft</b>										
1,900.00	7.47	78.70	1,898.72	5.44	27.22	-2.75	0.00	0.00	0.00	0.00
2,000.00	7.47	78.70	1,997.87	7.99	39.97	-4.04	0.00	0.00	0.00	0.00
2,100.00	7.47	78.70	2,097.02	10.53	52.72	-5.33	0.00	0.00	0.00	0.00
2,200.00	7.47	78.70	2,196.17	13.08	65.47	-6.63	0.00	0.00	0.00	0.00
2,300.00	7.47	78.70	2,295.32	15.63	78.22	-7.92	0.00	0.00	0.00	0.00
2,400.00	7.47	78.70	2,394.47	18.18	90.97	-9.21	0.00	0.00	0.00	0.00
2,500.00	7.47	78.70	2,493.62	20.72	103.72	-10.50	0.00	0.00	0.00	0.00
2,600.00	7.47	78.70	2,592.78	23.27	116.47	-11.79	0.00	0.00	0.00	0.00
2,700.00	7.47	78.70	2,691.93	25.82	129.22	-13.08	0.00	0.00	0.00	0.00
2,800.00	7.47	78.70	2,791.08	28.36	141.97	-14.37	0.00	0.00	0.00	0.00
2,900.00	7.47	78.70	2,890.23	30.91	154.72	-15.66	0.00	0.00	0.00	0.00
3,000.00	7.47	78.70	2,989.38	33.46	167.47	-16.95	0.00	0.00	0.00	0.00
3,100.00	7.47	78.70	3,088.53	36.01	180.22	-18.24	0.00	0.00	0.00	0.00
3,200.00	7.47	78.70	3,187.68	38.55	192.97	-19.53	0.00	0.00	0.00	0.00
3,300.00	7.47	78.70	3,286.83	41.10	205.72	-20.82	0.00	0.00	0.00	0.00
3,400.00	7.47	78.70	3,385.98	43.65	218.47	-22.11	0.00	0.00	0.00	0.00
3,500.00	7.47	78.70	3,485.14	46.20	231.22	-23.40	0.00	0.00	0.00	0.00
3,600.00	7.47	78.70	3,584.29	48.74	243.98	-24.69	0.00	0.00	0.00	0.00
3,700.00	7.47	78.70	3,683.44	51.29	256.73	-25.98	0.00	0.00	0.00	0.00
3,800.00	7.47	78.70	3,782.59	53.84	269.48	-27.27	0.00	0.00	0.00	0.00
3,900.00	7.47	78.70	3,881.74	56.38	282.23	-28.56	0.00	0.00	0.00	0.00
4,000.00	7.47	78.70	3,980.89	58.93	294.98	-29.85	0.00	0.00	0.00	0.00
<b>Hold Angle @ 7.47</b>										
4,100.00	7.47	78.70	4,080.04	61.48	307.73	-31.14	0.00	0.00	0.00	0.00
4,200.00	7.47	78.70	4,179.19	64.03	320.48	-32.43	0.00	0.00	0.00	0.00
4,300.00	7.47	78.70	4,278.34	66.57	333.23	-33.72	0.00	0.00	0.00	0.00
4,400.00	7.47	78.70	4,377.50	69.12	345.98	-35.01	0.00	0.00	0.00	0.00
4,500.00	7.47	78.70	4,476.65	71.67	358.73	-36.30	0.00	0.00	0.00	0.00
4,600.00	7.47	78.70	4,575.80	74.22	371.48	-37.59	0.00	0.00	0.00	0.00
4,700.00	7.47	78.70	4,674.95	76.76	384.23	-38.88	0.00	0.00	0.00	0.00

**Plan Report for Sparboe 40N-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	7.47	78.70	4,774.10	79.31	396.98	-40.17	0.00	0.00	0.00	0.00
4,900.00	7.47	78.70	4,873.25	81.86	409.73	-41.46	0.00	0.00	0.00	0.00
5,000.00	7.47	78.70	4,972.40	84.41	422.48	-42.75	0.00	0.00	0.00	0.00
5,012.71	7.47	78.70	4,985.00	84.73	424.10	-42.91	0.00	0.00	0.00	0.00
<b>Sussex</b>										
5,100.00	7.47	78.70	5,071.55	86.95	435.23	-44.04	0.00	0.00	0.00	0.00
5,200.00	7.47	78.70	5,170.70	89.50	447.98	-45.33	0.00	0.00	0.00	0.00
5,300.00	7.47	78.70	5,269.86	92.05	460.73	-46.62	0.00	0.00	0.00	0.00
5,400.00	7.47	78.70	5,369.01	94.59	473.48	-47.91	0.00	0.00	0.00	0.00
5,500.00	7.47	78.70	5,468.16	97.14	486.23	-49.20	0.00	0.00	0.00	0.00
5,600.00	7.47	78.70	5,567.31	99.69	498.98	-50.49	0.00	0.00	0.00	0.00
5,700.00	7.47	78.70	5,666.46	102.24	511.73	-51.78	0.00	0.00	0.00	0.00
5,800.00	7.47	78.70	5,765.61	104.78	524.48	-53.07	0.00	0.00	0.00	0.00
5,900.00	7.47	78.70	5,864.76	107.33	537.23	-54.36	0.00	0.00	0.00	0.00
6,000.00	7.47	78.70	5,963.91	109.88	549.98	-55.65	0.00	0.00	0.00	0.00
6,100.00	7.47	78.70	6,063.06	112.43	562.73	-56.94	0.00	0.00	0.00	0.00
6,200.00	7.47	78.70	6,162.22	114.97	575.48	-58.23	0.00	0.00	0.00	0.00
6,300.00	7.47	78.70	6,261.37	117.52	588.23	-59.52	0.00	0.00	0.00	0.00
6,400.00	7.47	78.70	6,360.52	120.07	600.98	-60.81	0.00	0.00	0.00	0.00
6,486.72	7.47	78.70	6,446.50	122.28	612.04	-61.93	0.00	0.00	0.00	0.00
<b>Begin Build @ 6486.72ft</b>										
6,500.00	7.33	88.96	6,459.67	122.46	613.73	-61.95	10.00	-1.03	77.28	101.01
6,600.00	12.29	143.60	6,558.37	113.99	626.46	-52.27	10.00	4.96	54.64	90.83
6,700.00	21.15	160.37	6,654.10	88.36	638.87	-25.56	10.00	8.86	16.77	36.83
6,800.00	30.70	167.28	6,743.95	46.36	650.58	17.38	10.00	9.55	6.91	20.72
<b>Build Rate = 10.00/100ft</b>										
6,900.00	40.45	171.12	6,825.20	-10.73	661.24	75.25	10.00	9.75	3.84	14.48
7,000.00	50.29	173.66	6,895.37	-81.19	670.51	146.27	10.00	9.84	2.55	11.35
7,050.66	55.29	174.69	6,926.00	-121.32	674.59	186.61	10.00	9.87	2.02	9.55
<b>Sharon Springs</b>										
7,100.00	60.16	175.57	6,952.34	-162.87	678.13	228.31	10.00	9.89	1.79	8.93
7,120.03	62.15	175.90	6,962.00	-180.37	679.43	245.85	10.00	9.89	1.66	8.46
<b>Niobrara A</b>										
7,200.00	70.06	177.12	6,994.37	-253.29	683.85	318.85	10.00	9.90	1.53	8.30
7,300.00	79.98	178.50	7,020.18	-349.70	687.51	415.16	10.00	9.91	1.37	7.80
7,311.04	81.07	178.64	7,022.00	-360.58	687.78	426.02	10.00	9.92	1.31	7.45
<b>Niobrara B</b>										
7,400.00	89.89	179.79	7,029.00	-449.17	688.99	514.30	10.00	9.92	1.29	7.42
7,401.83	90.08	179.81	7,029.00	-451.00	689.00	516.12	10.00	9.92	1.28	7.33
<b>End Build @ 7401.83ft - Niobrara B TL (Heel) - 7" Intermediate Casing - Sparboe 40N-3HZ Casing Point</b>										
7,500.00	90.08	179.81	7,028.87	-549.17	689.33	613.85	0.00	0.00	0.00	7.33
7,600.00	90.08	179.81	7,028.74	-649.17	689.66	713.41	0.00	0.00	0.00	0.00
7,700.00	90.08	179.81	7,028.61	-749.17	689.99	812.96	0.00	0.00	0.00	0.00
7,800.00	90.08	179.81	7,028.47	-849.17	690.32	912.51	0.00	0.00	0.00	0.00
7,900.00	90.08	179.81	7,028.34	-949.17	690.66	1,012.07	0.00	0.00	0.00	0.00
8,000.00	90.08	179.81	7,028.21	-1,049.17	690.99	1,111.62	0.00	0.00	0.00	0.00
8,100.00	90.08	179.81	7,028.08	-1,149.17	691.32	1,211.18	0.00	0.00	0.00	0.00
8,200.00	90.08	179.81	7,027.94	-1,249.16	691.65	1,310.73	0.00	0.00	0.00	0.00
8,300.00	90.08	179.81	7,027.81	-1,349.16	691.98	1,410.28	0.00	0.00	0.00	0.00
8,400.00	90.08	179.81	7,027.68	-1,449.16	692.32	1,509.84	0.00	0.00	0.00	0.00
8,500.00	90.08	179.81	7,027.55	-1,549.16	692.65	1,609.39	0.00	0.00	0.00	0.00
8,600.00	90.08	179.81	7,027.41	-1,649.16	692.98	1,708.95	0.00	0.00	0.00	0.00
8,700.00	90.08	179.81	7,027.28	-1,749.16	693.31	1,808.50	0.00	0.00	0.00	0.00
8,800.00	90.08	179.81	7,027.15	-1,849.16	693.65	1,908.05	0.00	0.00	0.00	0.00
8,900.00	90.08	179.81	7,027.02	-1,949.16	693.98	2,007.61	0.00	0.00	0.00	0.00
9,000.00	90.08	179.81	7,026.89	-2,049.16	694.31	2,107.16	0.00	0.00	0.00	0.00
9,100.00	90.08	179.81	7,026.75	-2,149.16	694.64	2,206.72	0.00	0.00	0.00	0.00
9,200.00	90.08	179.81	7,026.62	-2,249.16	694.98	2,306.27	0.00	0.00	0.00	0.00
9,300.00	90.08	179.81	7,026.49	-2,349.16	695.31	2,405.82	0.00	0.00	0.00	0.00

**Plan Report for Sparboe 40N-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 (°)
9,400.00	90.08	179.81	7,026.36	-2,449.16	695.64	2,505.38	0.00	0.00	0.00	0.00
9,500.00	90.08	179.81	7,026.22	-2,549.16	695.97	2,604.93	0.00	0.00	0.00	0.00
9,600.00	90.08	179.81	7,026.09	-2,649.16	696.31	2,704.49	0.00	0.00	0.00	0.00
9,700.00	90.08	179.81	7,025.96	-2,749.16	696.64	2,804.04	0.00	0.00	0.00	0.00
9,800.00	90.08	179.81	7,025.83	-2,849.15	696.97	2,903.59	0.00	0.00	0.00	0.00
9,900.00	90.08	179.81	7,025.69	-2,949.15	697.30	3,003.15	0.00	0.00	0.00	0.00
10,000.00	90.08	179.81	7,025.56	-3,049.15	697.63	3,102.70	0.00	0.00	0.00	0.00
10,100.00	90.08	179.81	7,025.43	-3,149.15	697.97	3,202.26	0.00	0.00	0.00	0.00
10,200.00	90.08	179.81	7,025.30	-3,249.15	698.30	3,301.81	0.00	0.00	0.00	0.00
10,300.00	90.08	179.81	7,025.17	-3,349.15	698.63	3,401.36	0.00	0.00	0.00	0.00
10,400.00	90.08	179.81	7,025.03	-3,449.15	698.96	3,500.92	0.00	0.00	0.00	0.00
10,500.00	90.08	179.81	7,024.90	-3,549.15	699.30	3,600.47	0.00	0.00	0.00	0.00
10,600.00	90.08	179.81	7,024.77	-3,649.15	699.63	3,700.03	0.00	0.00	0.00	0.00
10,700.00	90.08	179.81	7,024.64	-3,749.15	699.96	3,799.58	0.00	0.00	0.00	0.00
10,800.00	90.08	179.81	7,024.50	-3,849.15	700.29	3,899.13	0.00	0.00	0.00	0.00
10,900.00	90.08	179.81	7,024.37	-3,949.15	700.63	3,998.69	0.00	0.00	0.00	0.00
11,000.00	90.08	179.81	7,024.24	-4,049.15	700.96	4,098.24	0.00	0.00	0.00	0.00
11,100.00	90.08	179.81	7,024.11	-4,149.15	701.29	4,197.80	0.00	0.00	0.00	0.00
11,200.00	90.08	179.81	7,023.97	-4,249.15	701.62	4,297.35	0.00	0.00	0.00	0.00
11,300.00	90.08	179.81	7,023.84	-4,349.14	701.95	4,396.90	0.00	0.00	0.00	0.00
11,400.00	90.08	179.81	7,023.71	-4,449.14	702.29	4,496.46	0.00	0.00	0.00	0.00
11,500.00	90.08	179.81	7,023.58	-4,549.14	702.62	4,596.01	0.00	0.00	0.00	0.00
11,600.00	90.08	179.81	7,023.45	-4,649.14	702.95	4,695.57	0.00	0.00	0.00	0.00
11,700.00	90.08	179.81	7,023.31	-4,749.14	703.28	4,795.12	0.00	0.00	0.00	0.00
11,800.00	90.08	179.81	7,023.18	-4,849.14	703.62	4,894.67	0.00	0.00	0.00	0.00
11,900.00	90.08	179.81	7,023.05	-4,949.14	703.95	4,994.23	0.00	0.00	0.00	0.00
12,000.00	90.08	179.81	7,022.92	-5,049.14	704.28	5,093.78	0.00	0.00	0.00	0.00
<b>Hold Angle @ 90.08</b>										
12,100.00	90.08	179.81	7,022.78	-5,149.14	704.61	5,193.34	0.00	0.00	0.00	0.00
12,200.00	90.08	179.81	7,022.65	-5,249.14	704.95	5,292.89	0.00	0.00	0.00	0.00
12,300.00	90.08	179.81	7,022.52	-5,349.14	705.28	5,392.44	0.00	0.00	0.00	0.00
12,400.00	90.08	179.81	7,022.39	-5,449.14	705.61	5,492.00	0.00	0.00	0.00	0.00
12,500.00	90.08	179.81	7,022.25	-5,549.14	705.94	5,591.55	0.00	0.00	0.00	0.00
12,600.00	90.08	179.81	7,022.12	-5,649.14	706.27	5,691.10	0.00	0.00	0.00	0.00
12,700.00	90.08	179.81	7,021.99	-5,749.14	706.61	5,790.66	0.00	0.00	0.00	0.00
12,800.00	90.08	179.81	7,021.86	-5,849.14	706.94	5,890.21	0.00	0.00	0.00	0.00
12,900.00	90.08	179.81	7,021.73	-5,949.13	707.27	5,989.77	0.00	0.00	0.00	0.00
13,000.00	90.08	179.81	7,021.59	-6,049.13	707.60	6,089.32	0.00	0.00	0.00	0.00
13,100.00	90.08	179.81	7,021.46	-6,149.13	707.94	6,188.87	0.00	0.00	0.00	0.00
13,200.00	90.08	179.81	7,021.33	-6,249.13	708.27	6,288.43	0.00	0.00	0.00	0.00
13,300.00	90.08	179.81	7,021.20	-6,349.13	708.60	6,387.98	0.00	0.00	0.00	0.00
13,400.00	90.08	179.81	7,021.06	-6,449.13	708.93	6,487.54	0.00	0.00	0.00	0.00
13,500.00	90.08	179.81	7,020.93	-6,549.13	709.27	6,587.09	0.00	0.00	0.00	0.00
13,600.00	90.08	179.81	7,020.80	-6,649.13	709.60	6,686.64	0.00	0.00	0.00	0.00
13,700.00	90.08	179.81	7,020.67	-6,749.13	709.93	6,786.20	0.00	0.00	0.00	0.00
13,800.00	90.08	179.81	7,020.53	-6,849.13	710.26	6,885.75	0.00	0.00	0.00	0.00
13,900.00	90.08	179.81	7,020.40	-6,949.13	710.60	6,985.31	0.00	0.00	0.00	0.00
14,000.00	90.08	179.81	7,020.27	-7,049.13	710.93	7,084.86	0.00	0.00	0.00	0.00
14,100.00	90.08	179.81	7,020.14	-7,149.13	711.26	7,184.41	0.00	0.00	0.00	0.00
14,200.00	90.08	179.81	7,020.01	-7,249.13	711.59	7,283.97	0.00	0.00	0.00	0.00
14,203.91	90.08	179.81	7,020.00	-7,253.04	711.61	7,287.86	0.00	0.00	0.00	0.00
<b>Niobrara B TL (Toe)</b>										
14,203.92	90.08	179.81	7,020.00	-7,253.05	711.61	7,287.87	0.00	0.00	0.00	0.00
<b>Sparboe 40N-3HZ_BHL</b>										

## Plan Report for Sparboe 40N-3HZ - Plan A Rev 0 Permit

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
1,500.00	1,500.00	0.00	0.00	Begin Nudge @ 1500.00ft
1,700.00	1,699.84	1.37	6.84	Nudge Rate = 2.00/100ft
1,873.54	1,872.48	4.76	23.85	End Nudge @ 1873.54ft
4,000.00	3,980.89	58.93	294.98	Hold Angle @ 7.47
6,486.72	6,446.50	122.28	612.04	Begin Build @ 6486.72ft
6,800.00	6,743.95	46.36	650.58	Build Rate = 10.00/100ft
7,401.83	7,029.00	-451.00	689.00	End Build @ 7401.83ft
12,000.00	7,022.92	-5,049.14	704.28	Hold Angle @ 90.08
14,203.92	7,020.00	-7,253.05	711.61	Total Depth @ 14203.92ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Sparboe 40N-3HZ_BHL	174.40	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	14,203.92	Plan A Rev 0 Permit	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,401.83	7,029.00	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	
5,012.71	4,985.00	Sussex		0.00	
7,050.66	6,926.00	Sharon Springs		0.00	
7,120.03	6,962.00	Niobrara A		0.00	
7,311.04	7,022.00	Niobrara B		0.00	
7,401.83	7,029.00	Niobrara B TL (Heel)		0.00	
14,203.91	7,020.00	Niobrara B TL (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Sparboe 40N-3HZ_Sec 34/1 Line	0.00	0.00	0.00	Polygon
Sparboe 40N-3HZ_SHL	0.00	0.00	0.00	Point
Sparboe 40N-3HZ_BHL	7,020.00	-7,253.05	711.61	Point
Sparboe 40N-3HZ_Setback Lines	0.00	0.00	0.00	Polygon
Sparboe 40N-3HZ_Section Lines	0.00	0.00	0.00	Polygon
Sparboe 40N-3HZ_Casing Point	7,029.00	-451.00	689.00	Point

## North Reference Sheet for Sec. 34-T2N-R65W - Sparboe 40N-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 40N-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: 1,281,025.832731 ft N, 3,239,722.556495 ft E

Geographical Coordinates of Well: 40° 06' 05.86" N, 104° 38' 34.90" W

Grid Convergence at Surface is: 0.55°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,203.92ft  
the Bottom Hole Displacement is 7,287.87ft in the Direction of 174.40° (True).

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

