

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 21-T2N-66W

3D 16N-21HZ

Plan A

Plan: Plan A0 - Permit

## Sperry Drilling Services

### Proposal Report

17 July, 2013

Well Coordinates: 1,291,103.75 N, 3,202,380.74 E (40° 07' 48.74" N, 104° 46' 34.38" W)

Ground Level: 4,989.00 ft

Local Coordinate Origin:

Centered on Well 3D 16N-21HZ

Viewing Datum:

RKB = 17' @ 5006.00ft (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**

Project: Weld County, CO (NAD 83)

Site: Sec. 21-T2N-66W

Well: 3D 16N-21HZ

Wellbore: Plan A

Design: Plan A0 - Permit



**HALLIBURTON**  
Sperry Drilling

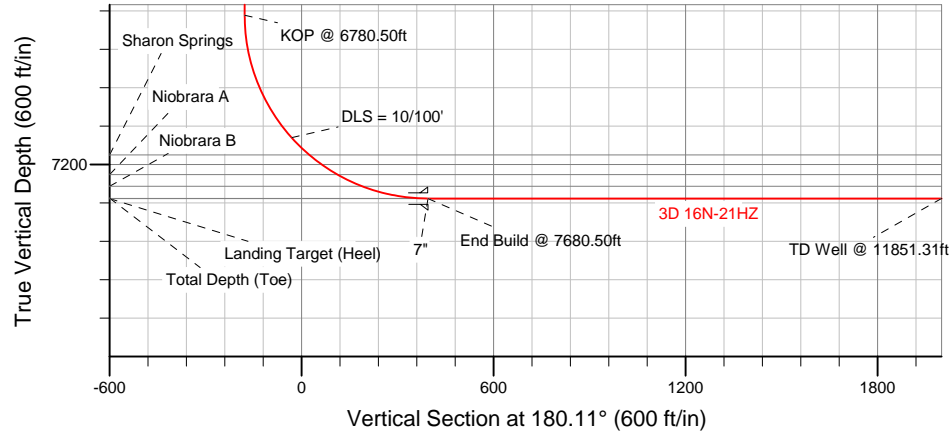
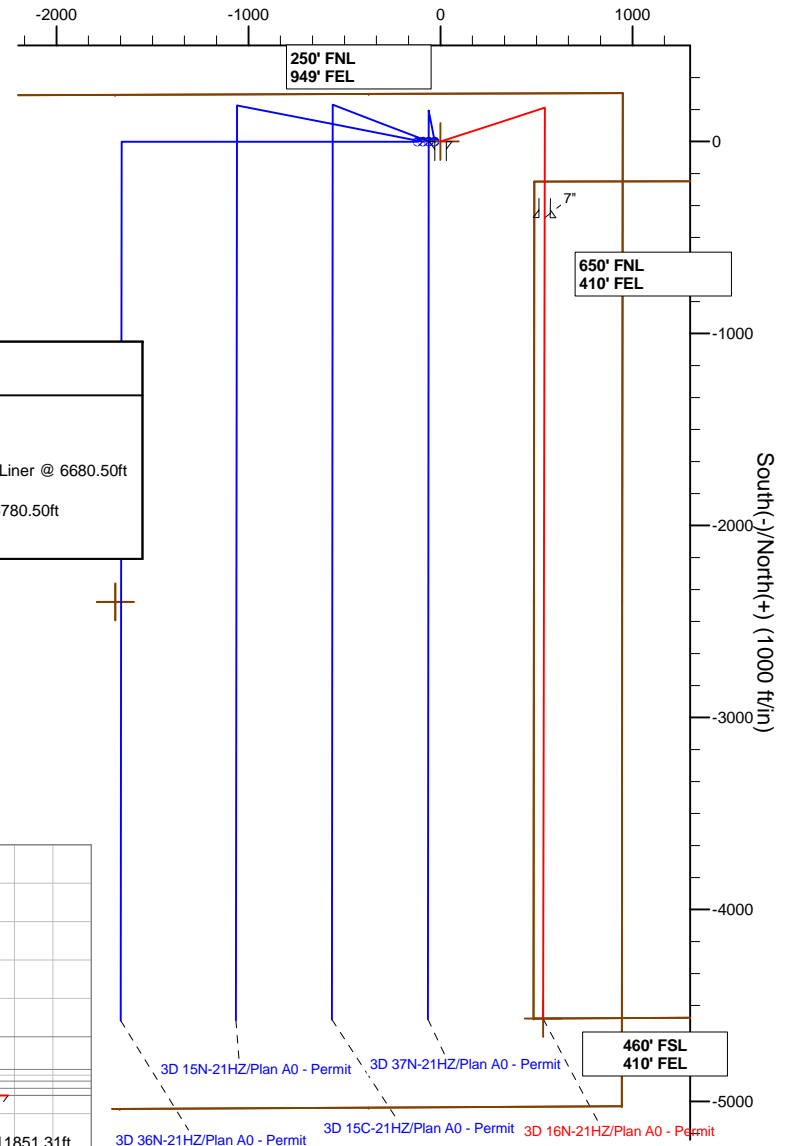
#### SECTION DETAILS

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	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	
3	1700.00	10.00	72.00	1697.47	13.45	41.39	2.00	72.00	-13.53	
4	4490.00	10.00	72.00	4445.08	163.16	502.16	0.00	0.00	-164.13	
5	4990.00	0.00	0.00	4942.54	176.61	543.55	2.00	180.00	-177.65	
6	6780.50	0.00	0.00	6733.04	176.61	543.55	0.00	0.00	-177.65	
7	7680.50	90.00	180.11	7306.00	-396.35	542.45	10.00	180.11	395.30	
8	11851.31	90.00	180.11	7306.00	-4567.14	534.47	0.00	0.00	4566.11	3D 16N-21HZ_BHL

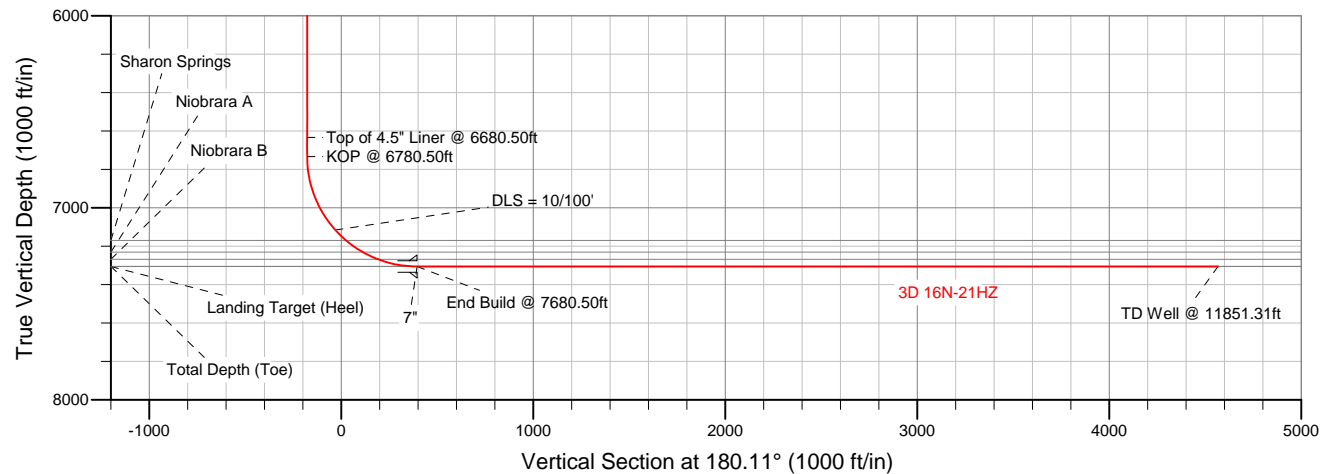
#### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
3D 16N-21HZ_LD	0.00	-2397.63	-1693.33	40.123624	-104.782273	Polygon
3D 16N-21HZ_SHL	0.00	0.00	0.00	40.130206	-104.776218	Point
3D_SEC	0.00	-2397.63	-1693.33	40.123624	-104.782273	Polygon
3D 16N-21HZ_BHL	7306.00	-4567.14	534.47	40.117669	-104.774307	Point

West(-)/East(+) (1000 ft/in)



TVD	MD	Description
6633.04	6680.50	Top of 4.5" Liner @ 6680.50ft
6733.04	6780.50	KOP @ 6780.50ft



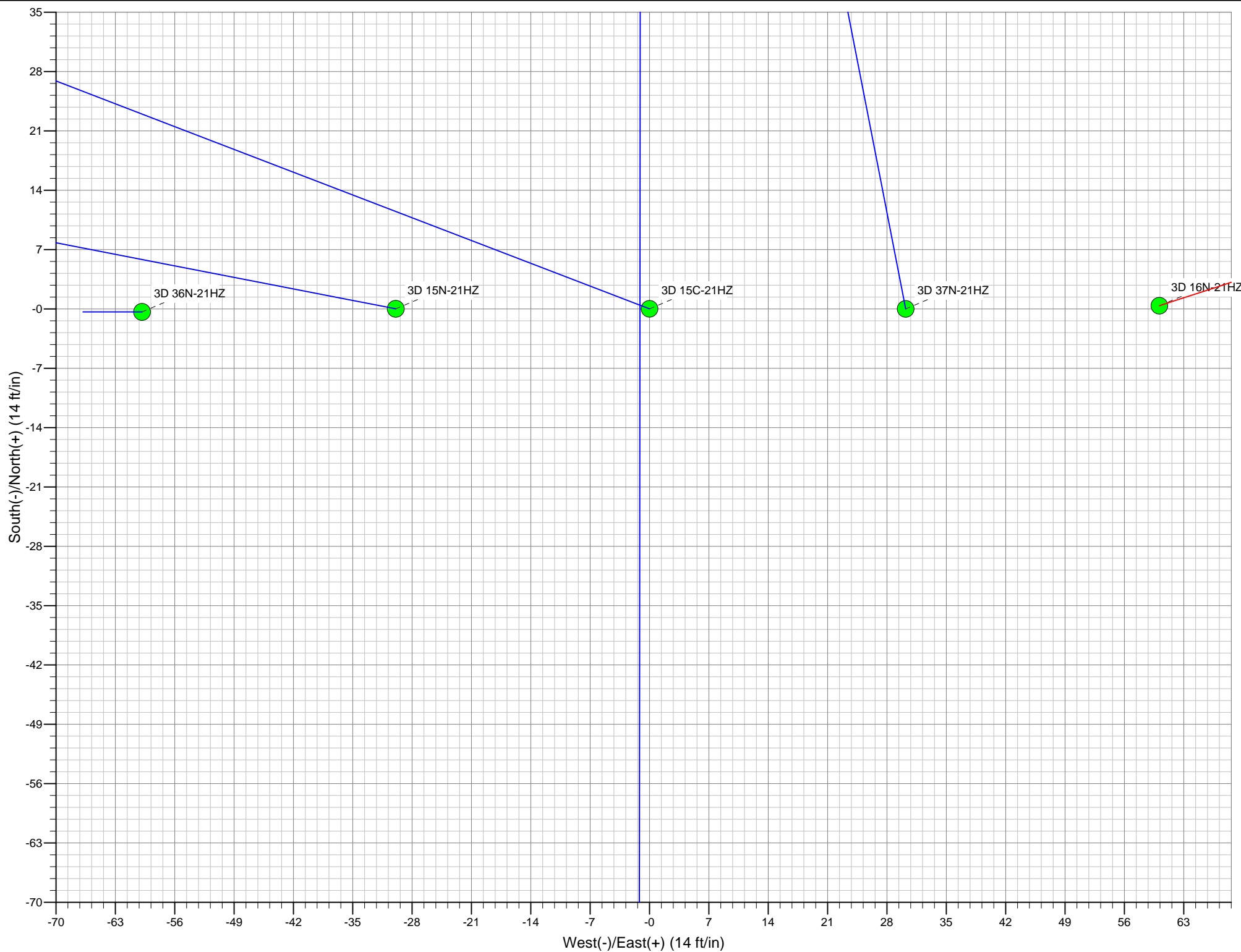
WELL DETAILS: 3D 16N-21HZ

Ground Level: 4989.00

RKB = 17' @ 5006.00ft (Drilling Rig)

Plan: Plan A0 - Permit (3D 16N-21HZ/Plan A)

Created By: Clint Eshelman Date: 07/17/2013



**Plan Report for 3D 16N-21HZ - 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
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
925.00	0.00	0.00	925.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills Base</b>										
975.00	0.00	0.00	975.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>										
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	72.00	1,299.98	0.54	1.66	-0.54	2.00	2.00	0.00	72.00
1,400.00	4.00	72.00	1,399.84	2.16	6.64	-2.17	2.00	2.00	0.00	0.00
1,500.00	6.00	72.00	1,499.45	4.85	14.93	-4.88	2.00	2.00	0.00	0.00
1,600.00	8.00	72.00	1,598.70	8.62	26.52	-8.67	2.00	2.00	0.00	0.00
1,700.00	10.00	72.00	1,697.47	13.45	41.39	-13.53	2.00	2.00	0.00	0.00
<b>End Nudge @ 1700.00ft</b>										
1,800.00	10.00	72.00	1,795.95	18.82	57.91	-18.93	0.00	0.00	0.00	0.00
1,900.00	10.00	72.00	1,894.43	24.18	74.42	-24.32	0.00	0.00	0.00	0.00
2,000.00	10.00	72.00	1,992.91	29.55	90.94	-29.72	0.00	0.00	0.00	0.00
2,100.00	10.00	72.00	2,091.39	34.91	107.45	-35.12	0.00	0.00	0.00	0.00
2,200.00	10.00	72.00	2,189.87	40.28	123.97	-40.52	0.00	0.00	0.00	0.00
2,300.00	10.00	72.00	2,288.35	45.65	140.48	-45.91	0.00	0.00	0.00	0.00
2,400.00	10.00	72.00	2,386.83	51.01	157.00	-51.31	0.00	0.00	0.00	0.00
2,500.00	10.00	72.00	2,485.31	56.38	173.51	-56.71	0.00	0.00	0.00	0.00
2,600.00	10.00	72.00	2,583.79	61.74	190.03	-62.11	0.00	0.00	0.00	0.00
2,700.00	10.00	72.00	2,682.27	67.11	206.54	-67.51	0.00	0.00	0.00	0.00
2,800.00	10.00	72.00	2,780.75	72.48	223.06	-72.90	0.00	0.00	0.00	0.00
2,900.00	10.00	72.00	2,879.23	77.84	239.57	-78.30	0.00	0.00	0.00	0.00
3,000.00	10.00	72.00	2,977.72	83.21	256.09	-83.70	0.00	0.00	0.00	0.00
3,100.00	10.00	72.00	3,076.20	88.57	272.60	-89.10	0.00	0.00	0.00	0.00
3,200.00	10.00	72.00	3,174.68	93.94	289.12	-94.49	0.00	0.00	0.00	0.00
3,300.00	10.00	72.00	3,273.16	99.31	305.63	-99.89	0.00	0.00	0.00	0.00
3,400.00	10.00	72.00	3,371.64	104.67	322.15	-105.29	0.00	0.00	0.00	0.00
3,500.00	10.00	72.00	3,470.12	110.04	338.66	-110.69	0.00	0.00	0.00	0.00
3,600.00	10.00	72.00	3,568.60	115.40	355.18	-116.09	0.00	0.00	0.00	0.00
3,700.00	10.00	72.00	3,667.08	120.77	371.69	-121.48	0.00	0.00	0.00	0.00
3,800.00	10.00	72.00	3,765.56	126.14	388.21	-126.88	0.00	0.00	0.00	0.00
3,900.00	10.00	72.00	3,864.04	131.50	404.72	-132.28	0.00	0.00	0.00	0.00
4,000.00	10.00	72.00	3,962.52	136.87	421.24	-137.68	0.00	0.00	0.00	0.00
4,100.00	10.00	72.00	4,061.00	142.23	437.75	-143.07	0.00	0.00	0.00	0.00
4,200.00	10.00	72.00	4,159.48	147.60	454.27	-148.47	0.00	0.00	0.00	0.00
4,206.62	10.00	72.00	4,166.00	147.95	455.36	-148.83	0.00	0.00	0.00	0.00
<b>Parkman</b>										
4,300.00	10.00	72.00	4,257.97	152.97	470.78	-153.87	0.00	0.00	0.00	0.00
4,400.00	10.00	72.00	4,356.45	158.33	487.30	-159.27	0.00	0.00	0.00	0.00
4,490.00	10.00	72.00	4,445.08	163.16	502.16	-164.13	0.00	0.00	0.00	0.00
<b>Begin Drop @ 4490.00ft</b>										
4,500.00	9.80	72.00	4,454.93	163.69	503.79	-164.66	2.00	-2.00	0.00	180.00
4,600.00	7.80	72.00	4,553.75	168.42	518.34	-169.41	2.00	-2.00	0.00	180.00
4,613.37	7.53	72.00	4,567.00	168.97	520.04	-169.97	2.00	-2.00	0.00	-180.00

**Plan Report for 3D 16N-21HZ - 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 (°)
<b>Sussex</b>										
4,700.00	5.80	72.00	4,653.04	172.08	529.60	-173.09	2.00	-2.00	0.00	180.00
4,800.00	3.80	72.00	4,752.68	174.66	537.56	-175.70	2.00	-2.00	0.00	180.00
4,900.00	1.80	72.00	4,852.56	176.17	542.21	-177.21	2.00	-2.00	0.00	180.00
4,990.00	0.00	0.00	4,942.54	176.61	543.55	-177.65	2.00	-2.00	0.00	-180.00
<b>End Drop @ 4990.00ft</b>										
5,000.00	0.00	0.00	4,952.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,052.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,152.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,252.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,352.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,452.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,552.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,652.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,752.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,852.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,952.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,052.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,152.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,252.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,352.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,452.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,552.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
6,680.50	0.00	0.00	6,633.04	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
<b>Top of 4.5" Liner @ 6680.50ft</b>										
6,700.00	0.00	0.00	6,652.54	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
6,780.50	0.00	0.00	6,733.04	176.61	543.55	-177.65	0.00	0.00	0.00	0.00
<b>KOP @ 6780.50ft</b>										
6,800.00	1.95	180.11	6,752.54	176.28	543.55	-177.32	10.00	10.00	0.00	180.11
6,850.00	6.95	180.11	6,802.37	172.40	543.54	-173.44	10.00	10.00	0.00	0.00
6,900.00	11.95	180.11	6,851.68	164.19	543.53	-165.24	10.00	10.00	0.00	0.00
6,950.00	16.95	180.11	6,900.08	151.72	543.50	-152.76	10.00	10.00	0.00	0.00
7,000.00	21.95	180.11	6,947.21	135.08	543.47	-136.12	10.00	10.00	0.00	0.00
7,050.00	26.95	180.11	6,992.72	114.39	543.43	-115.43	10.00	10.00	0.00	0.00
7,100.00	31.95	180.11	7,036.24	89.81	543.39	-90.86	10.00	10.00	0.00	0.00
7,150.00	36.95	180.11	7,077.46	61.54	543.33	-62.58	10.00	10.00	0.00	0.00
7,200.00	41.95	180.11	7,116.06	29.78	543.27	-30.82	10.00	10.00	0.00	0.00
<b>DLS = 10/100'</b>										
7,250.00	46.95	180.11	7,151.74	-5.23	543.20	4.18	10.00	10.00	0.00	0.00
7,277.47	49.70	180.11	7,170.00	-25.74	543.16	24.70	10.00	10.00	0.00	0.00
<b>Sharon Springs</b>										
7,300.00	51.95	180.11	7,184.23	-43.20	543.13	42.16	10.00	10.00	0.00	0.00
7,350.00	56.95	180.11	7,213.29	-83.87	543.05	82.83	10.00	10.00	0.00	0.00
7,384.04	60.35	180.11	7,231.00	-112.94	543.00	111.89	10.00	10.00	0.00	0.00
<b>Niobrara A</b>										
7,400.00	61.95	180.11	7,238.70	-126.92	542.97	125.88	10.00	10.00	0.00	0.00
7,450.00	66.95	180.11	7,260.26	-172.01	542.88	170.97	10.00	10.00	0.00	0.00
7,470.65	69.01	180.11	7,268.00	-191.16	542.85	190.11	10.00	10.00	0.00	0.00
<b>Niobrara B</b>										
7,500.00	71.95	180.11	7,277.80	-218.82	542.79	217.77	10.00	10.00	0.00	0.00
7,550.00	76.95	180.11	7,291.20	-266.97	542.70	265.93	10.00	10.00	0.00	0.00
7,600.00	81.95	180.11	7,300.36	-316.11	542.61	315.07	10.00	10.00	0.00	0.00
7,650.00	86.95	180.11	7,305.19	-365.86	542.51	364.82	10.00	10.00	0.00	0.00
7,680.50	90.00	180.11	7,306.00	-396.35	542.45	395.30	10.00	10.00	0.00	0.00
<b>End Build @ 7680.50ft - Landing Target (Heel) - 7"</b>										
7,700.00	90.00	180.11	7,306.00	-415.85	542.42	414.80	0.00	0.00	0.00	0.00
7,800.00	90.00	180.11	7,306.00	-515.85	542.23	514.80	0.00	0.00	0.00	0.00
7,900.00	90.00	180.11	7,306.00	-615.85	542.03	614.80	0.00	0.00	0.00	0.00

**Plan Report for 3D 16N-21HZ - 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 (°)
8,000.00	90.00	180.11	7,306.00	-715.85	541.84	714.80	0.00	0.00	0.00	0.00
8,100.00	90.00	180.11	7,306.00	-815.85	541.65	814.80	0.00	0.00	0.00	0.00
8,200.00	90.00	180.11	7,306.00	-915.85	541.46	914.80	0.00	0.00	0.00	0.00
8,300.00	90.00	180.11	7,306.00	-1,015.85	541.27	1,014.80	0.00	0.00	0.00	0.00
8,400.00	90.00	180.11	7,306.00	-1,115.84	541.08	1,114.80	0.00	0.00	0.00	0.00
8,500.00	90.00	180.11	7,306.00	-1,215.84	540.89	1,214.80	0.00	0.00	0.00	0.00
8,600.00	90.00	180.11	7,306.00	-1,315.84	540.69	1,314.80	0.00	0.00	0.00	0.00
8,700.00	90.00	180.11	7,306.00	-1,415.84	540.50	1,414.80	0.00	0.00	0.00	0.00
8,800.00	90.00	180.11	7,306.00	-1,515.84	540.31	1,514.80	0.00	0.00	0.00	0.00
8,900.00	90.00	180.11	7,306.00	-1,615.84	540.12	1,614.80	0.00	0.00	0.00	0.00
9,000.00	90.00	180.11	7,306.00	-1,715.84	539.93	1,714.80	0.00	0.00	0.00	0.00
9,100.00	90.00	180.11	7,306.00	-1,815.84	539.74	1,814.80	0.00	0.00	0.00	0.00
9,200.00	90.00	180.11	7,306.00	-1,915.84	539.55	1,914.80	0.00	0.00	0.00	0.00
9,300.00	90.00	180.11	7,306.00	-2,015.84	539.35	2,014.80	0.00	0.00	0.00	0.00
9,400.00	90.00	180.11	7,306.00	-2,115.84	539.16	2,114.80	0.00	0.00	0.00	0.00
9,500.00	90.00	180.11	7,306.00	-2,215.84	538.97	2,214.80	0.00	0.00	0.00	0.00
9,600.00	90.00	180.11	7,306.00	-2,315.84	538.78	2,314.80	0.00	0.00	0.00	0.00
9,700.00	90.00	180.11	7,306.00	-2,415.84	538.59	2,414.80	0.00	0.00	0.00	0.00
9,800.00	90.00	180.11	7,306.00	-2,515.84	538.40	2,514.80	0.00	0.00	0.00	0.00
9,900.00	90.00	180.11	7,306.00	-2,615.84	538.21	2,614.80	0.00	0.00	0.00	0.00
10,000.00	90.00	180.11	7,306.00	-2,715.84	538.02	2,714.80	0.00	0.00	0.00	0.00
10,100.00	90.00	180.11	7,306.00	-2,815.84	537.82	2,814.80	0.00	0.00	0.00	0.00
10,200.00	90.00	180.11	7,306.00	-2,915.84	537.63	2,914.80	0.00	0.00	0.00	0.00
10,300.00	90.00	180.11	7,306.00	-3,015.84	537.44	3,014.80	0.00	0.00	0.00	0.00
10,400.00	90.00	180.11	7,306.00	-3,115.84	537.25	3,114.80	0.00	0.00	0.00	0.00
10,500.00	90.00	180.11	7,306.00	-3,215.84	537.06	3,214.80	0.00	0.00	0.00	0.00
10,600.00	90.00	180.11	7,306.00	-3,315.84	536.87	3,314.80	0.00	0.00	0.00	0.00
10,700.00	90.00	180.11	7,306.00	-3,415.84	536.68	3,414.80	0.00	0.00	0.00	0.00
10,800.00	90.00	180.11	7,306.00	-3,515.84	536.48	3,514.80	0.00	0.00	0.00	0.00
10,900.00	90.00	180.11	7,306.00	-3,615.84	536.29	3,614.80	0.00	0.00	0.00	0.00
11,000.00	90.00	180.11	7,306.00	-3,715.84	536.10	3,714.80	0.00	0.00	0.00	0.00
11,100.00	90.00	180.11	7,306.00	-3,815.84	535.91	3,814.80	0.00	0.00	0.00	0.00
11,200.00	90.00	180.11	7,306.00	-3,915.84	535.72	3,914.80	0.00	0.00	0.00	0.00
11,300.00	90.00	180.11	7,306.00	-4,015.84	535.53	4,014.80	0.00	0.00	0.00	0.00
11,400.00	90.00	180.11	7,306.00	-4,115.84	535.34	4,114.80	0.00	0.00	0.00	0.00
11,500.00	90.00	180.11	7,306.00	-4,215.84	535.14	4,214.80	0.00	0.00	0.00	0.00
11,600.00	90.00	180.11	7,306.00	-4,315.84	534.95	4,314.80	0.00	0.00	0.00	0.00
11,700.00	90.00	180.11	7,306.00	-4,415.84	534.76	4,414.80	0.00	0.00	0.00	0.00
11,800.00	90.00	180.11	7,306.00	-4,515.84	534.57	4,514.80	0.00	0.00	0.00	0.00
11,851.31	90.00	180.11	7,306.00	-4,567.14	534.47	4,566.11	0.00	0.00	0.00	0.00

**3D 16N-21HZ\_BHL****Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,200.00	1,200.00	0.00	0.00	Begin Nudge @ 1200.00ft
1,700.00	1,697.47	13.45	41.39	End Nudge @ 1700.00ft
4,490.00	4,445.08	163.16	502.16	Begin Drop @ 4490.00ft
4,990.00	4,942.54	176.61	543.55	End Drop @ 4990.00ft
6,680.50	6,633.04	176.61	543.55	Top of 4.5" Liner @ 6680.50ft
6,780.50	6,733.04	176.61	543.55	KOP @ 6780.50ft
7,200.00	7,116.06	29.78	543.27	DLS = 10/100'
7,680.50	7,306.00	-396.35	542.45	End Build @ 7680.50ft
11,851.31	7,306.00	-4,567.15	534.47	TD Well @ 11851.31ft

## Plan Report for 3D 16N-21HZ - Plan A0 - Permit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	180.11	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	11,851.31	Plan A0 - Permit	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
975.00	975.00	9 5/8"	9-5/8	13-1/2
7,680.50	7,306.00	7"	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
925.00	925.00	Fox Hills Base		0.00	
4,206.62	4,166.00	Parkman		0.00	
4,613.37	4,567.00	Sussex		0.00	
7,277.47	7,170.00	Sharon Springs		0.00	
7,384.04	7,231.00	Niobrara A		0.00	
7,470.65	7,268.00	Niobrara B		0.00	
7,680.50	7,306.00	Landing Target (Heel)		0.00	
11,851.31	7,306.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
3D 16N-21HZ_LD	0.00	-2,397.63	-1,693.33	Polygon
3D 16N-21HZ_BHL	7,306.00	-4,567.14	534.47	Point
3D_SEC	0.00	-2,397.63	-1,693.33	Polygon
3D 16N-21HZ_SHL	0.00	0.00	0.00	Point

## North Reference Sheet for Sec. 21-T2N-66W - 3D 16N-21HZ - 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' @ 5006.00ft (Drilling Rig). Northing and Easting are relative to 3D 16N-21HZ  
 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: 0.99995905  
 Grid Coordinates of Well: 1,291,103.75 ft N, 3,202,380.74 ft E  
 Geographical Coordinates of Well: 40° 07' 48.74" N, 104° 46' 34.38" W  
 Grid Convergence at Surface is: 0.47°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,851.31ft  
 the Bottom Hole Displacement is 4,598.31ft in the Direction of 173.33° (True).  
 Magnetic Convergence at surface is: -8.13° (17 July 2013, , BGGM2013)

