

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 28-T1N-R67W

D&C FARMS 14N-33HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

## Sperry Drilling Services

### Proposal Report

14 June, 2013

Well Coordinates: 1,249,572.25 N, 3,168,843.55 E (40° 01' 00.79" N, 104° 53' 49.79" W)

Ground Level: 5,011.00 ft

Local Coordinate Origin: Centered on Well D&C FARMS 14N-33HZ

Viewing Datum: RKB = 17 @ 5028.00ft (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. 28-T1N-R67W  
 Well: D&C FARMS 14N-33HZ  
 Wellbore: Plan A Rev 0  
 Design: Plan A Rev 0 Permit



**HALLIBURTON**  
 Sperry Drilling

#### SECTION DETAILS

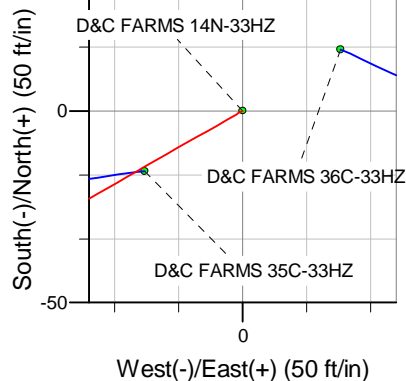
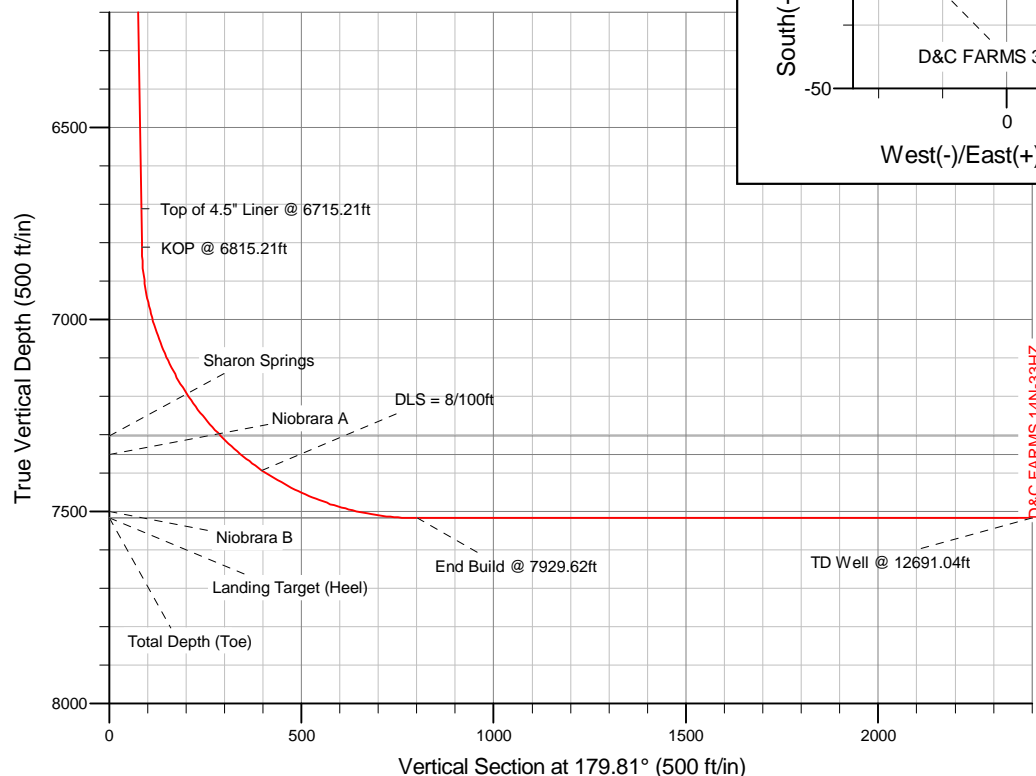
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
3	1085.80	1.72	240.23	1085.79	-0.64	-1.12	2.00	240.23	0.63	
4	6815.21	1.72	240.23	6812.63	-85.82	-150.04	0.00	0.00	85.32	
5	7929.62	90.00	179.81	7518.00	-802.00	-166.00	8.00	-60.44	801.45	D&C FARMS 14N-33HZ_CP
6	12691.04	90.00	179.81	7518.00	-5563.38	-149.88	0.00	0.00	5562.86	D&C FARMS 14N-33HZ_BHL

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

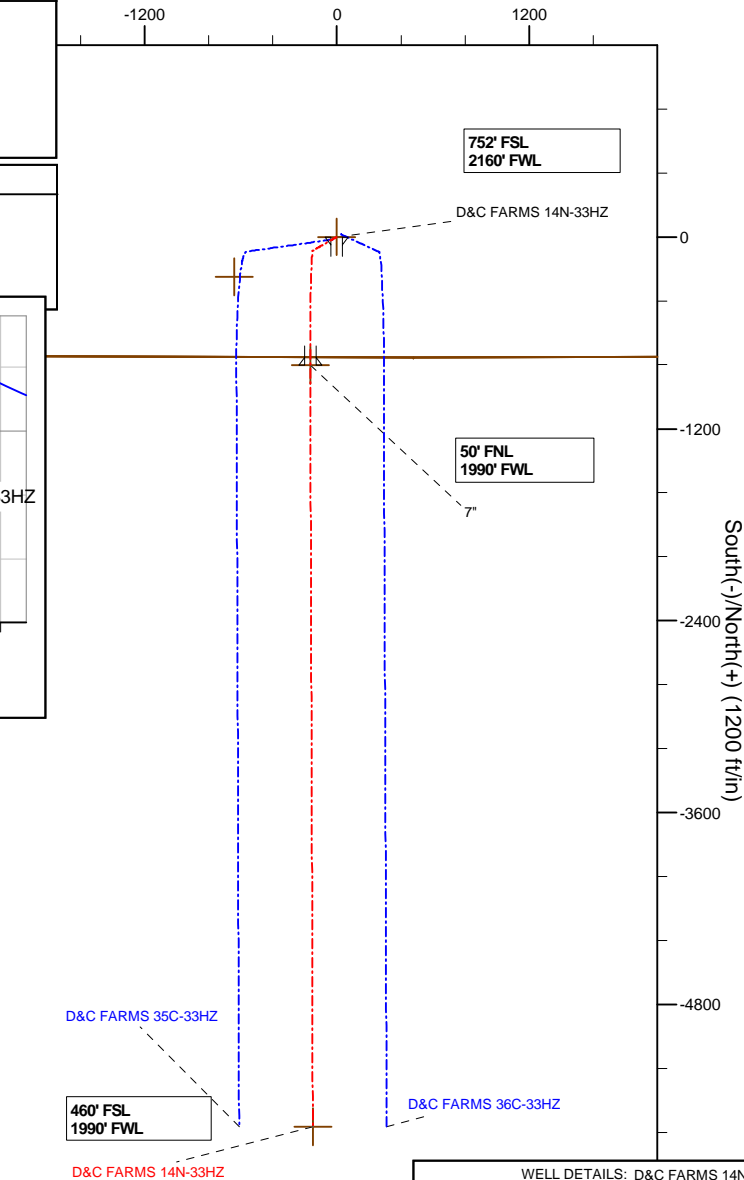
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
D&C FARMS 14N-33HZ_SHL	0.00	0.00	0.00	40.016887	-104.897164	Point
D&C FARMS_SEC	3.00	-249.17	-640.86	40.016203	-104.899452	Polygon
D&C FARMS 14N-33HZ_BHL	7518.00	-5563.38	-149.88	40.001615	-104.897699	Point
D&C FARMS 14N-33HZ_CP	7518.00	-802.00	-166.00	40.014685	-104.897757	Point

TVD MD

6712.67 6715.21 Top of 4.5" Liner @ 6715.21ft  
 6812.63 6815.21 KOP @ 6815.21ft



West(-)/East(+) (1200 ft/in)



WELL DETAILS: D&C FARMS 14N-33HZ

Ground Level: 5011.00  
 RKB = 17 @ 5028.00ft (Drilling Rig)

Plan: Plan A Rev 0 Permit (D&C FARMS 14N-33HZ/Plan A Rev 0)

Created By: Fred Hartmann Date: 06/05/2013

**Plan Report for D&C FARMS 14N-33HZ - 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
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
798.00	0.00	0.00	798.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</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
<b>Begin Nudge @ 1000.00ft</b>										
1,085.80	1.72	240.23	1,085.79	-0.64	-1.12	0.63	2.00	2.00	0.00	240.23
<b>End Nudge @ 1085.80ft</b>										
1,100.00	1.72	240.23	1,099.98	-0.85	-1.48	0.84	0.00	0.00	0.00	0.00
1,200.00	1.72	240.23	1,199.94	-2.34	-4.08	2.32	0.00	0.00	0.00	0.00
1,300.00	1.72	240.23	1,299.89	-3.82	-6.68	3.80	0.00	0.00	0.00	0.00
1,400.00	1.72	240.23	1,399.85	-5.31	-9.28	5.28	0.00	0.00	0.00	0.00
1,500.00	1.72	240.23	1,499.80	-6.80	-11.88	6.76	0.00	0.00	0.00	0.00
1,600.00	1.72	240.23	1,599.76	-8.28	-14.48	8.23	0.00	0.00	0.00	0.00
1,700.00	1.72	240.23	1,699.71	-9.77	-17.08	9.71	0.00	0.00	0.00	0.00
1,800.00	1.72	240.23	1,799.67	-11.26	-19.68	11.19	0.00	0.00	0.00	0.00
1,900.00	1.72	240.23	1,899.62	-12.74	-22.28	12.67	0.00	0.00	0.00	0.00
2,000.00	1.72	240.23	1,999.58	-14.23	-24.88	14.15	0.00	0.00	0.00	0.00
2,100.00	1.72	240.23	2,099.53	-15.72	-27.48	15.63	0.00	0.00	0.00	0.00
2,200.00	1.72	240.23	2,199.49	-17.20	-30.08	17.10	0.00	0.00	0.00	0.00
2,300.00	1.72	240.23	2,299.44	-18.69	-32.68	18.58	0.00	0.00	0.00	0.00
2,400.00	1.72	240.23	2,399.40	-20.18	-35.28	20.06	0.00	0.00	0.00	0.00
2,500.00	1.72	240.23	2,499.35	-21.66	-37.88	21.54	0.00	0.00	0.00	0.00
2,600.00	1.72	240.23	2,599.31	-23.15	-40.48	23.02	0.00	0.00	0.00	0.00
2,700.00	1.72	240.23	2,699.26	-24.64	-43.07	24.49	0.00	0.00	0.00	0.00
2,800.00	1.72	240.23	2,799.22	-26.12	-45.67	25.97	0.00	0.00	0.00	0.00
2,900.00	1.72	240.23	2,899.17	-27.61	-48.27	27.45	0.00	0.00	0.00	0.00
3,000.00	1.72	240.23	2,999.13	-29.10	-50.87	28.93	0.00	0.00	0.00	0.00
3,100.00	1.72	240.23	3,099.08	-30.59	-53.47	30.41	0.00	0.00	0.00	0.00
3,200.00	1.72	240.23	3,199.04	-32.07	-56.07	31.89	0.00	0.00	0.00	0.00
3,300.00	1.72	240.23	3,298.99	-33.56	-58.67	33.36	0.00	0.00	0.00	0.00
3,400.00	1.72	240.23	3,398.95	-35.05	-61.27	34.84	0.00	0.00	0.00	0.00
3,500.00	1.72	240.23	3,498.90	-36.53	-63.87	36.32	0.00	0.00	0.00	0.00
3,600.00	1.72	240.23	3,598.86	-38.02	-66.47	37.80	0.00	0.00	0.00	0.00
3,700.00	1.72	240.23	3,698.81	-39.51	-69.07	39.28	0.00	0.00	0.00	0.00
3,800.00	1.72	240.23	3,798.77	-40.99	-71.67	40.75	0.00	0.00	0.00	0.00
3,900.00	1.72	240.23	3,898.73	-42.48	-74.27	42.23	0.00	0.00	0.00	0.00
4,000.00	1.72	240.23	3,998.68	-43.97	-76.87	43.71	0.00	0.00	0.00	0.00
4,100.00	1.72	240.23	4,098.64	-45.45	-79.47	45.19	0.00	0.00	0.00	0.00
4,200.00	1.72	240.23	4,198.59	-46.94	-82.07	46.67	0.00	0.00	0.00	0.00
4,300.00	1.72	240.23	4,298.55	-48.43	-84.66	48.15	0.00	0.00	0.00	0.00
4,400.00	1.72	240.23	4,398.50	-49.91	-87.26	49.62	0.00	0.00	0.00	0.00
4,500.00	1.72	240.23	4,498.46	-51.40	-89.86	51.10	0.00	0.00	0.00	0.00
4,600.00	1.72	240.23	4,598.41	-52.89	-92.46	52.58	0.00	0.00	0.00	0.00
4,700.00	1.72	240.23	4,698.37	-54.37	-95.06	54.06	0.00	0.00	0.00	0.00
4,800.00	1.72	240.23	4,798.32	-55.86	-97.66	55.54	0.00	0.00	0.00	0.00
4,842.70	1.72	240.23	4,841.00	-56.50	-98.77	56.17	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,900.00	1.72	240.23	4,898.28	-57.35	-100.26	57.01	0.00	0.00	0.00	0.00
5,000.00	1.72	240.23	4,998.23	-58.83	-102.86	58.49	0.00	0.00	0.00	0.00

**Plan Report for D&C FARMS 14N-33HZ - 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 (°)
5,100.00	1.72	240.23	5,098.19	-60.32	-105.46	59.97	0.00	0.00	0.00	0.00
5,200.00	1.72	240.23	5,198.14	-61.81	-108.06	61.45	0.00	0.00	0.00	0.00
5,300.00	1.72	240.23	5,298.10	-63.29	-110.66	62.93	0.00	0.00	0.00	0.00
5,331.92	1.72	240.23	5,330.00	-63.77	-111.49	63.40	0.00	0.00	0.00	0.00
<b>Shannon</b>										
5,400.00	1.72	240.23	5,398.05	-64.78	-113.26	64.41	0.00	0.00	0.00	0.00
5,500.00	1.72	240.23	5,498.01	-66.27	-115.86	65.88	0.00	0.00	0.00	0.00
5,600.00	1.72	240.23	5,597.96	-67.76	-118.46	67.36	0.00	0.00	0.00	0.00
5,700.00	1.72	240.23	5,697.92	-69.24	-121.06	68.84	0.00	0.00	0.00	0.00
5,800.00	1.72	240.23	5,797.87	-70.73	-123.66	70.32	0.00	0.00	0.00	0.00
5,900.00	1.72	240.23	5,897.83	-72.22	-126.26	71.80	0.00	0.00	0.00	0.00
6,000.00	1.72	240.23	5,997.78	-73.70	-128.85	73.27	0.00	0.00	0.00	0.00
6,100.00	1.72	240.23	6,097.74	-75.19	-131.45	74.75	0.00	0.00	0.00	0.00
6,200.00	1.72	240.23	6,197.69	-76.68	-134.05	76.23	0.00	0.00	0.00	0.00
6,300.00	1.72	240.23	6,297.65	-78.16	-136.65	77.71	0.00	0.00	0.00	0.00
6,400.00	1.72	240.23	6,397.60	-79.65	-139.25	79.19	0.00	0.00	0.00	0.00
6,500.00	1.72	240.23	6,497.56	-81.14	-141.85	80.67	0.00	0.00	0.00	0.00
6,600.00	1.72	240.23	6,597.51	-82.62	-144.45	82.14	0.00	0.00	0.00	0.00
6,700.00	1.72	240.23	6,697.47	-84.11	-147.05	83.62	0.00	0.00	0.00	0.00
6,715.21	1.72	240.23	6,712.67	-84.34	-147.45	83.85	0.00	0.00	0.00	0.00
<b>Top of 4.5" Liner @ 6715.21ft</b>										
6,800.00	1.72	240.23	6,797.42	-85.60	-149.65	85.10	0.00	0.00	0.00	0.00
6,815.21	1.72	240.23	6,812.63	-85.82	-150.04	85.32	0.00	0.00	0.00	0.00
<b>KOP @ 6815.21ft</b>										
6,900.00	7.77	190.81	6,897.11	-92.09	-152.22	91.59	8.00	7.14	-58.29	-60.44
7,000.00	15.70	185.13	6,994.94	-112.24	-154.71	111.73	8.00	7.93	-5.68	-11.10
7,100.00	23.67	183.21	7,089.02	-145.82	-157.04	145.30	8.00	7.98	-1.91	-5.52
7,200.00	31.66	182.23	7,177.52	-192.17	-159.19	191.64	8.00	7.99	-0.99	-3.72
7,300.00	39.65	181.61	7,258.70	-250.38	-161.11	249.84	8.00	7.99	-0.62	-2.84
7,361.06	44.53	181.32	7,304.00	-291.29	-162.15	290.75	8.00	7.99	-0.47	-2.34
<b>Sharon Springs</b>										
7,400.00	47.65	181.17	7,331.00	-319.33	-162.76	318.79	8.00	7.99	-0.40	-2.13
7,431.97	50.20	181.05	7,352.00	-343.42	-163.23	342.88	8.00	8.00	-0.37	-2.02
<b>Niobrara A</b>										
7,500.00	55.64	180.83	7,393.00	-397.67	-164.11	397.13	8.00	8.00	-0.33	-1.94
<b>DLS = 8/100ft</b>										
7,600.00	63.64	180.55	7,443.50	-483.89	-165.14	483.34	8.00	8.00	-0.28	-1.81
7,700.00	71.64	180.30	7,481.52	-576.29	-165.81	575.73	8.00	8.00	-0.24	-1.67
7,773.24	77.49	180.14	7,501.00	-646.86	-166.08	646.30	8.00	8.00	-0.22	-1.57
<b>Niobrara B</b>										
7,800.00	79.63	180.08	7,506.31	-673.08	-166.13	672.53	8.00	8.00	-0.22	-1.53
7,900.00	87.63	179.87	7,517.39	-772.38	-166.08	771.83	8.00	8.00	-0.21	-1.52
7,929.62	90.00	179.81	7,518.00	-802.00	-166.00	801.45	8.00	8.00	-0.21	-1.49
<b>End Build @ 7929.62ft - Landing Target (Heel) - Total Depth (Toe) - 7" - D&amp;C FARMS 14N-33HZ_CP</b>										
8,000.00	90.00	179.81	7,518.00	-872.38	-165.76	871.82	0.00	0.00	0.00	0.00
8,100.00	90.00	179.81	7,518.00	-972.37	-165.42	971.82	0.00	0.00	0.00	0.00
8,200.00	90.00	179.81	7,518.00	-1,072.37	-165.08	1,071.82	0.00	0.00	0.00	0.00
8,300.00	90.00	179.81	7,518.00	-1,172.37	-164.75	1,171.82	0.00	0.00	0.00	0.00
8,400.00	90.00	179.81	7,518.00	-1,272.37	-164.41	1,271.82	0.00	0.00	0.00	0.00
8,500.00	90.00	179.81	7,518.00	-1,372.37	-164.07	1,371.82	0.00	0.00	0.00	0.00
8,600.00	90.00	179.81	7,518.00	-1,472.37	-163.73	1,471.82	0.00	0.00	0.00	0.00
8,700.00	90.00	179.81	7,518.00	-1,572.37	-163.39	1,571.82	0.00	0.00	0.00	0.00
8,800.00	90.00	179.81	7,518.00	-1,672.37	-163.05	1,671.82	0.00	0.00	0.00	0.00
8,900.00	90.00	179.81	7,518.00	-1,772.37	-162.72	1,771.82	0.00	0.00	0.00	0.00
9,000.00	90.00	179.81	7,518.00	-1,872.37	-162.38	1,871.82	0.00	0.00	0.00	0.00
9,100.00	90.00	179.81	7,518.00	-1,972.37	-162.04	1,971.82	0.00	0.00	0.00	0.00
9,200.00	90.00	179.81	7,518.00	-2,072.37	-161.70	2,071.82	0.00	0.00	0.00	0.00
9,300.00	90.00	179.81	7,518.00	-2,172.37	-161.36	2,171.82	0.00	0.00	0.00	0.00
9,400.00	90.00	179.81	7,518.00	-2,272.37	-161.02	2,271.82	0.00	0.00	0.00	0.00

## Plan Report for D&C FARMS 14N-33HZ - 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 (°)
9,500.00	90.00	179.81	7,518.00	-2,372.37	-160.68	2,371.82	0.00	0.00	0.00	0.00
9,600.00	90.00	179.81	7,518.00	-2,472.37	-160.35	2,471.82	0.00	0.00	0.00	0.00
9,700.00	90.00	179.81	7,518.00	-2,572.37	-160.01	2,571.82	0.00	0.00	0.00	0.00
9,800.00	90.00	179.81	7,518.00	-2,672.37	-159.67	2,671.82	0.00	0.00	0.00	0.00
9,900.00	90.00	179.81	7,518.00	-2,772.36	-159.33	2,771.82	0.00	0.00	0.00	0.00
10,000.00	90.00	179.81	7,518.00	-2,872.36	-158.99	2,871.82	0.00	0.00	0.00	0.00
10,100.00	90.00	179.81	7,518.00	-2,972.36	-158.65	2,971.82	0.00	0.00	0.00	0.00
10,200.00	90.00	179.81	7,518.00	-3,072.36	-158.32	3,071.82	0.00	0.00	0.00	0.00
10,300.00	90.00	179.81	7,518.00	-3,172.36	-157.98	3,171.82	0.00	0.00	0.00	0.00
10,400.00	90.00	179.81	7,518.00	-3,272.36	-157.64	3,271.82	0.00	0.00	0.00	0.00
10,500.00	90.00	179.81	7,518.00	-3,372.36	-157.30	3,371.82	0.00	0.00	0.00	0.00
10,600.00	90.00	179.81	7,518.00	-3,472.36	-156.96	3,471.82	0.00	0.00	0.00	0.00
10,700.00	90.00	179.81	7,518.00	-3,572.36	-156.62	3,571.82	0.00	0.00	0.00	0.00
10,800.00	90.00	179.81	7,518.00	-3,672.36	-156.28	3,671.82	0.00	0.00	0.00	0.00
10,900.00	90.00	179.81	7,518.00	-3,772.36	-155.95	3,771.82	0.00	0.00	0.00	0.00
11,000.00	90.00	179.81	7,518.00	-3,872.36	-155.61	3,871.82	0.00	0.00	0.00	0.00
11,100.00	90.00	179.81	7,518.00	-3,972.36	-155.27	3,971.82	0.00	0.00	0.00	0.00
11,200.00	90.00	179.81	7,518.00	-4,072.36	-154.93	4,071.82	0.00	0.00	0.00	0.00
11,300.00	90.00	179.81	7,518.00	-4,172.36	-154.59	4,171.82	0.00	0.00	0.00	0.00
11,400.00	90.00	179.81	7,518.00	-4,272.36	-154.25	4,271.82	0.00	0.00	0.00	0.00
11,500.00	90.00	179.81	7,518.00	-4,372.36	-153.92	4,371.82	0.00	0.00	0.00	0.00
11,600.00	90.00	179.81	7,518.00	-4,472.35	-153.58	4,471.82	0.00	0.00	0.00	0.00
11,700.00	90.00	179.81	7,518.00	-4,572.35	-153.24	4,571.82	0.00	0.00	0.00	0.00
11,800.00	90.00	179.81	7,518.00	-4,672.35	-152.90	4,671.82	0.00	0.00	0.00	0.00
11,900.00	90.00	179.81	7,518.00	-4,772.35	-152.56	4,771.82	0.00	0.00	0.00	0.00
12,000.00	90.00	179.81	7,518.00	-4,872.35	-152.22	4,871.82	0.00	0.00	0.00	0.00
12,100.00	90.00	179.81	7,518.00	-4,972.35	-151.88	4,971.82	0.00	0.00	0.00	0.00
12,200.00	90.00	179.81	7,518.00	-5,072.35	-151.55	5,071.82	0.00	0.00	0.00	0.00
12,300.00	90.00	179.81	7,518.00	-5,172.35	-151.21	5,171.82	0.00	0.00	0.00	0.00
12,400.00	90.00	179.81	7,518.00	-5,272.35	-150.87	5,271.82	0.00	0.00	0.00	0.00
12,500.00	90.00	179.81	7,518.00	-5,372.35	-150.53	5,371.82	0.00	0.00	0.00	0.00
12,600.00	90.00	179.81	7,518.00	-5,472.35	-150.19	5,471.82	0.00	0.00	0.00	0.00
12,691.04	90.00	179.81	7,518.00	-5,563.38	-149.88	5,562.86	0.00	0.00	0.00	0.00

D&C FARMS 14N-33HZ\_BHL

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
1,000.00	1,000.00	0.00	0.00	Begin Nudge @ 1000.00ft
1,085.80	1,085.79	-0.64	-1.12	End Nudge @ 1085.80ft
6,715.21	6,712.67	-84.34	-147.45	Top of 4.5" Liner @ 6715.21ft
6,815.21	6,812.63	-85.82	-150.04	KOP @ 6815.21ft
7,500.00	7,393.00	-397.67	-164.11	DLS = 8/100ft
7,929.62	7,518.00	-802.00	-166.00	End Build @ 7929.62ft
12,691.04	7,518.00	-5,563.39	-149.88	TD Well @ 12691.04ft

### Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	+E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	179.81	Slot	0.00	0.00	0.00

## Plan Report for D&C FARMS 14N-33HZ - Plan A Rev 0 Permit

### Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	12,691.04	Plan A Rev 0 Permit	MWD

### Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
798.00	798.00	9 5/8"	9-5/8	13-1/2
7,929.62	7,518.00	7"	7	8-3/4

### Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,842.70	4,841.00	Sussex		0.00	
5,331.92	5,330.00	Shannon		0.00	
7,361.06	7,304.00	Sharon Springs		0.00	
7,431.97	7,352.00	Niobrara A		0.00	
7,773.24	7,501.00	Niobrara B		0.00	
7,929.62	7,518.00	Landing Target (Heel)		0.00	
7,929.62	7,518.00	Total Depth (Toe)		0.00	

### *Targets associated with this wellbore*

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
D&C FARMS_SEC	3.00	-249.17	-640.86	Polygon
D&C FARMS 14N-33HZ_BHL	7,518.00	-5,563.38	-149.88	Point
D&C FARMS 14N-33HZ_CP	7,518.00	-802.00	-166.00	Point
D&C FARMS 14N-33HZ_SHL	0.00	0.00	0.00	Point

**North Reference Sheet for Sec. 28-T1N-R67W - D&C FARMS 14N-33HZ - 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 = 17 @ 5028.00ft (Drilling Rig). Northing and Easting are relative to D&C FARMS 14N-33HZ

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: 0.99996513

Grid Coordinates of Well: 1,249,572.25 ft N, 3,168,843.55 ft E

Geographical Coordinates of Well: 40° 01' 00.79" N, 104° 53' 49.79" W

Grid Convergence at Surface is: 0.39°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,691.04ft  
the Bottom Hole Displacement is 5,565.40ft in the Direction of 181.54° (True).

Magnetic Convergence at surface is: -8.27° (13 June 2013, , BGGM2013)

