

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 22-T2N-R67W

Banded 37C-27HZ

Plan A

Plan: Rev A0 Permit

## Sperry Drilling Services

### Proposal Report

06 February, 2014

Well Coordinates: 1,286,182.22 N, 3,175,978.73 E (40° 07' 02.10" N, 104° 52' 14.74" W)

Ground Level: 4,977.00 usft

Local Coordinate Origin:

Centered on Well Banded 37C-27HZ

Viewing Datum:

RKB=17' @ 4994.00usft

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

**HALLIBURTON**

Project: Weld County, CO (NAD 83)  
 Site: Sec. 22-T2N-R67W  
 Well: Banded 37C-27HZ  
 Wellbore: Plan A  
 Design: Rev A0 Permit

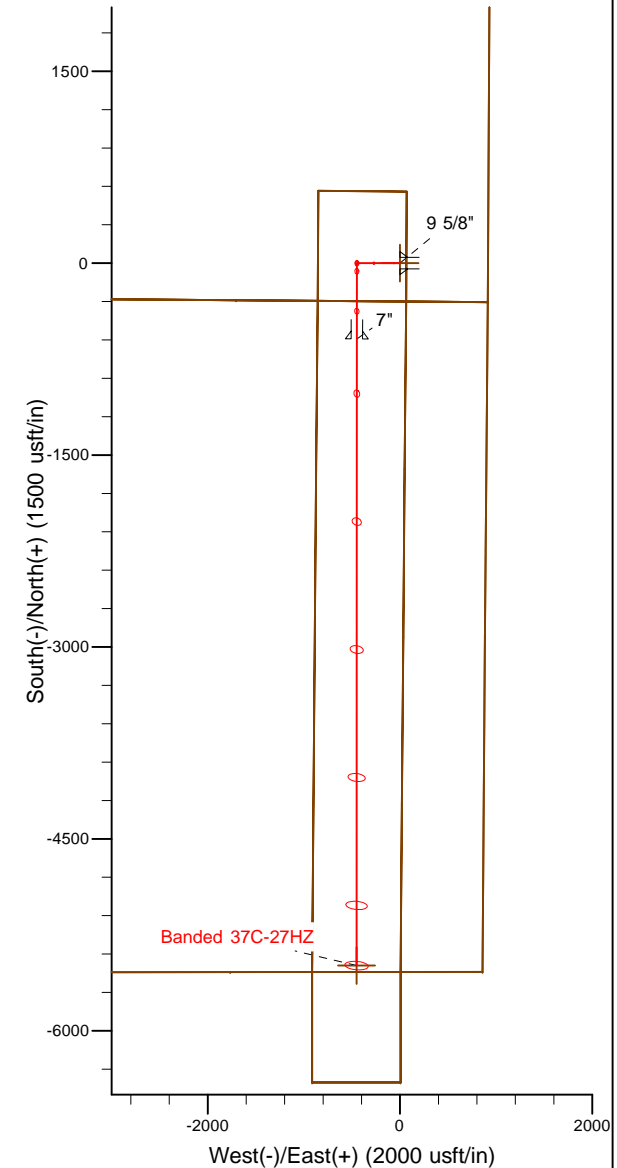
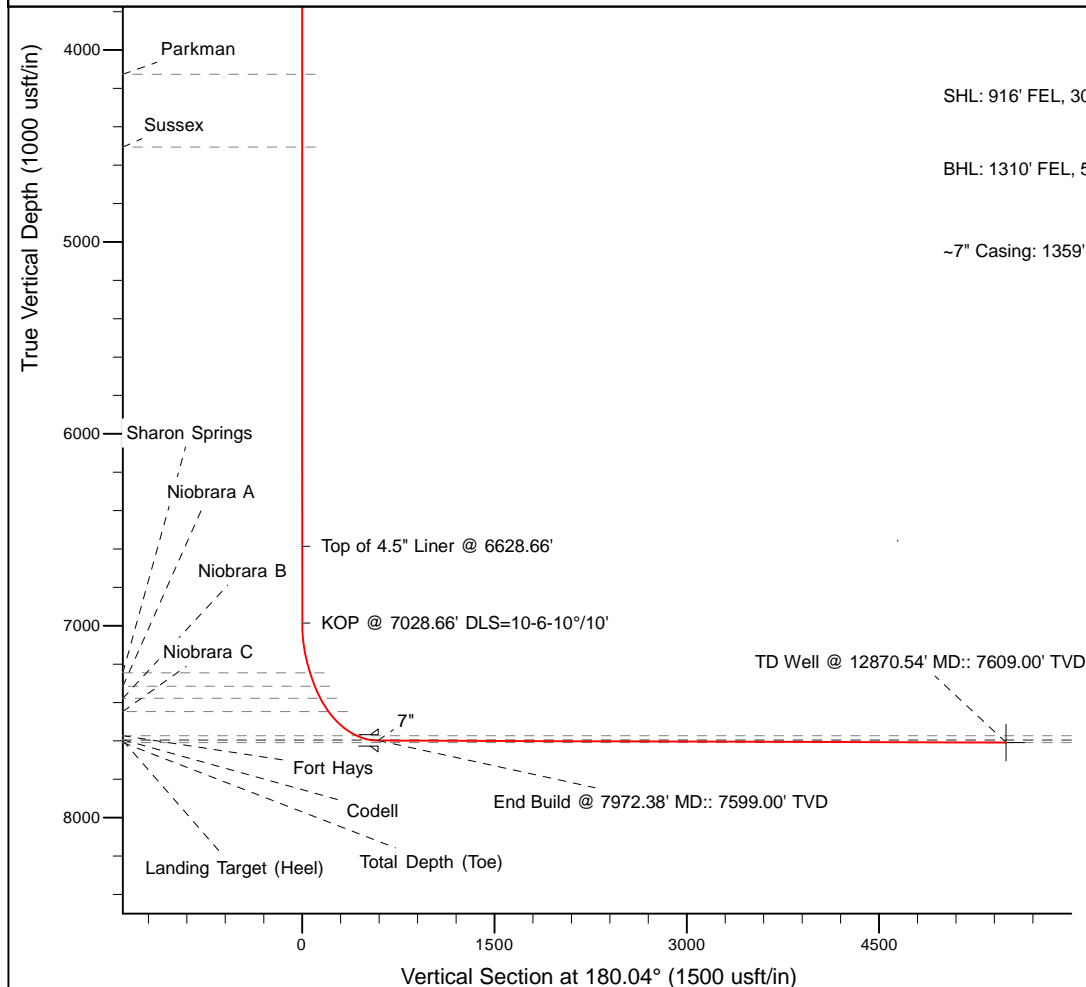
# Anadarko Petroleum Corp.



Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Banded 16N-27HZ Pad_Sec.line	0.00	4355.74	-3447.33	1290513.22	3172500.72	40.129205	-104.883090
Banded 37C-27HZ LD	0.00	4355.74	-3447.33	1290513.22	3172500.72	40.129205	-104.883090
Banded 37C-27HZ SHL	0.00	0.00	0.00	1286182.22	3175978.73	40.117249	-104.870762
Banded 37C-27HZ BHL	7609.00	-5490.25	-451.23	1280689.13	3175566.49	40.102178	-104.872375

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00
2000.00	12.00	270.00	1995.62	0.00	-62.60	2.00	0.04
3550.00	12.00	270.00	3511.75	0.00	-384.87	0.00	0.27
4150.00	0.00	0.00	4107.38	0.00	-447.47	2.00	0.31
7028.66	0.00	0.00	6986.04	0.00	-447.47	0.00	0.31
7264.20	23.55	180.04	7215.00	-47.74	-447.50	10.00	48.05
7376.42	30.29	180.04	7315.00	-98.51	-447.54	6.00	98.83
7972.38	89.88	180.04	7599.00	-592.10	-447.88	10.00	592.41
12870.54	89.88	180.04	7609.00	-5490.25	-451.23	0.00	5490.56



WELL DETAILS: Banded 37C-27HZ
Ground Level: 4977.00 RKB=17' @ 4994.00usft
Plan: Rev A0 Permit (Banded 37C-27HZ/Plan A)
Created By: Pari Amanlou Date: 2-6-2014

**Plan Report for Banded 37C-27HZ - Rev A0 Permit**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	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
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
1,201.00	0.00	0.00	1,201.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills Marker</b>										
1,251.00	0.00	0.00	1,251.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>										
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 @ 1400.00'</b>										
1,500.00	2.00	270.00	1,499.98	0.00	-1.75	0.00	2.00	2.00	0.00	270.00
1,600.00	4.00	270.00	1,599.84	0.00	-6.98	0.00	2.00	2.00	0.00	0.00
1,700.00	6.00	270.00	1,699.45	0.00	-15.69	0.01	2.00	2.00	0.00	0.00
1,800.00	8.00	270.00	1,798.70	0.00	-27.88	0.02	2.00	2.00	0.00	0.00
1,900.00	10.00	270.00	1,897.47	0.00	-43.52	0.03	2.00	2.00	0.00	0.00
2,000.00	12.00	270.00	1,995.62	0.00	-62.60	0.04	2.00	2.00	0.00	0.00
2,100.00	12.00	270.00	2,093.44	0.00	-83.39	0.06	0.00	0.00	0.00	0.00
2,200.00	12.00	270.00	2,191.25	0.00	-104.18	0.07	0.00	0.00	0.00	0.00
2,300.00	12.00	270.00	2,289.07	0.00	-124.98	0.09	0.00	0.00	0.00	0.00
2,400.00	12.00	270.00	2,386.88	0.00	-145.77	0.10	0.00	0.00	0.00	0.00
2,500.00	12.00	270.00	2,484.70	0.00	-166.56	0.12	0.00	0.00	0.00	0.00
2,600.00	12.00	270.00	2,582.51	0.00	-187.35	0.13	0.00	0.00	0.00	0.00
2,700.00	12.00	270.00	2,680.33	0.00	-208.14	0.15	0.00	0.00	0.00	0.00
2,800.00	12.00	270.00	2,778.14	0.00	-228.93	0.16	0.00	0.00	0.00	0.00
2,900.00	12.00	270.00	2,875.96	0.00	-249.72	0.17	0.00	0.00	0.00	0.00
3,000.00	12.00	270.00	2,973.77	0.00	-270.51	0.19	0.00	0.00	0.00	0.00
3,100.00	12.00	270.00	3,071.59	0.00	-291.31	0.20	0.00	0.00	0.00	0.00
3,200.00	12.00	270.00	3,169.40	0.00	-312.10	0.22	0.00	0.00	0.00	0.00
3,300.00	12.00	270.00	3,267.22	0.00	-332.89	0.23	0.00	0.00	0.00	0.00
3,400.00	12.00	270.00	3,365.03	0.00	-353.68	0.25	0.00	0.00	0.00	0.00
3,500.00	12.00	270.00	3,462.84	0.00	-374.47	0.26	0.00	0.00	0.00	0.00
3,550.00	12.00	270.00	3,511.75	0.00	-384.87	0.27	0.00	0.00	0.00	0.00
<b>Drop to Vertical @ 3550.00'</b>										
3,600.00	11.00	270.00	3,560.75	0.00	-394.83	0.28	2.00	-2.00	0.00	180.00
3,700.00	9.00	270.00	3,659.22	0.00	-412.20	0.29	2.00	-2.00	0.00	180.00
3,800.00	7.00	270.00	3,758.25	0.00	-426.11	0.30	2.00	-2.00	0.00	180.00
3,900.00	5.00	270.00	3,857.69	0.00	-436.57	0.30	2.00	-2.00	0.00	180.00
4,000.00	3.00	270.00	3,957.44	0.00	-443.54	0.31	2.00	-2.00	0.00	180.00
4,100.00	1.00	270.00	4,057.38	0.00	-447.03	0.31	2.00	-2.00	0.00	180.00
4,150.00	0.00	0.00	4,107.38	0.00	-447.47	0.31	2.00	-2.00	0.00	180.00
4,168.62	0.00	0.00	4,126.00	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
<b>Parkman</b>										
4,200.00	0.00	0.00	4,157.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,257.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,357.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,457.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
4,548.62	0.00	0.00	4,506.00	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
<b>Sussex</b>										

**Plan Report for Banded 37C-27HZ - Rev A0 Permit**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
4,600.00	0.00	0.00	4,557.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,657.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,757.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,857.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	4,957.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,057.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,157.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,257.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,357.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,457.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,557.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,657.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,757.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,857.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,957.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,057.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,157.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,257.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,357.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,457.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,557.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
6,628.66	0.00	0.00	6,586.04	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
<b>Top of 4.5" Liner @ 6628.66'</b>										
6,700.00	0.00	0.00	6,657.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,757.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,857.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	6,957.38	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
7,028.66	0.00	0.00	6,986.04	0.00	-447.47	0.31	0.00	0.00	0.00	0.00
<b>KOP @ 7028.66' DLS=10-6-10°/10'</b>										
7,100.00	7.13	180.04	7,057.19	-4.43	-447.47	4.75	10.00	10.00	0.00	180.04
7,200.00	17.13	180.04	7,154.83	-25.43	-447.49	25.74	10.00	10.00	0.00	0.00
7,264.20	23.55	180.04	7,215.00	-47.74	-447.50	48.05	10.00	10.00	0.00	0.00
7,297.18	25.53	180.04	7,245.00	-61.44	-447.51	61.75	6.00	6.00	0.00	0.00
<b>Sharon Springs</b>										
7,300.00	25.70	180.04	7,247.54	-62.65	-447.51	62.96	6.00	6.00	0.00	0.00
7,376.42	30.29	180.04	7,315.00	-98.51	-447.54	98.83	6.00	6.00	0.00	0.00
<b>Niobrara A</b>										
7,400.00	32.64	180.04	7,335.11	-110.82	-447.55	111.13	10.00	10.00	0.00	0.00
7,452.55	37.90	180.04	7,378.00	-141.16	-447.57	141.47	10.00	10.00	0.00	0.00
<b>Niobrara B</b>										
7,500.00	42.64	180.04	7,414.19	-171.82	-447.59	172.13	10.00	10.00	0.00	0.00
7,546.38	47.28	180.04	7,447.00	-204.59	-447.61	204.90	10.00	10.00	0.00	0.00
<b>Niobrara C</b>										
7,600.00	52.64	180.04	7,481.48	-245.62	-447.64	245.94	10.00	10.00	0.00	0.00
7,700.00	62.64	180.04	7,534.93	-329.99	-447.70	330.30	10.00	10.00	0.00	0.00
7,800.00	72.64	180.04	7,572.91	-422.36	-447.76	422.67	10.00	10.00	0.00	0.00
7,800.29	72.67	180.04	7,573.00	-422.64	-447.76	422.95	10.00	10.00	0.00	0.00
<b>Fort Hays</b>										
7,897.82	82.43	180.04	7,594.00	-517.76	-447.83	518.07	10.00	10.00	0.00	0.00
<b>Codell</b>										
7,900.00	82.64	180.04	7,594.28	-519.92	-447.83	520.23	10.00	10.00	0.00	0.00
7,972.38	89.88	180.04	7,599.00	-592.10	-447.88	592.41	10.00	10.00	0.00	0.00
<b>End Build @ 7972.38' MD:: 7599.00' TVD - Landing Target (Heel) - 7"</b>										
8,000.00	89.88	180.04	7,599.05	-619.72	-447.90	620.03	0.00	0.00	0.00	0.00
8,100.00	89.88	180.04	7,599.26	-719.72	-447.96	720.03	0.00	0.00	0.00	0.00
8,200.00	89.88	180.04	7,599.46	-819.72	-448.03	820.03	0.00	0.00	0.00	0.00
8,300.00	89.88	180.04	7,599.67	-919.72	-448.10	920.03	0.00	0.00	0.00	0.00
8,400.00	89.88	180.04	7,599.87	-1,019.72	-448.17	1,020.03	0.00	0.00	0.00	0.00

**Plan Report for Banded 37C-27HZ - Rev A0 Permit**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
8,500.00	89.88	180.04	7,600.07	-1,119.72	-448.24	1,120.03	0.00	0.00	0.00	0.00
8,600.00	89.88	180.04	7,600.28	-1,219.72	-448.31	1,220.03	0.00	0.00	0.00	0.00
8,700.00	89.88	180.04	7,600.48	-1,319.71	-448.37	1,320.03	0.00	0.00	0.00	0.00
8,800.00	89.88	180.04	7,600.69	-1,419.71	-448.44	1,420.03	0.00	0.00	0.00	0.00
8,900.00	89.88	180.04	7,600.89	-1,519.71	-448.51	1,520.03	0.00	0.00	0.00	0.00
9,000.00	89.88	180.04	7,601.10	-1,619.71	-448.58	1,620.03	0.00	0.00	0.00	0.00
9,100.00	89.88	180.04	7,601.30	-1,719.71	-448.65	1,720.03	0.00	0.00	0.00	0.00
9,200.00	89.88	180.04	7,601.50	-1,819.71	-448.72	1,820.03	0.00	0.00	0.00	0.00
9,300.00	89.88	180.04	7,601.71	-1,919.71	-448.79	1,920.03	0.00	0.00	0.00	0.00
9,400.00	89.88	180.04	7,601.91	-2,019.71	-448.85	2,020.03	0.00	0.00	0.00	0.00
9,500.00	89.88	180.04	7,602.12	-2,119.71	-448.92	2,120.03	0.00	0.00	0.00	0.00
9,600.00	89.88	180.04	7,602.32	-2,219.71	-448.99	2,220.03	0.00	0.00	0.00	0.00
9,700.00	89.88	180.04	7,602.52	-2,319.71	-449.06	2,320.03	0.00	0.00	0.00	0.00
9,800.00	89.88	180.04	7,602.73	-2,419.71	-449.13	2,420.03	0.00	0.00	0.00	0.00
9,900.00	89.88	180.04	7,602.93	-2,519.71	-449.20	2,520.03	0.00	0.00	0.00	0.00
10,000.00	89.88	180.04	7,603.14	-2,619.71	-449.26	2,620.02	0.00	0.00	0.00	0.00
10,100.00	89.88	180.04	7,603.34	-2,719.71	-449.33	2,720.02	0.00	0.00	0.00	0.00
10,200.00	89.88	180.04	7,603.55	-2,819.71	-449.40	2,820.02	0.00	0.00	0.00	0.00
10,300.00	89.88	180.04	7,603.75	-2,919.71	-449.47	2,920.02	0.00	0.00	0.00	0.00
10,400.00	89.88	180.04	7,603.95	-3,019.71	-449.54	3,020.02	0.00	0.00	0.00	0.00
10,500.00	89.88	180.04	7,604.16	-3,119.71	-449.61	3,120.02	0.00	0.00	0.00	0.00
10,600.00	89.88	180.04	7,604.36	-3,219.71	-449.68	3,220.02	0.00	0.00	0.00	0.00
10,700.00	89.88	180.04	7,604.57	-3,319.71	-449.74	3,320.02	0.00	0.00	0.00	0.00
10,800.00	89.88	180.04	7,604.77	-3,419.71	-449.81	3,420.02	0.00	0.00	0.00	0.00
10,900.00	89.88	180.04	7,604.98	-3,519.71	-449.88	3,520.02	0.00	0.00	0.00	0.00
11,000.00	89.88	180.04	7,605.18	-3,619.71	-449.95	3,620.02	0.00	0.00	0.00	0.00
11,100.00	89.88	180.04	7,605.38	-3,719.71	-450.02	3,720.02	0.00	0.00	0.00	0.00
11,200.00	89.88	180.04	7,605.59	-3,819.71	-450.09	3,820.02	0.00	0.00	0.00	0.00
11,300.00	89.88	180.04	7,605.79	-3,919.71	-450.15	3,920.02	0.00	0.00	0.00	0.00
11,400.00	89.88	180.04	7,606.00	-4,019.71	-450.22	4,020.02	0.00	0.00	0.00	0.00
11,500.00	89.88	180.04	7,606.20	-4,119.71	-450.29	4,120.02	0.00	0.00	0.00	0.00
11,600.00	89.88	180.04	7,606.41	-4,219.71	-450.36	4,220.02	0.00	0.00	0.00	0.00
11,700.00	89.88	180.04	7,606.61	-4,319.71	-450.43	4,320.02	0.00	0.00	0.00	0.00
11,800.00	89.88	180.04	7,606.81	-4,419.71	-450.50	4,420.02	0.00	0.00	0.00	0.00
11,900.00	89.88	180.04	7,607.02	-4,519.71	-450.56	4,520.02	0.00	0.00	0.00	0.00
12,000.00	89.88	180.04	7,607.22	-4,619.71	-450.63	4,620.02	0.00	0.00	0.00	0.00
12,100.00	89.88	180.04	7,607.43	-4,719.71	-450.70	4,720.02	0.00	0.00	0.00	0.00
12,200.00	89.88	180.04	7,607.63	-4,819.71	-450.77	4,820.02	0.00	0.00	0.00	0.00
12,300.00	89.88	180.04	7,607.83	-4,919.71	-450.84	4,920.02	0.00	0.00	0.00	0.00
12,400.00	89.88	180.04	7,608.04	-5,019.71	-450.91	5,020.02	0.00	0.00	0.00	0.00
12,500.00	89.88	180.04	7,608.24	-5,119.71	-450.98	5,120.02	0.00	0.00	0.00	0.00
12,600.00	89.88	180.04	7,608.45	-5,219.71	-451.04	5,220.02	0.00	0.00	0.00	0.00
12,700.00	89.88	180.04	7,608.65	-5,319.71	-451.11	5,320.02	0.00	0.00	0.00	0.00
12,800.00	89.88	180.04	7,608.86	-5,419.71	-451.18	5,420.02	0.00	0.00	0.00	0.00
12,870.54	89.88	180.04	7,609.00	-5,490.25	-451.23	5,490.56	0.00	0.00	0.00	0.00

TD Well @ 12870.54' MD:: 7609.00' TVD

**Plan Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,400.00	1,400.00	0.00	0.00	Begin Nudge @ 1400.00'
3,550.00	3,511.75	0.00	-384.87	Drop to Vertical @ 3550.00'
6,628.66	6,586.04	0.00	-447.47	Top of 4.5" Liner @ 6628.66'
7,028.66	6,986.04	0.00	-447.47	KOP @ 7028.66' DLS=10-6-10°/10'
7,972.38	7,599.00	-592.10	-447.88	End Build @ 7972.38' MD:: 7599.00' TVD
12,870.54	7,609.00	-5,490.25	-451.23	TD Well @ 12870.54' MD:: 7609.00' TVD

## Plan Report for Banded 37C-27HZ - Rev A0 Permit

### Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	180.04	Slot	0.00	0.00	0.00

### Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	1,251.00	Rev A0 Permit	MWD
1,251.00	7,972.38	Rev A0 Permit	MWD
7,972.38	12,870.54	Rev A0 Permit	MWD

### Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,251.00	1,251.00	9 5/8"	9-5/8	12-3/4
7,972.38	7,599.00	7"	7	8-3/4

### Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,201.00	1,201.00	Fox Hills Marker		0.00	
4,168.62	4,126.00	Parkman		0.00	
4,548.62	4,506.00	Sussex		0.00	
7,297.18	7,245.00	Sharon Springs		0.00	
7,376.42	7,315.00	Niobrara A		0.00	
7,452.55	7,378.00	Niobrara B		0.00	
7,546.38	7,447.00	Niobrara C		0.00	
7,800.29	7,573.00	Fort Hays		0.00	
7,897.82	7,594.00	Codell		0.00	
7,972.38	7,599.00	Landing Target (Heel)		0.00	
12,870.54	7,609.00	Total Depth (Toe)		0.00	

### Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Banded 16N-27HZ Pad_Sec.line	0.00	4,355.74	-3,447.33	Polygon
Banded 37C-27HZ LD	0.00	4,355.74	-3,447.33	Polygon
Banded 37C-27HZ SHL	0.00	0.00	0.00	Point
Banded 37C-27HZ BHL	7,609.00	-5,490.25	-451.23	Point

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**Plan Report for Banded 37C-27HZ - Rev A0 Permit**

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**Directional Difficulty Index**

Average Dogleg over Survey:	0.88 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 7,972.38 usft
Net Tortosity applicable to Plans:	0.88 °/100usft	Directional Difficulty Index:	6.157

**Audit Info**

**North Reference Sheet for Sec. 22-T2N-R67W - Banded 37C-27HZ - 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' @ 4994.00usft. Northing and Easting are relative to Banded 37C-27HZ  
 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: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995955

Grid Coordinates of Well: 1,286,182.22 usft N, 3,175,978.73 usft E  
 Geographical Coordinates of Well: 40° 07' 02.10" N, 104° 52' 14.74" W  
 Grid Convergence at Surface is: 0.41°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,870.54usft  
 the Bottom Hole Displacement is 5,508.76usft in the Direction of 184.70° ( True).  
 Magnetic Convergence at surface is: -8.18° ( 6 February 2014, , BGGM2013)

