

Project: Weld County, CO (NAD 83)  
 Site: Sec. 31-T1N-R67W  
 Well: Sack 29C-30HZ  
 Wellbore: Plan A  
 Design: Rev A0 Permit

# Anadarko Petroleum Corp.



### 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	4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	0.00	
3	4500.00	10.00	270.00	4497.47	0.00	-43.52	2.00	270.00	0.00	
4	6730.00	10.00	270.00	6693.59	0.00	-430.76	0.00	0.00	0.00	
5	7230.00	0.00	0.00	7191.05	0.00	-474.28	2.00	180.00	0.00	
6	7346.01	0.00	0.00	7307.06	0.00	-474.28	0.00	0.00	0.00	
7	8251.00	90.50	0.00	7880.00	577.95	-474.25	10.00	0.00	577.95	
8	17441.40	90.50	0.00	7800.00	9768.00	-473.83	0.00	0.00	9768.00	Sack 29C-30HZ_BHL

### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Polygon
Sack 29C-30HZ_LD	0.00	0.00	0.00	40.002605	-104.935931	
Sack 29C-30HZ_SEC	0.00	0.00	0.00	40.002605	-104.935931	
Sack 29C-30HZ_SHL	0.00	0.00	0.00	40.002605	-104.935931	
Sack 29C-30HZ_BHL	7800.00	9768.00	-473.83	40.029419	-104.937623	

### WELL DETAILS: Sack 29C-30HZ

Ground Level: 5056.00

RKB = 17' @ 5073.00usft (Drilling Rig)

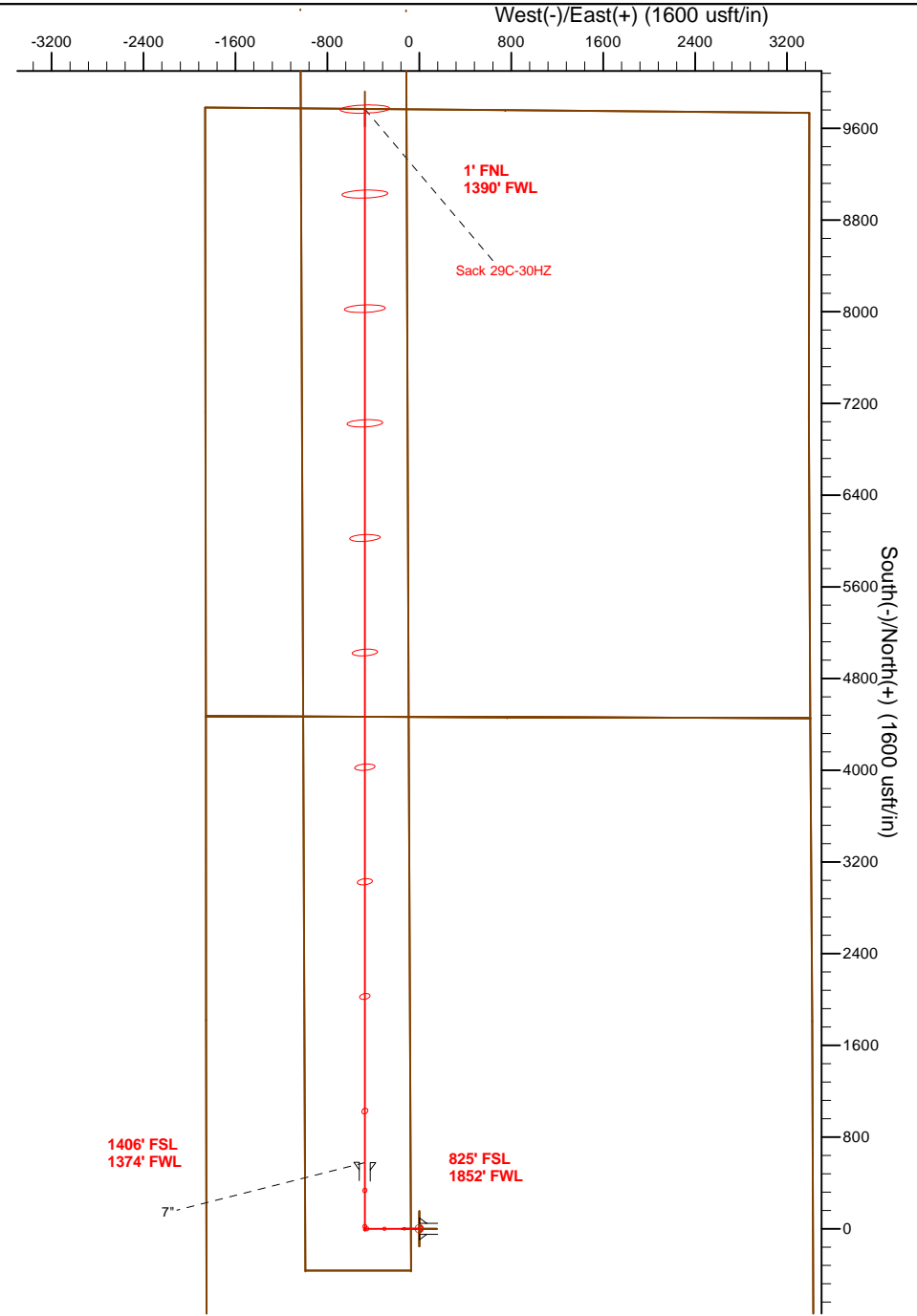
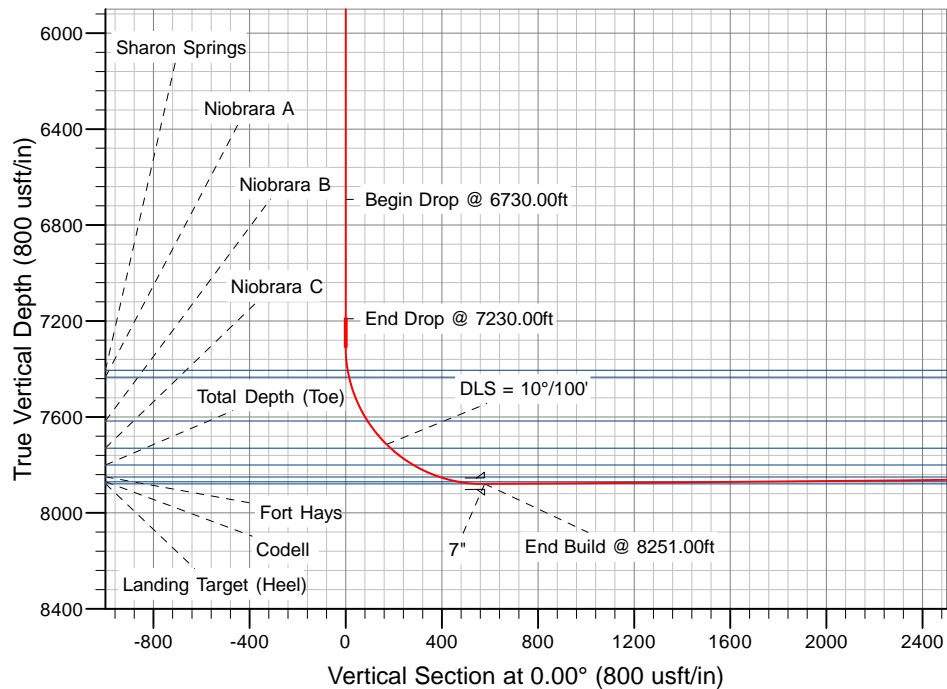
Plan: Rev A0 Permit (Sack 29C-30HZ/Plan A)

Created By: Clint Eshelman Date: 12/23/2013  
 Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

TVD MD

7207.06 7246.01 Top of 4.5" Liner @ 7246.01ft

7307.06 7346.01 KOP @ 7346.01ft



# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 31-T1N-R67W

Sack 29C-30HZ

Plan A

Plan: Rev A0 Permit

## Sperry Drilling Services

### Proposal Report

23 December, 2013

Well Coordinates: 1,244,298.34 N, 3,158,018.85 E (40° 00' 09.38" N, 104° 56' 09.35" W)

Ground Level: 5,056.00 usft

Local Coordinate Origin:

Centered on Well Sack 29C-30HZ

Viewing Datum:

RKB = 17' @ 5073.00usft (Drilling Rig)

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**

**Plan Report for Sack 29C-30HZ - 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
<b>Sack 29C-30HZ_SHL - Sack 29C-30HZ_SEC - Sack 29C-30HZ_LD</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
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
1,228.00	0.00	0.00	1,228.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills Marker</b>										
1,278.00	0.00	0.00	1,278.00	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
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 4000.00ft</b>										
4,100.00	2.00	270.00	4,099.98	0.00	-1.75	0.00	2.00	2.00	0.00	270.00
4,200.00	4.00	270.00	4,199.84	0.00	-6.98	0.00	2.00	2.00	0.00	0.00
4,300.00	6.00	270.00	4,299.45	0.00	-15.69	0.00	2.00	2.00	0.00	0.00
4,400.00	8.00	270.00	4,398.70	0.00	-27.88	0.00	2.00	2.00	0.00	0.00
4,500.00	10.00	270.00	4,497.47	0.00	-43.52	0.00	2.00	2.00	0.00	0.00
<b>End Nudge @ 4500.00ft</b>										
4,600.00	10.00	270.00	4,595.95	0.00	-60.89	0.00	0.00	0.00	0.00	0.00
4,700.00	10.00	270.00	4,694.43	0.00	-78.25	0.00	0.00	0.00	0.00	0.00
4,800.00	10.00	270.00	4,792.91	0.00	-95.62	0.00	0.00	0.00	0.00	0.00
4,900.00	10.00	270.00	4,891.39	0.00	-112.98	0.00	0.00	0.00	0.00	0.00
5,000.00	10.00	270.00	4,989.87	0.00	-130.35	0.00	0.00	0.00	0.00	0.00

**Plan Report for Sack 29C-30HZ - 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)	Tooface Azimuth (°)
5,084.41	10.00	270.00	5,073.00	0.00	-145.00	0.00	0.00	0.00	0.00	0.00
<b>Sussex</b>										
5,100.00	10.00	270.00	5,088.35	0.00	-147.71	0.00	0.00	0.00	0.00	0.00
5,200.00	10.00	270.00	5,186.83	0.00	-165.08	0.00	0.00	0.00	0.00	0.00
5,300.00	10.00	270.00	5,285.31	0.00	-182.44	0.00	0.00	0.00	0.00	0.00
5,400.00	10.00	270.00	5,383.79	0.00	-199.81	0.00	0.00	0.00	0.00	0.00
5,410.37	10.00	270.00	5,394.00	0.00	-201.61	0.00	0.00	0.00	0.00	0.00
<b>Shannon</b>										
5,500.00	10.00	270.00	5,482.27	0.00	-217.17	0.00	0.00	0.00	0.00	0.00
5,600.00	10.00	270.00	5,580.75	0.00	-234.54	0.00	0.00	0.00	0.00	0.00
5,700.00	10.00	270.00	5,679.23	0.00	-251.90	0.00	0.00	0.00	0.00	0.00
5,800.00	10.00	270.00	5,777.72	0.00	-269.27	0.00	0.00	0.00	0.00	0.00
5,900.00	10.00	270.00	5,876.20	0.00	-286.63	0.00	0.00	0.00	0.00	0.00
6,000.00	10.00	270.00	5,974.68	0.00	-303.99	0.00	0.00	0.00	0.00	0.00
6,100.00	10.00	270.00	6,073.16	0.00	-321.36	0.00	0.00	0.00	0.00	0.00
6,200.00	10.00	270.00	6,171.64	0.00	-338.72	0.00	0.00	0.00	0.00	0.00
6,300.00	10.00	270.00	6,270.12	0.00	-356.09	0.00	0.00	0.00	0.00	0.00
6,400.00	10.00	270.00	6,368.60	0.00	-373.45	0.00	0.00	0.00	0.00	0.00
6,500.00	10.00	270.00	6,467.08	0.00	-390.82	0.00	0.00	0.00	0.00	0.00
6,600.00	10.00	270.00	6,565.56	0.00	-408.18	0.00	0.00	0.00	0.00	0.00
6,700.00	10.00	270.00	6,664.04	0.00	-425.55	0.00	0.00	0.00	0.00	0.00
6,730.00	10.00	270.00	6,693.59	0.00	-430.76	0.00	0.00	0.00	0.00	0.00
<b>Begin Drop @ 6730.00ft</b>										
6,800.00	8.60	270.00	6,762.66	0.00	-442.07	0.00	2.00	-2.00	0.00	180.00
6,900.00	6.60	270.00	6,861.78	0.00	-455.29	0.00	2.00	-2.00	0.00	180.00
7,000.00	4.60	270.00	6,961.30	0.00	-465.05	0.00	2.00	-2.00	0.00	180.00
7,100.00	2.60	270.00	7,061.10	0.00	-471.33	0.00	2.00	-2.00	0.00	180.00
7,200.00	0.60	270.00	7,161.05	0.00	-474.12	0.00	2.00	-2.00	0.00	180.00
7,230.00	0.00	0.00	7,191.05	0.00	-474.28	0.00	2.00	-2.00	0.00	180.00
<b>End Drop @ 7230.00ft</b>										
7,246.01	0.00	0.00	7,207.06	0.00	-474.28	0.00	0.00	0.00	0.00	0.00
<b>Top of 4.5" Liner @ 7246.01ft</b>										
7,300.00	0.00	0.00	7,261.05	0.00	-474.28	0.00	0.00	0.00	0.00	0.00
7,346.01	0.00	0.00	7,307.06	0.00	-474.28	0.00	0.00	0.00	0.00	0.00
<b>KOP @ 7346.01ft</b>										
7,400.00	5.40	0.00	7,360.97	2.54	-474.28	2.54	10.00	10.00	0.00	0.00
7,445.45	9.94	0.00	7,406.00	8.61	-474.28	8.61	10.00	10.00	0.00	0.00
<b>Sharon Springs</b>										
7,475.04	12.90	0.00	7,435.00	14.47	-474.28	14.47	10.00	10.00	0.00	0.00
<b>Niobrara A</b>										
7,500.00	15.40	0.00	7,459.20	20.57	-474.28	20.57	10.00	10.00	0.00	0.00
7,600.00	25.40	0.00	7,552.81	55.38	-474.28	55.38	10.00	10.00	0.00	0.00
7,673.49	32.75	0.00	7,617.00	91.07	-474.28	91.07	10.00	10.00	0.00	0.00
<b>Niobrara B</b>										
7,700.00	35.40	0.00	7,638.96	105.92	-474.28	105.92	10.00	10.00	0.00	0.00
7,800.00	45.40	0.00	7,715.02	170.65	-474.27	170.65	10.00	10.00	0.00	0.00
<b>DLS = 10°/100'</b>										
7,823.25	47.72	0.00	7,731.00	187.53	-474.27	187.53	10.00	10.00	0.00	0.00
<b>Niobrara C</b>										
7,900.00	55.40	0.00	7,778.68	247.60	-474.27	247.60	10.00	10.00	0.00	0.00
8,000.00	65.40	0.00	7,828.01	334.44	-474.27	334.44	10.00	10.00	0.00	0.00
8,062.87	71.69	0.00	7,851.00	392.92	-474.26	392.92	10.00	10.00	0.00	0.00
<b>Fort Hays</b>										
8,100.00	75.40	0.00	7,861.52	428.52	-474.26	428.52	10.00	10.00	0.00	0.00
8,144.21	79.82	0.00	7,871.00	471.69	-474.26	471.69	10.00	10.00	0.00	0.00
<b>Codell</b>										
8,200.00	85.40	0.00	7,878.17	527.00	-474.26	527.00	10.00	10.00	0.00	0.00
8,251.00	90.50	0.00	7,880.00	577.95	-474.25	577.95	10.00	10.00	0.00	0.00

**Plan Report for Sack 29C-30HZ - 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 (°)
<b>End Build @ 8251.00ft - Landing Target (Heel) - 7"</b>										
8,300.00	90.50	0.00	7,879.57	626.95	-474.25	626.95	0.00	0.00	0.00	0.00
8,400.00	90.50	0.00	7,878.70	726.94	-474.25	726.94	0.00	0.00	0.00	0.00
8,500.00	90.50	0.00	7,877.83	826.94	-474.24	826.94	0.00	0.00	0.00	0.00
8,600.00	90.50	0.00	7,876.96	926.93	-474.24	926.93	0.00	0.00	0.00	0.00
8,700.00	90.50	0.00	7,876.09	1,026.93	-474.23	1,026.93	0.00	0.00	0.00	0.00
8,800.00	90.50	0.00	7,875.22	1,126.93	-474.23	1,126.93	0.00	0.00	0.00	0.00
8,900.00	90.50	0.00	7,874.35	1,226.92	-474.22	1,226.92	0.00	0.00	0.00	0.00
9,000.00	90.50	0.00	7,873.48	1,326.92	-474.22	1,326.92	0.00	0.00	0.00	0.00
9,100.00	90.50	0.00	7,872.61	1,426.92	-474.21	1,426.92	0.00	0.00	0.00	0.00
9,200.00	90.50	0.00	7,871.74	1,526.91	-474.21	1,526.91	0.00	0.00	0.00	0.00
9,300.00	90.50	0.00	7,870.87	1,626.91	-474.21	1,626.91	0.00	0.00	0.00	0.00
9,400.00	90.50	0.00	7,870.00	1,726.90	-474.20	1,726.90	0.00	0.00	0.00	0.00
9,500.00	90.50	0.00	7,869.13	1,826.90	-474.20	1,826.90	0.00	0.00	0.00	0.00
9,600.00	90.50	0.00	7,868.26	1,926.90	-474.19	1,926.90	0.00	0.00	0.00	0.00
9,700.00	90.50	0.00	7,867.39	2,026.89	-474.19	2,026.89	0.00	0.00	0.00	0.00
9,800.00	90.50	0.00	7,866.51	2,126.89	-474.18	2,126.89	0.00	0.00	0.00	0.00
9,900.00	90.50	0.00	7,865.64	2,226.89	-474.18	2,226.89	0.00	0.00	0.00	0.00
10,000.00	90.50	0.00	7,864.77	2,326.88	-474.17	2,326.88	0.00	0.00	0.00	0.00
10,100.00	90.50	0.00	7,863.90	2,426.88	-474.17	2,426.88	0.00	0.00	0.00	0.00
10,200.00	90.50	0.00	7,863.03	2,526.87	-474.16	2,526.87	0.00	0.00	0.00	0.00
10,300.00	90.50	0.00	7,862.16	2,626.87	-474.16	2,626.87	0.00	0.00	0.00	0.00
10,400.00	90.50	0.00	7,861.29	2,726.87	-474.16	2,726.87	0.00	0.00	0.00	0.00
10,500.00	90.50	0.00	7,860.42	2,826.86	-474.15	2,826.86	0.00	0.00	0.00	0.00
10,600.00	90.50	0.00	7,859.55	2,926.86	-474.15	2,926.86	0.00	0.00	0.00	0.00
10,700.00	90.50	0.00	7,858.68	3,026.85	-474.14	3,026.85	0.00	0.00	0.00	0.00
10,800.00	90.50	0.00	7,857.81	3,126.85	-474.14	3,126.85	0.00	0.00	0.00	0.00
10,900.00	90.50	0.00	7,856.94	3,226.85	-474.13	3,226.85	0.00	0.00	0.00	0.00
11,000.00	90.50	0.00	7,856.07	3,326.84	-474.13	3,326.84	0.00	0.00	0.00	0.00
11,100.00	90.50	0.00	7,855.20	3,426.84	-474.12	3,426.84	0.00	0.00	0.00	0.00
11,200.00	90.50	0.00	7,854.33	3,526.84	-474.12	3,526.84	0.00	0.00	0.00	0.00
11,300.00	90.50	0.00	7,853.46	3,626.83	-474.11	3,626.83	0.00	0.00	0.00	0.00
11,400.00	90.50	0.00	7,852.59	3,726.83	-474.11	3,726.83	0.00	0.00	0.00	0.00
11,500.00	90.50	0.00	7,851.72	3,826.82	-474.10	3,826.82	0.00	0.00	0.00	0.00
11,600.00	90.50	0.00	7,850.85	3,926.82	-474.10	3,926.82	0.00	0.00	0.00	0.00
11,700.00	90.50	0.00	7,849.98	4,026.82	-474.10	4,026.82	0.00	0.00	0.00	0.00
11,800.00	90.50	0.00	7,849.11	4,126.81	-474.09	4,126.81	0.00	0.00	0.00	0.00
11,900.00	90.50	0.00	7,848.24	4,226.81	-474.09	4,226.81	0.00	0.00	0.00	0.00
12,000.00	90.50	0.00	7,847.36	4,326.81	-474.08	4,326.81	0.00	0.00	0.00	0.00
12,100.00	90.50	0.00	7,846.49	4,426.80	-474.08	4,426.80	0.00	0.00	0.00	0.00
12,200.00	90.50	0.00	7,845.62	4,526.80	-474.07	4,526.80	0.00	0.00	0.00	0.00
12,300.00	90.50	0.00	7,844.75	4,626.79	-474.07	4,626.79	0.00	0.00	0.00	0.00
12,400.00	90.50	0.00	7,843.88	4,726.79	-474.06	4,726.79	0.00	0.00	0.00	0.00
12,500.00	90.50	0.00	7,843.01	4,826.79	-474.06	4,826.79	0.00	0.00	0.00	0.00
12,600.00	90.50	0.00	7,842.14	4,926.78	-474.05	4,926.78	0.00	0.00	0.00	0.00
12,700.00	90.50	0.00	7,841.27	5,026.78	-474.05	5,026.78	0.00	0.00	0.00	0.00
12,800.00	90.50	0.00	7,840.40	5,126.78	-474.04	5,126.78	0.00	0.00	0.00	0.00
12,900.00	90.50	0.00	7,839.53	5,226.77	-474.04	5,226.77	0.00	0.00	0.00	0.00
13,000.00	90.50	0.00	7,838.66	5,326.77	-474.04	5,326.77	0.00	0.00	0.00	0.00
13,100.00	90.50	0.00	7,837.79	5,426.76	-474.03	5,426.76	0.00	0.00	0.00	0.00
13,200.00	90.50	0.00	7,836.92	5,526.76	-474.03	5,526.76	0.00	0.00	0.00	0.00
13,300.00	90.50	0.00	7,836.05	5,626.76	-474.02	5,626.76	0.00	0.00	0.00	0.00
13,400.00	90.50	0.00	7,835.18	5,726.75	-474.02	5,726.75	0.00	0.00	0.00	0.00
13,500.00	90.50	0.00	7,834.31	5,826.75	-474.01	5,826.75	0.00	0.00	0.00	0.00
13,600.00	90.50	0.00	7,833.44	5,926.75	-474.01	5,926.75	0.00	0.00	0.00	0.00
13,700.00	90.50	0.00	7,832.57	6,026.74	-474.00	6,026.74	0.00	0.00	0.00	0.00
13,800.00	90.50	0.00	7,831.70	6,126.74	-474.00	6,126.74	0.00	0.00	0.00	0.00
13,900.00	90.50	0.00	7,830.83	6,226.73	-473.99	6,226.73	0.00	0.00	0.00	0.00
14,000.00	90.50	0.00	7,829.96	6,326.73	-473.99	6,326.73	0.00	0.00	0.00	0.00

**Plan Report for Sack 29C-30HZ - 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 (°)
14,100.00	90.50	0.00	7,829.09	6,426.73	-473.99	6,426.73	0.00	0.00	0.00	0.00
14,200.00	90.50	0.00	7,828.21	6,526.72	-473.98	6,526.72	0.00	0.00	0.00	0.00
14,300.00	90.50	0.00	7,827.34	6,626.72	-473.98	6,626.72	0.00	0.00	0.00	0.00
14,400.00	90.50	0.00	7,826.47	6,726.71	-473.97	6,726.71	0.00	0.00	0.00	0.00
14,500.00	90.50	0.00	7,825.60	6,826.71	-473.97	6,826.71	0.00	0.00	0.00	0.00
14,600.00	90.50	0.00	7,824.73	6,926.71	-473.96	6,926.71	0.00	0.00	0.00	0.00
14,700.00	90.50	0.00	7,823.86	7,026.70	-473.96	7,026.70	0.00	0.00	0.00	0.00
14,800.00	90.50	0.00	7,822.99	7,126.70	-473.95	7,126.70	0.00	0.00	0.00	0.00
14,900.00	90.50	0.00	7,822.12	7,226.70	-473.95	7,226.70	0.00	0.00	0.00	0.00
15,000.00	90.50	0.00	7,821.25	7,326.69	-473.94	7,326.69	0.00	0.00	0.00	0.00
15,100.00	90.50	0.00	7,820.38	7,426.69	-473.94	7,426.69	0.00	0.00	0.00	0.00
15,200.00	90.50	0.00	7,819.51	7,526.68	-473.93	7,526.68	0.00	0.00	0.00	0.00
15,300.00	90.50	0.00	7,818.64	7,626.68	-473.93	7,626.68	0.00	0.00	0.00	0.00
15,400.00	90.50	0.00	7,817.77	7,726.68	-473.93	7,726.68	0.00	0.00	0.00	0.00
15,500.00	90.50	0.00	7,816.90	7,826.67	-473.92	7,826.67	0.00	0.00	0.00	0.00
15,600.00	90.50	0.00	7,816.03	7,926.67	-473.92	7,926.67	0.00	0.00	0.00	0.00
15,700.00	90.50	0.00	7,815.16	8,026.67	-473.91	8,026.67	0.00	0.00	0.00	0.00
15,800.00	90.50	0.00	7,814.29	8,126.66	-473.91	8,126.66	0.00	0.00	0.00	0.00
15,900.00	90.50	0.00	7,813.42	8,226.66	-473.90	8,226.66	0.00	0.00	0.00	0.00
16,000.00	90.50	0.00	7,812.55	8,326.65	-473.90	8,326.65	0.00	0.00	0.00	0.00
16,100.00	90.50	0.00	7,811.68	8,426.65	-473.89	8,426.65	0.00	0.00	0.00	0.00
16,200.00	90.50	0.00	7,810.81	8,526.65	-473.89	8,526.65	0.00	0.00	0.00	0.00
16,300.00	90.50	0.00	7,809.94	8,626.64	-473.88	8,626.64	0.00	0.00	0.00	0.00
16,400.00	90.50	0.00	7,809.06	8,726.64	-473.88	8,726.64	0.00	0.00	0.00	0.00
16,500.00	90.50	0.00	7,808.19	8,826.64	-473.87	8,826.64	0.00	0.00	0.00	0.00
16,600.00	90.50	0.00	7,807.32	8,926.63	-473.87	8,926.63	0.00	0.00	0.00	0.00
16,700.00	90.50	0.00	7,806.45	9,026.63	-473.87	9,026.63	0.00	0.00	0.00	0.00
16,800.00	90.50	0.00	7,805.58	9,126.62	-473.86	9,126.62	0.00	0.00	0.00	0.00
16,900.00	90.50	0.00	7,804.71	9,226.62	-473.86	9,226.62	0.00	0.00	0.00	0.00
17,000.00	90.50	0.00	7,803.84	9,326.62	-473.85	9,326.62	0.00	0.00	0.00	0.00
17,100.00	90.50	0.00	7,802.97	9,426.61	-473.85	9,426.61	0.00	0.00	0.00	0.00
17,200.00	90.50	0.00	7,802.10	9,526.61	-473.84	9,526.61	0.00	0.00	0.00	0.00
17,300.00	90.50	0.00	7,801.23	9,626.60	-473.84	9,626.60	0.00	0.00	0.00	0.00
17,400.00	90.50	0.00	7,800.36	9,726.60	-473.83	9,726.60	0.00	0.00	0.00	0.00
17,441.39	90.50	0.00	7,800.00	9,767.99	-473.83	9,767.99	0.00	0.00	0.00	0.00
<b>Total Depth (Toe)</b>										
17,441.40	90.50	0.00	7,800.00	9,768.00	-473.83	9,768.00	0.00	0.00	0.00	0.00
<b>TD Well @ 17441.40ft - Sack 29C-30HZ_BHL</b>										

**Plan Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,000.00	4,000.00	0.00	0.00	Begin Nudge @ 4000.00ft
4,500.00	4,497.47	0.00	-43.52	End Nudge @ 4500.00ft
6,730.00	6,693.59	0.00	-430.76	Begin Drop @ 6730.00ft
7,230.00	7,191.05	0.00	-474.28	End Drop @ 7230.00ft
7,246.01	7,207.06	0.00	-474.28	Top of 4.5" Liner @ 7246.01ft
7,346.01	7,307.06	0.00	-474.28	KOP @ 7346.01ft
7,800.00	7,715.02	170.65	-474.27	DLS = 10°/100'
8,251.00	7,880.00	577.95	-474.25	End Build @ 8251.00ft
17,441.40	7,800.00	9,768.00	-473.83	TD Well @ 17441.40ft

**Plan Report for Sack 29C-30HZ - 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)	0.00	Slot	0.00	0.00	0.00

**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	8,251.00	Rev A0 Permit	MWD
8,251.00	17,441.40	Rev A0 Permit	MWD

**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,278.00	1,278.00	9 5/8"	9-5/8	13-1/2
8,251.00	7,880.00	7"	7	8-3/4

**Formation Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,228.00	1,228.00	Fox Hills Marker		0.00	
5,084.41	5,073.00	Sussex		0.00	
5,410.37	5,394.00	Shannon		0.00	
7,445.45	7,406.00	Sharon Springs		0.00	
7,475.04	7,435.00	Niobrara A		0.00	
7,673.49	7,617.00	Niobrara B		0.00	
7,823.25	7,731.00	Niobrara C		0.00	
8,062.87	7,851.00	Fort Hays		0.00	
8,144.21	7,871.00	Codell		0.00	
8,251.00	7,880.00	Landing Target (Heel)		0.00	
17,441.39	7,800.00	Total Depth (Toe)		0.00	

***Targets associated with this wellbore***

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Sack 29C-30HZ_SHL	0.00	0.00	0.00	Point
Sack 29C-30HZ_SEC	0.00	0.00	0.00	Polygon
Sack 29C-30HZ_LD	0.00	0.00	0.00	Polygon
Sack 29C-30HZ_BHL	7,800.00	9,768.00	-473.83	Point

**Plan Report for Sack 29C-30HZ - Rev A0 Permit**

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**Directional Difficulty Index**

Average Dogleg over Survey:	0.00 °/100usft	Maximum Dogleg over Survey:	0.00 °/100usft at 1.00 usft
Net Tortosity applicable to Plans:	0.00 °/100usft	Directional Difficulty Index:	6.630

**Audit Info**

**North Reference Sheet for Sec. 31-T1N-R67W - Sack 29C-30HZ - 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' @ 5073.00usft (Drilling Rig). Northing and Easting are relative to Sack 29C-30HZ  
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: 0.99996617

Grid Coordinates of Well: 1,244,298.34 usft N, 3,158,018.85 usft E  
Geographical Coordinates of Well: 40° 00' 09.38" N, 104° 56' 09.35" W  
Grid Convergence at Surface is: 0.36°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,441.40usft  
the Bottom Hole Displacement is 9,779.48usft in the Direction of 357.22° ( True).

Magnetic Convergence at surface is: -8.26° (23 December 2013, , BGGM2013)

Magnetic Model: BGGM2013  
Date: 23-Dec-13  
Declination: 8.62°  
Inclination/Dip: 66.60°  
Field Strength: 52559

Grid North is 0.36° East of True North (Grid Convergence)  
Magnetic North is 8.62° East of True North (Magnetic Declination)  
Magnetic North is 8.26° East of Grid North (Magnetic Convergence)

To convert a True Direction to a Grid Direction, Subtract 0.36°  
To convert a Magnetic Direction to a True Direction, Add 8.62° East  
To convert a Magnetic Direction to a Grid Direction, Add 8.26°