

Project: Weld County, CO (NAD 83)
 Site: Sec. 31-T1N-R67W
 Well: Sack 26N-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	4490.00	0.00	0.00	4490.00	0.00	0.00	0.00	0.00	0.00	
3	4990.00	10.00	90.00	4987.47	0.00	43.52	2.00	90.00	0.00	
4	6470.00	10.00	90.00	6444.98	0.00	300.52	0.00	0.00	0.00	
5	6970.00	0.00	0.00	6942.45	0.00	344.04	2.00	180.00	0.00	
6	7079.60	0.00	0.00	7052.05	0.00	344.04	0.00	0.00	0.00	
7	7981.82	90.22	0.00	7625.00	575.18	344.08	10.00	0.00	575.18	
8	17271.97	90.22	0.00	7589.00	9865.26	344.73	0.00	0.00	9865.26	Sack 26N-30HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Polygon
Sack 26N-30HZ_LD	0.00	0.00	0.00	40.002252	-104.926205	
Sack 26N-30HZ_SEC	0.00	0.00	0.00	40.002252	-104.926205	
Sack 26N-30HZ_SHL	0.00	0.00	0.00	40.002252	-104.926205	
Sack 26N-30HZ_BHL	7589.00	9865.26	344.73	40.029333	-104.924974	

WELL DETAILS: Sack 26N-30HZ

Ground Level: 5055.00

RKB = 17' @ 5072.00usft (Drilling Rig)

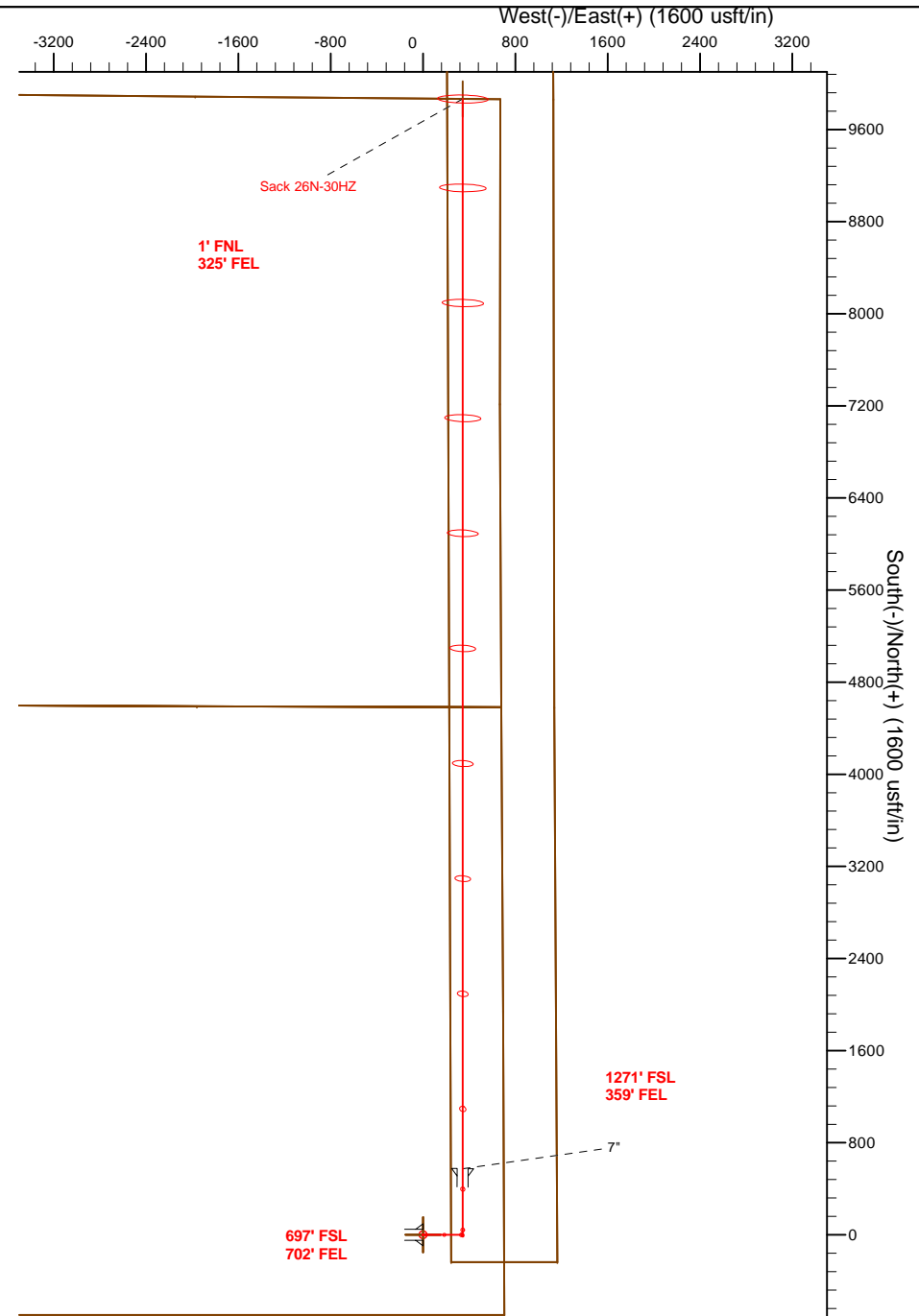
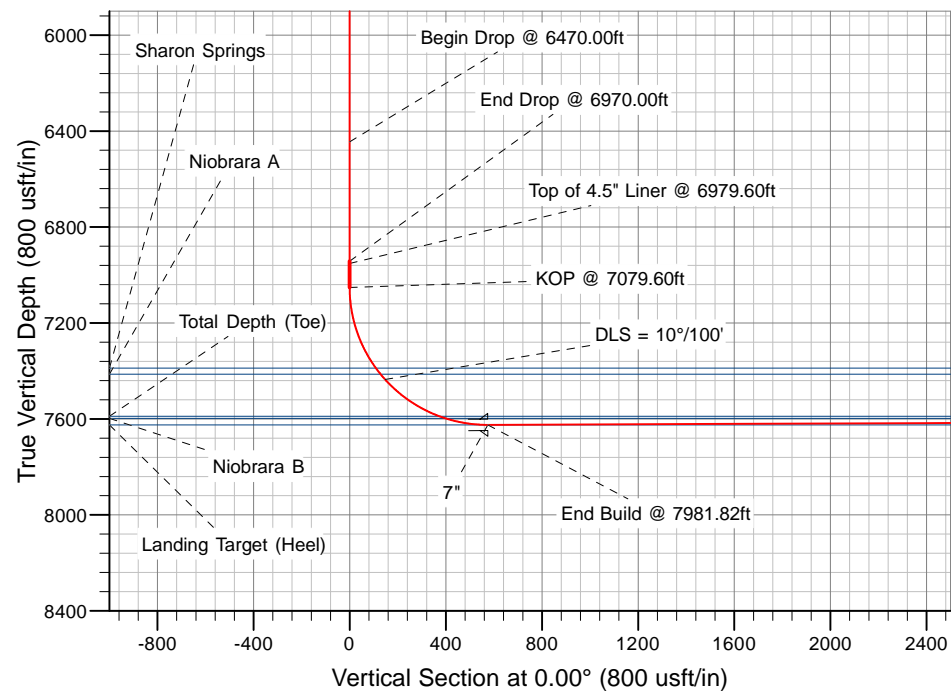
Plan: Rev A0 Permit (Sack 26N-30HZ/Plan A)

Created By: Clint Eshelman Date: 12/23/2013
 Reviewed: _____ Date: _____

TVD MD

6952.05 6979.60 Top of 4.5" Liner @ 6979.60ft

7052.05 7079.60 KOP @ 7079.60ft



Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 31-T1N-R67W

Sack 26N-30HZ

Plan A

Plan: Rev A0 Permit

Sperry Drilling Services

Proposal Report

23 December, 2013

Well Coordinates: 1,244,187.24 N, 3,160,744.30 E (40° 00' 08.11" N, 104° 55' 34.34" W)

Ground Level: 5,055.00 usft

Local Coordinate Origin:

Centered on Well Sack 26N-30HZ

Viewing Datum:

RKB = 17' @ 5072.00usft (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 26N-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
Sack 26N-30HZ_SEC - Sack 26N-30HZ_LD - Sack 26N-30HZ_SHL										
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
1,227.00	0.00	0.00	1,227.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Marker										
1,277.00	0.00	0.00	1,277.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
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
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,490.00	0.00	0.00	4,490.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 4490.00ft										
4,500.00	0.20	90.00	4,500.00	0.00	0.02	0.00	2.00	2.00	0.00	90.00
4,600.00	2.20	90.00	4,599.97	0.00	2.11	0.00	2.00	2.00	0.00	0.00
4,700.00	4.20	90.00	4,699.81	0.00	7.69	0.00	2.00	2.00	0.00	0.00
4,800.00	6.20	90.00	4,799.40	0.00	16.76	0.00	2.00	2.00	0.00	0.00
4,900.00	8.20	90.00	4,898.60	0.00	29.29	0.00	2.00	2.00	0.00	0.00
4,990.00	10.00	90.00	4,987.47	0.00	43.52	0.00	2.00	2.00	0.00	0.00

Plan Report for Sack 26N-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 (°)
End Nudge @ 4990.00ft										
5,000.00	10.00	90.00	4,997.31	0.00	45.26	0.00	0.00	0.00	0.00	0.00
5,075.84	10.00	90.00	5,072.00	0.00	58.43	0.00	0.00	0.00	0.00	0.00
Sussex										
5,100.00	10.00	90.00	5,095.79	0.00	62.62	0.00	0.00	0.00	0.00	0.00
5,200.00	10.00	90.00	5,194.28	0.00	79.99	0.00	0.00	0.00	0.00	0.00
5,300.00	10.00	90.00	5,292.76	0.00	97.35	0.00	0.00	0.00	0.00	0.00
5,400.00	10.00	90.00	5,391.24	0.00	114.72	0.00	0.00	0.00	0.00	0.00
5,401.79	10.00	90.00	5,393.00	0.00	115.03	0.00	0.00	0.00	0.00	0.00
Shannon										
5,500.00	10.00	90.00	5,489.72	0.00	132.08	0.00	0.00	0.00	0.00	0.00
5,600.00	10.00	90.00	5,588.20	0.00	149.45	0.00	0.00	0.00	0.00	0.00
5,700.00	10.00	90.00	5,686.68	0.00	166.81	0.00	0.00	0.00	0.00	0.00
5,800.00	10.00	90.00	5,785.16	0.00	184.18	0.00	0.00	0.00	0.00	0.00
5,900.00	10.00	90.00	5,883.64	0.00	201.54	0.00	0.00	0.00	0.00	0.00
6,000.00	10.00	90.00	5,982.12	0.00	218.91	0.00	0.00	0.00	0.00	0.00
6,100.00	10.00	90.00	6,080.60	0.00	236.27	0.00	0.00	0.00	0.00	0.00
6,200.00	10.00	90.00	6,179.08	0.00	253.64	0.00	0.00	0.00	0.00	0.00
6,300.00	10.00	90.00	6,277.56	0.00	271.00	0.00	0.00	0.00	0.00	0.00
6,400.00	10.00	90.00	6,376.04	0.00	288.37	0.00	0.00	0.00	0.00	0.00
6,470.00	10.00	90.00	6,444.98	0.00	300.52	0.00	0.00	0.00	0.00	0.00
Begin Drop @ 6470.00ft										
6,500.00	9.40	90.00	6,474.55	0.00	305.58	0.00	2.00	-2.00	0.00	180.00
6,600.00	7.40	90.00	6,573.47	0.00	320.18	0.00	2.00	-2.00	0.00	180.00
6,700.00	5.40	90.00	6,672.85	0.00	331.33	0.00	2.00	-2.00	0.00	180.00
6,800.00	3.40	90.00	6,772.55	0.00	339.00	0.00	2.00	-2.00	0.00	180.00
6,900.00	1.40	90.00	6,872.45	0.00	343.19	0.00	2.00	-2.00	0.00	180.00
6,970.00	0.00	0.00	6,942.45	0.00	344.04	0.00	2.00	-2.00	0.00	-180.00
End Drop @ 6970.00ft										
6,979.60	0.00	0.00	6,952.05	0.00	344.04	0.00	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6979.60ft										
7,000.00	0.00	0.00	6,972.45	0.00	344.04	0.00	0.00	0.00	0.00	0.00
7,079.60	0.00	0.00	7,052.05	0.00	344.04	0.00	0.00	0.00	0.00	0.00
KOP @ 7079.60ft										
7,100.00	2.04	0.00	7,072.44	0.36	344.04	0.36	10.00	10.00	0.00	0.00
7,200.00	12.04	0.00	7,171.56	12.60	344.05	12.60	10.00	10.00	0.00	0.00
7,300.00	22.04	0.00	7,267.05	41.87	344.05	41.87	10.00	10.00	0.00	0.00
7,400.00	32.04	0.00	7,356.01	87.27	344.05	87.27	10.00	10.00	0.00	0.00
7,438.58	35.90	0.00	7,388.00	108.83	344.05	108.83	10.00	10.00	0.00	0.00
Sharon Springs										
7,471.38	39.18	0.00	7,414.00	128.81	344.05	128.81	10.00	10.00	0.00	0.00
Niobrara A										
7,500.00	42.04	0.00	7,435.73	147.43	344.05	147.43	10.00	10.00	0.00	0.00
DLS = 10°/100'										
7,600.00	52.04	0.00	7,503.79	220.53	344.06	220.53	10.00	10.00	0.00	0.00
7,700.00	62.04	0.00	7,558.13	304.32	344.07	304.32	10.00	10.00	0.00	0.00
7,800.00	72.04	0.00	7,597.08	396.28	344.07	396.28	10.00	10.00	0.00	0.00
7,802.99	72.34	0.00	7,598.00	399.13	344.07	399.13	10.00	10.00	0.00	0.00
Niobrara B										
7,900.00	82.04	0.00	7,619.48	493.61	344.08	493.61	10.00	10.00	0.00	0.00
7,981.82	90.22	0.00	7,625.00	575.18	344.08	575.18	10.00	10.00	0.00	0.00
End Build @ 7981.82ft - Landing Target (Heel) - 7"										
8,000.00	90.22	0.00	7,624.93	593.36	344.09	593.36	0.00	0.00	0.00	0.00
8,100.00	90.22	0.00	7,624.54	693.36	344.09	693.36	0.00	0.00	0.00	0.00
8,200.00	90.22	0.00	7,624.15	793.36	344.10	793.36	0.00	0.00	0.00	0.00
8,300.00	90.22	0.00	7,623.77	893.36	344.11	893.36	0.00	0.00	0.00	0.00
8,400.00	90.22	0.00	7,623.38	993.35	344.11	993.35	0.00	0.00	0.00	0.00
8,500.00	90.22	0.00	7,622.99	1,093.35	344.12	1,093.35	0.00	0.00	0.00	0.00

Plan Report for Sack 26N-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 (°)
8,600.00	90.22	0.00	7,622.60	1,193.35	344.13	1,193.35	0.00	0.00	0.00	0.00
8,700.00	90.22	0.00	7,622.22	1,293.35	344.13	1,293.35	0.00	0.00	0.00	0.00
8,800.00	90.22	0.00	7,621.83	1,393.35	344.14	1,393.35	0.00	0.00	0.00	0.00
8,900.00	90.22	0.00	7,621.44	1,493.35	344.15	1,493.35	0.00	0.00	0.00	0.00
9,000.00	90.22	0.00	7,621.05	1,593.35	344.16	1,593.35	0.00	0.00	0.00	0.00
9,100.00	90.22	0.00	7,620.67	1,693.35	344.16	1,693.35	0.00	0.00	0.00	0.00
9,200.00	90.22	0.00	7,620.28	1,793.35	344.17	1,793.35	0.00	0.00	0.00	0.00
9,300.00	90.22	0.00	7,619.89	1,893.35	344.18	1,893.35	0.00	0.00	0.00	0.00
9,400.00	90.22	0.00	7,619.50	1,993.35	344.18	1,993.35	0.00	0.00	0.00	0.00
9,500.00	90.22	0.00	7,619.12	2,093.35	344.19	2,093.35	0.00	0.00	0.00	0.00
9,600.00	90.22	0.00	7,618.73	2,193.35	344.20	2,193.35	0.00	0.00	0.00	0.00
9,700.00	90.22	0.00	7,618.34	2,293.34	344.20	2,293.34	0.00	0.00	0.00	0.00
9,800.00	90.22	0.00	7,617.95	2,393.34	344.21	2,393.34	0.00	0.00	0.00	0.00
9,900.00	90.22	0.00	7,617.57	2,493.34	344.22	2,493.34	0.00	0.00	0.00	0.00
10,000.00	90.22	0.00	7,617.18	2,593.34	344.23	2,593.34	0.00	0.00	0.00	0.00
10,100.00	90.22	0.00	7,616.79	2,693.34	344.23	2,693.34	0.00	0.00	0.00	0.00
10,200.00	90.22	0.00	7,616.40	2,793.34	344.24	2,793.34	0.00	0.00	0.00	0.00
10,300.00	90.22	0.00	7,616.02	2,893.34	344.25	2,893.34	0.00	0.00	0.00	0.00
10,400.00	90.22	0.00	7,615.63	2,993.34	344.25	2,993.34	0.00	0.00	0.00	0.00
10,500.00	90.22	0.00	7,615.24	3,093.34	344.26	3,093.34	0.00	0.00	0.00	0.00
10,600.00	90.22	0.00	7,614.85	3,193.34	344.27	3,193.34	0.00	0.00	0.00	0.00
10,700.00	90.22	0.00	7,614.47	3,293.34	344.27	3,293.34	0.00	0.00	0.00	0.00
10,800.00	90.22	0.00	7,614.08	3,393.34	344.28	3,393.34	0.00	0.00	0.00	0.00
10,900.00	90.22	0.00	7,613.69	3,493.34	344.29	3,493.34	0.00	0.00	0.00	0.00
11,000.00	90.22	0.00	7,613.30	3,593.34	344.30	3,593.34	0.00	0.00	0.00	0.00
11,100.00	90.22	0.00	7,612.92	3,693.33	344.30	3,693.33	0.00	0.00	0.00	0.00
11,200.00	90.22	0.00	7,612.53	3,793.33	344.31	3,793.33	0.00	0.00	0.00	0.00
11,300.00	90.22	0.00	7,612.14	3,893.33	344.32	3,893.33	0.00	0.00	0.00	0.00
11,400.00	90.22	0.00	7,611.75	3,993.33	344.32	3,993.33	0.00	0.00	0.00	0.00
11,500.00	90.22	0.00	7,611.37	4,093.33	344.33	4,093.33	0.00	0.00	0.00	0.00
11,600.00	90.22	0.00	7,610.98	4,193.33	344.34	4,193.33	0.00	0.00	0.00	0.00
11,700.00	90.22	0.00	7,610.59	4,293.33	344.34	4,293.33	0.00	0.00	0.00	0.00
11,800.00	90.22	0.00	7,610.20	4,393.33	344.35	4,393.33	0.00	0.00	0.00	0.00
11,900.00	90.22	0.00	7,609.82	4,493.33	344.36	4,493.33	0.00	0.00	0.00	0.00
12,000.00	90.22	0.00	7,609.43	4,593.33	344.36	4,593.33	0.00	0.00	0.00	0.00
12,100.00	90.22	0.00	7,609.04	4,693.33	344.37	4,693.33	0.00	0.00	0.00	0.00
12,200.00	90.22	0.00	7,608.65	4,793.33	344.38	4,793.33	0.00	0.00	0.00	0.00
12,300.00	90.22	0.00	7,608.27	4,893.33	344.39	4,893.33	0.00	0.00	0.00	0.00
12,400.00	90.22	0.00	7,607.88	4,993.32	344.39	4,993.32	0.00	0.00	0.00	0.00
12,500.00	90.22	0.00	7,607.49	5,093.32	344.40	5,093.32	0.00	0.00	0.00	0.00
12,600.00	90.22	0.00	7,607.10	5,193.32	344.41	5,193.32	0.00	0.00	0.00	0.00
12,700.00	90.22	0.00	7,606.72	5,293.32	344.41	5,293.32	0.00	0.00	0.00	0.00
12,800.00	90.22	0.00	7,606.33	5,393.32	344.42	5,393.32	0.00	0.00	0.00	0.00
12,900.00	90.22	0.00	7,605.94	5,493.32	344.43	5,493.32	0.00	0.00	0.00	0.00
13,000.00	90.22	0.00	7,605.55	5,593.32	344.43	5,593.32	0.00	0.00	0.00	0.00
13,100.00	90.22	0.00	7,605.17	5,693.32	344.44	5,693.32	0.00	0.00	0.00	0.00
13,200.00	90.22	0.00	7,604.78	5,793.32	344.45	5,793.32	0.00	0.00	0.00	0.00
13,300.00	90.22	0.00	7,604.39	5,893.32	344.46	5,893.32	0.00	0.00	0.00	0.00
13,400.00	90.22	0.00	7,604.00	5,993.32	344.46	5,993.32	0.00	0.00	0.00	0.00
13,500.00	90.22	0.00	7,603.62	6,093.32	344.47	6,093.32	0.00	0.00	0.00	0.00
13,600.00	90.22	0.00	7,603.23	6,193.32	344.48	6,193.32	0.00	0.00	0.00	0.00
13,700.00	90.22	0.00	7,602.84	6,293.31	344.48	6,293.31	0.00	0.00	0.00	0.00
13,800.00	90.22	0.00	7,602.45	6,393.31	344.49	6,393.31	0.00	0.00	0.00	0.00
13,900.00	90.22	0.00	7,602.07	6,493.31	344.50	6,493.31	0.00	0.00	0.00	0.00
14,000.00	90.22	0.00	7,601.68	6,593.31	344.50	6,593.31	0.00	0.00	0.00	0.00
14,100.00	90.22	0.00	7,601.29	6,693.31	344.51	6,693.31	0.00	0.00	0.00	0.00
14,200.00	90.22	0.00	7,600.90	6,793.31	344.52	6,793.31	0.00	0.00	0.00	0.00
14,300.00	90.22	0.00	7,600.52	6,893.31	344.53	6,893.31	0.00	0.00	0.00	0.00
14,400.00	90.22	0.00	7,600.13	6,993.31	344.53	6,993.31	0.00	0.00	0.00	0.00
14,500.00	90.22	0.00	7,599.74	7,093.31	344.54	7,093.31	0.00	0.00	0.00	0.00

Plan Report for Sack 26N-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 (°)
14,600.00	90.22	0.00	7,599.35	7,193.31	344.55	7,193.31	0.00	0.00	0.00	0.00
14,700.00	90.22	0.00	7,598.97	7,293.31	344.55	7,293.31	0.00	0.00	0.00	0.00
14,800.00	90.22	0.00	7,598.58	7,393.31	344.56	7,393.31	0.00	0.00	0.00	0.00
14,900.00	90.22	0.00	7,598.19	7,493.31	344.57	7,493.31	0.00	0.00	0.00	0.00
15,000.00	90.22	0.00	7,597.80	7,593.31	344.57	7,593.31	0.00	0.00	0.00	0.00
15,100.00	90.22	0.00	7,597.42	7,693.30	344.58	7,693.30	0.00	0.00	0.00	0.00
15,200.00	90.22	0.00	7,597.03	7,793.30	344.59	7,793.30	0.00	0.00	0.00	0.00
15,300.00	90.22	0.00	7,596.64	7,893.30	344.59	7,893.30	0.00	0.00	0.00	0.00
15,400.00	90.22	0.00	7,596.25	7,993.30	344.60	7,993.30	0.00	0.00	0.00	0.00
15,500.00	90.22	0.00	7,595.87	8,093.30	344.61	8,093.30	0.00	0.00	0.00	0.00
15,600.00	90.22	0.00	7,595.48	8,193.30	344.62	8,193.30	0.00	0.00	0.00	0.00
15,700.00	90.22	0.00	7,595.09	8,293.30	344.62	8,293.30	0.00	0.00	0.00	0.00
15,800.00	90.22	0.00	7,594.70	8,393.30	344.63	8,393.30	0.00	0.00	0.00	0.00
15,900.00	90.22	0.00	7,594.32	8,493.30	344.64	8,493.30	0.00	0.00	0.00	0.00
16,000.00	90.22	0.00	7,593.93	8,593.30	344.64	8,593.30	0.00	0.00	0.00	0.00
16,100.00	90.22	0.00	7,593.54	8,693.30	344.65	8,693.30	0.00	0.00	0.00	0.00
16,200.00	90.22	0.00	7,593.15	8,793.30	344.66	8,793.30	0.00	0.00	0.00	0.00
16,300.00	90.22	0.00	7,592.77	8,893.30	344.66	8,893.30	0.00	0.00	0.00	0.00
16,400.00	90.22	0.00	7,592.38	8,993.29	344.67	8,993.29	0.00	0.00	0.00	0.00
16,500.00	90.22	0.00	7,591.99	9,093.29	344.68	9,093.29	0.00	0.00	0.00	0.00
16,600.00	90.22	0.00	7,591.60	9,193.29	344.69	9,193.29	0.00	0.00	0.00	0.00
16,700.00	90.22	0.00	7,591.22	9,293.29	344.69	9,293.29	0.00	0.00	0.00	0.00
16,800.00	90.22	0.00	7,590.83	9,393.29	344.70	9,393.29	0.00	0.00	0.00	0.00
16,900.00	90.22	0.00	7,590.44	9,493.29	344.71	9,493.29	0.00	0.00	0.00	0.00
17,000.00	90.22	0.00	7,590.05	9,593.29	344.71	9,593.29	0.00	0.00	0.00	0.00
17,100.00	90.22	0.00	7,589.67	9,693.29	344.72	9,693.29	0.00	0.00	0.00	0.00
17,200.00	90.22	0.00	7,589.28	9,793.29	344.73	9,793.29	0.00	0.00	0.00	0.00
17,271.96	90.22	0.00	7,589.00	9,865.25	344.73	9,865.25	0.00	0.00	0.00	0.00
Total Depth (Toe)										
17,271.97	90.22	0.00	7,589.00	9,865.26	344.73	9,865.26	0.00	0.00	0.00	0.00
TD Well @ 17271.97ft - Sack 26N-30HZ_BHL										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
4,490.00	4,490.00	0.00	0.00	Begin Nudge @ 4490.00ft
4,990.00	4,987.47	0.00	43.52	End Nudge @ 4990.00ft
6,470.00	6,444.98	0.00	300.52	Begin Drop @ 6470.00ft
6,970.00	6,942.45	0.00	344.04	End Drop @ 6970.00ft
6,979.60	6,952.05	0.00	344.04	Top of 4.5" Liner @ 6979.60ft
7,079.60	7,052.05	0.00	344.04	KOP @ 7079.60ft
7,500.00	7,435.73	147.43	344.05	DLS = 10°/100'
7,981.82	7,625.00	575.18	344.08	End Build @ 7981.82ft
17,271.97	7,589.00	9,865.26	344.73	TD Well @ 17271.97ft

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	7,981.82	Rev A0 Permit	MWD

Plan Report for Sack 26N-30HZ - Rev A0 Permit**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
7,981.82	17,271.97	Rev A0 Permit	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,277.00	1,277.00	9 5/8"	9-5/8	13-1/2
7,981.82	7,625.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,227.00	1,227.00	Fox Hills Marker		0.00	
5,075.84	5,072.00	Sussex		0.00	
5,401.79	5,393.00	Shannon		0.00	
7,438.58	7,388.00	Sharon Springs		0.00	
7,471.38	7,414.00	Niobrara A		0.00	
7,802.99	7,598.00	Niobrara B		0.00	
7,981.82	7,625.00	Landing Target (Heel)		0.00	
17,271.96	7,589.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Sack 26N-30HZ_SEC	0.00	0.00	0.00	Polygon
Sack 26N-30HZ_LD	0.00	0.00	0.00	Polygon
Sack 26N-30HZ_SHL	0.00	0.00	0.00	Point
Sack 26N-30HZ_BHL	7,589.00	9,865.26	344.73	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.00 °/100usft	Maximum Dogleg over Survey:	0.00 °/100usft at 0.00 usft
Net Tortosity applicable to Plans:	0.00 °/100usft	Directional Difficulty Index:	6.636

Audit Info

North Reference Sheet for Sec. 31-T1N-R67W - Sack 26N-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' @ 5072.00usft (Drilling Rig). Northing and Easting are relative to Sack 26N-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: 0.99996620

Grid Coordinates of Well: 1,244,187.24 usft N, 3,160,744.30 usft E
Geographical Coordinates of Well: 40° 00' 08.11" N, 104° 55' 34.34" W
Grid Convergence at Surface is: 0.37°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,271.97usft
the Bottom Hole Displacement is 9,871.28usft in the Direction of 2.00° (True).

Magnetic Convergence at surface is: -8.25° (23 December 2013, , BGGM2013)

Magnetic Model: BGGM2013
Date: 23-Dec-13
Declination: 8.62°
Inclination/Dip: 66.61°
Field Strength: 52560

Grid North is 0.37° East of True North (Grid Convergence)
Magnetic North is 8.62° East of True North (Magnetic Declination)
Magnetic North is 8.25° East of Grid North (Magnetic Convergence)

To convert a True Direction to a Grid Direction, Subtract 0.37°
To convert a Magnetic Direction to a True Direction, Add 8.62° East
To convert a Magnetic Direction to a Grid Direction, Add 8.25°