

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 6-T1N-R65W

Thomason 32C-31HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

Sperry Drilling Services

Proposal Report

12 June, 2012

Well Coordinates: 1,270,774.22 N, 3,220,227.33 E (40° 04' 26.34" N, 104° 42' 46.95" W)

Ground Level: 5,005.00 ft

Local Coordinate Origin: Centered on Well Thomason 32C-31HZ

Viewing Datum: RKB=17' @ 5022.00ft (Drilling Rig)

TVDs to System: N

North Reference: True

Unit System: API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

HALLIBURTON

Project: Weld County, CO (NAD 83)
 Site: Sec. 6-T1N-R65W
 Well: Thomason 32C-31HZ
 Wellbore: Plan A Rev 0
 Design: Plan A Rev 0 Permit

Anadarko Petroleum Corp.



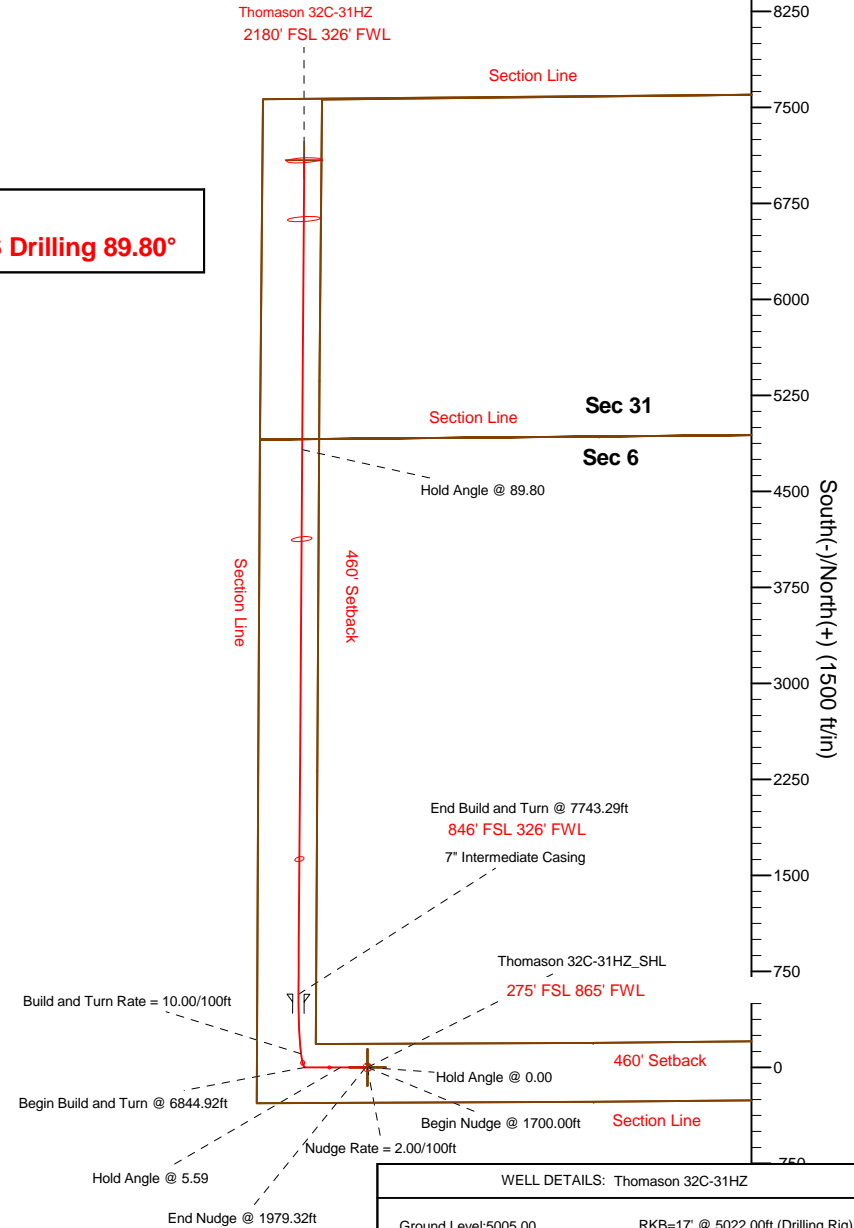
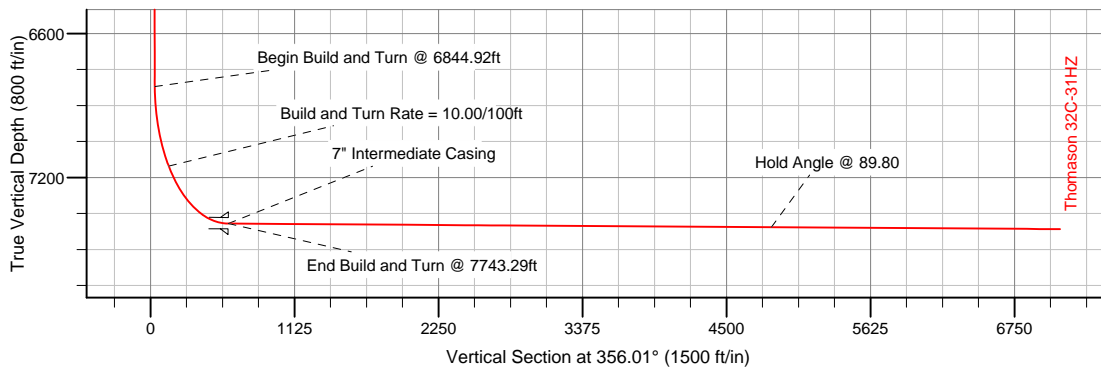
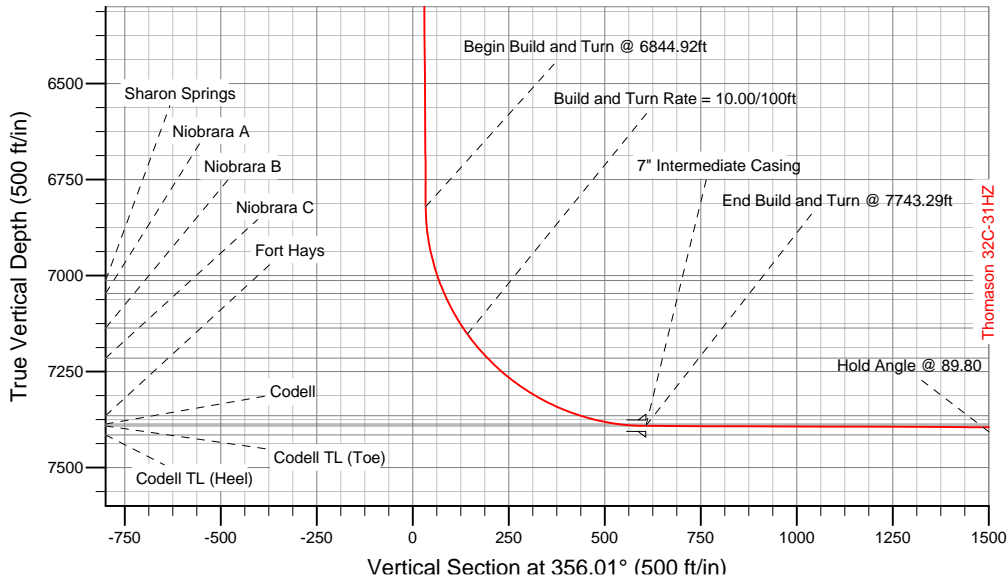
SECTION DETAILS

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	1700.00	0.00	0.00	1700.00	0.00	0.00	0.00	0.00	0.00	
3	1979.32	5.59	270.00	1978.88	0.00	-13.61	2.00	270.00	0.95	
4	6844.92	5.59	270.00	6821.37	0.00	-487.26	0.00	0.00	33.92	
5	7743.29	89.80	0.39	7392.00	571.31	-539.00	10.00	90.41	607.45	
6	14260.21	89.80	0.39	7415.00	7088.04	-494.65	0.00	0.00	7105.28	Thomason 32C-31HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N-S	+E-W	Latitude	Longitude	Shape
Thomason 32C-31HZ_Sec 6/31 Line	0.00	0.00	0.00	40.073983	-104.713041	Polygon
Thomason 32C-31HZ_Section Lines	0.00	0.00	0.00	40.073983	-104.713041	Polygon
Thomason 32C-31HZ_Setback Lines	0.00	0.00	0.00	40.073983	-104.713041	Polygon
Thomason 32C-31HZ_SHL	0.00	0.00	0.00	40.073983	-104.713041	Point
Thomason 32C-31HZ_BHL	7415.00	7088.04	-494.65	40.093440	-104.714809	Point

Target Line:
7390.20' TVDkb @ 0' VS Drilling 89.80°



WELL DETAILS: Thomason 32C-31HZ	
Ground Level: 5005.00	RKB=17' @ 5022.00ft (Drilling Rig)
Plan: Plan A Rev 0 Permit (Thomason 32C-31HZ/Plan A Rev 0)	
Created By: Fred Hartmann	Date: 06/12/2012
Reviewed: _____	Date: _____

Plan Report for Thomason 32C-31HZ - 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)	Tooface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tie-On to Surface @ 0.00ft - Thomason 32C-31HZ_SHL - Thomason 32C-31HZ_Sec 6/31 Line - Thomason 32C-31HZ_Section Lin										
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
Hold Angle @ 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
1,300.00	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
1,454.00	0.00	0.00	1,454.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills										
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
Begin Nudge @ 1700.00ft										
1,800.00	2.00	270.00	1,799.98	0.00	-1.75	0.12	2.00	2.00	0.00	270.00
Nudge Rate = 2.00/100ft										
1,900.00	4.00	270.00	1,899.84	0.00	-6.98	0.49	2.00	2.00	0.00	0.00
1,979.32	5.59	270.00	1,978.88	0.00	-13.61	0.95	2.00	2.00	0.00	0.00
End Nudge @ 1979.32ft										
2,000.00	5.59	270.00	1,999.46	0.00	-15.62	1.09	0.00	0.00	0.00	0.00
2,100.00	5.59	270.00	2,098.98	0.00	-25.35	1.77	0.00	0.00	0.00	0.00
2,200.00	5.59	270.00	2,198.51	0.00	-35.09	2.44	0.00	0.00	0.00	0.00
2,300.00	5.59	270.00	2,298.03	0.00	-44.82	3.12	0.00	0.00	0.00	0.00
2,400.00	5.59	270.00	2,397.56	0.00	-54.56	3.80	0.00	0.00	0.00	0.00
2,500.00	5.59	270.00	2,497.08	0.00	-64.29	4.48	0.00	0.00	0.00	0.00
2,600.00	5.59	270.00	2,596.61	0.00	-74.03	5.15	0.00	0.00	0.00	0.00
2,700.00	5.59	270.00	2,696.13	0.00	-83.76	5.83	0.00	0.00	0.00	0.00
2,800.00	5.59	270.00	2,795.66	0.00	-93.50	6.51	0.00	0.00	0.00	0.00
2,900.00	5.59	270.00	2,895.18	0.00	-103.23	7.19	0.00	0.00	0.00	0.00
3,000.00	5.59	270.00	2,994.71	0.00	-112.97	7.86	0.00	0.00	0.00	0.00
3,100.00	5.59	270.00	3,094.23	0.00	-122.70	8.54	0.00	0.00	0.00	0.00
3,200.00	5.59	270.00	3,193.76	0.00	-132.44	9.22	0.00	0.00	0.00	0.00
3,300.00	5.59	270.00	3,293.28	0.00	-142.17	9.90	0.00	0.00	0.00	0.00
3,400.00	5.59	270.00	3,392.81	0.00	-151.91	10.58	0.00	0.00	0.00	0.00
3,500.00	5.59	270.00	3,492.33	0.00	-161.64	11.25	0.00	0.00	0.00	0.00
3,600.00	5.59	270.00	3,591.86	0.00	-171.38	11.93	0.00	0.00	0.00	0.00
3,700.00	5.59	270.00	3,691.39	0.00	-181.11	12.61	0.00	0.00	0.00	0.00
3,800.00	5.59	270.00	3,790.91	0.00	-190.85	13.29	0.00	0.00	0.00	0.00
3,900.00	5.59	270.00	3,890.44	0.00	-200.58	13.96	0.00	0.00	0.00	0.00
4,000.00	5.59	270.00	3,989.96	0.00	-210.32	14.64	0.00	0.00	0.00	0.00
Hold Angle @ 5.59										
4,100.00	5.59	270.00	4,089.49	0.00	-220.05	15.32	0.00	0.00	0.00	0.00
4,200.00	5.59	270.00	4,189.01	0.00	-229.79	16.00	0.00	0.00	0.00	0.00
4,300.00	5.59	270.00	4,288.54	0.00	-239.52	16.67	0.00	0.00	0.00	0.00
4,400.00	5.59	270.00	4,388.06	0.00	-249.26	17.35	0.00	0.00	0.00	0.00
4,500.00	5.59	270.00	4,487.59	0.00	-258.99	18.03	0.00	0.00	0.00	0.00
4,600.00	5.59	270.00	4,587.11	0.00	-268.73	18.71	0.00	0.00	0.00	0.00
4,700.00	5.59	270.00	4,686.64	0.00	-278.46	19.39	0.00	0.00	0.00	0.00

Plan Report for Thomason 32C-31HZ - 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 (°)
4,800.00	5.59	270.00	4,786.16	0.00	-288.19	20.06	0.00	0.00	0.00	0.00
4,900.00	5.59	270.00	4,885.69	0.00	-297.93	20.74	0.00	0.00	0.00	0.00
5,000.00	5.59	270.00	4,985.21	0.00	-307.66	21.42	0.00	0.00	0.00	0.00
5,035.96	5.59	270.00	5,021.00	0.00	-311.17	21.66	0.00	0.00	0.00	0.00
Sussex										
5,100.00	5.59	270.00	5,084.74	0.00	-317.40	22.10	0.00	0.00	0.00	0.00
5,200.00	5.59	270.00	5,184.26	0.00	-327.13	22.77	0.00	0.00	0.00	0.00
5,300.00	5.59	270.00	5,283.79	0.00	-336.87	23.45	0.00	0.00	0.00	0.00
5,400.00	5.59	270.00	5,383.31	0.00	-346.60	24.13	0.00	0.00	0.00	0.00
5,500.00	5.59	270.00	5,482.84	0.00	-356.34	24.81	0.00	0.00	0.00	0.00
5,600.00	5.59	270.00	5,582.36	0.00	-366.07	25.49	0.00	0.00	0.00	0.00
5,700.00	5.59	270.00	5,681.89	0.00	-375.81	26.16	0.00	0.00	0.00	0.00
5,800.00	5.59	270.00	5,781.41	0.00	-385.54	26.84	0.00	0.00	0.00	0.00
5,900.00	5.59	270.00	5,880.94	0.00	-395.28	27.52	0.00	0.00	0.00	0.00
6,000.00	5.59	270.00	5,980.46	0.00	-405.01	28.20	0.00	0.00	0.00	0.00
6,100.00	5.59	270.00	6,079.99	0.00	-414.75	28.87	0.00	0.00	0.00	0.00
6,200.00	5.59	270.00	6,179.51	0.00	-424.48	29.55	0.00	0.00	0.00	0.00
6,300.00	5.59	270.00	6,279.04	0.00	-434.22	30.23	0.00	0.00	0.00	0.00
6,400.00	5.59	270.00	6,378.56	0.00	-443.95	30.91	0.00	0.00	0.00	0.00
6,500.00	5.59	270.00	6,478.09	0.00	-453.69	31.58	0.00	0.00	0.00	0.00
6,600.00	5.59	270.00	6,577.61	0.00	-463.42	32.26	0.00	0.00	0.00	0.00
6,700.00	5.59	270.00	6,677.14	0.00	-473.16	32.94	0.00	0.00	0.00	0.00
6,800.00	5.59	270.00	6,776.66	0.00	-482.89	33.62	0.00	0.00	0.00	0.00
6,844.92	5.59	270.00	6,821.37	0.00	-487.26	33.92	0.00	0.00	0.00	0.00
Begin Build and Turn @ 6844.92ft										
6,900.00	7.81	314.93	6,876.10	2.65	-492.60	36.93	10.00	4.04	81.57	90.41
7,000.00	16.42	341.03	6,973.85	20.86	-502.03	55.76	10.00	8.61	26.10	45.75
7,041.26	20.34	345.12	7,013.00	33.31	-505.77	68.44	10.00	9.51	9.90	20.14
Sharon Springs										
7,077.97	23.89	347.65	7,047.00	46.74	-509.00	82.07	10.00	9.66	6.91	16.26
Niobrara A										
7,100.00	26.03	348.86	7,066.97	55.85	-510.89	91.28	10.00	9.73	5.48	13.91
7,180.92	33.97	352.06	7,137.00	95.73	-517.45	131.52	10.00	9.81	3.96	12.81
Niobrara B										
7,200.00	35.85	352.63	7,152.64	106.55	-518.91	142.41	10.00	9.85	2.97	10.03
Build and Turn Rate = 10.00/100ft										
7,281.30	43.88	354.57	7,215.00	158.30	-524.64	194.44	10.00	9.88	2.39	9.57
Niobrara C										
7,300.00	45.74	354.94	7,228.26	171.42	-525.84	207.61	10.00	9.90	1.96	8.07
7,400.00	55.65	356.58	7,291.53	248.49	-531.48	284.89	10.00	9.92	1.64	7.81
7,500.00	65.59	357.87	7,340.53	335.42	-535.65	371.90	10.00	9.94	1.29	6.77
7,568.29	72.38	358.63	7,365.00	399.10	-537.59	435.56	10.00	9.95	1.12	6.14
Fort Hays										
7,600.00	75.54	358.96	7,373.76	429.57	-538.22	465.99	10.00	9.95	1.05	5.86
7,669.36	82.44	359.67	7,387.00	497.61	-539.03	533.93	10.00	9.95	1.01	5.77
Codell										
7,700.00	85.49	359.97	7,390.22	528.07	-539.13	564.32	10.00	9.95	0.98	5.64
7,743.29	89.80	0.39	7,392.00	571.31	-539.00	607.45	10.00	9.95	0.98	5.60
End Build and Turn @ 7743.29ft - 7" Intermediate Casing										
7,743.32	89.80	0.39	7,392.00	571.34	-538.99	607.48	0.00	0.00	0.00	0.00
Codell TL (Toe)										
7,800.00	89.80	0.39	7,392.20	628.02	-538.61	663.99	0.00	0.00	0.00	0.00
7,900.00	89.80	0.39	7,392.55	728.02	-537.93	763.70	0.00	0.00	0.00	0.00
8,000.00	89.80	0.39	7,392.91	828.01	-537.25	863.41	0.00	0.00	0.00	0.00
8,100.00	89.80	0.39	7,393.26	928.01	-536.57	963.11	0.00	0.00	0.00	0.00
8,200.00	89.80	0.39	7,393.61	1,028.01	-535.89	1,062.82	0.00	0.00	0.00	0.00
8,300.00	89.80	0.39	7,393.96	1,128.00	-535.21	1,162.53	0.00	0.00	0.00	0.00
8,400.00	89.80	0.39	7,394.32	1,228.00	-534.53	1,262.23	0.00	0.00	0.00	0.00

Plan Report for Thomason 32C-31HZ - 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 (°)
8,500.00	89.80	0.39	7,394.67	1,328.00	-533.85	1,361.94	0.00	0.00	0.00	0.00
8,600.00	89.80	0.39	7,395.02	1,428.00	-533.17	1,461.65	0.00	0.00	0.00	0.00
8,700.00	89.80	0.39	7,395.38	1,527.99	-532.49	1,561.36	0.00	0.00	0.00	0.00
8,800.00	89.80	0.39	7,395.73	1,627.99	-531.80	1,661.06	0.00	0.00	0.00	0.00
8,900.00	89.80	0.39	7,396.08	1,727.99	-531.12	1,760.77	0.00	0.00	0.00	0.00
9,000.00	89.80	0.39	7,396.44	1,827.98	-530.44	1,860.48	0.00	0.00	0.00	0.00
9,100.00	89.80	0.39	7,396.79	1,927.98	-529.76	1,960.18	0.00	0.00	0.00	0.00
9,200.00	89.80	0.39	7,397.14	2,027.98	-529.08	2,059.89	0.00	0.00	0.00	0.00
9,300.00	89.80	0.39	7,397.49	2,127.98	-528.40	2,159.60	0.00	0.00	0.00	0.00
9,400.00	89.80	0.39	7,397.85	2,227.97	-527.72	2,259.31	0.00	0.00	0.00	0.00
9,500.00	89.80	0.39	7,398.20	2,327.97	-527.04	2,359.01	0.00	0.00	0.00	0.00
9,600.00	89.80	0.39	7,398.55	2,427.97	-526.36	2,458.72	0.00	0.00	0.00	0.00
9,700.00	89.80	0.39	7,398.91	2,527.96	-525.68	2,558.43	0.00	0.00	0.00	0.00
9,800.00	89.80	0.39	7,399.26	2,627.96	-525.00	2,658.13	0.00	0.00	0.00	0.00
9,900.00	89.80	0.39	7,399.61	2,727.96	-524.32	2,757.84	0.00	0.00	0.00	0.00
10,000.00	89.80	0.39	7,399.96	2,827.95	-523.64	2,857.55	0.00	0.00	0.00	0.00
10,100.00	89.80	0.39	7,400.32	2,927.95	-522.96	2,957.26	0.00	0.00	0.00	0.00
10,200.00	89.80	0.39	7,400.67	3,027.95	-522.28	3,056.96	0.00	0.00	0.00	0.00
10,300.00	89.80	0.39	7,401.02	3,127.95	-521.60	3,156.67	0.00	0.00	0.00	0.00
10,400.00	89.80	0.39	7,401.38	3,227.94	-520.92	3,256.38	0.00	0.00	0.00	0.00
10,500.00	89.80	0.39	7,401.73	3,327.94	-520.24	3,356.08	0.00	0.00	0.00	0.00
10,600.00	89.80	0.39	7,402.08	3,427.94	-519.56	3,455.79	0.00	0.00	0.00	0.00
10,700.00	89.80	0.39	7,402.43	3,527.93	-518.88	3,555.50	0.00	0.00	0.00	0.00
10,800.00	89.80	0.39	7,402.79	3,627.93	-518.20	3,655.20	0.00	0.00	0.00	0.00
10,900.00	89.80	0.39	7,403.14	3,727.93	-517.52	3,754.91	0.00	0.00	0.00	0.00
11,000.00	89.80	0.39	7,403.49	3,827.93	-516.84	3,854.62	0.00	0.00	0.00	0.00
11,100.00	89.80	0.39	7,403.85	3,927.92	-516.15	3,954.33	0.00	0.00	0.00	0.00
11,200.00	89.80	0.39	7,404.20	4,027.92	-515.47	4,054.03	0.00	0.00	0.00	0.00
11,300.00	89.80	0.39	7,404.55	4,127.92	-514.79	4,153.74	0.00	0.00	0.00	0.00
11,400.00	89.80	0.39	7,404.91	4,227.91	-514.11	4,253.45	0.00	0.00	0.00	0.00
11,500.00	89.80	0.39	7,405.26	4,327.91	-513.43	4,353.15	0.00	0.00	0.00	0.00
11,600.00	89.80	0.39	7,405.61	4,427.91	-512.75	4,452.86	0.00	0.00	0.00	0.00
11,700.00	89.80	0.39	7,405.96	4,527.90	-512.07	4,552.57	0.00	0.00	0.00	0.00
11,800.00	89.80	0.39	7,406.32	4,627.90	-511.39	4,652.28	0.00	0.00	0.00	0.00
11,900.00	89.80	0.39	7,406.67	4,727.90	-510.71	4,751.98	0.00	0.00	0.00	0.00
12,000.00	89.80	0.39	7,407.02	4,827.90	-510.03	4,851.69	0.00	0.00	0.00	0.00
Hold Angle @ 89.80										
12,100.00	89.80	0.39	7,407.38	4,927.89	-509.35	4,951.40	0.00	0.00	0.00	0.00
12,200.00	89.80	0.39	7,407.73	5,027.89	-508.67	5,051.10	0.00	0.00	0.00	0.00
12,300.00	89.80	0.39	7,408.08	5,127.89	-507.99	5,150.81	0.00	0.00	0.00	0.00
12,400.00	89.80	0.39	7,408.43	5,227.88	-507.31	5,250.52	0.00	0.00	0.00	0.00
12,500.00	89.80	0.39	7,408.79	5,327.88	-506.63	5,350.22	0.00	0.00	0.00	0.00
12,600.00	89.80	0.39	7,409.14	5,427.88	-505.95	5,449.93	0.00	0.00	0.00	0.00
12,700.00	89.80	0.39	7,409.49	5,527.88	-505.27	5,549.64	0.00	0.00	0.00	0.00
12,800.00	89.80	0.39	7,409.85	5,627.87	-504.59	5,649.35	0.00	0.00	0.00	0.00
12,900.00	89.80	0.39	7,410.20	5,727.87	-503.91	5,749.05	0.00	0.00	0.00	0.00
13,000.00	89.80	0.39	7,410.55	5,827.87	-503.23	5,848.76	0.00	0.00	0.00	0.00
13,100.00	89.80	0.39	7,410.91	5,927.86	-502.55	5,948.47	0.00	0.00	0.00	0.00
13,200.00	89.80	0.39	7,411.26	6,027.86	-501.87	6,048.17	0.00	0.00	0.00	0.00
13,300.00	89.80	0.39	7,411.61	6,127.86	-501.19	6,147.88	0.00	0.00	0.00	0.00
13,400.00	89.80	0.39	7,411.96	6,227.85	-500.51	6,247.59	0.00	0.00	0.00	0.00
13,500.00	89.80	0.39	7,412.32	6,327.85	-499.82	6,347.30	0.00	0.00	0.00	0.00
13,600.00	89.80	0.39	7,412.67	6,427.85	-499.14	6,447.00	0.00	0.00	0.00	0.00
13,700.00	89.80	0.39	7,413.02	6,527.85	-498.46	6,546.71	0.00	0.00	0.00	0.00
13,800.00	89.80	0.39	7,413.38	6,627.84	-497.78	6,646.42	0.00	0.00	0.00	0.00
13,900.00	89.80	0.39	7,413.73	6,727.84	-497.10	6,746.12	0.00	0.00	0.00	0.00
14,000.00	89.80	0.39	7,414.08	6,827.84	-496.42	6,845.83	0.00	0.00	0.00	0.00
14,100.00	89.80	0.39	7,414.43	6,927.83	-495.74	6,945.54	0.00	0.00	0.00	0.00
14,200.00	89.80	0.39	7,414.79	7,027.83	-495.06	7,045.25	0.00	0.00	0.00	0.00

Plan Report for Thomason 32C-31HZ - 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 (°)
14,260.21	89.80	0.39	7,415.00	7,088.04	-494.65	7,105.28	0.00	0.00	0.00	0.00
Codell TL (Heel) - Thomason 32C-31HZ_BHL										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
0.00	0.00	0.00	0.00	Tie-On to Surface @ 0.00ft
1,000.00	1,000.00	0.00	0.00	Hold Angle @ 0.00
1,700.00	1,700.00	0.00	0.00	Begin Nudge @ 1700.00ft
1,800.00	1,799.98	0.00	-1.75	Nudge Rate = 2.00/100ft
1,979.32	1,978.88	0.00	-13.61	End Nudge @ 1979.32ft
4,000.00	3,989.96	0.00	-210.32	Hold Angle @ 5.59
6,844.92	6,821.37	0.00	-487.26	Begin Build and Turn @ 6844.92ft
7,200.00	7,152.64	106.55	-518.91	Build and Turn Rate = 10.00/100ft
7,743.29	7,392.00	571.31	-539.00	End Build and Turn @ 7743.29ft
12,000.00	7,407.02	4,827.90	-510.03	Hold Angle @ 89.80
14,260.21	7,415.00	7,088.04	-494.65	Total Depth @ 14260.21ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Thomason 32C-31HZ_BHL	356.01	Slot	0.00	0.00	7,415.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	14,259.98	Plan A Rev 0 Permit	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,743.29	7,392.00	7" Intermediate Casing	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,454.00	1,454.00	Fox Hills		0.00	
5,035.96	5,021.00	Sussex		0.00	
7,041.26	7,013.00	Sharon Springs		0.00	
7,077.97	7,047.00	Niobrara A		0.00	
7,180.92	7,137.00	Niobrara B		0.00	
7,281.30	7,215.00	Niobrara C		0.00	
7,568.29	7,365.00	Fort Hays		0.00	
7,669.36	7,387.00	Codell		0.00	
7,743.32	7,392.00	Codell TL (Toe)		0.00	
14,260.21	7,415.00	Codell TL (Heel)		0.00	

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Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Thomason 32C-31HZ_Section Lines	0.00	0.00	0.00	Polygon
Thomason 32C-31HZ_Setback Lines	0.00	0.00	0.00	Polygon
Thomason 32C-31HZ_Sec 6/31 Line	0.00	0.00	0.00	Polygon
Thomason 32C-31HZ_BHL	7,415.00	7,088.04	-494.65	Point
Thomason 32C-31HZ_SHL	0.00	0.00	0.00	Point

North Reference Sheet for Sec. 6-T1N-R65W - Thomason 32C-31HZ - 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' @ 5022.00ft (Drilling Rig). Northing and Easting are relative to Thomason 32C-31HZ

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: 3,000,000.000644ft, False Northing: 1,000,000.001308ft, Scale Reduction: 0.99996158

Grid Coordinates of Well: 1,270,774.220057 ft N, 3,220,227.325675 ft E

Geographical Coordinates of Well: 40° 04' 26.34" N, 104° 42' 46.95" W

Grid Convergence at Surface is: 0.51°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,260.21ft
the Bottom Hole Displacement is 7,105.28ft in the Direction of 356.01° (True).

Magnetic Convergence at surface is: -8.16° (12 June 2012, , BGGM2011)

