

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 23-T2N-R66W

Turkey Springs 28C-14HZ

Plan B Rev 0

Plan: Plan B Rev 0 Permit

## Sperry Drilling Services

## Proposal Report

11 December, 2012

Well Coordinates: 1,291,185.82 N, 3,212,919.25 E (40° 07' 48.68" N, 104° 44' 18.70" W)

Ground Level: 5,103.00 ft

Local Coordinate Origin: Centered on Well Turkey Springs 28C-14HZ

Viewing Datum: RKB=17 @ 5120.00ft (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. 23-T2N-R66W  
Well: Turkey Springs 28C-14HZ  
Wellbore: Plan B Rev 0  
Design: Plan B Rev 0 Permit

# Anadarko Petroleum Corp.

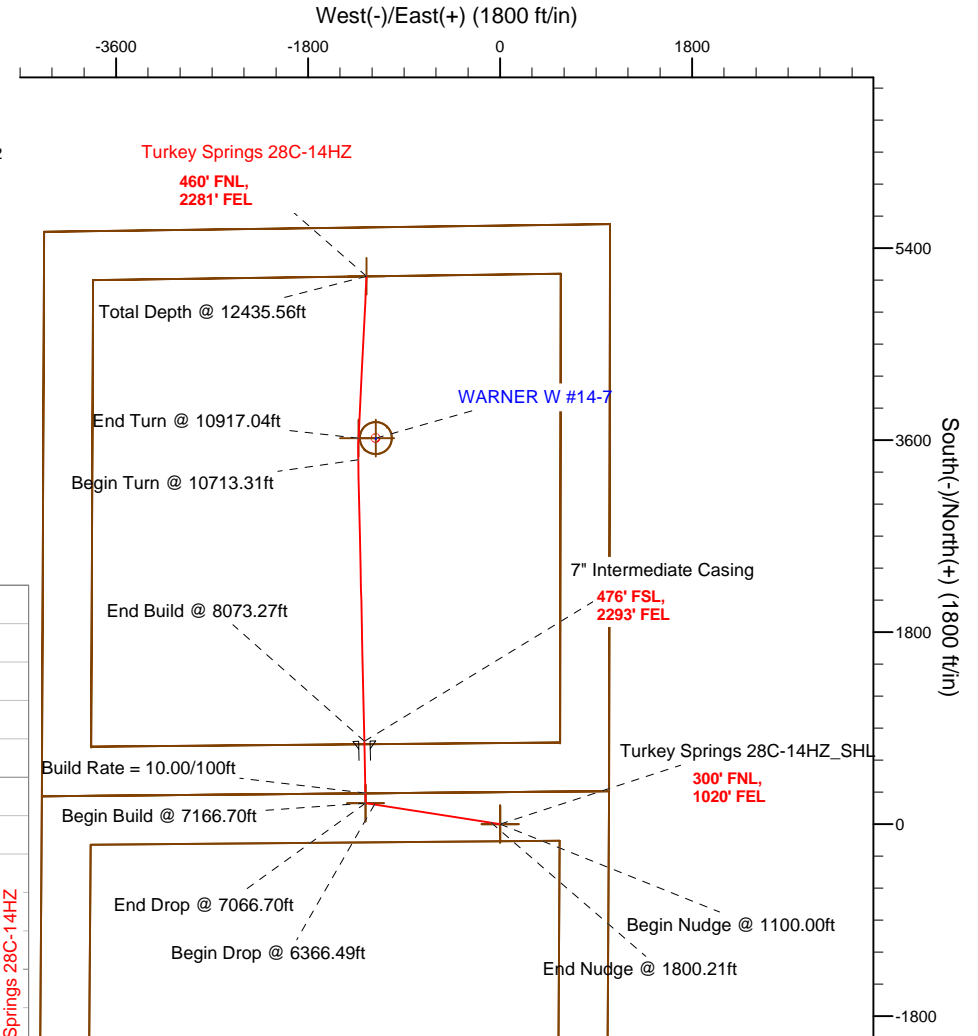
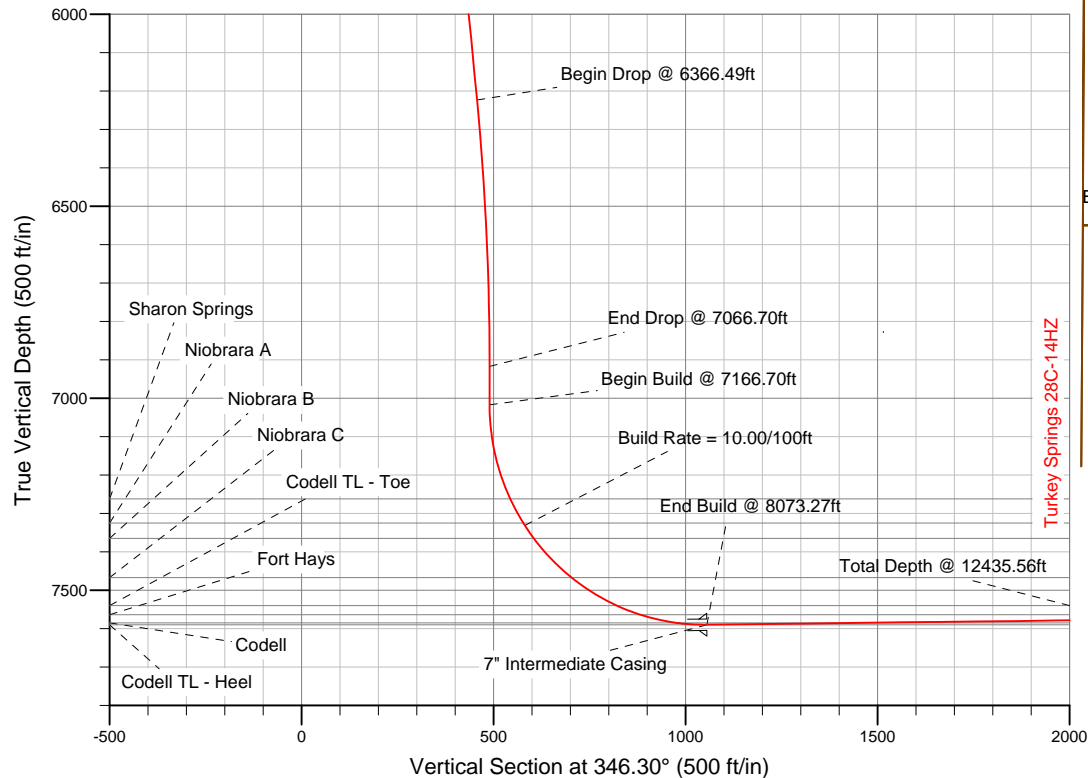
**HALLIBURTON**  
Sperry Drilling

## 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	1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00	
3	1800.21	14.00	278.89	1793.26	13.15	-84.13	2.00	278.89	32.70	
4	6366.49	14.00	278.89	6223.82	183.85	-1175.87	0.00	0.00	457.04	
5	7066.70	0.00	0.00	6917.08	197.00	-1260.00	2.00	180.00	489.74	Turkey Springs 28C-14HZ_DPtgt
6	7166.70	0.00	0.00	7017.08	197.00	-1260.00	0.00	0.00	489.74	Turkey Springs 28C-14HZ_DPtgt2
7	8073.27	90.66	358.76	7590.00	776.39	-1272.53	10.00	358.76	1055.62	
8	10713.31	90.66	358.76	7559.73	3415.64	-1329.61	0.00	0.00	3633.33	
9	10917.04	90.66	2.84	7557.39	3619.29	-1326.77	2.00	89.99	3830.52	Turkey Springs 28C-14HZ_WP1
10	12435.56	90.66	2.84	7540.00	5135.86	-1251.65	0.00	0.00	5286.18	Turkey Springs 28C-14HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Turkey Springs 28C-14HZ_SB22	0.00	0.00	0.00	40.130189	-104.738528	Polygon
Turkey Springs 28C-14HZ_SB23	0.00	0.00	0.00	40.130189	-104.738528	Polygon
Turkey Springs 28C-14HZ_Sec22	0.00	0.00	0.00	40.130189	-104.738528	Polygon
Turkey Springs 28C-14HZ_Sec23	0.00	0.00	0.00	40.130189	-104.738528	Polygon
Turkey Springs 28C-14HZ_SHL	0.00	0.00	0.00	40.130189	-104.738528	Point
WARNER W #14-7	0.00	3619.29	-1164.77	40.140124	-104.742694	Circle (Radius: 150.00)
Turkey Springs 28C-14HZ_DPtgt	6917.08	197.00	-1260.00	40.130730	-104.743034	Point
Turkey Springs 28C-14HZ_DPtgt2	7017.08	197.00	-1260.00	40.130730	-104.743034	Point
Turkey Springs 28C-14HZ_BHL	7540.00	5135.86	-1251.65	40.144287	-104.743005	Point
Turkey Springs 28C-14HZ_WP1	7557.39	3619.29	-1326.77	40.140124	-104.743273	Point



## WELL DETAILS: Turkey Springs 28C-14HZ

Ground Level: 5103.00 RKB=17 @ 5120.00ft (Drilling Rig)

Plan: Plan B Rev 0 Permit (Turkey Springs 28C-14HZ/Plan B Rev 0)

Created By: Fred Hartmann Date: 12/14/2012  
Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

**Plan Report for Turkey Springs 28C-14HZ - Plan B 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
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
<b>Begin Nudge @ 1100.00ft</b>										
1,200.00	2.00	278.89	1,199.98	0.27	-1.72	0.67	2.00	2.00	0.00	278.89
1,300.00	4.00	278.89	1,299.84	1.08	-6.89	2.68	2.00	2.00	0.00	0.00
1,400.00	6.00	278.89	1,399.45	2.42	-15.51	6.03	2.00	2.00	0.00	0.00
1,500.00	8.00	278.89	1,498.70	4.31	-27.55	10.71	2.00	2.00	0.00	0.00
1,600.00	10.00	278.89	1,597.47	6.72	-43.00	16.71	2.00	2.00	0.00	0.00
1,700.00	12.00	278.89	1,695.62	9.67	-61.85	24.04	2.00	2.00	0.00	0.00
1,800.00	14.00	278.89	1,793.06	13.15	-84.08	32.68	2.00	2.00	0.00	0.00
1,800.21	14.00	278.89	1,793.26	13.15	-84.13	32.70	2.00	2.00	0.00	0.00
<b>End Nudge @ 1800.21ft</b>										
1,900.00	14.00	278.89	1,890.08	16.88	-107.98	41.97	0.00	0.00	0.00	0.00
2,000.00	14.00	278.89	1,987.11	20.62	-131.89	51.26	0.00	0.00	0.00	0.00
2,100.00	14.00	278.89	2,084.14	24.36	-155.80	60.56	0.00	0.00	0.00	0.00
2,200.00	14.00	278.89	2,181.17	28.10	-179.71	69.85	0.00	0.00	0.00	0.00
2,300.00	14.00	278.89	2,278.19	31.84	-203.62	79.14	0.00	0.00	0.00	0.00
2,400.00	14.00	278.89	2,375.22	35.57	-227.53	88.44	0.00	0.00	0.00	0.00
2,500.00	14.00	278.89	2,472.25	39.31	-251.44	97.73	0.00	0.00	0.00	0.00
2,600.00	14.00	278.89	2,569.28	43.05	-275.35	107.02	0.00	0.00	0.00	0.00
2,700.00	14.00	278.89	2,666.31	46.79	-299.26	116.31	0.00	0.00	0.00	0.00
2,800.00	14.00	278.89	2,763.33	50.53	-323.16	125.61	0.00	0.00	0.00	0.00
2,900.00	14.00	278.89	2,860.36	54.26	-347.07	134.90	0.00	0.00	0.00	0.00
3,000.00	14.00	278.89	2,957.39	58.00	-370.98	144.19	0.00	0.00	0.00	0.00
3,100.00	14.00	278.89	3,054.42	61.74	-394.89	153.49	0.00	0.00	0.00	0.00
3,200.00	14.00	278.89	3,151.44	65.48	-418.80	162.78	0.00	0.00	0.00	0.00
3,300.00	14.00	278.89	3,248.47	69.22	-442.71	172.07	0.00	0.00	0.00	0.00
3,400.00	14.00	278.89	3,345.50	72.96	-466.62	181.37	0.00	0.00	0.00	0.00
3,500.00	14.00	278.89	3,442.53	76.69	-490.53	190.66	0.00	0.00	0.00	0.00
3,600.00	14.00	278.89	3,539.56	80.43	-514.44	199.95	0.00	0.00	0.00	0.00
3,700.00	14.00	278.89	3,636.58	84.17	-538.34	209.24	0.00	0.00	0.00	0.00
3,800.00	14.00	278.89	3,733.61	87.91	-562.25	218.54	0.00	0.00	0.00	0.00
3,900.00	14.00	278.89	3,830.64	91.65	-586.16	227.83	0.00	0.00	0.00	0.00
4,000.00	14.00	278.89	3,927.67	95.38	-610.07	237.12	0.00	0.00	0.00	0.00
4,100.00	14.00	278.89	4,024.69	99.12	-633.98	246.42	0.00	0.00	0.00	0.00
4,200.00	14.00	278.89	4,121.72	102.86	-657.89	255.71	0.00	0.00	0.00	0.00
4,300.00	14.00	278.89	4,218.75	106.60	-681.80	265.00	0.00	0.00	0.00	0.00
4,304.38	14.00	278.89	4,223.00	106.76	-682.85	265.41	0.00	0.00	0.00	0.00
<b>Parkman</b>										
4,400.00	14.00	278.89	4,315.78	110.34	-705.71	274.29	0.00	0.00	0.00	0.00
4,500.00	14.00	278.89	4,412.81	114.07	-729.62	283.59	0.00	0.00	0.00	0.00
4,600.00	14.00	278.89	4,509.83	117.81	-753.53	292.88	0.00	0.00	0.00	0.00
4,686.75	14.00	278.89	4,594.00	121.06	-774.27	300.94	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,700.00	14.00	278.89	4,606.86	121.55	-777.43	302.17	0.00	0.00	0.00	0.00
4,800.00	14.00	278.89	4,703.89	125.29	-801.34	311.47	0.00	0.00	0.00	0.00
4,900.00	14.00	278.89	4,800.92	129.03	-825.25	320.76	0.00	0.00	0.00	0.00
5,000.00	14.00	278.89	4,897.94	132.77	-849.16	330.05	0.00	0.00	0.00	0.00

**Plan Report for Turkey Springs 28C-14HZ - Plan B 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	14.00	278.89	4,994.97	136.50	-873.07	339.35	0.00	0.00	0.00	0.00
5,200.00	14.00	278.89	5,092.00	140.24	-896.98	348.64	0.00	0.00	0.00	0.00
5,300.00	14.00	278.89	5,189.03	143.98	-920.89	357.93	0.00	0.00	0.00	0.00
5,400.00	14.00	278.89	5,286.06	147.72	-944.80	367.22	0.00	0.00	0.00	0.00
5,500.00	14.00	278.89	5,383.08	151.46	-968.71	376.52	0.00	0.00	0.00	0.00
5,600.00	14.00	278.89	5,480.11	155.19	-992.61	385.81	0.00	0.00	0.00	0.00
5,700.00	14.00	278.89	5,577.14	158.93	-1,016.52	395.10	0.00	0.00	0.00	0.00
5,800.00	14.00	278.89	5,674.17	162.67	-1,040.43	404.40	0.00	0.00	0.00	0.00
5,900.00	14.00	278.89	5,771.19	166.41	-1,064.34	413.69	0.00	0.00	0.00	0.00
6,000.00	14.00	278.89	5,868.22	170.15	-1,088.25	422.98	0.00	0.00	0.00	0.00
6,100.00	14.00	278.89	5,965.25	173.89	-1,112.16	432.27	0.00	0.00	0.00	0.00
6,200.00	14.00	278.89	6,062.28	177.62	-1,136.07	441.57	0.00	0.00	0.00	0.00
6,300.00	14.00	278.89	6,159.31	181.36	-1,159.98	450.86	0.00	0.00	0.00	0.00
6,366.49	14.00	278.89	6,223.82	183.85	-1,175.87	457.04	0.00	0.00	0.00	0.00
<b>Begin Drop @ 6366.49ft</b>										
6,400.00	13.33	278.89	6,256.38	185.07	-1,183.70	460.08	2.00	-2.00	0.00	180.00
6,500.00	11.33	278.89	6,354.07	188.37	-1,204.80	468.28	2.00	-2.00	0.00	180.00
6,600.00	9.33	278.89	6,452.44	191.14	-1,222.52	475.17	2.00	-2.00	0.00	180.00
6,700.00	7.33	278.89	6,551.38	193.38	-1,236.84	480.74	2.00	-2.00	0.00	180.00
6,800.00	5.33	278.89	6,650.76	195.08	-1,247.74	484.97	2.00	-2.00	0.00	180.00
6,900.00	3.33	278.89	6,750.47	196.25	-1,255.21	487.88	2.00	-2.00	0.00	180.00
7,000.00	1.33	278.89	6,850.38	196.88	-1,259.23	489.44	2.00	-2.00	0.00	180.00
7,066.70	0.00	0.00	6,917.08	197.00	-1,260.00	489.74	2.00	-2.00	121.61	180.00
<b>End Drop @ 7066.70ft - Turkey Springs 28C-14HZ_DPTgt</b>										
7,100.00	0.00	0.00	6,950.38	197.00	-1,260.00	489.74	0.00	0.00	0.00	180.00
7,166.70	0.00	0.00	7,017.08	197.00	-1,260.00	489.74	0.00	0.00	0.00	0.00
<b>Begin Build @ 7166.70ft - Turkey Springs 28C-14HZ_DPTgt2</b>										
7,200.00	3.33	358.76	7,050.36	197.97	-1,260.02	490.68	10.00	10.00	0.00	358.76
7,300.00	13.33	358.76	7,149.18	212.43	-1,260.33	504.81	10.00	10.00	0.00	0.00
7,400.00	23.33	358.76	7,243.98	243.83	-1,261.01	535.48	10.00	10.00	0.00	0.00
7,419.77	25.31	358.76	7,262.00	251.97	-1,261.19	543.43	10.00	10.00	0.00	0.00
<b>Sharon Springs</b>										
7,491.79	32.51	358.76	7,325.00	286.75	-1,261.94	577.40	10.00	10.00	0.00	0.00
<b>Niobrara A</b>										
7,500.00	33.33	358.76	7,331.90	291.22	-1,262.04	581.76	10.00	10.00	0.00	0.00
<b>Build Rate = 10.00/100ft</b>										
7,540.60	37.39	358.76	7,365.00	314.70	-1,262.55	604.70	10.00	10.00	0.00	0.00
<b>Niobrara B</b>										
7,600.00	43.33	358.76	7,410.24	353.14	-1,263.38	642.24	10.00	10.00	0.00	0.00
7,684.15	51.74	358.76	7,467.00	415.15	-1,264.72	702.80	10.00	10.00	0.00	0.00
<b>Niobrara C</b>										
7,700.00	53.33	358.76	7,476.64	427.73	-1,264.99	715.09	10.00	10.00	0.00	0.00
7,800.00	63.33	358.76	7,529.08	512.71	-1,266.83	798.09	10.00	10.00	0.00	0.00
7,893.31	72.66	358.76	7,564.00	599.10	-1,268.70	882.47	10.00	10.00	0.00	0.00
<b>Fort Hays</b>										
7,900.00	73.33	358.76	7,565.96	605.50	-1,268.83	888.71	10.00	10.00	0.00	0.00
7,990.67	82.40	358.76	7,585.00	694.03	-1,270.75	975.18	10.00	10.00	0.00	0.00
<b>Codell</b>										
8,000.00	83.33	358.76	7,586.16	703.29	-1,270.95	984.22	10.00	10.00	0.00	0.00
8,073.25	90.66	358.76	7,590.00	776.37	-1,272.53	1,055.60	10.00	10.00	0.00	0.00
<b>Codell TL - Heel</b>										
8,073.27	90.66	358.76	7,590.00	776.39	-1,272.53	1,055.62	1.23	-1.23	0.00	180.00
<b>End Build @ 8073.27ft - 7" Intermediate Casing</b>										
8,100.00	90.66	358.76	7,589.69	803.11	-1,273.11	1,081.72	0.00	0.00	0.00	0.00
8,200.00	90.66	358.76	7,588.55	903.08	-1,275.27	1,179.36	0.00	0.00	0.00	0.00
8,300.00	90.66	358.76	7,587.40	1,003.05	-1,277.43	1,277.00	0.00	0.00	0.00	0.00
8,400.00	90.66	358.76	7,586.25	1,103.02	-1,279.59	1,374.63	0.00	0.00	0.00	0.00
8,500.00	90.66	358.76	7,585.11	1,202.99	-1,281.76	1,472.27	0.00	0.00	0.00	0.00

**Plan Report for Turkey Springs 28C-14HZ - Plan B 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 (°)
8,600.00	90.66	358.76	7,583.96	1,302.96	-1,283.92	1,569.91	0.00	0.00	0.00	0.00
8,700.00	90.66	358.76	7,582.81	1,402.93	-1,286.08	1,667.55	0.00	0.00	0.00	0.00
8,800.00	90.66	358.76	7,581.67	1,502.90	-1,288.24	1,765.19	0.00	0.00	0.00	0.00
8,900.00	90.66	358.76	7,580.52	1,602.87	-1,290.40	1,862.83	0.00	0.00	0.00	0.00
9,000.00	90.66	358.76	7,579.37	1,702.84	-1,292.57	1,960.47	0.00	0.00	0.00	0.00
9,100.00	90.66	358.76	7,578.23	1,802.81	-1,294.73	2,058.11	0.00	0.00	0.00	0.00
9,200.00	90.66	358.76	7,577.08	1,902.78	-1,296.89	2,155.75	0.00	0.00	0.00	0.00
9,300.00	90.66	358.76	7,575.93	2,002.75	-1,299.05	2,253.39	0.00	0.00	0.00	0.00
9,400.00	90.66	358.76	7,574.79	2,102.72	-1,301.21	2,351.03	0.00	0.00	0.00	0.00
9,500.00	90.66	358.76	7,573.64	2,202.69	-1,303.38	2,448.67	0.00	0.00	0.00	0.00
9,600.00	90.66	358.76	7,572.49	2,302.66	-1,305.54	2,546.31	0.00	0.00	0.00	0.00
9,700.00	90.66	358.76	7,571.35	2,402.63	-1,307.70	2,643.94	0.00	0.00	0.00	0.00
9,800.00	90.66	358.76	7,570.20	2,502.60	-1,309.86	2,741.58	0.00	0.00	0.00	0.00
9,900.00	90.66	358.76	7,569.05	2,602.57	-1,312.02	2,839.22	0.00	0.00	0.00	0.00
10,000.00	90.66	358.76	7,567.91	2,702.54	-1,314.19	2,936.86	0.00	0.00	0.00	0.00
10,100.00	90.66	358.76	7,566.76	2,802.51	-1,316.35	3,034.50	0.00	0.00	0.00	0.00
10,200.00	90.66	358.76	7,565.61	2,902.48	-1,318.51	3,132.14	0.00	0.00	0.00	0.00
10,300.00	90.66	358.76	7,564.47	3,002.45	-1,320.67	3,229.78	0.00	0.00	0.00	0.00
10,400.00	90.66	358.76	7,563.32	3,102.42	-1,322.83	3,327.42	0.00	0.00	0.00	0.00
10,500.00	90.66	358.76	7,562.17	3,202.39	-1,325.00	3,425.06	0.00	0.00	0.00	0.00
10,600.00	90.66	358.76	7,561.02	3,302.36	-1,327.16	3,522.70	0.00	0.00	0.00	0.00
10,700.00	90.66	358.76	7,559.88	3,402.33	-1,329.32	3,620.34	0.00	0.00	0.00	0.00
10,713.31	90.66	358.76	7,559.73	3,415.64	-1,329.61	3,633.33	0.00	0.00	0.00	0.00
<b>Begin Turn @ 10713.31ft</b>										
10,800.00	90.66	0.49	7,558.73	3,502.32	-1,330.17	3,717.68	2.00	0.00	2.00	89.99
10,900.00	90.66	2.50	7,557.59	3,602.27	-1,327.56	3,814.17	2.00	0.00	2.00	90.01
10,917.04	90.66	2.84	7,557.39	3,619.29	-1,326.77	3,830.52	2.00	0.00	2.00	90.03
<b>End Turn @ 10917.04ft - Turkey Springs 28C-14HZ_WP1</b>										
11,000.00	90.66	2.84	7,556.44	3,702.15	-1,322.67	3,910.05	0.00	0.00	0.00	90.04
11,100.00	90.66	2.84	7,555.29	3,802.02	-1,317.72	4,005.91	0.00	0.00	0.00	0.00
11,200.00	90.66	2.84	7,554.15	3,901.89	-1,312.77	4,101.77	0.00	0.00	0.00	0.00
11,300.00	90.66	2.84	7,553.00	4,001.76	-1,307.82	4,197.63	0.00	0.00	0.00	0.00
11,400.00	90.66	2.84	7,551.86	4,101.63	-1,302.88	4,293.49	0.00	0.00	0.00	0.00
11,500.00	90.66	2.84	7,550.71	4,201.50	-1,297.93	4,389.35	0.00	0.00	0.00	0.00
11,600.00	90.66	2.84	7,549.57	4,301.37	-1,292.98	4,485.21	0.00	0.00	0.00	0.00
11,700.00	90.66	2.84	7,548.42	4,401.24	-1,288.04	4,581.07	0.00	0.00	0.00	0.00
11,800.00	90.66	2.84	7,547.28	4,501.11	-1,283.09	4,676.93	0.00	0.00	0.00	0.00
11,900.00	90.66	2.84	7,546.13	4,600.98	-1,278.14	4,772.79	0.00	0.00	0.00	0.00
12,000.00	90.66	2.84	7,544.99	4,700.86	-1,273.19	4,868.65	0.00	0.00	0.00	0.00
12,100.00	90.66	2.84	7,543.84	4,800.73	-1,268.25	4,964.51	0.00	0.00	0.00	0.00
12,200.00	90.66	2.84	7,542.70	4,900.60	-1,263.30	5,060.36	0.00	0.00	0.00	0.00
12,300.00	90.66	2.84	7,541.55	5,000.47	-1,258.35	5,156.22	0.00	0.00	0.00	0.00
12,400.00	90.66	2.84	7,540.41	5,100.34	-1,253.40	5,252.08	0.00	0.00	0.00	0.00
12,435.40	90.66	2.84	7,540.00	5,135.69	-1,251.65	5,286.02	0.00	0.00	0.00	0.00
<b>Codell TL - Toe</b>										
12,435.56	90.66	2.84	7,540.00	5,135.85	-1,251.65	5,286.17	0.00	0.00	0.00	0.00
<b>Total Depth @ 12435.56ft - Turkey Springs 28C-14HZ_BHL</b>										

## Plan Report for Turkey Springs 28C-14HZ - Plan B Rev 0 Permit

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,100.00	1,100.00	0.00	0.00	Begin Nudge @ 1100.00ft
1,800.21	1,793.26	13.15	-84.13	End Nudge @ 1800.21ft
6,366.49	6,223.82	183.85	-1,175.87	Begin Drop @ 6366.49ft
7,066.70	6,917.08	197.00	-1,260.00	End Drop @ 7066.70ft
7,166.70	7,017.08	197.00	-1,260.00	Begin Build @ 7166.70ft
7,500.00	7,331.90	291.22	-1,262.04	Build Rate = 10.00/100ft
8,073.27	7,590.00	776.39	-1,272.53	End Build @ 8073.27ft
10,713.31	7,559.73	3,415.64	-1,329.61	Begin Turn @ 10713.31ft
10,917.04	7,557.39	3,619.29	-1,326.77	End Turn @ 10917.04ft
12,435.56	7,540.00	5,135.85	-1,251.65	Total Depth @ 12435.56ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Turkey Springs 28C-14HZ_BHL	346.30	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	12,435.56	Plan B Rev 0 Permit	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
8,073.27	7,590.00	7" Intermediate Casing	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,304.38	4,223.00	Parkman			
4,686.75	4,594.00	Sussex			
7,419.77	7,262.00	Sharon Springs			
7,491.79	7,325.00	Niobrara A			
7,540.60	7,365.00	Niobrara B			
7,684.15	7,467.00	Niobrara C			
7,893.31	7,564.00	Fort Hays			
7,990.67	7,585.00	Codell			
8,073.25	7,590.00	Codell TL - Heel			
12,435.40	7,540.00	Codell TL - Toe		0.00	

**Plan Report for Turkey Springs 28C-14HZ - Plan B Rev 0 Permit**

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***Targets associated with this wellbore***

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Turkey Springs 28C-14HZ_WP1	7,557.39	3,619.29	-1,326.77	Point
Turkey Springs 28C-14HZ_Sec23	0.00	0.00	0.00	Polygon
Turkey Springs 28C-14HZ_DPtgt2	7,017.08	197.00	-1,260.00	Point
Turkey Springs 28C-14HZ_Sec22	0.00	0.00	0.00	Polygon
Turkey Springs 28C-14HZ_SB23	0.00	0.00	0.00	Polygon
Turkey Springs 28C-14HZ_DPtgt	6,917.08	197.00	-1,260.00	Point
Turkey Springs 28C-14HZ_SHL	0.00	0.00	0.00	Point
Turkey Springs 28C-14HZ_SB22	0.00	0.00	0.00	Polygon
Turkey Springs 28C-14HZ_BHL	7,540.00	5,135.86	-1,251.65	Point
WARNER W #14-7	0.00	3,619.29	-1,164.77	Circle

## North Reference Sheet for Sec. 23-T2N-R66W - Turkey Springs 28C-14HZ - Plan B 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 @ 5120.00ft (Drilling Rig). Northing and Easting are relative to Turkey Springs 28C-14HZ

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: 0.99995905

Grid Coordinates of Well: 1,291,185.82 ft N, 3,212,919.25 ft E

Geographical Coordinates of Well: 40° 07' 48.68" N, 104° 44' 18.70" W

Grid Convergence at Surface is: 0.49°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,435.56ft  
the Bottom Hole Displacement is 5,286.17ft in the Direction of 346.30° (True).

Magnetic Convergence at surface is: -8.18° (11 December 2012, , BGGM2012)

