

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 22 T2N-R66W

Turkey Springs 4N-14HZ

Plan B Rev 0

Plan: Plan B Rev 0 Permit

Sperry Drilling Services

Proposal Report

11 December, 2012

Well Coordinates: 1,290,542.25 N, 3,208,346.30 E (40° 07' 42.70" N, 104° 45' 17.64" W)

Ground Level: 5,091.00 ft

Local Coordinate Origin: Centered on Well Turkey Springs 4N-14HZ

Viewing Datum: RKB=17 @ 5108.00ft (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. 22 T2N-R66W
Well: Turkey Springs 4N-14HZ
Wellbore: Plan B Rev 0
Design: Plan B Rev 0 Permit

Anadarko Petroleum Corp.

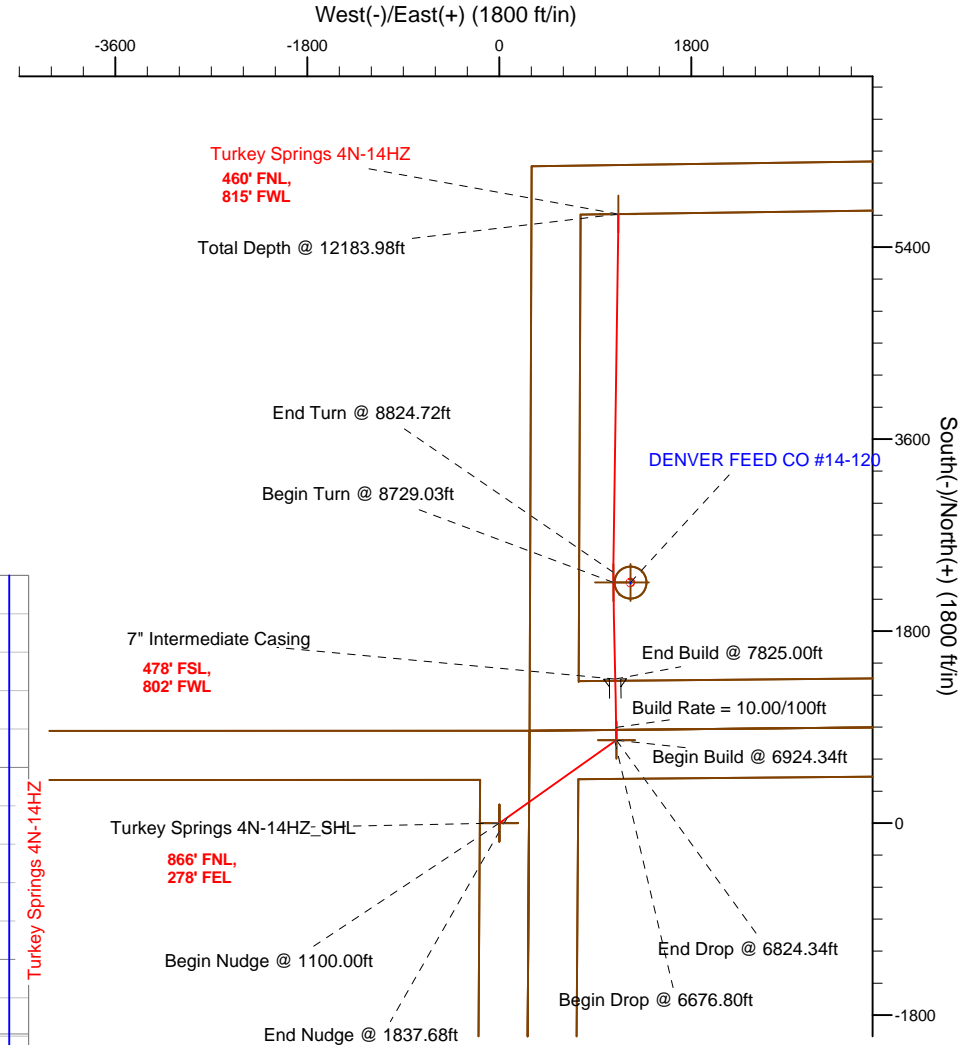
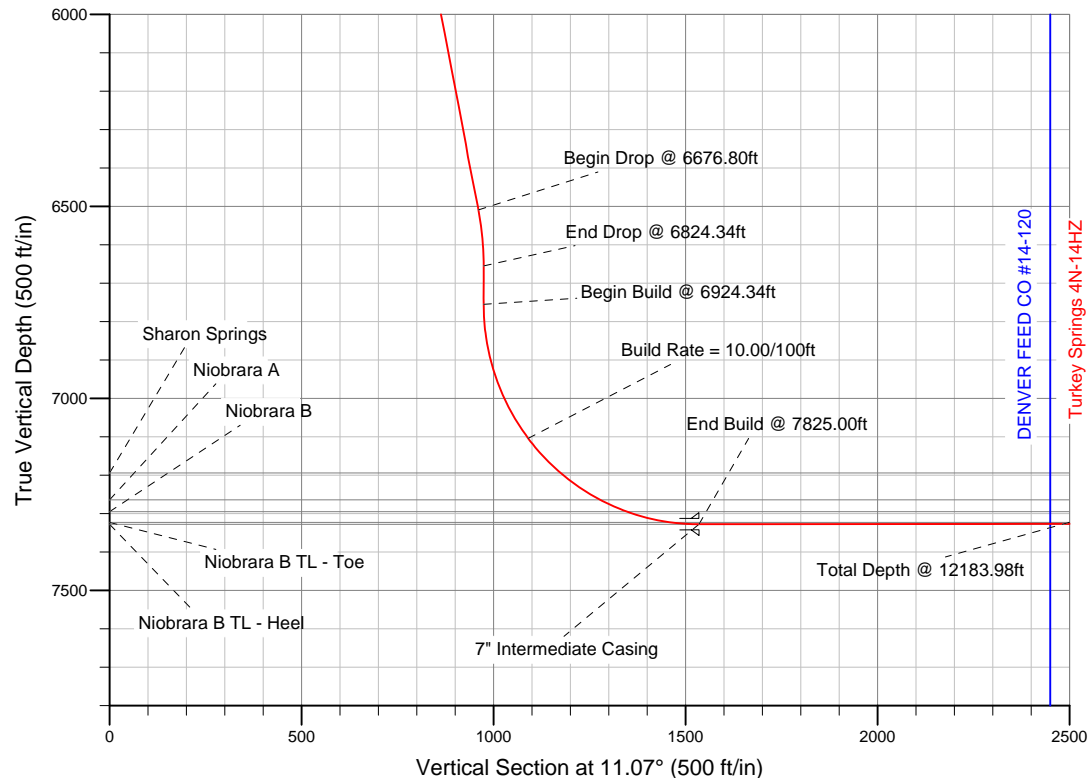
HALLIBURTON
Sperry Drilling

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	1837.68	14.75	54.68	1829.56	54.61	77.07	2.00	54.68	68.39	
4	6676.80	14.75	54.68	6509.13	767.08	1082.59	0.00	0.00	960.63	
5	6824.34	0.00	0.00	6655.04	778.00	1098.00	10.00	180.00	974.31	Turkey Springs 4N-14HZ_DPtgt
6	6924.34	0.00	0.00	6755.04	778.00	1098.00	0.00	0.00	974.31	Turkey Springs 4N-14HZ_DPtgt2
7	7825.00	90.07	358.90	7328.00	1351.51	1086.96	10.00	358.90	1535.03	
8	8729.03	90.07	358.90	7326.96	2255.38	1069.57	0.00	0.00	2418.75	Turkey Springs 4N-14HZ_WP1
9	8824.72	90.07	0.81	7326.85	2351.06	1069.33	2.00	90.00	2512.61	
10	12183.98	90.07	0.81	7323.00	5709.98	1116.89	0.00	0.00	5818.19	Turkey Springs 4N-14HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
DENVER FEED CO #14-120	0.00	2255.38	1230.57	40.134720	-104.750500	Circle (Radius: 150.00)
Turkey Springs 4N-14HZ_SB14	0.00	0.00	0.00	40.128529	-104.754901	Polygon
Turkey Springs 4N-14HZ_SB22	0.00	0.00	0.00	40.128529	-104.754901	Polygon
Turkey Springs 4N-14HZ_SB23	0.00	0.00	0.00	40.128529	-104.754901	Polygon
Turkey Springs 4N-14HZ_Sec14	0.00	0.00	0.00	40.128529	-104.754901	Polygon
Turkey Springs 4N-14HZ_Sec22	0.00	0.00	0.00	40.128529	-104.754901	Polygon
Turkey Springs 4N-14HZ_Sec23	0.00	0.00	0.00	40.128529	-104.754901	Polygon
Turkey Springs 4N-14HZ_SHL	0.00	0.00	0.00	40.128529	-104.754901	Point
Turkey Springs 4N-14HZ_DPtgt	6655.04	778.00	1098.00	40.130665	-104.750974	Point
Turkey Springs 4N-14HZ_DPtgt2	6755.04	778.00	1098.00	40.130665	-104.750974	Point
Turkey Springs 4N-14HZ_BHL	7323.00	5709.98	1116.89	40.144203	-104.750906	Point
Turkey Springs 4N-14HZ_WP1	7326.96	2255.38	1069.57	40.134720	-104.751076	Point



WELL DETAILS: Turkey Springs 4N-14HZ

Ground Level 5091.00 RKB=17 @ 5108.00ft (Drilling Rig)

Plan: Plan B Rev 0 Permit (Turkey Springs 4N-14HZ/Plan B Rev 0)

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

Plan Report for Turkey Springs 4N-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
Begin Nudge @ 1100.00ft										
1,200.00	2.00	54.68	1,199.98	1.01	1.42	1.26	2.00	2.00	0.00	54.68
1,300.00	4.00	54.68	1,299.84	4.03	5.69	5.05	2.00	2.00	0.00	0.00
1,400.00	6.00	54.68	1,399.45	9.07	12.80	11.36	2.00	2.00	0.00	0.00
1,500.00	8.00	54.68	1,498.70	16.12	22.75	20.19	2.00	2.00	0.00	0.00
1,600.00	10.00	54.68	1,597.47	25.16	35.51	31.51	2.00	2.00	0.00	0.00
1,700.00	12.00	54.68	1,695.62	36.19	51.08	45.33	2.00	2.00	0.00	0.00
1,800.00	14.00	54.68	1,793.06	49.20	69.43	61.61	2.00	2.00	0.00	0.00
1,837.68	14.75	54.68	1,829.55	54.61	77.07	68.39	2.00	2.00	0.00	0.00
End Nudge @ 1837.68ft										
1,900.00	14.75	54.68	1,889.82	63.78	90.02	79.88	0.00	0.00	0.00	0.00
2,000.00	14.75	54.68	1,986.52	78.51	110.80	98.31	0.00	0.00	0.00	0.00
2,100.00	14.75	54.68	2,083.23	93.23	131.57	116.75	0.00	0.00	0.00	0.00
2,200.00	14.75	54.68	2,179.93	107.95	152.35	135.19	0.00	0.00	0.00	0.00
2,300.00	14.75	54.68	2,276.63	122.67	173.13	153.63	0.00	0.00	0.00	0.00
2,400.00	14.75	54.68	2,373.34	137.40	193.91	172.07	0.00	0.00	0.00	0.00
2,500.00	14.75	54.68	2,470.04	152.12	214.69	190.51	0.00	0.00	0.00	0.00
2,600.00	14.75	54.68	2,566.74	166.84	235.47	208.94	0.00	0.00	0.00	0.00
2,700.00	14.75	54.68	2,663.44	181.57	256.25	227.38	0.00	0.00	0.00	0.00
2,800.00	14.75	54.68	2,760.15	196.29	277.03	245.82	0.00	0.00	0.00	0.00
2,900.00	14.75	54.68	2,856.85	211.01	297.81	264.26	0.00	0.00	0.00	0.00
3,000.00	14.75	54.68	2,953.55	225.74	318.59	282.70	0.00	0.00	0.00	0.00
3,100.00	14.75	54.68	3,050.26	240.46	339.36	301.13	0.00	0.00	0.00	0.00
3,200.00	14.75	54.68	3,146.96	255.18	360.14	319.57	0.00	0.00	0.00	0.00
3,300.00	14.75	54.68	3,243.66	269.91	380.92	338.01	0.00	0.00	0.00	0.00
3,400.00	14.75	54.68	3,340.36	284.63	401.70	356.45	0.00	0.00	0.00	0.00
3,500.00	14.75	54.68	3,437.07	299.35	422.48	374.89	0.00	0.00	0.00	0.00
3,600.00	14.75	54.68	3,533.77	314.08	443.26	393.33	0.00	0.00	0.00	0.00
3,700.00	14.75	54.68	3,630.47	328.80	464.04	411.76	0.00	0.00	0.00	0.00
3,800.00	14.75	54.68	3,727.18	343.52	484.82	430.20	0.00	0.00	0.00	0.00
3,900.00	14.75	54.68	3,823.88	358.25	505.60	448.64	0.00	0.00	0.00	0.00
4,000.00	14.75	54.68	3,920.58	372.97	526.37	467.08	0.00	0.00	0.00	0.00
4,100.00	14.75	54.68	4,017.29	387.69	547.15	485.52	0.00	0.00	0.00	0.00
4,200.00	14.75	54.68	4,113.99	402.42	567.93	503.95	0.00	0.00	0.00	0.00
4,300.00	14.75	54.68	4,210.69	417.14	588.71	522.39	0.00	0.00	0.00	0.00
4,390.29	14.75	54.68	4,298.00	430.43	607.47	539.04	0.00	0.00	0.00	0.00
Parkman										
4,400.00	14.75	54.68	4,307.39	431.86	609.49	540.83	0.00	0.00	0.00	0.00
4,500.00	14.75	54.68	4,404.10	446.58	630.27	559.27	0.00	0.00	0.00	0.00
4,600.00	14.75	54.68	4,500.80	461.31	651.05	577.71	0.00	0.00	0.00	0.00
4,700.00	14.75	54.68	4,597.50	476.03	671.83	596.15	0.00	0.00	0.00	0.00
4,729.47	14.75	54.68	4,626.00	480.37	677.95	601.58	0.00	0.00	0.00	0.00
Sussex										
4,800.00	14.75	54.68	4,694.21	490.75	692.61	614.58	0.00	0.00	0.00	0.00
4,900.00	14.75	54.68	4,790.91	505.48	713.39	633.02	0.00	0.00	0.00	0.00
5,000.00	14.75	54.68	4,887.61	520.20	734.16	651.46	0.00	0.00	0.00	0.00

Plan Report for Turkey Springs 4N-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	14.75	54.68	4,984.32	534.92	754.94	669.90	0.00	0.00	0.00	0.00
5,200.00	14.75	54.68	5,081.02	549.65	775.72	688.34	0.00	0.00	0.00	0.00
5,300.00	14.75	54.68	5,177.72	564.37	796.50	706.77	0.00	0.00	0.00	0.00
5,400.00	14.75	54.68	5,274.42	579.09	817.28	725.21	0.00	0.00	0.00	0.00
5,500.00	14.75	54.68	5,371.13	593.82	838.06	743.65	0.00	0.00	0.00	0.00
5,600.00	14.75	54.68	5,467.83	608.54	858.84	762.09	0.00	0.00	0.00	0.00
5,700.00	14.75	54.68	5,564.53	623.26	879.62	780.53	0.00	0.00	0.00	0.00
5,800.00	14.75	54.68	5,661.24	637.99	900.40	798.97	0.00	0.00	0.00	0.00
5,900.00	14.75	54.68	5,757.94	652.71	921.18	817.40	0.00	0.00	0.00	0.00
6,000.00	14.75	54.68	5,854.64	667.43	941.95	835.84	0.00	0.00	0.00	0.00
6,100.00	14.75	54.68	5,951.34	682.16	962.73	854.28	0.00	0.00	0.00	0.00
6,200.00	14.75	54.68	6,048.05	696.88	983.51	872.72	0.00	0.00	0.00	0.00
6,300.00	14.75	54.68	6,144.75	711.60	1,004.29	891.16	0.00	0.00	0.00	0.00
6,400.00	14.75	54.68	6,241.45	726.32	1,025.07	909.59	0.00	0.00	0.00	0.00
6,500.00	14.75	54.68	6,338.16	741.05	1,045.85	928.03	0.00	0.00	0.00	0.00
6,600.00	14.75	54.68	6,434.86	755.77	1,066.63	946.47	0.00	0.00	0.00	0.00
6,676.80	14.75	54.68	6,509.13	767.08	1,082.59	960.63	0.00	0.00	0.00	0.00
Begin Drop @ 6676.80ft										
6,700.00	12.43	54.68	6,531.68	770.23	1,087.04	964.58	10.00	-10.00	0.00	180.00
6,800.00	2.43	54.68	6,630.71	777.70	1,097.58	973.93	10.00	-10.00	0.00	180.00
6,824.34	0.00	54.68	6,655.04	778.00	1,098.00	974.31	10.00	-10.00	0.00	180.00
End Drop @ 6824.34ft - Turkey Springs 4N-14HZ_DPtgt										
6,900.00	0.00	0.00	6,730.70	778.00	1,098.00	974.31	0.00	0.00	0.00	-180.00
6,924.34	0.00	0.00	6,755.04	778.00	1,098.00	974.31	0.00	0.00	0.00	0.00
Begin Build @ 6924.34ft - Turkey Springs 4N-14HZ_DPtgt2										
7,000.00	7.57	358.90	6,830.48	782.99	1,097.90	979.19	10.00	10.00	0.00	358.90
7,100.00	17.57	358.90	6,927.96	804.71	1,097.49	1,000.43	10.00	10.00	0.00	0.00
7,200.00	27.57	358.90	7,020.19	843.03	1,096.75	1,037.89	10.00	10.00	0.00	0.00
7,300.00	37.57	358.90	7,104.36	896.78	1,095.71	1,090.44	10.00	10.00	0.00	0.00
Build Rate = 10.00/100ft										
7,400.00	47.57	358.90	7,177.92	964.33	1,094.41	1,156.48	10.00	10.00	0.00	0.00
7,424.41	50.01	358.90	7,194.00	982.69	1,094.06	1,174.43	10.00	10.00	0.00	0.00
Sharon Springs										
7,500.00	57.57	358.90	7,238.62	1,043.62	1,092.89	1,234.00	10.00	10.00	0.00	0.00
7,550.95	62.66	358.90	7,264.00	1,087.76	1,092.04	1,277.17	10.00	10.00	0.00	0.00
Niobrara A										
7,600.00	67.57	358.90	7,284.64	1,132.24	1,091.18	1,320.65	10.00	10.00	0.00	0.00
7,628.94	70.46	358.90	7,295.00	1,159.25	1,090.66	1,347.06	10.00	10.00	0.00	0.00
Niobrara B										
7,700.00	77.57	358.90	7,314.56	1,227.51	1,089.35	1,413.80	10.00	10.00	0.00	0.00
7,800.00	87.57	358.90	7,327.48	1,326.53	1,087.44	1,510.61	10.00	10.00	0.00	0.00
7,822.75	90.07	358.90	7,328.00	1,349.26	1,087.01	1,532.83	10.99	10.99	0.00	0.00
Niobrara B TL - Heel										
7,825.00	90.07	358.90	7,328.00	1,351.51	1,086.96	1,535.04	0.00	0.00	0.00	0.00
End Build @ 7825.00ft - 7" Intermediate Casing										
7,900.00	90.07	358.90	7,327.91	1,426.50	1,085.52	1,608.35	0.00	0.00	0.00	0.00
8,000.00	90.07	358.90	7,327.80	1,526.48	1,083.60	1,706.10	0.00	0.00	0.00	0.00
8,100.00	90.07	358.90	7,327.68	1,626.46	1,081.67	1,803.86	0.00	0.00	0.00	0.00
8,200.00	90.07	358.90	7,327.57	1,726.44	1,079.75	1,901.61	0.00	0.00	0.00	0.00
8,300.00	90.07	358.90	7,327.45	1,826.43	1,077.82	1,999.36	0.00	0.00	0.00	0.00
8,400.00	90.07	358.90	7,327.34	1,926.41	1,075.90	2,097.12	0.00	0.00	0.00	0.00
8,500.00	90.07	358.90	7,327.22	2,026.39	1,073.98	2,194.87	0.00	0.00	0.00	0.00
8,600.00	90.07	358.90	7,327.11	2,126.37	1,072.05	2,292.62	0.00	0.00	0.00	0.00
8,700.00	90.07	358.90	7,326.99	2,226.35	1,070.13	2,390.37	0.00	0.00	0.00	0.00
8,729.03	90.07	358.90	7,326.96	2,255.38	1,069.57	2,418.75	0.00	0.00	0.00	0.00
Begin Turn @ 8729.03ft - Turkey Springs 4N-14HZ_WP1										
8,800.00	90.07	0.32	7,326.88	2,326.34	1,069.08	2,488.30	2.00	0.00	2.00	90.00
8,824.72	90.07	0.81	7,326.85	2,351.06	1,069.33	2,512.61	2.00	0.00	2.00	90.00

Plan Report for Turkey Springs 4N-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 (°)
End Turn @ 8824.72ft										
8,900.00	90.07	0.81	7,326.76	2,426.33	1,070.39	2,586.69	0.00	0.00	0.00	90.00
9,000.00	90.07	0.81	7,326.65	2,526.32	1,071.81	2,685.09	0.00	0.00	0.00	0.00
9,100.00	90.07	0.81	7,326.53	2,626.31	1,073.22	2,783.49	0.00	0.00	0.00	0.00
9,200.00	90.07	0.81	7,326.42	2,726.30	1,074.64	2,881.89	0.00	0.00	0.00	0.00
9,300.00	90.07	0.81	7,326.31	2,826.29	1,076.06	2,980.29	0.00	0.00	0.00	0.00
9,400.00	90.07	0.81	7,326.19	2,926.28	1,077.47	3,078.70	0.00	0.00	0.00	0.00
9,500.00	90.07	0.81	7,326.08	3,026.27	1,078.89	3,177.10	0.00	0.00	0.00	0.00
9,600.00	90.07	0.81	7,325.96	3,126.26	1,080.30	3,275.50	0.00	0.00	0.00	0.00
9,700.00	90.07	0.81	7,325.85	3,226.25	1,081.72	3,373.90	0.00	0.00	0.00	0.00
9,800.00	90.07	0.81	7,325.73	3,326.24	1,083.14	3,472.31	0.00	0.00	0.00	0.00
9,900.00	90.07	0.81	7,325.62	3,426.23	1,084.55	3,570.71	0.00	0.00	0.00	0.00
10,000.00	90.07	0.81	7,325.50	3,526.22	1,085.97	3,669.11	0.00	0.00	0.00	0.00
10,100.00	90.07	0.81	7,325.39	3,626.21	1,087.38	3,767.51	0.00	0.00	0.00	0.00
10,200.00	90.07	0.81	7,325.27	3,726.20	1,088.80	3,865.91	0.00	0.00	0.00	0.00
10,300.00	90.07	0.81	7,325.16	3,826.19	1,090.22	3,964.32	0.00	0.00	0.00	0.00
10,400.00	90.07	0.81	7,325.04	3,926.18	1,091.63	4,062.72	0.00	0.00	0.00	0.00
10,500.00	90.07	0.81	7,324.93	4,026.17	1,093.05	4,161.12	0.00	0.00	0.00	0.00
10,600.00	90.07	0.81	7,324.82	4,126.16	1,094.46	4,259.52	0.00	0.00	0.00	0.00
10,700.00	90.07	0.81	7,324.70	4,226.15	1,095.88	4,357.92	0.00	0.00	0.00	0.00
10,800.00	90.07	0.81	7,324.59	4,326.14	1,097.30	4,456.33	0.00	0.00	0.00	0.00
10,900.00	90.07	0.81	7,324.47	4,426.13	1,098.71	4,554.73	0.00	0.00	0.00	0.00
11,000.00	90.07	0.81	7,324.36	4,526.12	1,100.13	4,653.13	0.00	0.00	0.00	0.00
11,100.00	90.07	0.81	7,324.24	4,626.11	1,101.54	4,751.53	0.00	0.00	0.00	0.00
11,200.00	90.07	0.81	7,324.13	4,726.10	1,102.96	4,849.93	0.00	0.00	0.00	0.00
11,300.00	90.07	0.81	7,324.01	4,826.09	1,104.38	4,948.34	0.00	0.00	0.00	0.00
11,400.00	90.07	0.81	7,323.90	4,926.08	1,105.79	5,046.74	0.00	0.00	0.00	0.00
11,500.00	90.07	0.81	7,323.78	5,026.07	1,107.21	5,145.14	0.00	0.00	0.00	0.00
11,600.00	90.07	0.81	7,323.67	5,126.06	1,108.62	5,243.54	0.00	0.00	0.00	0.00
11,700.00	90.07	0.81	7,323.55	5,226.05	1,110.04	5,341.94	0.00	0.00	0.00	0.00
11,800.00	90.07	0.81	7,323.44	5,326.04	1,111.46	5,440.35	0.00	0.00	0.00	0.00
11,900.00	90.07	0.81	7,323.33	5,426.03	1,112.87	5,538.75	0.00	0.00	0.00	0.00
12,000.00	90.07	0.81	7,323.21	5,526.02	1,114.29	5,637.15	0.00	0.00	0.00	0.00
12,100.00	90.07	0.81	7,323.10	5,626.01	1,115.70	5,735.55	0.00	0.00	0.00	0.00
12,183.97	90.07	0.81	7,323.00	5,709.97	1,116.89	5,818.18	0.00	0.00	0.00	0.00
Niobrara B TL - Toe										
12,183.98	90.07	0.81	7,323.00	5,709.98	1,116.89	5,818.19	0.01	0.00	0.00	180.00
Turkey Springs 4N-14HZ_BHL										

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
1,837.68	1,829.55	54.61	77.07	End Nudge @ 1837.68ft
6,676.80	6,509.13	767.08	1,082.59	Begin Drop @ 6676.80ft
6,824.34	6,655.04	778.00	1,098.00	End Drop @ 6824.34ft
6,924.34	6,755.04	778.00	1,098.00	Begin Build @ 6924.34ft
7,300.00	7,104.36	896.78	1,095.71	Build Rate = 10.00/100ft
7,825.00	7,328.00	1,351.51	1,086.96	End Build @ 7825.00ft
8,729.03	7,326.96	2,255.38	1,069.57	Begin Turn @ 8729.03ft
8,824.72	7,326.85	2,351.06	1,069.33	End Turn @ 8824.72ft
12,183.98	7,323.00	5,709.98	1,116.89	Total Depth @ 12183.98ft

Plan Report for Turkey Springs 4N-14HZ - Plan B Rev 0 Permit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Turkey Springs 4N-14HZ_BHL	11.07	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	12,183.98	Plan B Rev 0 Permit	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,825.00	7,328.00	7" Intermediate Casing	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,390.29	4,298.00	Parkman			
4,729.47	4,626.00	Sussex			
7,424.41	7,194.00	Sharon Springs			
7,550.95	7,264.00	Niobrara A			
7,628.94	7,295.00	Niobrara B			
7,822.75	7,328.00	Niobrara B TL - Heel			
12,183.97	7,323.00	Niobrara B TL - Toe		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Turkey Springs 4N-14HZ_SB14	0.00	0.00	0.00	Polygon
Turkey Springs 4N-14HZ_DPtgt	6,655.04	778.00	1,098.00	Point
Turkey Springs 4N-14HZ_DPtgt2	6,755.04	778.00	1,098.00	Point
Turkey Springs 4N-14HZ_SB22	0.00	0.00	0.00	Polygon
Turkey Springs 4N-14HZ_BHL	7,323.00	5,709.98	1,116.89	Point
Turkey Springs 4N-14HZ_SB23	0.00	0.00	0.00	Polygon
Turkey Springs 4N-14HZ_WP1	7,326.96	2,255.38	1,069.57	Point
Turkey Springs 4N-14HZ_SHL	0.00	0.00	0.00	Point
Turkey Springs 4N-14HZ_Sec14	0.00	0.00	0.00	Polygon
Turkey Springs 4N-14HZ_Sec22	0.00	0.00	0.00	Polygon
DENVER FEED CO #14-120	0.00	2,255.38	1,230.57	Circle
Turkey Springs 4N-14HZ_Sec23	0.00	0.00	0.00	Polygon

North Reference Sheet for Sec. 22 T2N-R66W - Turkey Springs 4N-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 @ 5108.00ft (Drilling Rig). Northing and Easting are relative to Turkey Springs 4N-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: 0.99995911

Grid Coordinates of Well: 1,290,542.25 ft N, 3,208,346.30 ft E
 Geographical Coordinates of Well: 40° 07' 42.70" N, 104° 45' 17.64" W
 Grid Convergence at Surface is: 0.48°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,183.98ft
 the Bottom Hole Displacement is 5,818.19ft in the Direction of 11.07° (True).

Magnetic Convergence at surface is: -8.20° (11 December 2012, , BGGM2012)

