

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8 T2N-R66W

Kunzman FEDERAL 30C-5HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

Sperry Drilling Services Proposal Report

26 November, 2012

Well Coordinates: 1,301,806.89 N, 3,194,447.07 E (40° 09' 35.14" N, 104° 48' 15.44" W)

Ground Level: 4,858.00 ft

Local Coordinate Origin: Centered on Well Kunzman 30C-5HZ

Viewing Datum: RKB=17 @ 4875.00ft (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. 8 T2N-R66W
 Well: Kunzman Federal 30C-5HZ
 Wellbore: Plan A Rev 0
 Design: Plan A Rev 0 Permit

Anadarko Petroleum Corp.

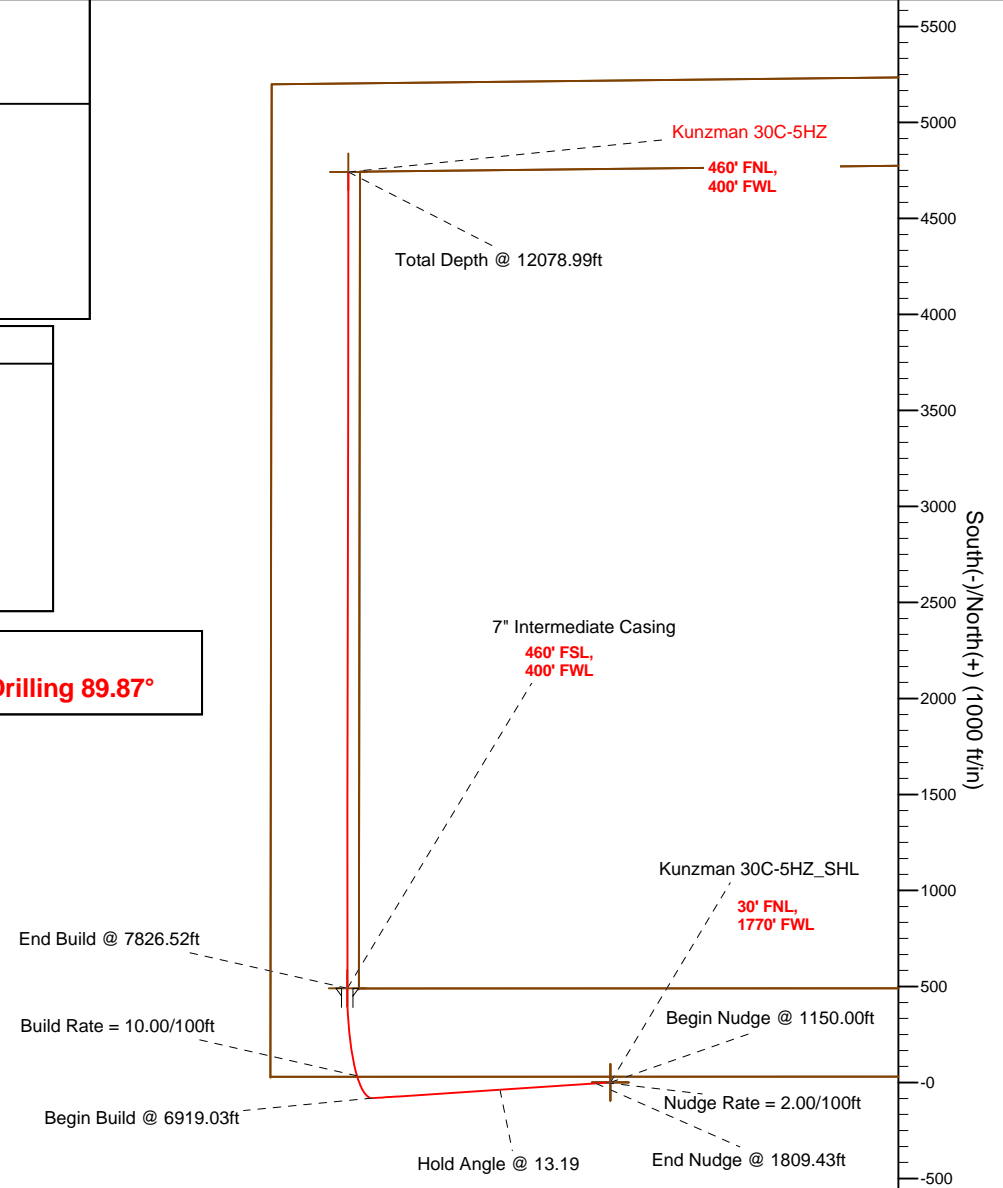
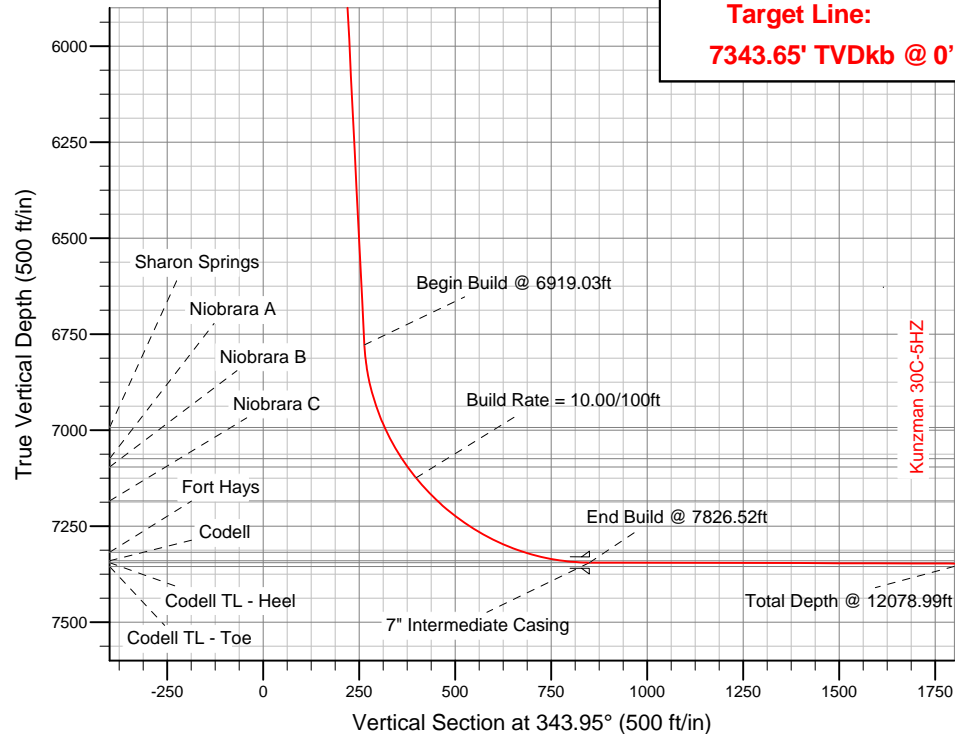
HALLIBURTON
 Sperry Drilling

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	1150.00	0.00	0.00	1150.00	0.00	0.00	0.00	0.00	0.00	
3	1809.43	13.19	266.22	1803.62	-4.98	-75.40	2.00	266.22	16.06	
4	6919.03	13.19	266.22	6778.46	-81.76	-1238.66	0.00	0.00	263.80	
5	7826.52	89.87	0.08	7345.00	490.00	-1370.00	10.00	93.79	849.60	Kunzman 30C-5HZ_CP
6	12078.99	89.87	0.08	7355.00	4742.46	-1364.02	0.00	0.00	4934.72	Kunzman 30C-5HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Kunzman 30C-5HZ_SB	0.00	0.00	0.00	40.159761	-104.804290	Polygon
Kunzman 30C-5HZ_Sec	0.00	0.00	0.00	40.159761	-104.804290	Polygon
Kunzman 30C-5HZ_SHL	0.00	0.00	0.00	40.159761	-104.804290	Point
Kunzman 30C-5HZ_CP	7345.00	490.00	-1370.00	40.161106	-104.809192	Point
Kunzman 30C-5HZ_BHL	7355.00	4742.46	-1364.02	40.172779	-104.809171	Point



WELL DETAILS: Kunzman 30C-5HZ

Ground Level: 4858.00 RKB=17 @ 4875.00ft (Drilling Rig)

Plan: Plan A Rev 0 Permit (Kunzman 30C-5HZ/Plan A Rev 0)

Created By: Fred Hartmann Date: 11/19/2012
 Reviewed: Date:

Plan Report for Kunzman Federal 30C-5HZ - 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 (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kunzman 30C-5HZ_SB - Kunzman 30C-5HZ_SHL - Kunzman 30C-5HZ_Sec										
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
707.00	0.00	0.00	707.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills										
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
1,150.00	0.00	0.00	1,150.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 1150.00ft										
1,200.00	1.00	266.22	1,200.00	-0.03	-0.44	0.09	2.00	2.00	0.00	266.22
1,300.00	3.00	266.22	1,299.93	-0.26	-3.92	0.83	2.00	2.00	0.00	0.00
1,400.00	5.00	266.22	1,399.68	-0.72	-10.88	2.32	2.00	2.00	0.00	0.00
1,500.00	7.00	266.22	1,499.13	-1.41	-21.31	4.54	2.00	2.00	0.00	0.00
Nudge Rate = 2.00/100ft										
1,600.00	9.00	266.22	1,598.15	-2.32	-35.19	7.50	2.00	2.00	0.00	0.00
1,700.00	11.00	266.22	1,696.63	-3.47	-52.52	11.19	2.00	2.00	0.00	0.00
1,800.00	13.00	266.22	1,794.44	-4.84	-73.26	15.60	2.00	2.00	0.00	0.00
1,809.43	13.19	266.22	1,803.62	-4.98	-75.40	16.06	2.00	2.00	0.00	0.00
End Nudge @ 1809.43ft										
1,900.00	13.19	266.22	1,891.80	-6.34	-96.02	20.45	0.00	0.00	0.00	0.00
2,000.00	13.19	266.22	1,989.17	-7.84	-118.78	25.30	0.00	0.00	0.00	0.00
2,100.00	13.19	266.22	2,086.53	-9.34	-141.55	30.15	0.00	0.00	0.00	0.00
2,200.00	13.19	266.22	2,183.89	-10.85	-164.31	35.00	0.00	0.00	0.00	0.00
2,300.00	13.19	266.22	2,281.25	-12.35	-187.08	39.84	0.00	0.00	0.00	0.00
2,400.00	13.19	266.22	2,378.62	-13.85	-209.85	44.69	0.00	0.00	0.00	0.00
2,500.00	13.19	266.22	2,475.98	-15.35	-232.61	49.54	0.00	0.00	0.00	0.00
2,600.00	13.19	266.22	2,573.34	-16.86	-255.38	54.39	0.00	0.00	0.00	0.00
2,700.00	13.19	266.22	2,670.70	-18.36	-278.15	59.24	0.00	0.00	0.00	0.00
2,800.00	13.19	266.22	2,768.07	-19.86	-300.91	64.09	0.00	0.00	0.00	0.00
2,900.00	13.19	266.22	2,865.43	-21.37	-323.68	68.94	0.00	0.00	0.00	0.00
3,000.00	13.19	266.22	2,962.79	-22.87	-346.44	73.78	0.00	0.00	0.00	0.00
3,100.00	13.19	266.22	3,060.15	-24.37	-369.21	78.63	0.00	0.00	0.00	0.00
3,200.00	13.19	266.22	3,157.51	-25.87	-391.98	83.48	0.00	0.00	0.00	0.00
3,300.00	13.19	266.22	3,254.88	-27.38	-414.74	88.33	0.00	0.00	0.00	0.00
3,400.00	13.19	266.22	3,352.24	-28.88	-437.51	93.18	0.00	0.00	0.00	0.00
3,500.00	13.19	266.22	3,449.60	-30.38	-460.28	98.03	0.00	0.00	0.00	0.00
3,600.00	13.19	266.22	3,546.96	-31.89	-483.04	102.88	0.00	0.00	0.00	0.00
3,700.00	13.19	266.22	3,644.33	-33.39	-505.81	107.72	0.00	0.00	0.00	0.00
3,800.00	13.19	266.22	3,741.69	-34.89	-528.57	112.57	0.00	0.00	0.00	0.00
3,900.00	13.19	266.22	3,839.05	-36.39	-551.34	117.42	0.00	0.00	0.00	0.00
3,985.20	13.19	266.22	3,922.00	-37.67	-570.74	121.55	0.00	0.00	0.00	0.00
Parkman										
4,000.00	13.19	266.22	3,936.41	-37.90	-574.11	122.27	0.00	0.00	0.00	0.00
Hold Angle @ 13.19										
4,100.00	13.19	266.22	4,033.78	-39.40	-596.87	127.12	0.00	0.00	0.00	0.00
4,200.00	13.19	266.22	4,131.14	-40.90	-619.64	131.97	0.00	0.00	0.00	0.00
4,300.00	13.19	266.22	4,228.50	-42.40	-642.41	136.82	0.00	0.00	0.00	0.00
4,396.03	13.19	266.22	4,322.00	-43.85	-664.27	141.47	0.00	0.00	0.00	0.00
Sussex										
4,400.00	13.19	266.22	4,325.86	-43.91	-665.17	141.67	0.00	0.00	0.00	0.00

Plan Report for Kunzman Federal 30C-5HZ - 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 (°)
4,500.00	13.19	266.22	4,423.23	-45.41	-687.94	146.51	0.00	0.00	0.00	0.00
4,600.00	13.19	266.22	4,520.59	-46.91	-710.70	151.36	0.00	0.00	0.00	0.00
4,700.00	13.19	266.22	4,617.95	-48.42	-733.47	156.21	0.00	0.00	0.00	0.00
4,800.00	13.19	266.22	4,715.31	-49.92	-756.24	161.06	0.00	0.00	0.00	0.00
4,900.00	13.19	266.22	4,812.68	-51.42	-779.00	165.91	0.00	0.00	0.00	0.00
5,000.00	13.19	266.22	4,910.04	-52.92	-801.77	170.76	0.00	0.00	0.00	0.00
5,100.00	13.19	266.22	5,007.40	-54.43	-824.54	175.61	0.00	0.00	0.00	0.00
5,200.00	13.19	266.22	5,104.76	-55.93	-847.30	180.45	0.00	0.00	0.00	0.00
5,300.00	13.19	266.22	5,202.13	-57.43	-870.07	185.30	0.00	0.00	0.00	0.00
5,400.00	13.19	266.22	5,299.49	-58.94	-892.83	190.15	0.00	0.00	0.00	0.00
5,500.00	13.19	266.22	5,396.85	-60.44	-915.60	195.00	0.00	0.00	0.00	0.00
5,600.00	13.19	266.22	5,494.21	-61.94	-938.37	199.85	0.00	0.00	0.00	0.00
5,700.00	13.19	266.22	5,591.58	-63.44	-961.13	204.70	0.00	0.00	0.00	0.00
5,800.00	13.19	266.22	5,688.94	-64.95	-983.90	209.55	0.00	0.00	0.00	0.00
5,900.00	13.19	266.22	5,786.30	-66.45	-1,006.66	214.39	0.00	0.00	0.00	0.00
6,000.00	13.19	266.22	5,883.66	-67.95	-1,029.43	219.24	0.00	0.00	0.00	0.00
6,100.00	13.19	266.22	5,981.02	-69.46	-1,052.20	224.09	0.00	0.00	0.00	0.00
6,200.00	13.19	266.22	6,078.39	-70.96	-1,074.96	228.94	0.00	0.00	0.00	0.00
6,300.00	13.19	266.22	6,175.75	-72.46	-1,097.73	233.79	0.00	0.00	0.00	0.00
6,400.00	13.19	266.22	6,273.11	-73.96	-1,120.50	238.64	0.00	0.00	0.00	0.00
6,500.00	13.19	266.22	6,370.47	-75.47	-1,143.26	243.49	0.00	0.00	0.00	0.00
6,600.00	13.19	266.22	6,467.84	-76.97	-1,166.03	248.34	0.00	0.00	0.00	0.00
6,700.00	13.19	266.22	6,565.20	-78.47	-1,188.79	253.18	0.00	0.00	0.00	0.00
6,800.00	13.19	266.22	6,662.56	-79.97	-1,211.56	258.03	0.00	0.00	0.00	0.00
6,900.00	13.19	266.22	6,759.92	-81.48	-1,234.33	262.88	0.00	0.00	0.00	0.00
6,919.03	13.19	266.22	6,778.45	-81.76	-1,238.66	263.80	0.00	0.00	0.00	0.00
Begin Build @ 6919.03ft										
7,000.00	14.97	299.17	6,857.11	-77.27	-1,257.04	273.21	10.00	2.21	40.69	93.79
7,100.00	21.54	323.80	6,952.16	-56.10	-1,279.22	299.68	10.00	6.57	24.62	61.77
7,144.49	25.18	330.29	6,993.00	-41.28	-1,288.74	316.55	10.00	8.17	14.59	38.32
Sharon Springs										
7,200.00	30.00	336.23	7,042.20	-18.31	-1,300.20	341.80	10.00	8.70	10.70	32.35
7,237.38	33.37	339.32	7,074.00	-0.13	-1,307.60	361.31	10.00	9.01	8.27	27.08
Niobrara A										
7,264.11	35.82	341.21	7,096.00	14.16	-1,312.71	376.46	10.00	9.16	7.07	24.45
Niobrara B										
7,300.00	39.15	343.42	7,124.48	34.97	-1,319.33	398.28	10.00	9.27	6.16	22.89
Build Rate = 10.00/100ft										
7,381.41	46.82	347.44	7,184.00	88.66	-1,333.14	453.70	10.00	9.42	4.93	21.14
Niobrara C										
7,400.00	48.59	348.21	7,196.51	102.10	-1,336.04	467.42	10.00	9.51	4.16	18.19
7,500.00	58.17	351.77	7,256.10	181.05	-1,349.82	547.11	10.00	9.59	3.56	17.67
7,600.00	67.84	354.65	7,301.45	269.43	-1,360.25	634.92	10.00	9.67	2.88	15.54
7,648.92	72.59	355.91	7,318.00	315.28	-1,364.03	680.04	10.00	9.70	2.57	14.23
Fort Hays										
7,700.00	77.55	357.15	7,331.16	364.54	-1,367.01	728.19	10.00	9.72	2.44	13.80
7,751.12	82.53	358.35	7,340.00	414.83	-1,368.98	777.07	10.00	9.73	2.35	13.48
Codell										
7,800.00	87.28	359.48	7,344.34	463.49	-1,369.90	824.09	10.00	9.74	2.30	13.27
7,826.52	89.86	0.08	7,345.00	490.00	-1,370.00	849.60	10.00	9.74	2.28	13.17
End Build @ 7826.52ft - Codell TL - Heel - 7" Intermediate Casing - Kunzman 30C-5HZ_CP										
7,900.00	89.87	0.08	7,345.17	563.48	-1,369.90	920.19	0.00	0.00	0.00	13.16
8,000.00	89.87	0.08	7,345.41	663.48	-1,369.76	1,016.25	0.00	0.00	0.00	0.00
8,100.00	89.87	0.08	7,345.64	763.48	-1,369.62	1,112.32	0.00	0.00	0.00	0.00
8,200.00	89.87	0.08	7,345.88	863.48	-1,369.48	1,208.38	0.00	0.00	0.00	0.00
8,300.00	89.87	0.08	7,346.11	963.48	-1,369.33	1,304.45	0.00	0.00	0.00	0.00
8,400.00	89.87	0.08	7,346.35	1,063.48	-1,369.19	1,400.51	0.00	0.00	0.00	0.00
8,500.00	89.87	0.08	7,346.58	1,163.48	-1,369.05	1,496.57	0.00	0.00	0.00	0.00

Plan Report for Kunzman Federal 30C-5HZ - 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 (°)
8,600.00	89.87	0.08	7,346.82	1,263.48	-1,368.91	1,592.64	0.00	0.00	0.00	0.00
8,700.00	89.87	0.08	7,347.05	1,363.48	-1,368.77	1,688.70	0.00	0.00	0.00	0.00
8,800.00	89.87	0.08	7,347.29	1,463.48	-1,368.63	1,784.77	0.00	0.00	0.00	0.00
8,900.00	89.87	0.08	7,347.52	1,563.48	-1,368.49	1,880.83	0.00	0.00	0.00	0.00
9,000.00	89.87	0.08	7,347.76	1,663.48	-1,368.35	1,976.90	0.00	0.00	0.00	0.00
9,100.00	89.87	0.08	7,347.99	1,763.48	-1,368.21	2,072.96	0.00	0.00	0.00	0.00
9,200.00	89.87	0.08	7,348.23	1,863.48	-1,368.07	2,169.03	0.00	0.00	0.00	0.00
9,300.00	89.87	0.08	7,348.47	1,963.48	-1,367.93	2,265.09	0.00	0.00	0.00	0.00
9,400.00	89.87	0.08	7,348.70	2,063.48	-1,367.79	2,361.16	0.00	0.00	0.00	0.00
9,500.00	89.87	0.08	7,348.94	2,163.48	-1,367.65	2,457.22	0.00	0.00	0.00	0.00
9,600.00	89.87	0.08	7,349.17	2,263.48	-1,367.51	2,553.29	0.00	0.00	0.00	0.00
9,700.00	89.87	0.08	7,349.41	2,363.48	-1,367.37	2,649.35	0.00	0.00	0.00	0.00
9,800.00	89.87	0.08	7,349.64	2,463.48	-1,367.23	2,745.42	0.00	0.00	0.00	0.00
9,900.00	89.87	0.08	7,349.88	2,563.48	-1,367.09	2,841.48	0.00	0.00	0.00	0.00
10,000.00	89.87	0.08	7,350.11	2,663.48	-1,366.94	2,937.54	0.00	0.00	0.00	0.00
10,100.00	89.87	0.08	7,350.35	2,763.47	-1,366.80	3,033.61	0.00	0.00	0.00	0.00
10,200.00	89.87	0.08	7,350.58	2,863.47	-1,366.66	3,129.67	0.00	0.00	0.00	0.00
10,300.00	89.87	0.08	7,350.82	2,963.47	-1,366.52	3,225.74	0.00	0.00	0.00	0.00
10,400.00	89.87	0.08	7,351.05	3,063.47	-1,366.38	3,321.80	0.00	0.00	0.00	0.00
10,500.00	89.87	0.08	7,351.29	3,163.47	-1,366.24	3,417.87	0.00	0.00	0.00	0.00
10,600.00	89.87	0.08	7,351.52	3,263.47	-1,366.10	3,513.93	0.00	0.00	0.00	0.00
10,700.00	89.87	0.08	7,351.76	3,363.47	-1,365.96	3,610.00	0.00	0.00	0.00	0.00
10,800.00	89.87	0.08	7,351.99	3,463.47	-1,365.82	3,706.06	0.00	0.00	0.00	0.00
10,900.00	89.87	0.08	7,352.23	3,563.47	-1,365.68	3,802.13	0.00	0.00	0.00	0.00
11,000.00	89.87	0.08	7,352.46	3,663.47	-1,365.54	3,898.19	0.00	0.00	0.00	0.00
11,100.00	89.87	0.08	7,352.70	3,763.47	-1,365.40	3,994.26	0.00	0.00	0.00	0.00
11,200.00	89.87	0.08	7,352.93	3,863.47	-1,365.26	4,090.32	0.00	0.00	0.00	0.00
11,300.00	89.87	0.08	7,353.17	3,963.47	-1,365.12	4,186.39	0.00	0.00	0.00	0.00
11,400.00	89.87	0.08	7,353.40	4,063.47	-1,364.98	4,282.45	0.00	0.00	0.00	0.00
11,500.00	89.87	0.08	7,353.64	4,163.47	-1,364.84	4,378.52	0.00	0.00	0.00	0.00
11,600.00	89.87	0.08	7,353.87	4,263.47	-1,364.70	4,474.58	0.00	0.00	0.00	0.00
11,700.00	89.87	0.08	7,354.11	4,363.47	-1,364.56	4,570.64	0.00	0.00	0.00	0.00
11,800.00	89.87	0.08	7,354.34	4,463.47	-1,364.41	4,666.71	0.00	0.00	0.00	0.00
11,900.00	89.87	0.08	7,354.58	4,563.47	-1,364.27	4,762.77	0.00	0.00	0.00	0.00
12,000.00	89.87	0.08	7,354.81	4,663.47	-1,364.13	4,858.84	0.00	0.00	0.00	0.00
12,078.99	89.87	0.08	7,355.00	4,742.46	-1,364.02	4,934.72	0.00	0.00	0.00	0.00

Total Depth @ 12078.99ft - Kunzman 30C-5HZ_BHL

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,150.00	1,150.00	0.00	0.00	Begin Nudge @ 1150.00ft
1,500.00	1,499.13	-1.41	-21.31	Nudge Rate = 2.00/100ft
1,809.43	1,803.62	-4.98	-75.40	End Nudge @ 1809.43ft
4,000.00	3,936.41	-37.90	-574.11	Hold Angle @ 13.19
6,919.03	6,778.45	-81.76	-1,238.66	Begin Build @ 6919.03ft
7,300.00	7,124.48	34.97	-1,319.33	Build Rate = 10.00/100ft
7,826.52	7,345.00	490.00	-1,370.00	End Build @ 7826.52ft
12,078.99	7,355.00	4,742.46	-1,364.02	Total Depth @ 12078.99ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Kunzman 30C-5HZ_BHL	343.95	Slot	0.00	0.00	0.00

Plan Report for Kunzman Federal 30C-5HZ - Plan A Rev 0 Permit**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	12,078.99	Plan A Rev 0 Permit	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,826.52	7,345.00	7" Intermediate Casing	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
707.00	707.00	Fox Hills		0.00	
3,985.20	3,922.00	Parkman		0.00	
4,396.03	4,322.00	Sussex		0.00	
7,144.49	6,993.00	Sharon Springs		0.00	
7,237.38	7,074.00	Niobrara A		0.00	
7,264.11	7,096.00	Niobrara B		0.00	
7,381.41	7,184.00	Niobrara C		0.00	
7,648.92	7,318.00	Fort Hays		0.00	
7,751.12	7,340.00	Codell		0.00	
7,826.52	7,345.00	Codell TL - Heel		0.00	
12,078.99	7,355.00	Codell TL - Toe		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Kunzman 30C-5HZ_CP	7,345.00	490.00	-1,370.00	Point
Kunzman 30C-5HZ_BHL	7,355.00	4,742.46	-1,364.02	Point
Kunzman 30C-5HZ_Sec	0.00	0.00	0.00	Polygon
Kunzman 30C-5HZ_SHL	0.00	0.00	0.00	Point
Kunzman 30C-5HZ_SB	0.00	0.00	0.00	Polygon

North Reference Sheet for Sec. 8 T2N-R66W - Kunzman Federal 30C-5HZ - 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 @ 4875.00ft (Drilling Rig). Northing and Easting are relative to Kunzman 30C-5HZ

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: 0.99995810

Grid Coordinates of Well: 1,301,806.89 ft N, 3,194,447.07 ft E

Geographical Coordinates of Well: 40° 09' 35.14" N, 104° 48' 15.44" W

Grid Convergence at Surface is: 0.45°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,078.99ft
the Bottom Hole Displacement is 4,934.72ft in the Direction of 343.95° (True).

Magnetic Convergence at surface is: -8.27° (26 November 2012, , BGGM2012)

