

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 13-T2N-67W

KERR 28N-12HZ

Plan A0

Plan: Plan A0 Permit

Sperry Drilling Services

Proposal Report

08 August, 2013

Well Coordinates: 1,291,735.13 N, 3,184,163.42 E (40° 07' 56.38" N, 104° 50' 28.86" W)

Ground Level: 4,883.00 ft

Local Coordinate Origin:

Centered on Well KERR 28N-12HZ

Viewing Datum:

RKB = 25' @ 4908.00ft (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. 13-T2N-67W
Well: KERR 28N-12HZ
Wellbore: Plan A0
Design: Plan A0 Permit

Anadarko Petroleum Corp.

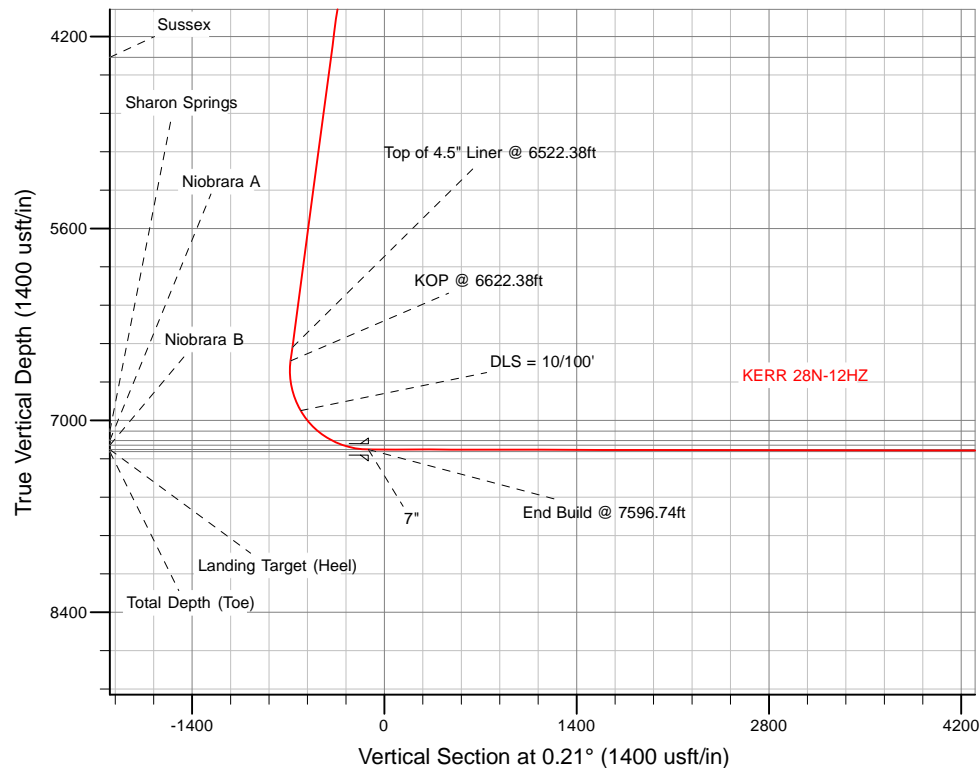
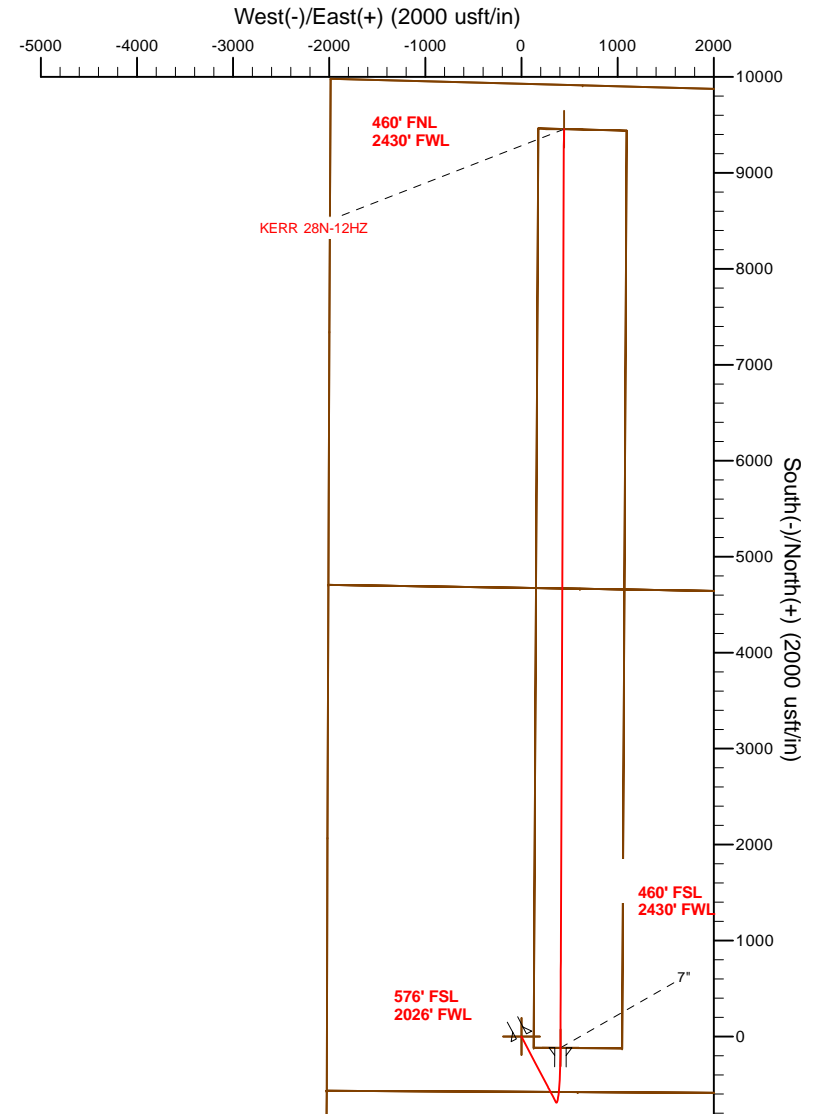
HALLIBURTON
Sperry Drilling

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	
3	1626.56	8.53	152.29	1624.98	-28.06	14.74	2.00	152.29	-28.01	
4	6622.38	8.53	152.29	6565.53	-684.20	359.33	0.00	0.00	-682.87	
5	7596.74	89.90	0.21	7212.00	-117.31	406.77	10.00	-151.82	-115.82	Kerr 28N-12HZ_CP
6	17171.98	89.90	0.21	7228.00	9457.85	442.47	0.00	0.00	9459.40	Kerr 28N-12HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Polygon
Kerr 28N-12HZ_LD	0.00	0.00	0.00	40.132329	-104.841350	Polygon
Kerr 28N-12HZ_SHL	0.00	0.00	0.00	40.132329	-104.841350	Polygon
Kerr_SEC	0.00	2699.57	599.35	40.139739	-104.839206	Polygon
Kerr 28N-12HZ_CP	7212.00	-117.31	406.77	40.132007	-104.839895	Polygon
Kerr 28N-12HZ_BHL	7228.00	9457.85	442.47	40.158291	-104.839767	Point



TVD MD

6466.64 6522.38 Top of 4.5" Liner @ 6522.38ft
6565.53 6622.38 KOP @ 6622.38ft

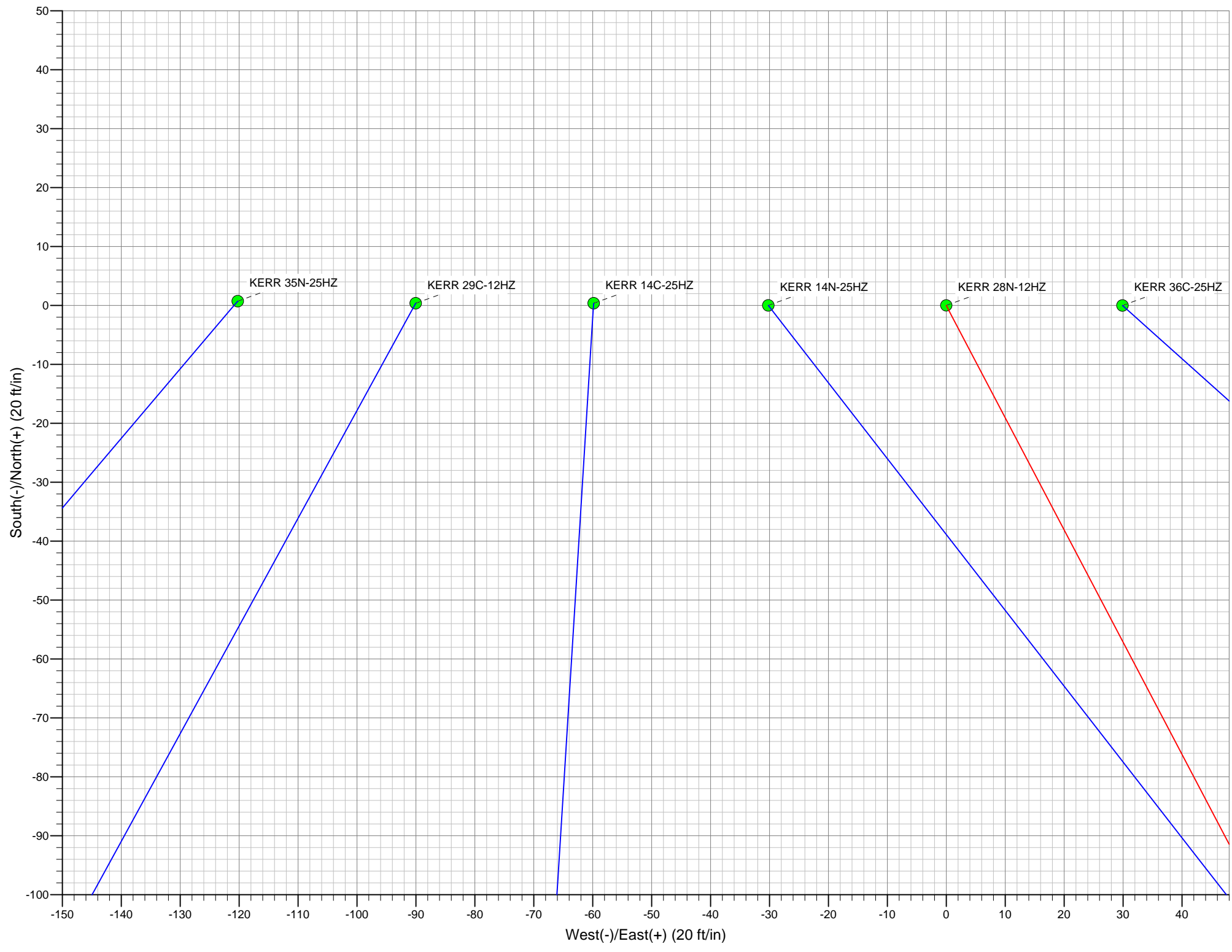
WELL DETAILS: KERR 28N-12HZ

Ground Level: 4883.00

RKB = 25' @ 4908.00usft (Drilling Rig)

Plan: Plan A0 Permit (KERR 28N-12HZ/Plan A0)

Created By: Clint Eshelman Date: 11/04/2013
Reviewed: _____ Date: _____



Plan Report for KERR 28N-12HZ - Plan A0 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
Kerr 28N-12HZ_LD - Kerr 28N-12HZ_SHL - Kerr_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
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
943.00	0.00	0.00	943.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base										
995.00	0.00	0.00	995.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
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
Begin Nudge @ 1200.00ft										
1,300.00	2.00	152.29	1,299.98	-1.55	0.81	-1.54	2.00	2.00	0.00	152.29
1,400.00	4.00	152.29	1,399.84	-6.18	3.24	-6.17	2.00	2.00	0.00	0.00
1,500.00	6.00	152.29	1,499.45	-13.89	7.30	-13.87	2.00	2.00	0.00	0.00
1,600.00	8.00	152.29	1,598.70	-24.68	12.96	-24.64	2.00	2.00	0.00	0.00
1,626.56	8.53	152.29	1,624.99	-28.06	14.74	-28.01	2.00	2.00	0.00	0.00
End Nudge @ 1626.56ft										
1,700.00	8.53	152.29	1,697.61	-37.71	19.80	-37.64	0.00	0.00	0.00	0.00
1,800.00	8.53	152.29	1,796.51	-50.84	26.70	-50.74	0.00	0.00	0.00	0.00
1,900.00	8.53	152.29	1,895.40	-63.98	33.60	-63.85	0.00	0.00	0.00	0.00
2,000.00	8.53	152.29	1,994.29	-77.11	40.50	-76.96	0.00	0.00	0.00	0.00
2,100.00	8.53	152.29	2,093.19	-90.24	47.39	-90.07	0.00	0.00	0.00	0.00
2,200.00	8.53	152.29	2,192.08	-103.38	54.29	-103.18	0.00	0.00	0.00	0.00
2,300.00	8.53	152.29	2,290.97	-116.51	61.19	-116.29	0.00	0.00	0.00	0.00
2,400.00	8.53	152.29	2,389.87	-129.64	68.09	-129.39	0.00	0.00	0.00	0.00
2,500.00	8.53	152.29	2,488.76	-142.78	74.98	-142.50	0.00	0.00	0.00	0.00
2,600.00	8.53	152.29	2,587.65	-155.91	81.88	-155.61	0.00	0.00	0.00	0.00
2,700.00	8.53	152.29	2,686.55	-169.05	88.78	-168.72	0.00	0.00	0.00	0.00
2,800.00	8.53	152.29	2,785.44	-182.18	95.68	-181.83	0.00	0.00	0.00	0.00
2,900.00	8.53	152.29	2,884.34	-195.31	102.57	-194.93	0.00	0.00	0.00	0.00
3,000.00	8.53	152.29	2,983.23	-208.45	109.47	-208.04	0.00	0.00	0.00	0.00
3,100.00	8.53	152.29	3,082.12	-221.58	116.37	-221.15	0.00	0.00	0.00	0.00
3,200.00	8.53	152.29	3,181.02	-234.71	123.27	-234.26	0.00	0.00	0.00	0.00
3,300.00	8.53	152.29	3,279.91	-247.85	130.16	-247.37	0.00	0.00	0.00	0.00
3,400.00	8.53	152.29	3,378.80	-260.98	137.06	-260.48	0.00	0.00	0.00	0.00
3,500.00	8.53	152.29	3,477.70	-274.11	143.96	-273.58	0.00	0.00	0.00	0.00
3,600.00	8.53	152.29	3,576.59	-287.25	150.86	-286.69	0.00	0.00	0.00	0.00
3,700.00	8.53	152.29	3,675.48	-300.38	157.76	-299.80	0.00	0.00	0.00	0.00
3,800.00	8.53	152.29	3,774.38	-313.51	164.65	-312.91	0.00	0.00	0.00	0.00
3,900.00	8.53	152.29	3,873.27	-326.65	171.55	-326.02	0.00	0.00	0.00	0.00
3,961.41	8.53	152.29	3,934.00	-334.71	175.79	-334.07	0.00	0.00	0.00	0.00
Parkman										
4,000.00	8.53	152.29	3,972.16	-339.78	178.45	-339.13	0.00	0.00	0.00	0.00
4,100.00	8.53	152.29	4,071.06	-352.92	185.35	-352.23	0.00	0.00	0.00	0.00
4,200.00	8.53	152.29	4,169.95	-366.05	192.24	-365.34	0.00	0.00	0.00	0.00
4,300.00	8.53	152.29	4,268.84	-379.18	199.14	-378.45	0.00	0.00	0.00	0.00
4,383.07	8.53	152.29	4,351.00	-390.09	204.87	-389.34	0.00	0.00	0.00	0.00
Sussex										
4,400.00	8.53	152.29	4,367.74	-392.32	206.04	-391.56	0.00	0.00	0.00	0.00

Plan Report for KERR 28N-12HZ - Plan A0 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	8.53	152.29	4,466.63	-405.45	212.94	-404.67	0.00	0.00	0.00	0.00
4,600.00	8.53	152.29	4,565.53	-418.58	219.83	-417.78	0.00	0.00	0.00	0.00
4,700.00	8.53	152.29	4,664.42	-431.72	226.73	-430.88	0.00	0.00	0.00	0.00
4,800.00	8.53	152.29	4,763.31	-444.85	233.63	-443.99	0.00	0.00	0.00	0.00
4,900.00	8.53	152.29	4,862.21	-457.98	240.53	-457.10	0.00	0.00	0.00	0.00
5,000.00	8.53	152.29	4,961.10	-471.12	247.42	-470.21	0.00	0.00	0.00	0.00
5,100.00	8.53	152.29	5,059.99	-484.25	254.32	-483.32	0.00	0.00	0.00	0.00
5,200.00	8.53	152.29	5,158.89	-497.39	261.22	-496.42	0.00	0.00	0.00	0.00
5,300.00	8.53	152.29	5,257.78	-510.52	268.12	-509.53	0.00	0.00	0.00	0.00
5,400.00	8.53	152.29	5,356.67	-523.65	275.01	-522.64	0.00	0.00	0.00	0.00
5,500.00	8.53	152.29	5,455.57	-536.79	281.91	-535.75	0.00	0.00	0.00	0.00
5,600.00	8.53	152.29	5,554.46	-549.92	288.81	-548.86	0.00	0.00	0.00	0.00
5,700.00	8.53	152.29	5,653.35	-563.05	295.71	-561.97	0.00	0.00	0.00	0.00
5,800.00	8.53	152.29	5,752.25	-576.19	302.60	-575.07	0.00	0.00	0.00	0.00
5,900.00	8.53	152.29	5,851.14	-589.32	309.50	-588.18	0.00	0.00	0.00	0.00
6,000.00	8.53	152.29	5,950.04	-602.45	316.40	-601.29	0.00	0.00	0.00	0.00
6,100.00	8.53	152.29	6,048.93	-615.59	323.30	-614.40	0.00	0.00	0.00	0.00
6,200.00	8.53	152.29	6,147.82	-628.72	330.19	-627.51	0.00	0.00	0.00	0.00
6,300.00	8.53	152.29	6,246.72	-641.86	337.09	-640.62	0.00	0.00	0.00	0.00
6,400.00	8.53	152.29	6,345.61	-654.99	343.99	-653.72	0.00	0.00	0.00	0.00
6,500.00	8.53	152.29	6,444.50	-668.12	350.89	-666.83	0.00	0.00	0.00	0.00
6,522.38	8.53	152.29	6,466.64	-671.06	352.43	-669.77	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6522.38ft										
6,600.00	8.53	152.29	6,543.40	-681.26	357.78	-679.94	0.00	0.00	0.00	0.00
6,622.38	8.53	152.29	6,565.53	-684.20	359.33	-682.87	0.00	0.00	0.00	0.00
KOP @ 6622.38ft										
6,700.00	4.02	86.93	6,642.74	-689.15	364.73	-687.81	10.00	-5.81	-84.21	-151.82
6,800.00	10.98	21.42	6,741.95	-680.08	371.73	-678.71	10.00	6.96	-65.51	-86.73
6,900.00	20.61	10.97	6,838.08	-653.87	378.58	-652.47	10.00	9.63	-10.45	-21.58
7,000.00	30.47	7.06	6,928.21	-611.32	385.06	-609.90	10.00	9.86	-3.91	-11.48
DLS = 10/100'										
7,100.00	40.40	4.94	7,009.59	-553.73	390.98	-552.29	10.00	9.93	-2.12	-7.94
7,197.26	50.07	3.58	7,078.00	-484.94	396.04	-483.49	10.00	9.95	-1.40	-6.21
Sharon Springs										
7,200.00	50.35	3.54	7,079.75	-482.84	396.17	-481.39	10.00	9.96	-1.19	-5.24
7,300.00	60.31	2.50	7,136.57	-400.82	400.45	-399.35	10.00	9.96	-1.04	-5.22
7,319.63	62.27	2.32	7,146.00	-383.61	401.18	-382.14	10.00	9.97	-0.91	-4.63
Niobrara A										
7,400.00	70.28	1.65	7,178.31	-310.14	403.71	-308.66	10.00	9.97	-0.84	-4.54
7,405.07	70.79	1.61	7,180.00	-305.37	403.85	-303.89	10.00	9.97	-0.79	-4.27
Niobrara B										
7,500.00	80.25	0.90	7,203.71	-213.58	405.84	-212.09	10.00	9.97	-0.75	-4.25
7,596.74	89.90	0.21	7,212.00	-117.31	406.77	-115.82	10.00	9.97	-0.71	-4.08
End Build @ 7596.74ft - Landing Target (Heel) - 7" - Kerr 28N-12HZ_CP										
7,600.00	89.90	0.21	7,212.01	-114.05	406.79	-112.56	0.01	0.01	0.00	-4.02
7,700.00	89.90	0.21	7,212.17	-14.05	407.16	-12.56	0.00	0.00	0.00	0.00
7,800.00	89.90	0.21	7,212.34	85.95	407.53	87.44	0.00	0.00	0.00	0.00
7,900.00	89.90	0.21	7,212.51	185.94	407.90	187.44	0.00	0.00	0.00	0.00
8,000.00	89.90	0.21	7,212.67	285.94	408.28	287.44	0.00	0.00	0.00	0.00
8,100.00	89.90	0.21	7,212.84	385.94	408.65	387.44	0.00	0.00	0.00	0.00
8,200.00	89.90	0.21	7,213.01	485.94	409.02	487.44	0.00	0.00	0.00	0.00
8,300.00	89.90	0.21	7,213.18	585.94	409.40	587.44	0.00	0.00	0.00	0.00
8,400.00	89.90	0.21	7,213.34	685.94	409.77	687.44	0.00	0.00	0.00	0.00
8,500.00	89.90	0.21	7,213.51	785.94	410.14	787.44	0.00	0.00	0.00	0.00
8,600.00	89.90	0.21	7,213.68	885.94	410.51	887.44	0.00	0.00	0.00	0.00
8,700.00	89.90	0.21	7,213.84	985.94	410.89	987.44	0.00	0.00	0.00	0.00
8,800.00	89.90	0.21	7,214.01	1,085.94	411.26	1,087.44	0.00	0.00	0.00	0.00
8,900.00	89.90	0.21	7,214.18	1,185.94	411.63	1,187.44	0.00	0.00	0.00	0.00
9,000.00	89.90	0.21	7,214.34	1,285.94	412.01	1,287.44	0.00	0.00	0.00	0.00

Plan Report for KERR 28N-12HZ - Plan A0 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 (°)
9,100.00	89.90	0.21	7,214.51	1,385.93	412.38	1,387.44	0.00	0.00	0.00	0.00
9,200.00	89.90	0.21	7,214.68	1,485.93	412.75	1,487.44	0.00	0.00	0.00	0.00
9,300.00	89.90	0.21	7,214.85	1,585.93	413.12	1,587.44	0.00	0.00	0.00	0.00
9,400.00	89.90	0.21	7,215.01	1,685.93	413.50	1,687.44	0.00	0.00	0.00	0.00
9,500.00	89.90	0.21	7,215.18	1,785.93	413.87	1,787.44	0.00	0.00	0.00	0.00
9,600.00	89.90	0.21	7,215.35	1,885.93	414.24	1,887.44	0.00	0.00	0.00	0.00
9,700.00	89.90	0.21	7,215.51	1,985.93	414.62	1,987.44	0.00	0.00	0.00	0.00
9,800.00	89.90	0.21	7,215.68	2,085.93	414.99	2,087.44	0.00	0.00	0.00	0.00
9,900.00	89.90	0.21	7,215.85	2,185.93	415.36	2,187.44	0.00	0.00	0.00	0.00
10,000.00	89.90	0.21	7,216.02	2,285.93	415.73	2,287.44	0.00	0.00	0.00	0.00
10,100.00	89.90	0.21	7,216.18	2,385.93	416.11	2,387.44	0.00	0.00	0.00	0.00
10,200.00	89.90	0.21	7,216.35	2,485.93	416.48	2,487.44	0.00	0.00	0.00	0.00
10,300.00	89.90	0.21	7,216.52	2,585.92	416.85	2,587.44	0.00	0.00	0.00	0.00
10,400.00	89.90	0.21	7,216.68	2,685.92	417.23	2,687.43	0.00	0.00	0.00	0.00
10,500.00	89.90	0.21	7,216.85	2,785.92	417.60	2,787.43	0.00	0.00	0.00	0.00
10,600.00	89.90	0.21	7,217.02	2,885.92	417.97	2,887.43	0.00	0.00	0.00	0.00
10,700.00	89.90	0.21	7,217.19	2,985.92	418.34	2,987.43	0.00	0.00	0.00	0.00
10,800.00	89.90	0.21	7,217.35	3,085.92	418.72	3,087.43	0.00	0.00	0.00	0.00
10,900.00	89.90	0.21	7,217.52	3,185.92	419.09	3,187.43	0.00	0.00	0.00	0.00
11,000.00	89.90	0.21	7,217.69	3,285.92	419.46	3,287.43	0.00	0.00	0.00	0.00
11,100.00	89.90	0.21	7,217.85	3,385.92	419.83	3,387.43	0.00	0.00	0.00	0.00
11,200.00	89.90	0.21	7,218.02	3,485.92	420.21	3,487.43	0.00	0.00	0.00	0.00
11,300.00	89.90	0.21	7,218.19	3,585.92	420.58	3,587.43	0.00	0.00	0.00	0.00
11,400.00	89.90	0.21	7,218.36	3,685.92	420.95	3,687.43	0.00	0.00	0.00	0.00
11,500.00	89.90	0.21	7,218.52	3,785.91	421.33	3,787.43	0.00	0.00	0.00	0.00
11,600.00	89.90	0.21	7,218.69	3,885.91	421.70	3,887.43	0.00	0.00	0.00	0.00
11,700.00	89.90	0.21	7,218.86	3,985.91	422.07	3,987.43	0.00	0.00	0.00	0.00
11,800.00	89.90	0.21	7,219.02	4,085.91	422.44	4,087.43	0.00	0.00	0.00	0.00
11,900.00	89.90	0.21	7,219.19	4,185.91	422.82	4,187.43	0.00	0.00	0.00	0.00
12,000.00	89.90	0.21	7,219.36	4,285.91	423.19	4,287.43	0.00	0.00	0.00	0.00
12,100.00	89.90	0.21	7,219.52	4,385.91	423.56	4,387.43	0.00	0.00	0.00	0.00
12,200.00	89.90	0.21	7,219.69	4,485.91	423.94	4,487.43	0.00	0.00	0.00	0.00
12,300.00	89.90	0.21	7,219.86	4,585.91	424.31	4,587.43	0.00	0.00	0.00	0.00
12,400.00	89.90	0.21	7,220.03	4,685.91	424.68	4,687.43	0.00	0.00	0.00	0.00
12,500.00	89.90	0.21	7,220.19	4,785.91	425.05	4,787.43	0.00	0.00	0.00	0.00
12,600.00	89.90	0.21	7,220.36	4,885.91	425.43	4,887.43	0.00	0.00	0.00	0.00
12,700.00	89.90	0.21	7,220.53	4,985.90	425.80	4,987.43	0.00	0.00	0.00	0.00
12,800.00	89.90	0.21	7,220.69	5,085.90	426.17	5,087.43	0.00	0.00	0.00	0.00
12,900.00	89.90	0.21	7,220.86	5,185.90	426.55	5,187.43	0.00	0.00	0.00	0.00
13,000.00	89.90	0.21	7,221.03	5,285.90	426.92	5,287.43	0.00	0.00	0.00	0.00
13,100.00	89.90	0.21	7,221.20	5,385.90	427.29	5,387.43	0.00	0.00	0.00	0.00
13,200.00	89.90	0.21	7,221.36	5,485.90	427.66	5,487.43	0.00	0.00	0.00	0.00
13,300.00	89.90	0.21	7,221.53	5,585.90	428.04	5,587.43	0.00	0.00	0.00	0.00
13,400.00	89.90	0.21	7,221.70	5,685.90	428.41	5,687.43	0.00	0.00	0.00	0.00
13,500.00	89.90	0.21	7,221.86	5,785.90	428.78	5,787.43	0.00	0.00	0.00	0.00
13,600.00	89.90	0.21	7,222.03	5,885.90	429.16	5,887.43	0.00	0.00	0.00	0.00
13,700.00	89.90	0.21	7,222.20	5,985.90	429.53	5,987.43	0.00	0.00	0.00	0.00
13,800.00	89.90	0.21	7,222.37	6,085.90	429.90	6,087.43	0.00	0.00	0.00	0.00
13,900.00	89.90	0.21	7,222.53	6,185.89	430.27	6,187.43	0.00	0.00	0.00	0.00
14,000.00	89.90	0.21	7,222.70	6,285.89	430.65	6,287.43	0.00	0.00	0.00	0.00
14,100.00	89.90	0.21	7,222.87	6,385.89	431.02	6,387.43	0.00	0.00	0.00	0.00
14,200.00	89.90	0.21	7,223.03	6,485.89	431.39	6,487.43	0.00	0.00	0.00	0.00
14,300.00	89.90	0.21	7,223.20	6,585.89	431.76	6,587.43	0.00	0.00	0.00	0.00
14,400.00	89.90	0.21	7,223.37	6,685.89	432.14	6,687.43	0.00	0.00	0.00	0.00
14,500.00	89.90	0.21	7,223.54	6,785.89	432.51	6,787.43	0.00	0.00	0.00	0.00
14,600.00	89.90	0.21	7,223.70	6,885.89	432.88	6,887.43	0.00	0.00	0.00	0.00
14,700.00	89.90	0.21	7,223.87	6,985.89	433.26	6,987.43	0.00	0.00	0.00	0.00
14,800.00	89.90	0.21	7,224.04	7,085.89	433.63	7,087.43	0.00	0.00	0.00	0.00
14,900.00	89.90	0.21	7,224.20	7,185.89	434.00	7,187.43	0.00	0.00	0.00	0.00
15,000.00	89.90	0.21	7,224.37	7,285.89	434.37	7,287.43	0.00	0.00	0.00	0.00

Plan Report for KERR 28N-12HZ - Plan A0 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 (°)
15,100.00	89.90	0.21	7,224.54	7,385.88	434.75	7,387.43	0.00	0.00	0.00	0.00
15,200.00	89.90	0.21	7,224.70	7,485.88	435.12	7,487.43	0.00	0.00	0.00	0.00
15,300.00	89.90	0.21	7,224.87	7,585.88	435.49	7,587.43	0.00	0.00	0.00	0.00
15,400.00	89.90	0.21	7,225.04	7,685.88	435.87	7,687.43	0.00	0.00	0.00	0.00
15,500.00	89.90	0.21	7,225.21	7,785.88	436.24	7,787.43	0.00	0.00	0.00	0.00
15,600.00	89.90	0.21	7,225.37	7,885.88	436.61	7,887.43	0.00	0.00	0.00	0.00
15,700.00	89.90	0.21	7,225.54	7,985.88	436.98	7,987.43	0.00	0.00	0.00	0.00
15,800.00	89.90	0.21	7,225.71	8,085.88	437.36	8,087.43	0.00	0.00	0.00	0.00
15,900.00	89.90	0.21	7,225.87	8,185.88	437.73	8,187.43	0.00	0.00	0.00	0.00
16,000.00	89.90	0.21	7,226.04	8,285.88	438.10	8,287.43	0.00	0.00	0.00	0.00
16,100.00	89.90	0.21	7,226.21	8,385.88	438.48	8,387.43	0.00	0.00	0.00	0.00
16,200.00	89.90	0.21	7,226.38	8,485.88	438.85	8,487.43	0.00	0.00	0.00	0.00
16,300.00	89.90	0.21	7,226.54	8,585.87	439.22	8,587.43	0.00	0.00	0.00	0.00
16,400.00	89.90	0.21	7,226.71	8,685.87	439.59	8,687.43	0.00	0.00	0.00	0.00
16,500.00	89.90	0.21	7,226.88	8,785.87	439.97	8,787.43	0.00	0.00	0.00	0.00
16,600.00	89.90	0.21	7,227.04	8,885.87	440.34	8,887.43	0.00	0.00	0.00	0.00
16,700.00	89.90	0.21	7,227.21	8,985.87	440.71	8,987.43	0.00	0.00	0.00	0.00
16,800.00	89.90	0.21	7,227.38	9,085.87	441.09	9,087.43	0.00	0.00	0.00	0.00
16,900.00	89.90	0.21	7,227.55	9,185.87	441.46	9,187.43	0.00	0.00	0.00	0.00
17,000.00	89.90	0.21	7,227.71	9,285.87	441.83	9,287.43	0.00	0.00	0.00	0.00
17,100.00	89.90	0.21	7,227.88	9,385.87	442.20	9,387.43	0.00	0.00	0.00	0.00
17,171.98	89.90	0.21	7,228.00	9,457.85	442.47	9,459.40	0.00	0.00	0.00	0.00

Total Depth (Toe) - Kerr 28N-12HZ_BHL

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,200.00	1,200.00	0.00	0.00	Begin Nudge @ 1200.00ft
1,626.56	1,624.99	-28.06	14.74	End Nudge @ 1626.56ft
6,522.38	6,466.64	-671.06	352.43	Top of 4.5" Liner @ 6522.38ft
6,622.38	6,565.53	-684.20	359.33	KOP @ 6622.38ft
7,000.00	6,928.21	-611.32	385.06	DLS = 10/100'
7,596.74	7,212.00	-117.31	406.77	End Build @ 7596.74ft
17,171.98	7,228.00	9,457.85	442.47	TD Well @ 17171.98ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
User	No Target (Freehand)	0.21	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	7,596.74	Plan A0 Permit	MWD
7,596.74	17,171.98	Plan A0 Permit	MWD

Plan Report for KERR 28N-12HZ - Plan A0 Permit**Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
995.00	995.00	9 5/8"	9-5/8	13-1/2
7,596.74	7,212.00	7"	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
943.00	943.00	Fox Hills Base			
3,961.41	3,934.00	Parkman			
4,383.07	4,351.00	Sussex			
7,197.26	7,078.00	Sharon Springs			
7,319.63	7,146.00	Niobrara A			
7,405.07	7,180.00	Niobrara B			
7,596.74	7,212.00	Landing Target (Heel)			
17,171.98	7,228.00	Total Depth (Toe)			

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Kerr 28N-12HZ_BHL	7,228.00	9,457.85	442.47	Point
Kerr 28N-12HZ_SHL	0.00	0.00	0.00	Point
Kerr_SEC	0.00	2,699.57	599.35	Polygon
Kerr 28N-12HZ_LD	0.00	2,699.57	599.35	Polygon
Kerr 28N-12HZ_CP	7,212.00	-117.31	406.77	Point

North Reference Sheet for Sec. 13-T2N-67W - KERR 28N-12HZ - Plan A0

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB = 25' @ 4908.00ft (Drilling Rig). Northing and Easting are relative to KERR 28N-12HZ

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: 0.99995897

Grid Coordinates of Well: 1,291,735.13 ft N, 3,184,163.42 ft E

Geographical Coordinates of Well: 40° 07' 56.38" N, 104° 50' 28.86" W

Grid Convergence at Surface is: 0.43°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,171.98ft
the Bottom Hole Displacement is 9,468.19ft in the Direction of 2.68° (True).

Magnetic Convergence at surface is: -8.20° (7 August 2013, , BGGM2013)

