

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 13-T2N-67W

KERR 13N-25HZ

Plan A0

Plan: Plan A0 Permit

## Sperry Drilling Services

## Proposal Report

08 August, 2013

Well Coordinates: 1,291,306.34 N, 3,182,683.77 E (40° 07' 52.26" N, 104° 50' 47.95" W)

Ground Level: 4,891.00 ft

Local Coordinate Origin:

Centered on Well KERR 13N-25HZ

Viewing Datum:

RKB = 25' @ 4916.00ft (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 13N-25HZ  
Wellbore: Plan A0  
Design: Plan A0 Permit

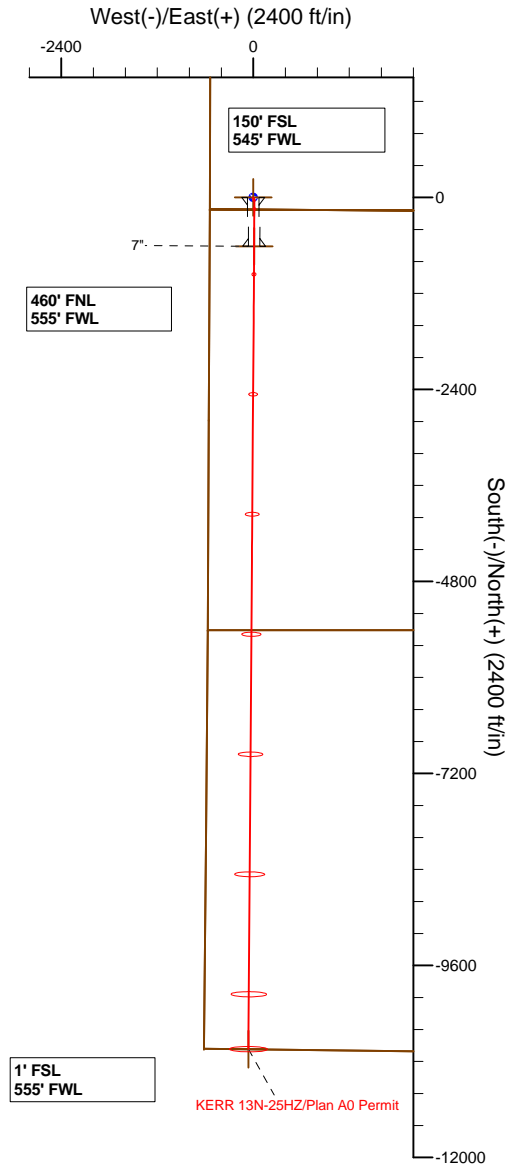
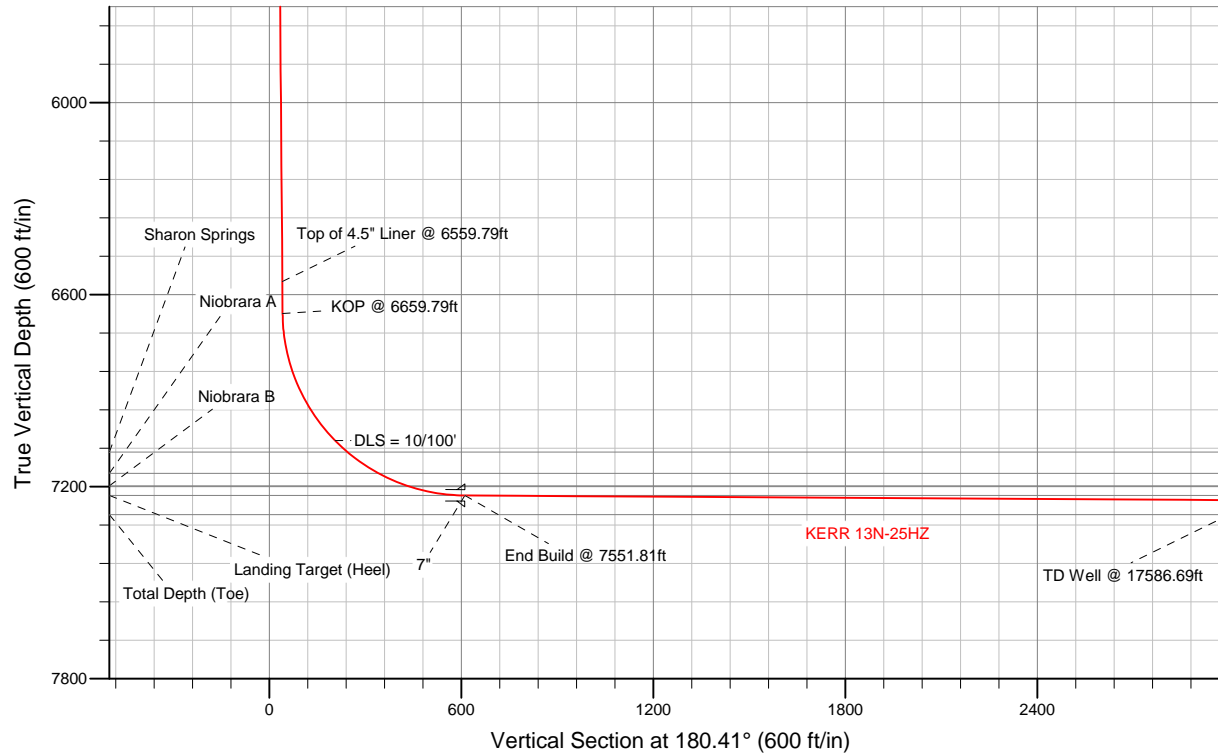


#### SECTION DETAILS

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	1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	0.00	
3	1423.92	0.48	162.53	1423.92	-0.10	0.03	2.00	162.53	0.10	
4	6659.79	0.48	162.53	6659.61	-41.79	13.15	0.00	0.00	41.69	
5	7551.81	89.66	180.41	7228.00	-611.30	10.56	10.00	17.88	611.21	KERR 13N-25HZ_CP
6	17586.69	89.66	180.41	7288.00	-10645.74	-60.70	0.00	0.00	10645.90	KERR 13N-25HZ_BHL

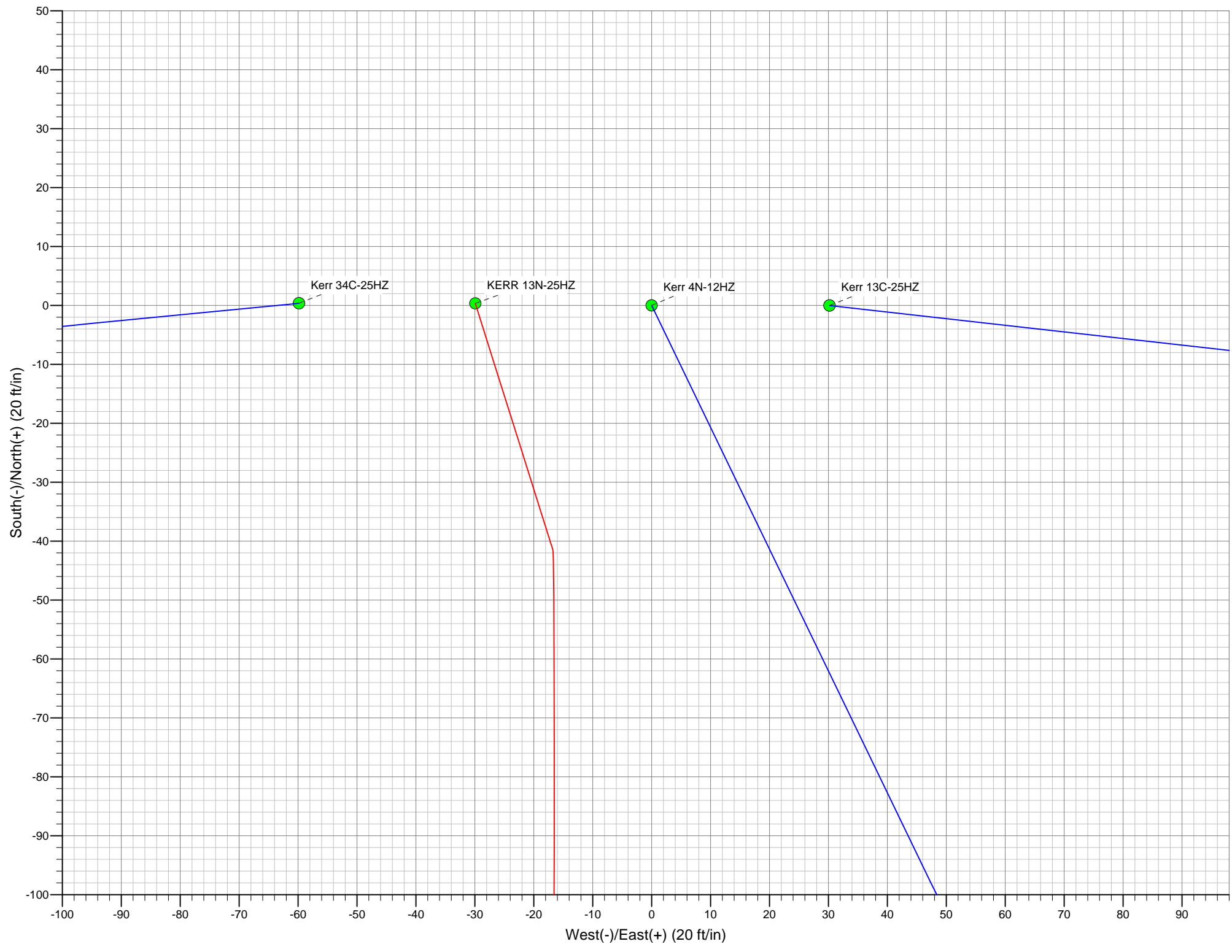
#### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
KERR 13N-25HZ_SHL	0.00	0.00	0.00	40.131182	-104.846653	Point
Kerr_SEC	8.00	3117.50	2082.02	40.139739	-104.839206	Polygon
KERR 13N-25HZ_CP	7228.00	-611.30	10.56	40.129504	-104.846615	Point
KERR 13N-25HZ_BHL	7288.00	-10645.74	-60.70	40.101959	-104.846870	Point



WELL DETAILS: KERR 13N-25HZ		
Ground Level: 4891.00 RKB = 25' @ 4916.00ft (Drilling Rig)		
Plan: Plan A0 Permit (KERR 13N-25HZ/Plan A0)		
Created By: Clint Eshelman Date: 08/08/2013		

TVD	MD	
6559.61	6559.79	Top of 4.5" Liner @ 6559.79ft
6659.61	6659.79	KOP @ 6659.79ft



**Plan Report for KERR 13N-25HZ - 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
<b>KERR 13N-25HZ_SHL</b>										
8.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Kerr_SEC</b>										
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
381.00	0.00	0.00	381.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Fox Hills Base</b>										
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
<b>9 5/8"</b>										
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
<b>Begin Nudge @ 1400.00ft</b>										
1,423.92	0.48	162.53	1,423.92	-0.10	0.03	0.10	2.00	2.00	0.00	162.53
<b>End Nudge @ 1423.92ft</b>										
1,500.00	0.48	162.53	1,500.00	-0.70	0.22	0.70	0.00	0.00	0.00	0.00
1,600.00	0.48	162.53	1,599.99	-1.50	0.47	1.49	0.00	0.00	0.00	0.00
1,700.00	0.48	162.53	1,699.99	-2.29	0.72	2.29	0.00	0.00	0.00	0.00
1,800.00	0.48	162.53	1,799.99	-3.09	0.97	3.08	0.00	0.00	0.00	0.00
1,900.00	0.48	162.53	1,899.98	-3.89	1.22	3.88	0.00	0.00	0.00	0.00
2,000.00	0.48	162.53	1,999.98	-4.68	1.47	4.67	0.00	0.00	0.00	0.00
2,100.00	0.48	162.53	2,099.98	-5.48	1.72	5.47	0.00	0.00	0.00	0.00
2,200.00	0.48	162.53	2,199.97	-6.28	1.98	6.26	0.00	0.00	0.00	0.00
2,300.00	0.48	162.53	2,299.97	-7.07	2.23	7.06	0.00	0.00	0.00	0.00
2,400.00	0.48	162.53	2,399.97	-7.87	2.48	7.85	0.00	0.00	0.00	0.00
2,500.00	0.48	162.53	2,499.96	-8.66	2.73	8.64	0.00	0.00	0.00	0.00
2,600.00	0.48	162.53	2,599.96	-9.46	2.98	9.44	0.00	0.00	0.00	0.00
2,700.00	0.48	162.53	2,699.96	-10.26	3.23	10.23	0.00	0.00	0.00	0.00
2,800.00	0.48	162.53	2,799.95	-11.05	3.48	11.03	0.00	0.00	0.00	0.00
2,900.00	0.48	162.53	2,899.95	-11.85	3.73	11.82	0.00	0.00	0.00	0.00
3,000.00	0.48	162.53	2,999.94	-12.65	3.98	12.62	0.00	0.00	0.00	0.00
3,100.00	0.48	162.53	3,099.94	-13.44	4.23	13.41	0.00	0.00	0.00	0.00
3,200.00	0.48	162.53	3,199.94	-14.24	4.48	14.21	0.00	0.00	0.00	0.00
3,300.00	0.48	162.53	3,299.93	-15.03	4.73	15.00	0.00	0.00	0.00	0.00
3,400.00	0.48	162.53	3,399.93	-15.83	4.98	15.80	0.00	0.00	0.00	0.00
3,500.00	0.48	162.53	3,499.93	-16.63	5.23	16.59	0.00	0.00	0.00	0.00
3,600.00	0.48	162.53	3,599.92	-17.42	5.48	17.38	0.00	0.00	0.00	0.00
3,700.00	0.48	162.53	3,699.92	-18.22	5.73	18.18	0.00	0.00	0.00	0.00
3,800.00	0.48	162.53	3,799.92	-19.02	5.99	18.97	0.00	0.00	0.00	0.00
3,900.00	0.48	162.53	3,899.91	-19.81	6.24	19.77	0.00	0.00	0.00	0.00
4,000.00	0.48	162.53	3,999.91	-20.61	6.49	20.56	0.00	0.00	0.00	0.00
4,100.00	0.48	162.53	4,099.91	-21.41	6.74	21.36	0.00	0.00	0.00	0.00
4,200.00	0.48	162.53	4,199.90	-22.20	6.99	22.15	0.00	0.00	0.00	0.00
4,300.00	0.48	162.53	4,299.90	-23.00	7.24	22.95	0.00	0.00	0.00	0.00
4,400.00	0.48	162.53	4,399.90	-23.79	7.49	23.74	0.00	0.00	0.00	0.00
4,400.10	0.48	162.53	4,400.00	-23.80	7.49	23.74	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,500.00	0.48	162.53	4,499.89	-24.59	7.74	24.53	0.00	0.00	0.00	0.00

**Plan Report for KERR 13N-25HZ - 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 (°)
4,600.00	0.48	162.53	4,599.89	-25.39	7.99	25.33	0.00	0.00	0.00	0.00
4,700.00	0.48	162.53	4,699.89	-26.18	8.24	26.12	0.00	0.00	0.00	0.00
4,800.00	0.48	162.53	4,799.88	-26.98	8.49	26.92	0.00	0.00	0.00	0.00
4,900.00	0.48	162.53	4,899.88	-27.78	8.74	27.71	0.00	0.00	0.00	0.00
5,000.00	0.48	162.53	4,999.88	-28.57	8.99	28.51	0.00	0.00	0.00	0.00
5,100.00	0.48	162.53	5,099.87	-29.37	9.24	29.30	0.00	0.00	0.00	0.00
5,200.00	0.48	162.53	5,199.87	-30.17	9.49	30.10	0.00	0.00	0.00	0.00
5,300.00	0.48	162.53	5,299.86	-30.96	9.75	30.89	0.00	0.00	0.00	0.00
5,400.00	0.48	162.53	5,399.86	-31.76	10.00	31.69	0.00	0.00	0.00	0.00
5,500.00	0.48	162.53	5,499.86	-32.55	10.25	32.48	0.00	0.00	0.00	0.00
5,600.00	0.48	162.53	5,599.85	-33.35	10.50	33.27	0.00	0.00	0.00	0.00
5,700.00	0.48	162.53	5,699.85	-34.15	10.75	34.07	0.00	0.00	0.00	0.00
5,800.00	0.48	162.53	5,799.85	-34.94	11.00	34.86	0.00	0.00	0.00	0.00
5,900.00	0.48	162.53	5,899.84	-35.74	11.25	35.66	0.00	0.00	0.00	0.00
6,000.00	0.48	162.53	5,999.84	-36.54	11.50	36.45	0.00	0.00	0.00	0.00
6,100.00	0.48	162.53	6,099.84	-37.33	11.75	37.25	0.00	0.00	0.00	0.00
6,200.00	0.48	162.53	6,199.83	-38.13	12.00	38.04	0.00	0.00	0.00	0.00
6,300.00	0.48	162.53	6,299.83	-38.92	12.25	38.84	0.00	0.00	0.00	0.00
6,400.00	0.48	162.53	6,399.83	-39.72	12.50	39.63	0.00	0.00	0.00	0.00
6,500.00	0.48	162.53	6,499.82	-40.52	12.75	40.43	0.00	0.00	0.00	0.00
6,559.79	0.48	162.53	6,559.61	-40.99	12.90	40.90	0.00	0.00	0.00	0.00
<b>Top of 4.5" Liner @ 6559.79ft</b>										
6,600.00	0.48	162.53	6,599.82	-41.31	13.00	41.22	0.00	0.00	0.00	0.00
6,659.79	0.48	162.53	6,659.61	-41.79	13.15	41.69	0.00	0.00	0.00	0.00
<b>KOP @ 6659.79ft</b>										
6,700.00	4.48	178.53	6,699.77	-43.52	13.24	43.42	10.00	9.95	39.80	17.88
6,800.00	14.48	179.84	6,798.28	-59.96	13.38	59.87	10.00	10.00	1.31	1.88
6,900.00	24.48	180.09	6,892.44	-93.26	13.38	93.17	10.00	10.00	0.25	0.59
7,000.00	34.48	180.19	6,979.38	-142.41	13.26	142.31	10.00	10.00	0.11	0.35
7,100.00	44.48	180.26	7,056.48	-205.90	13.00	205.81	10.00	10.00	0.06	0.26
<b>DLS = 10/100'</b>										
7,152.19	49.70	180.28	7,092.00	-244.11	12.82	244.02	10.00	10.00	0.05	0.21
<b>Sharon Springs</b>										
7,200.00	54.48	180.30	7,121.37	-281.82	12.63	281.72	10.00	10.00	0.04	0.19
7,271.12	61.59	180.33	7,159.00	-342.12	12.30	342.02	10.00	10.00	0.04	0.18
<b>Niobrara A</b>										
7,300.00	64.48	180.34	7,172.09	-367.85	12.15	367.76	10.00	10.00	0.03	0.17
7,368.97	71.37	180.36	7,198.00	-431.73	11.76	431.64	10.00	10.00	0.03	0.16
<b>Niobrara B</b>										
7,400.00	74.48	180.37	7,207.11	-461.38	11.57	461.29	10.00	10.00	0.03	0.15
7,500.00	84.48	180.39	7,225.35	-559.58	10.92	559.48	10.00	10.00	0.03	0.15
7,551.81	89.66	180.41	7,228.00	-611.30	10.56	611.21	10.00	10.00	0.03	0.15
<b>End Build @ 7551.81ft - Landing Target (Heel) - 7" - KERR 13N-25HZ_CP</b>										
7,600.00	89.66	180.41	7,228.29	-659.49	10.22	659.40	0.00	0.00	0.00	0.15
7,700.00	89.66	180.41	7,228.89	-759.48	9.50	759.39	0.00	0.00	0.00	0.00
7,800.00	89.66	180.41	7,229.48	-859.48	8.79	859.39	0.00	0.00	0.00	0.00
7,900.00	89.66	180.41	7,230.08	-959.47	8.08	959.39	0.00	0.00	0.00	0.00
8,000.00	89.66	180.41	7,230.68	-1,059.47	7.37	1,059.39	0.00	0.00	0.00	0.00
8,100.00	89.66	180.41	7,231.28	-1,159.46	6.66	1,159.39	0.00	0.00	0.00	0.00
8,200.00	89.66	180.41	7,231.88	-1,259.46	5.95	1,259.39	0.00	0.00	0.00	0.00
8,300.00	89.66	180.41	7,232.47	-1,359.46	5.24	1,359.38	0.00	0.00	0.00	0.00
8,400.00	89.66	180.41	7,233.07	-1,459.45	4.53	1,459.38	0.00	0.00	0.00	0.00
8,500.00	89.66	180.41	7,233.67	-1,559.45	3.82	1,559.38	0.00	0.00	0.00	0.00
8,600.00	89.66	180.41	7,234.27	-1,659.44	3.11	1,659.38	0.00	0.00	0.00	0.00
8,700.00	89.66	180.41	7,234.87	-1,759.44	2.40	1,759.38	0.00	0.00	0.00	0.00
8,800.00	89.66	180.41	7,235.46	-1,859.43	1.69	1,859.37	0.00	0.00	0.00	0.00
8,900.00	89.66	180.41	7,236.06	-1,959.43	0.98	1,959.37	0.00	0.00	0.00	0.00
9,000.00	89.66	180.41	7,236.66	-2,059.43	0.27	2,059.37	0.00	0.00	0.00	0.00
9,100.00	89.66	180.41	7,237.26	-2,159.42	-0.44	2,159.37	0.00	0.00	0.00	0.00

**Plan Report for KERR 13N-25HZ - 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 (°)
9,200.00	89.66	180.41	7,237.85	-2,259.42	-1.15	2,259.37	0.00	0.00	0.00	0.00
9,300.00	89.66	180.41	7,238.45	-2,359.41	-1.86	2,359.37	0.00	0.00	0.00	0.00
9,400.00	89.66	180.41	7,239.05	-2,459.41	-2.57	2,459.36	0.00	0.00	0.00	0.00
9,500.00	89.66	180.41	7,239.65	-2,559.40	-3.28	2,559.36	0.00	0.00	0.00	0.00
9,600.00	89.66	180.41	7,240.25	-2,659.40	-3.99	2,659.36	0.00	0.00	0.00	0.00
9,700.00	89.66	180.41	7,240.84	-2,759.40	-4.70	2,759.36	0.00	0.00	0.00	0.00
9,800.00	89.66	180.41	7,241.44	-2,859.39	-5.41	2,859.36	0.00	0.00	0.00	0.00
9,900.00	89.66	180.41	7,242.04	-2,959.39	-6.12	2,959.36	0.00	0.00	0.00	0.00
10,000.00	89.66	180.41	7,242.64	-3,059.38	-6.83	3,059.35	0.00	0.00	0.00	0.00
10,100.00	89.66	180.41	7,243.24	-3,159.38	-7.54	3,159.35	0.00	0.00	0.00	0.00
10,200.00	89.66	180.41	7,243.83	-3,259.37	-8.25	3,259.35	0.00	0.00	0.00	0.00
10,300.00	89.66	180.41	7,244.43	-3,359.37	-8.96	3,359.35	0.00	0.00	0.00	0.00
10,400.00	89.66	180.41	7,245.03	-3,459.37	-9.67	3,459.35	0.00	0.00	0.00	0.00
10,500.00	89.66	180.41	7,245.63	-3,559.36	-10.38	3,559.34	0.00	0.00	0.00	0.00
10,600.00	89.66	180.41	7,246.23	-3,659.36	-11.09	3,659.34	0.00	0.00	0.00	0.00
10,700.00	89.66	180.41	7,246.82	-3,759.35	-11.80	3,759.34	0.00	0.00	0.00	0.00
10,800.00	89.66	180.41	7,247.42	-3,859.35	-12.51	3,859.34	0.00	0.00	0.00	0.00
10,900.00	89.66	180.41	7,248.02	-3,959.34	-13.22	3,959.34	0.00	0.00	0.00	0.00
11,000.00	89.66	180.41	7,248.62	-4,059.34	-13.93	4,059.34	0.00	0.00	0.00	0.00
11,100.00	89.66	180.41	7,249.22	-4,159.34	-14.64	4,159.33	0.00	0.00	0.00	0.00
11,200.00	89.66	180.41	7,249.81	-4,259.33	-15.35	4,259.33	0.00	0.00	0.00	0.00
11,300.00	89.66	180.41	7,250.41	-4,359.33	-16.06	4,359.33	0.00	0.00	0.00	0.00
11,400.00	89.66	180.41	7,251.01	-4,459.32	-16.77	4,459.33	0.00	0.00	0.00	0.00
11,500.00	89.66	180.41	7,251.61	-4,559.32	-17.48	4,559.33	0.00	0.00	0.00	0.00
11,600.00	89.66	180.41	7,252.20	-4,659.31	-18.19	4,659.32	0.00	0.00	0.00	0.00
11,700.00	89.66	180.41	7,252.80	-4,759.31	-18.90	4,759.32	0.00	0.00	0.00	0.00
11,800.00	89.66	180.41	7,253.40	-4,859.31	-19.61	4,859.32	0.00	0.00	0.00	0.00
11,900.00	89.66	180.41	7,254.00	-4,959.30	-20.32	4,959.32	0.00	0.00	0.00	0.00
12,000.00	89.66	180.41	7,254.60	-5,059.30	-21.03	5,059.32	0.00	0.00	0.00	0.00
12,100.00	89.66	180.41	7,255.19	-5,159.29	-21.74	5,159.32	0.00	0.00	0.00	0.00
12,200.00	89.66	180.41	7,255.79	-5,259.29	-22.45	5,259.31	0.00	0.00	0.00	0.00
12,300.00	89.66	180.41	7,256.39	-5,359.28	-23.16	5,359.31	0.00	0.00	0.00	0.00
12,400.00	89.66	180.41	7,256.99	-5,459.28	-23.87	5,459.31	0.00	0.00	0.00	0.00
12,500.00	89.66	180.41	7,257.59	-5,559.28	-24.58	5,559.31	0.00	0.00	0.00	0.00
12,600.00	89.66	180.41	7,258.18	-5,659.27	-25.29	5,659.31	0.00	0.00	0.00	0.00
12,700.00	89.66	180.41	7,258.78	-5,759.27	-26.00	5,759.31	0.00	0.00	0.00	0.00
12,800.00	89.66	180.41	7,259.38	-5,859.26	-26.71	5,859.30	0.00	0.00	0.00	0.00
12,900.00	89.66	180.41	7,259.98	-5,959.26	-27.42	5,959.30	0.00	0.00	0.00	0.00
13,000.00	89.66	180.41	7,260.58	-6,059.25	-28.13	6,059.30	0.00	0.00	0.00	0.00
13,100.00	89.66	180.41	7,261.17	-6,159.25	-28.84	6,159.30	0.00	0.00	0.00	0.00
13,200.00	89.66	180.41	7,261.77	-6,259.25	-29.55	6,259.30	0.00	0.00	0.00	0.00
13,300.00	89.66	180.41	7,262.37	-6,359.24	-30.26	6,359.29	0.00	0.00	0.00	0.00
13,400.00	89.66	180.41	7,262.97	-6,459.24	-30.97	6,459.29	0.00	0.00	0.00	0.00
13,500.00	89.66	180.41	7,263.57	-6,559.23	-31.68	6,559.29	0.00	0.00	0.00	0.00
13,600.00	89.66	180.41	7,264.16	-6,659.23	-32.39	6,659.29	0.00	0.00	0.00	0.00
13,700.00	89.66	180.41	7,264.76	-6,759.22	-33.10	6,759.29	0.00	0.00	0.00	0.00
13,800.00	89.66	180.41	7,265.36	-6,859.22	-33.81	6,859.29	0.00	0.00	0.00	0.00
13,900.00	89.66	180.41	7,265.96	-6,959.21	-34.52	6,959.28	0.00	0.00	0.00	0.00
14,000.00	89.66	180.41	7,266.55	-7,059.21	-35.23	7,059.28	0.00	0.00	0.00	0.00
14,100.00	89.66	180.41	7,267.15	-7,159.21	-35.94	7,159.28	0.00	0.00	0.00	0.00
14,200.00	89.66	180.41	7,267.75	-7,259.20	-36.65	7,259.28	0.00	0.00	0.00	0.00
14,300.00	89.66	180.41	7,268.35	-7,359.20	-37.36	7,359.28	0.00	0.00	0.00	0.00
14,400.00	89.66	180.41	7,268.95	-7,459.19	-38.07	7,459.27	0.00	0.00	0.00	0.00
14,500.00	89.66	180.41	7,269.54	-7,559.19	-38.78	7,559.27	0.00	0.00	0.00	0.00
14,600.00	89.66	180.41	7,270.14	-7,659.18	-39.50	7,659.27	0.00	0.00	0.00	0.00
14,700.00	89.66	180.41	7,270.74	-7,759.18	-40.21	7,759.27	0.00	0.00	0.00	0.00
14,800.00	89.66	180.41	7,271.34	-7,859.18	-40.92	7,859.27	0.00	0.00	0.00	0.00
14,900.00	89.66	180.41	7,271.94	-7,959.17	-41.63	7,959.27	0.00	0.00	0.00	0.00
15,000.00	89.66	180.41	7,272.53	-8,059.17	-42.34	8,059.26	0.00	0.00	0.00	0.00
15,100.00	89.66	180.41	7,273.13	-8,159.16	-43.05	8,159.26	0.00	0.00	0.00	0.00

**Plan Report for KERR 13N-25HZ - 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 (°)
15,200.00	89.66	180.41	7,273.73	-8,259.16	-43.76	8,259.26	0.00	0.00	0.00	0.00
15,300.00	89.66	180.41	7,274.33	-8,359.15	-44.47	8,359.26	0.00	0.00	0.00	0.00
15,400.00	89.66	180.41	7,274.93	-8,459.15	-45.18	8,459.26	0.00	0.00	0.00	0.00
15,500.00	89.66	180.41	7,275.52	-8,559.15	-45.89	8,559.26	0.00	0.00	0.00	0.00
15,600.00	89.66	180.41	7,276.12	-8,659.14	-46.60	8,659.25	0.00	0.00	0.00	0.00
15,700.00	89.66	180.41	7,276.72	-8,759.14	-47.31	8,759.25	0.00	0.00	0.00	0.00
15,800.00	89.66	180.41	7,277.32	-8,859.13	-48.02	8,859.25	0.00	0.00	0.00	0.00
15,900.00	89.66	180.41	7,277.92	-8,959.13	-48.73	8,959.25	0.00	0.00	0.00	0.00
16,000.00	89.66	180.41	7,278.51	-9,059.12	-49.44	9,059.25	0.00	0.00	0.00	0.00
16,100.00	89.66	180.41	7,279.11	-9,159.12	-50.15	9,159.24	0.00	0.00	0.00	0.00
16,200.00	89.66	180.41	7,279.71	-9,259.12	-50.86	9,259.24	0.00	0.00	0.00	0.00
16,300.00	89.66	180.41	7,280.31	-9,359.11	-51.57	9,359.24	0.00	0.00	0.00	0.00
16,400.00	89.66	180.41	7,280.90	-9,459.11	-52.28	9,459.24	0.00	0.00	0.00	0.00
16,500.00	89.66	180.41	7,281.50	-9,559.10	-52.99	9,559.24	0.00	0.00	0.00	0.00
16,600.00	89.66	180.41	7,282.10	-9,659.10	-53.70	9,659.24	0.00	0.00	0.00	0.00
16,700.00	89.66	180.41	7,282.70	-9,759.09	-54.41	9,759.23	0.00	0.00	0.00	0.00
16,800.00	89.66	180.41	7,283.30	-9,859.09	-55.12	9,859.23	0.00	0.00	0.00	0.00
16,900.00	89.66	180.41	7,283.89	-9,959.09	-55.83	9,959.23	0.00	0.00	0.00	0.00
17,000.00	89.66	180.41	7,284.49	-10,059.08	-56.54	10,059.23	0.00	0.00	0.00	0.00
17,100.00	89.66	180.41	7,285.09	-10,159.08	-57.25	10,159.23	0.00	0.00	0.00	0.00
17,200.00	89.66	180.41	7,285.69	-10,259.07	-57.96	10,259.22	0.00	0.00	0.00	0.00
17,300.00	89.66	180.41	7,286.29	-10,359.07	-58.67	10,359.22	0.00	0.00	0.00	0.00
17,400.00	89.66	180.41	7,286.88	-10,459.06	-59.38	10,459.22	0.00	0.00	0.00	0.00
17,500.00	89.66	180.41	7,287.48	-10,559.06	-60.09	10,559.22	0.00	0.00	0.00	0.00
17,586.69	89.66	180.41	7,288.00	-10,645.74	-60.70	10,645.90	0.00	0.00	0.00	0.00
Total Depth (Toe) - KERR 13N-25HZ_BHL										

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
1,400.00	1,400.00	0.00	0.00	Begin Nudge @ 1400.00ft
1,423.92	1,423.92	-0.10	0.03	End Nudge @ 1423.92ft
6,559.79	6,559.61	-40.99	12.90	Top of 4.5" Liner @ 6559.79ft
6,659.79	6,659.61	-41.79	13.15	KOP @ 6659.79ft
7,100.00	7,056.48	-205.90	13.00	DLS = 10/100'
7,551.81	7,228.00	-611.30	10.56	End Build @ 7551.81ft
17,586.69	7,288.00	-10,645.75	-60.70	TD Well @ 17586.69ft

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	+E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	180.41	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	7,551.81	Plan A0 Permit	MWD
7,551.81	17,586.69	Plan A0 Permit	MWD

**Plan Report for KERR 13N-25HZ - Plan A0 Permit****Casing Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,000.00	1,000.00	9 5/8"	9-5/8	13-1/2
7,551.81	7,228.00	7"	7	8-3/4

**Formation Details**

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
381.00	381.00	Fox Hills Base			
4,400.10	4,400.00	Sussex			
7,152.19	7,092.00	Sharon Springs			
7,271.12	7,159.00	Niobrara A			
7,368.97	7,198.00	Niobrara B			
7,551.81	7,228.00	Landing Target (Heel)			
17,586.69	7,288.00	Total Depth (Toe)			

***Targets associated with this wellbore***

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
KERR 13N-25HZ_BHL	7,288.00	-10,645.74	-60.70	Point
KERR 13N-25HZ_SHL	0.00	0.00	0.00	Point
Kerr_SEC	8.00	3,117.50	2,082.02	Polygon
KERR 13N-25HZ_CP	7,228.00	-611.30	10.56	Point



## North Reference Sheet for Sec. 13-T2N-67W - KERR 13N-25HZ - 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' @ 4916.00ft (Drilling Rig). Northing and Easting are relative to KERR 13N-25HZ

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: 0.99995901

Grid Coordinates of Well: 1,291,306.34 ft N, 3,182,683.77 ft E

Geographical Coordinates of Well: 40° 07' 52.26" N, 104° 50' 47.95" W

Grid Convergence at Surface is: 0.42°

Based upon Minimum Curvature type calculations, at a Measured Depth of 17,586.69ft  
the Bottom Hole Displacement is 10,645.91ft in the Direction of 180.33° (True).

Magnetic Convergence at surface is: -8.20° ( 8 August 2013, , BGGM2013)

