

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 22-T3N-R66W

Roberts 13C-22HZ

Plan A

Plan: Rev A0 Permit

Sperry Drilling Services

Proposal Report

16 October, 2013

Well Coordinates: 1,322,477.51 N, 3,203,497.29 E (40° 12' 58.69" N, 104° 46' 16.69" W)

Ground Level: 4,885.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well Roberts 13C-22HZ

RKB = 17' @ 4902.00usft (Drilling Rig)

N

True

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

Project: Weld County, CO (NAD 83)
Site: Sec. 22-T3N-R66W
Well: Roberts 13C-22HZ
Wellbore: Plan A
Design: Rev A0 Permit

Anadarko Petroleum Corp.

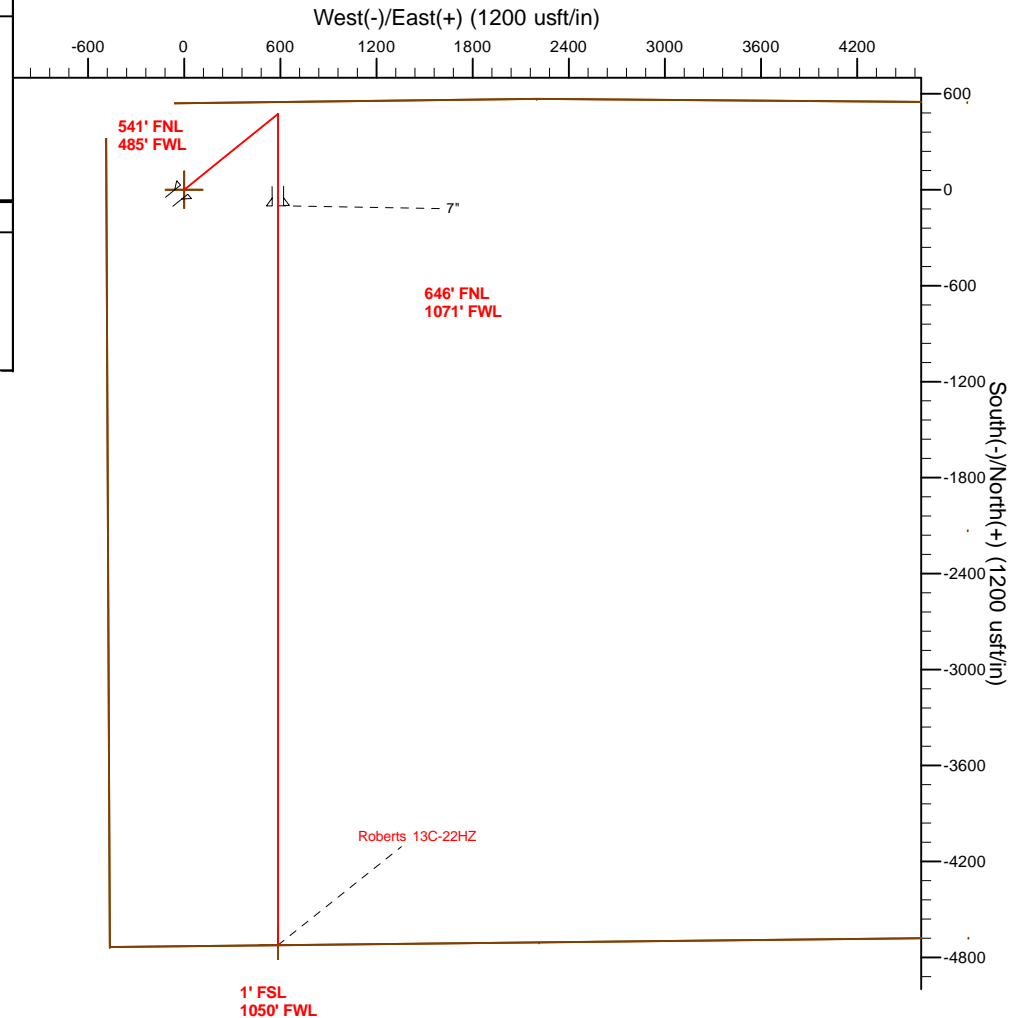
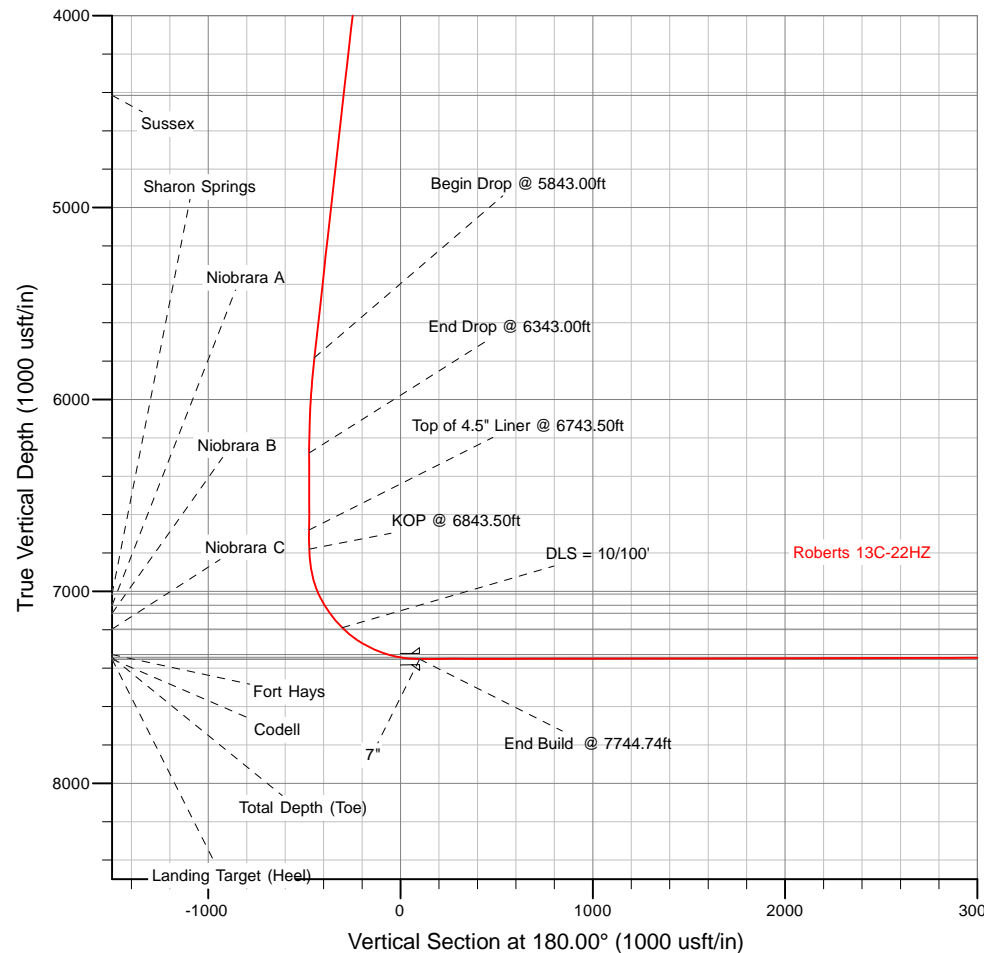
HALLIBURTON
Sperry Drilling

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	
3	2000.00	10.00	51.00	1997.47	27.39	33.82	2.00	51.00	-27.39	
4	5843.00	10.00	51.00	5782.08	447.35	552.44	0.00	0.00	-447.35	
5	6343.00	0.00	0.00	6279.55	474.74	586.26	2.00	180.00	-474.74	
6	6843.50	0.00	0.00	6780.05	474.74	586.26	0.00	0.00	-474.74	
7	7744.74	90.12	180.00	7353.00	-99.45	586.30	10.00	180.00	99.45	
8	12368.42	90.12	180.00	7343.00	-4723.13	586.59	0.00	0.00	4723.13	Roberts 13C-22HZ_BHL

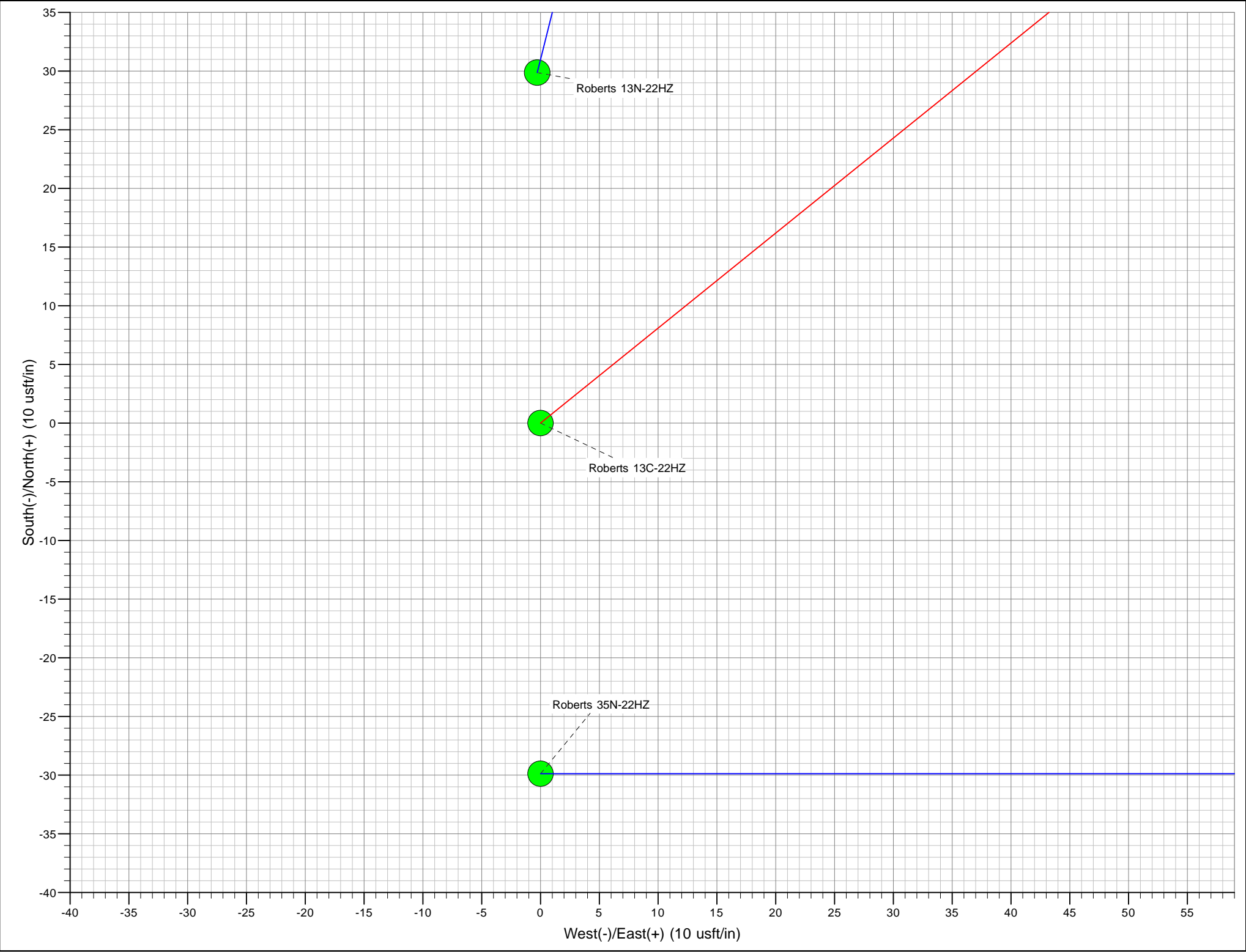
WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
Roberts 13C-22HZ_SEC	0.00	0.00	0.00	40.216303	-104.771303
Roberts 13C-22HZ_SHL	0.00	0.00	0.00	40.216303	-104.771303
Roberts 13C-22HZ_BHL	7343.00	-4723.13	586.59	40.203338	-104.769203



WELL DETAILS: Roberts 13C-22HZ		
Ground Level: 4885.00 RKB = 17" @ 4902.00usft (Drilling Rig)		
Plan: Rev A0 Permit (Roberts 13C-22HZ/Plan A)		
Created By: Clint Eshelman		Date: 10/16/2013
Reviewed: _____		Date: _____

TVD	MD	
6680.05	6743.50	Top of 4.5" Liner @ 6743.50ft
6780.05	6843.50	KOP @ 6843.50ft



Plan Report for Roberts 13C-22HZ - Rev A0 Permit

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Roberts 13C-22HZ_SEC - Roberts 13C-22HZ_SHL										
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
887.00	0.00	0.00	887.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base										
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
937.00	0.00	0.00	937.00	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
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
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 1500.00ft										
1,600.00	2.00	51.00	1,599.98	1.10	1.36	-1.10	2.00	2.00	0.00	51.00
1,700.00	4.00	51.00	1,699.84	4.39	5.42	-4.39	2.00	2.00	0.00	0.00
1,800.00	6.00	51.00	1,799.45	9.88	12.20	-9.88	2.00	2.00	0.00	0.00
1,900.00	8.00	51.00	1,898.70	17.55	21.67	-17.55	2.00	2.00	0.00	0.00
2,000.00	10.00	51.00	1,997.47	27.39	33.82	-27.39	2.00	2.00	0.00	0.00
End Nudge @ 2000.00ft										
2,100.00	10.00	51.00	2,095.95	38.32	47.32	-38.32	0.00	0.00	0.00	0.00
2,200.00	10.00	51.00	2,194.43	49.25	60.81	-49.25	0.00	0.00	0.00	0.00
2,300.00	10.00	51.00	2,292.91	60.17	74.31	-60.17	0.00	0.00	0.00	0.00
2,400.00	10.00	51.00	2,391.39	71.10	87.80	-71.10	0.00	0.00	0.00	0.00
2,500.00	10.00	51.00	2,489.87	82.03	101.30	-82.03	0.00	0.00	0.00	0.00
2,600.00	10.00	51.00	2,588.35	92.96	114.79	-92.96	0.00	0.00	0.00	0.00
2,700.00	10.00	51.00	2,686.83	103.89	128.29	-103.89	0.00	0.00	0.00	0.00
2,800.00	10.00	51.00	2,785.31	114.81	141.78	-114.81	0.00	0.00	0.00	0.00
2,900.00	10.00	51.00	2,883.79	125.74	155.28	-125.74	0.00	0.00	0.00	0.00
3,000.00	10.00	51.00	2,982.27	136.67	168.77	-136.67	0.00	0.00	0.00	0.00
3,100.00	10.00	51.00	3,080.75	147.60	182.27	-147.60	0.00	0.00	0.00	0.00
3,200.00	10.00	51.00	3,179.23	158.53	195.76	-158.53	0.00	0.00	0.00	0.00
3,300.00	10.00	51.00	3,277.72	169.45	209.26	-169.45	0.00	0.00	0.00	0.00
3,400.00	10.00	51.00	3,376.20	180.38	222.75	-180.38	0.00	0.00	0.00	0.00
3,500.00	10.00	51.00	3,474.68	191.31	236.25	-191.31	0.00	0.00	0.00	0.00
3,600.00	10.00	51.00	3,573.16	202.24	249.74	-202.24	0.00	0.00	0.00	0.00
3,700.00	10.00	51.00	3,671.64	213.17	263.24	-213.17	0.00	0.00	0.00	0.00
3,800.00	10.00	51.00	3,770.12	224.09	276.73	-224.09	0.00	0.00	0.00	0.00
3,898.38	10.00	51.00	3,867.00	234.84	290.01	-234.84	0.00	0.00	0.00	0.00
Parkman										
3,900.00	10.00	51.00	3,868.60	235.02	290.23	-235.02	0.00	0.00	0.00	0.00
4,000.00	10.00	51.00	3,967.08	245.95	303.72	-245.95	0.00	0.00	0.00	0.00
4,100.00	10.00	51.00	4,065.56	256.88	317.22	-256.88	0.00	0.00	0.00	0.00
4,200.00	10.00	51.00	4,164.04	267.81	330.71	-267.81	0.00	0.00	0.00	0.00
4,300.00	10.00	51.00	4,262.52	278.73	344.21	-278.73	0.00	0.00	0.00	0.00
4,400.00	10.00	51.00	4,361.00	289.66	357.70	-289.66	0.00	0.00	0.00	0.00
4,454.83	10.00	51.00	4,415.00	295.65	365.10	-295.65	0.00	0.00	0.00	0.00
Sussex										
4,500.00	10.00	51.00	4,459.48	300.59	371.20	-300.59	0.00	0.00	0.00	0.00

Plan Report for Roberts 13C-22HZ - Rev A0 Permit

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
4,600.00	10.00	51.00	4,557.97	311.52	384.69	-311.52	0.00	0.00	0.00	0.00
4,700.00	10.00	51.00	4,656.45	322.45	398.19	-322.45	0.00	0.00	0.00	0.00
4,800.00	10.00	51.00	4,754.93	333.37	411.68	-333.37	0.00	0.00	0.00	0.00
4,900.00	10.00	51.00	4,853.41	344.30	425.18	-344.30	0.00	0.00	0.00	0.00
5,000.00	10.00	51.00	4,951.89	355.23	438.67	-355.23	0.00	0.00	0.00	0.00
5,100.00	10.00	51.00	5,050.37	366.16	452.17	-366.16	0.00	0.00	0.00	0.00
5,200.00	10.00	51.00	5,148.85	377.09	465.66	-377.09	0.00	0.00	0.00	0.00
5,300.00	10.00	51.00	5,247.33	388.01	479.16	-388.01	0.00	0.00	0.00	0.00
5,400.00	10.00	51.00	5,345.81	398.94	492.65	-398.94	0.00	0.00	0.00	0.00
5,500.00	10.00	51.00	5,444.29	409.87	506.15	-409.87	0.00	0.00	0.00	0.00
5,600.00	10.00	51.00	5,542.77	420.80	519.64	-420.80	0.00	0.00	0.00	0.00
5,700.00	10.00	51.00	5,641.25	431.73	533.14	-431.73	0.00	0.00	0.00	0.00
5,800.00	10.00	51.00	5,739.73	442.65	546.63	-442.65	0.00	0.00	0.00	0.00
5,843.00	10.00	51.00	5,782.08	447.35	552.44	-447.35	0.00	0.00	0.00	0.00
Begin Drop @ 5843.00ft										
5,900.00	8.86	51.00	5,838.31	453.23	559.69	-453.23	2.00	-2.00	0.00	180.00
6,000.00	6.86	51.00	5,937.37	461.84	570.32	-461.84	2.00	-2.00	0.00	180.00
6,100.00	4.86	51.00	6,036.84	468.26	578.26	-468.26	2.00	-2.00	0.00	180.00
6,200.00	2.86	51.00	6,136.61	472.50	583.49	-472.50	2.00	-2.00	0.00	180.00
6,300.00	0.86	51.00	6,236.55	474.54	586.01	-474.54	2.00	-2.00	0.00	180.00
6,343.00	0.00	0.00	6,279.55	474.74	586.26	-474.74	2.00	-2.00	0.00	-180.00
End Drop @ 6343.00ft										
6,400.00	0.00	0.00	6,336.55	474.74	586.26	-474.74	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,436.55	474.74	586.26	-474.74	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,536.55	474.74	586.26	-474.74	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,636.55	474.74	586.26	-474.74	0.00	0.00	0.00	0.00
6,743.50	0.00	0.00	6,680.05	474.74	586.26	-474.74	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6743.50ft										
6,800.00	0.00	0.00	6,736.55	474.74	586.26	-474.74	0.00	0.00	0.00	0.00
6,843.50	0.00	0.00	6,780.05	474.74	586.26	-474.74	0.00	0.00	0.00	0.00
KOP @ 6843.50ft										
6,900.00	5.65	180.00	6,836.46	471.96	586.26	-471.96	10.00	10.00	0.00	180.00
7,000.00	15.65	180.00	6,934.61	453.50	586.26	-453.50	10.00	10.00	0.00	0.00
7,084.50	24.10	180.00	7,014.00	424.80	586.26	-424.80	10.00	10.00	0.00	0.00
Sharon Springs										
7,100.00	25.65	180.00	7,028.06	418.28	586.26	-418.28	10.00	10.00	0.00	0.00
7,149.84	30.63	180.00	7,072.00	394.78	586.26	-394.78	10.00	10.00	0.00	0.00
Niobrara A										
7,200.00	35.65	180.00	7,113.99	367.37	586.27	-367.37	10.00	10.00	0.00	0.00
7,200.02	35.65	180.00	7,114.00	367.36	586.27	-367.36	0.00	0.00	0.00	2.38
Niobrara B										
7,300.00	45.65	180.00	7,189.76	302.31	586.27	-302.31	10.00	10.00	0.00	0.00
DLS = 10/100'										
7,310.46	46.70	180.00	7,197.00	294.76	586.27	-294.76	10.00	10.00	0.00	0.00
Niobrara C										
7,400.00	55.65	180.00	7,253.08	225.08	586.28	-225.08	10.00	10.00	0.00	0.00
7,500.00	65.65	180.00	7,302.04	138.02	586.28	-138.02	10.00	10.00	0.00	0.00
7,577.06	73.36	180.00	7,329.00	65.89	586.29	-65.89	10.00	10.00	0.00	0.00
Fort Hays										
7,600.00	75.65	180.00	7,335.13	43.79	586.29	-43.79	10.00	10.00	0.00	0.00
7,700.00	85.65	180.00	7,351.35	-54.76	586.29	54.76	10.00	10.00	0.00	0.00
7,741.16	89.77	180.00	7,353.00	-95.88	586.30	95.88	10.00	10.00	0.00	0.00
Codell										
7,744.74	90.12	180.00	7,353.00	-99.45	586.30	99.45	10.00	10.00	0.00	0.00
End Build @ 7744.74ft - Landing Target (Heel) - 7"										
7,800.00	90.12	180.00	7,352.88	-154.71	586.30	154.71	0.00	0.00	0.00	0.00
7,900.00	90.12	180.00	7,352.67	-254.71	586.31	254.71	0.00	0.00	0.00	0.00
8,000.00	90.12	180.00	7,352.45	-354.71	586.31	354.71	0.00	0.00	0.00	0.00

Plan Report for Roberts 13C-22HZ - Rev A0 Permit

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
8,100.00	90.12	180.00	7,352.23	-454.71	586.32	454.71	0.00	0.00	0.00	0.00
8,200.00	90.12	180.00	7,352.02	-554.71	586.33	554.71	0.00	0.00	0.00	0.00
8,300.00	90.12	180.00	7,351.80	-654.71	586.33	654.71	0.00	0.00	0.00	0.00
8,400.00	90.12	180.00	7,351.59	-754.71	586.34	754.71	0.00	0.00	0.00	0.00
8,500.00	90.12	180.00	7,351.37	-854.71	586.35	854.71	0.00	0.00	0.00	0.00
8,600.00	90.12	180.00	7,351.15	-954.71	586.35	954.71	0.00	0.00	0.00	0.00
8,700.00	90.12	180.00	7,350.94	-1,054.71	586.36	1,054.71	0.00	0.00	0.00	0.00
8,800.00	90.12	180.00	7,350.72	-1,154.71	586.36	1,154.71	0.00	0.00	0.00	0.00
8,900.00	90.12	180.00	7,350.50	-1,254.71	586.37	1,254.71	0.00	0.00	0.00	0.00
9,000.00	90.12	180.00	7,350.29	-1,354.71	586.38	1,354.71	0.00	0.00	0.00	0.00
9,100.00	90.12	180.00	7,350.07	-1,454.71	586.38	1,454.71	0.00	0.00	0.00	0.00
9,200.00	90.12	180.00	7,349.85	-1,554.71	586.39	1,554.71	0.00	0.00	0.00	0.00
9,300.00	90.12	180.00	7,349.64	-1,654.71	586.40	1,654.71	0.00	0.00	0.00	0.00
9,400.00	90.12	180.00	7,349.42	-1,754.71	586.40	1,754.71	0.00	0.00	0.00	0.00
9,500.00	90.12	180.00	7,349.21	-1,854.71	586.41	1,854.71	0.00	0.00	0.00	0.00
9,600.00	90.12	180.00	7,348.99	-1,954.71	586.42	1,954.71	0.00	0.00	0.00	0.00
9,700.00	90.12	180.00	7,348.77	-2,054.71	586.42	2,054.71	0.00	0.00	0.00	0.00
9,800.00	90.12	180.00	7,348.56	-2,154.71	586.43	2,154.71	0.00	0.00	0.00	0.00
9,900.00	90.12	180.00	7,348.34	-2,254.71	586.43	2,254.71	0.00	0.00	0.00	0.00
10,000.00	90.12	180.00	7,348.12	-2,354.71	586.44	2,354.71	0.00	0.00	0.00	0.00
10,100.00	90.12	180.00	7,347.91	-2,454.71	586.45	2,454.71	0.00	0.00	0.00	0.00
10,200.00	90.12	180.00	7,347.69	-2,554.71	586.45	2,554.71	0.00	0.00	0.00	0.00
10,300.00	90.12	180.00	7,347.48	-2,654.71	586.46	2,654.71	0.00	0.00	0.00	0.00
10,400.00	90.12	180.00	7,347.26	-2,754.71	586.47	2,754.71	0.00	0.00	0.00	0.00
10,500.00	90.12	180.00	7,347.04	-2,854.71	586.47	2,854.71	0.00	0.00	0.00	0.00
10,600.00	90.12	180.00	7,346.83	-2,954.71	586.48	2,954.71	0.00	0.00	0.00	0.00
10,700.00	90.12	180.00	7,346.61	-3,054.71	586.49	3,054.71	0.00	0.00	0.00	0.00
10,800.00	90.12	180.00	7,346.39	-3,154.71	586.49	3,154.71	0.00	0.00	0.00	0.00
10,900.00	90.12	180.00	7,346.18	-3,254.71	586.50	3,254.71	0.00	0.00	0.00	0.00
11,000.00	90.12	180.00	7,345.96	-3,354.71	586.51	3,354.71	0.00	0.00	0.00	0.00
11,100.00	90.12	180.00	7,345.74	-3,454.71	586.51	3,454.71	0.00	0.00	0.00	0.00
11,200.00	90.12	180.00	7,345.53	-3,554.71	586.52	3,554.71	0.00	0.00	0.00	0.00
11,300.00	90.12	180.00	7,345.31	-3,654.71	586.52	3,654.71	0.00	0.00	0.00	0.00
11,400.00	90.12	180.00	7,345.10	-3,754.71	586.53	3,754.71	0.00	0.00	0.00	0.00
11,500.00	90.12	180.00	7,344.88	-3,854.71	586.54	3,854.71	0.00	0.00	0.00	0.00
11,600.00	90.12	180.00	7,344.66	-3,954.71	586.54	3,954.71	0.00	0.00	0.00	0.00
11,700.00	90.12	180.00	7,344.45	-4,054.70	586.55	4,054.70	0.00	0.00	0.00	0.00
11,800.00	90.12	180.00	7,344.23	-4,154.70	586.56	4,154.70	0.00	0.00	0.00	0.00
11,900.00	90.12	180.00	7,344.01	-4,254.70	586.56	4,254.70	0.00	0.00	0.00	0.00
12,000.00	90.12	180.00	7,343.80	-4,354.70	586.57	4,354.70	0.00	0.00	0.00	0.00
12,100.00	90.12	180.00	7,343.58	-4,454.70	586.58	4,454.70	0.00	0.00	0.00	0.00
12,200.00	90.12	180.00	7,343.36	-4,554.70	586.58	4,554.70	0.00	0.00	0.00	0.00
12,300.00	90.12	180.00	7,343.15	-4,654.70	586.59	4,654.70	0.00	0.00	0.00	0.00
12,368.42	90.12	180.00	7,343.00	-4,723.12	586.59	4,723.12	0.00	0.00	0.00	0.00

TD Well @ 12368.42ft - Total Depth (Toe) - Roberts 13C-22HZ_BHL

Plan Report for Roberts 13C-22HZ - Rev A0 Permit**Plan Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,500.00	1,500.00	0.00	0.00	Begin Nudge @ 1500.00ft
2,000.00	1,997.47	27.39	33.82	End Nudge @ 2000.00ft
5,843.00	5,782.08	447.35	552.44	Begin Drop @ 5843.00ft
6,343.00	6,279.55	474.74	586.26	End Drop @ 6343.00ft
6,743.50	6,680.05	474.74	586.26	Top of 4.5" Liner @ 6743.50ft
6,843.50	6,780.05	474.74	586.26	KOP @ 6843.50ft
7,300.00	7,189.76	302.31	586.27	DLS = 10/100'
7,744.74	7,353.00	-99.45	586.30	End Build @ 7744.74ft
12,368.42	7,343.00	-4,723.12	586.59	TD Well @ 12368.42ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	180.00	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,744.74	Rev A0 Permit	MWD
7,744.74	12,368.42	Rev A0 Permit	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
937.00	937.00	9 5/8"	9-5/8	13-1/2
7,744.74	7,353.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
887.00	887.00	Fox Hills Base		0.00	
3,898.38	3,867.00	Parkman		0.00	
4,454.83	4,415.00	Sussex		0.00	
7,084.50	7,014.00	Sharon Springs		0.00	
7,149.84	7,072.00	Niobrara A		0.00	
7,200.02	7,114.00	Niobrara B		0.00	
7,310.46	7,197.00	Niobrara C		0.00	
7,577.06	7,329.00	Fort Hays		0.00	
7,741.16	7,353.00	Codell		0.00	
7,744.74	7,353.00	Landing Target (Heel)		0.00	
12,368.42	7,343.00	Total Depth (Toe)		0.00	

Plan Report for Roberts 13C-22HZ - Rev A0 Permit

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Roberts 13C-22HZ_SEC	0.00	0.00	0.00	Polygon
Roberts 13C-22HZ_SHL	0.00	0.00	0.00	Point
Roberts 13C-22HZ_BHL	7,343.00	-4,723.13	586.59	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.89 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 7,744.74 usft
Net Tortosity applicable to Plans:	0.89 °/100usft	Directional Difficulty Index:	6.211

Audit Info

North Reference Sheet for Sec. 22-T3N-R66W - Roberts 13C-22HZ - Plan A

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' @ 4902.00usft (Drilling Rig). Northing and Easting are relative to Roberts 13C-22HZ
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: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995703

Grid Coordinates of Well: 1,322,477.51 usft N, 3,203,497.29 usft E
Geographical Coordinates of Well: 40° 12' 58.69" N, 104° 46' 16.69" W
Grid Convergence at Surface is: 0.47°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,368.42usft
the Bottom Hole Displacement is 4,759.41usft in the Direction of 172.92° (True).
Magnetic Convergence at surface is: -8.10° (16 October 2013, , BGGM2013)

