

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

3N-68W-22 McKinstry 8-22HZ Pad

McKinstry 7C-21HZ

Plan B

Plan: Permit Rev-2

Sperry Drilling Services Proposal Report

15 December, 2014

Well Coordinates: 14,604,756.56 N, 1,645,614.32 E (40° 12' 51.34" N, 104° 58' 52.98" W)

Ground Level: 4,984.00 usft

Local Coordinate Origin:

Centered on Well McKinstry 7C-21HZ

Viewing Datum:

RKB = 17' @ 5001.00usft (D Rig)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Version: 5000.1 Build: 70

HALLIBURTON

Project: WELD-NAD83-UTMFT13N
Site: 3N-68W-22 McKinstry 8-22HZ Pad
Well: McKinstry 7C-21HZ
Wellbore: Plan B
Design: Permit Rev-2

US ROCKIES WATTENBERG PLANNING

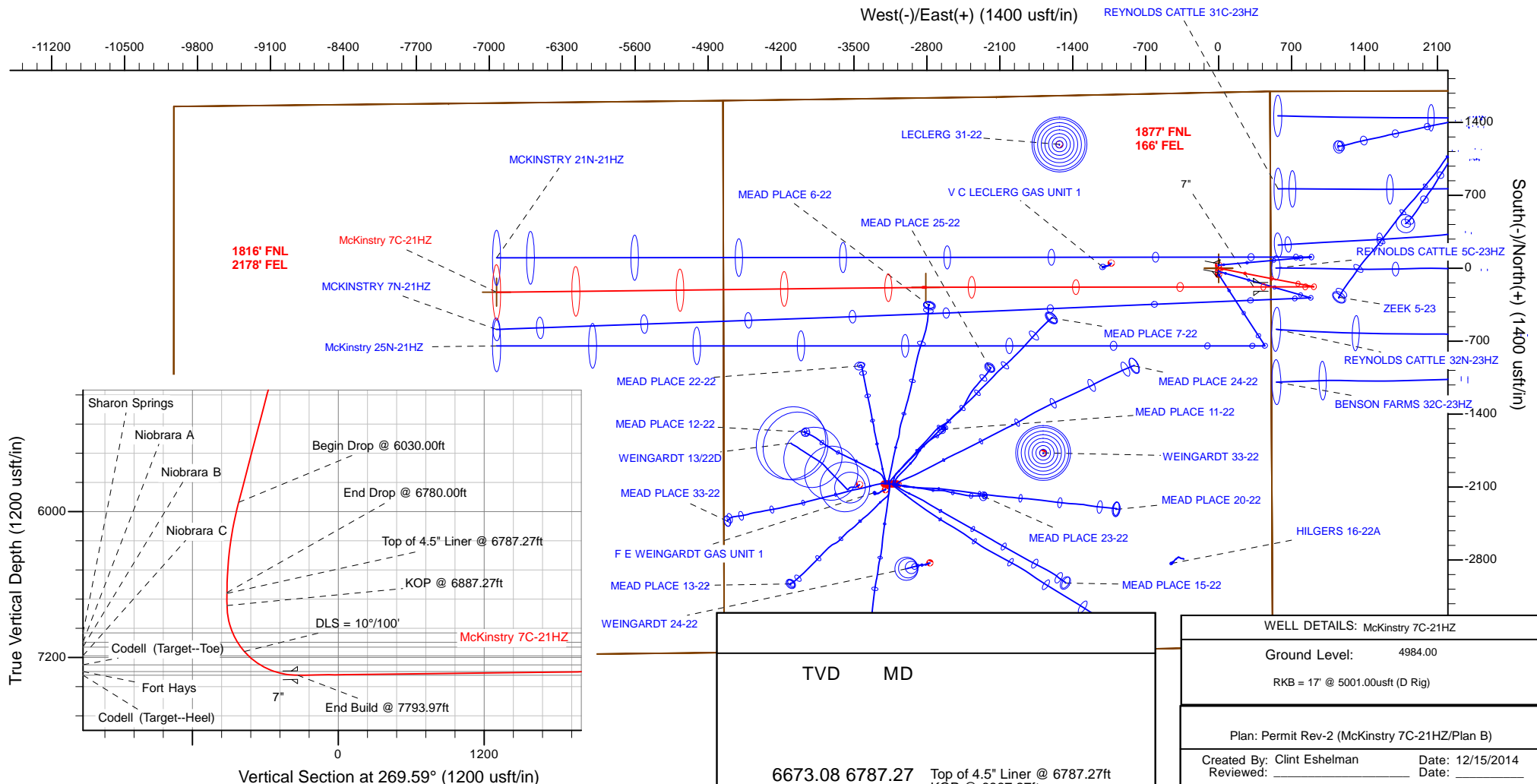
HALLIBURTON
Sperry Drilling

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	2430.00	0.00	0.00	2430.00	0.00	0.00	0.00	0.00	0.00	
3	3180.00	15.00	101.00	3171.46	-18.63	95.82	2.00	101.00	-95.69	
4	6030.00	15.00	101.00	5924.35	-159.37	-819.90	0.00	0.00	-818.74	
5	6780.00	0.00	0.00	6665.81	-178.00	915.73	2.00	180.00	-914.43	
6	6887.27	0.00	0.00	6773.08	-178.00	915.73	0.00	0.00	-914.43	
7	7793.97	90.67	269.92	7346.00	-178.76	336.07	10.00	269.92	-334.78	
8	10940.00	90.67	269.92	7309.21	-182.90	-2809.74	0.00	0.00	2810.98	McKinstry 7C-21HZ_Lateral Tgt
9	10969.29	90.67	269.34	7308.87	-183.09	-2839.04	2.00	-89.97	2840.27	
10	15060.53	90.67	269.34	7261.00	-230.31	-6929.72	0.00	0.00	6931.19	McKinstry 7C-21HZ_BHL Location

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
3N-R68W-Sec. 21_Section Lines	0.00	0.00	0.00	40.214261	-104.981382	Polygon
3N-R68W-Sec. 22_Section Lines	0.00	0.00	0.00	40.214261	-104.981382	Polygon
3N-R68W-Sec. 23_Section Lines	0.00	0.00	0.00	40.214261	-104.981382	Polygon
McKinstry 7C-21HZ_SHL	0.00	0.00	0.00	40.214261	-104.981382	
McKinstry 7C-21HZ_BHL Location	7261.00	-230.31	-6929.72	40.213626	-105.006204	
McKinstry 7C-21HZ_Lateral Tgt	7309.21	-182.90	-2809.74	40.213758	-104.991446	Point



Plan Report for McKinstry 7C-21HZ - Permit Rev-2

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
3N-R68W-Sec. 22_Section Lines - 3N-R68W-Sec. 23_Section Lines - McKinstry 7C-21HZ_SHL - 3N-R68W-Sec. 21_Section Lines										
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
712.00	0.00	0.00	712.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills										
762.00	0.00	0.00	762.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
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
1,200.00	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
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,430.00	0.00	0.00	2,430.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 2430.00ft										
2,500.00	1.40	101.00	2,499.99	-0.16	0.84	-0.84	2.00	2.00	0.00	101.00
2,600.00	3.40	101.00	2,599.90	-0.96	4.95	-4.94	2.00	2.00	0.00	0.00
2,700.00	5.40	101.00	2,699.60	-2.43	12.48	-12.46	2.00	2.00	0.00	0.00
2,800.00	7.40	101.00	2,798.97	-4.55	23.42	-23.39	2.00	2.00	0.00	0.00
2,900.00	9.40	101.00	2,897.89	-7.34	37.76	-37.71	2.00	2.00	0.00	0.00
3,000.00	11.40	101.00	2,996.25	-10.78	55.48	-55.40	2.00	2.00	0.00	0.00
3,100.00	13.40	101.00	3,093.91	-14.88	76.56	-76.45	2.00	2.00	0.00	0.00
3,180.00	15.00	101.00	3,171.46	-18.63	95.82	-95.69	2.00	2.00	0.00	0.00
End Nudge @ 3180.00ft										
3,200.00	15.00	101.00	3,190.78	-19.61	100.90	-100.76	0.00	0.00	0.00	0.00
3,300.00	15.00	101.00	3,287.37	-24.55	126.31	-126.13	0.00	0.00	0.00	0.00
3,400.00	15.00	101.00	3,383.97	-29.49	151.72	-151.50	0.00	0.00	0.00	0.00
3,500.00	15.00	101.00	3,480.56	-34.43	177.12	-176.87	0.00	0.00	0.00	0.00
3,600.00	15.00	101.00	3,577.15	-39.37	202.53	-202.24	0.00	0.00	0.00	0.00
3,640.22	15.00	101.00	3,616.00	-41.35	212.75	-212.45	0.00	0.00	0.00	0.00
Parkman										
3,700.00	15.00	101.00	3,673.74	-44.31	227.94	-227.61	0.00	0.00	0.00	0.00
3,800.00	15.00	101.00	3,770.34	-49.24	253.34	-252.98	0.00	0.00	0.00	0.00
3,900.00	15.00	101.00	3,866.93	-54.18	278.75	-278.35	0.00	0.00	0.00	0.00
4,000.00	15.00	101.00	3,963.52	-59.12	304.15	-303.72	0.00	0.00	0.00	0.00
4,100.00	15.00	101.00	4,060.11	-64.06	329.56	-329.09	0.00	0.00	0.00	0.00
4,154.75	15.00	101.00	4,113.00	-66.76	343.47	-342.98	0.00	0.00	0.00	0.00
Sussex										
4,200.00	15.00	101.00	4,156.71	-69.00	354.97	-354.46	0.00	0.00	0.00	0.00
4,300.00	15.00	101.00	4,253.30	-73.94	380.37	-379.83	0.00	0.00	0.00	0.00

Plan Report for McKinstry 7C-21HZ - Permit Rev-2

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 (°)
4,400.00	15.00	101.00	4,349.89	-78.88	405.78	-405.20	0.00	0.00	0.00	0.00
4,500.00	15.00	101.00	4,446.48	-83.81	431.19	-430.58	0.00	0.00	0.00	0.00
4,600.00	15.00	101.00	4,543.08	-88.75	456.59	-455.95	0.00	0.00	0.00	0.00
4,675.50	15.00	101.00	4,616.00	-92.48	475.77	-475.10	0.00	0.00	0.00	0.00
Shannon										
4,700.00	15.00	101.00	4,639.67	-93.69	482.00	-481.32	0.00	0.00	0.00	0.00
4,800.00	15.00	101.00	4,736.26	-98.63	507.41	-506.69	0.00	0.00	0.00	0.00
4,900.00	15.00	101.00	4,832.85	-103.57	532.81	-532.06	0.00	0.00	0.00	0.00
5,000.00	15.00	101.00	4,929.45	-108.51	558.22	-557.43	0.00	0.00	0.00	0.00
5,100.00	15.00	101.00	5,026.04	-113.45	583.62	-582.80	0.00	0.00	0.00	0.00
5,200.00	15.00	101.00	5,122.63	-118.38	609.03	-608.17	0.00	0.00	0.00	0.00
5,300.00	15.00	101.00	5,219.22	-123.32	634.44	-633.54	0.00	0.00	0.00	0.00
5,400.00	15.00	101.00	5,315.82	-128.26	659.84	-658.91	0.00	0.00	0.00	0.00
5,500.00	15.00	101.00	5,412.41	-133.20	685.25	-684.28	0.00	0.00	0.00	0.00
5,600.00	15.00	101.00	5,509.00	-138.14	710.66	-709.65	0.00	0.00	0.00	0.00
5,700.00	15.00	101.00	5,605.60	-143.08	736.06	-735.02	0.00	0.00	0.00	0.00
5,800.00	15.00	101.00	5,702.19	-148.01	761.47	-760.39	0.00	0.00	0.00	0.00
5,900.00	15.00	101.00	5,798.78	-152.95	786.88	-785.76	0.00	0.00	0.00	0.00
6,000.00	15.00	101.00	5,895.37	-157.89	812.28	-811.13	0.00	0.00	0.00	0.00
6,030.00	15.00	101.00	5,924.35	-159.37	819.90	-818.74	0.00	0.00	0.00	0.00
Begin Drop @ 6030.00ft										
6,100.00	13.60	101.00	5,992.18	-162.67	836.88	-835.69	2.00	-2.00	0.00	180.00
6,200.00	11.60	101.00	6,089.77	-166.83	858.29	-857.07	2.00	-2.00	0.00	180.00
6,300.00	9.60	101.00	6,188.06	-170.34	876.34	-875.10	2.00	-2.00	0.00	180.00
6,400.00	7.60	101.00	6,286.93	-173.20	891.02	-889.76	2.00	-2.00	0.00	180.00
6,500.00	5.60	101.00	6,386.26	-175.39	902.30	-901.03	2.00	-2.00	0.00	180.00
6,600.00	3.60	101.00	6,485.93	-176.92	910.18	-908.89	2.00	-2.00	0.00	180.00
6,700.00	1.60	101.00	6,585.82	-177.79	914.63	-913.33	2.00	-2.00	0.00	180.00
6,780.00	0.00	0.00	6,665.81	-178.00	915.73	-914.43	2.00	-2.00	-126.25	-180.00
End Drop @ 6780.00ft										
6,787.27	0.00	0.00	6,673.08	-178.00	915.73	-914.43	0.00	0.00	0.00	180.00
Top of 4.5" Liner @ 6787.27ft										
6,800.00	0.00	0.00	6,685.81	-178.00	915.73	-914.43	0.00	0.00	0.00	0.00
6,887.27	0.00	0.00	6,773.08	-178.00	915.73	-914.43	0.00	0.00	0.00	0.00
KOP @ 6887.27ft										
6,900.00	1.27	269.92	6,785.81	-178.00	915.58	-914.29	10.00	10.00	0.00	269.92
7,000.00	11.27	269.92	6,885.09	-178.01	904.67	-903.37	10.00	10.00	0.00	0.00
7,100.00	21.27	269.92	6,980.96	-178.05	876.69	-875.39	10.00	10.00	0.00	0.00
7,119.49	23.22	269.92	6,999.00	-178.06	869.31	-868.01	10.00	10.00	0.00	0.00
Sharon Springs										
7,200.00	31.27	269.92	7,070.51	-178.11	832.48	-831.18	10.00	10.00	0.00	0.00
7,205.26	31.80	269.92	7,075.00	-178.11	829.72	-828.43	10.00	10.00	0.00	0.00
Niobrara A										
7,253.65	36.64	269.92	7,115.00	-178.15	802.52	-801.23	10.00	10.00	0.00	0.00
Niobrara B										
7,300.00	41.27	269.92	7,151.03	-178.19	773.39	-772.09	10.00	10.00	0.00	0.00
DLS = 10°/100'										
7,349.82	46.25	269.92	7,187.00	-178.23	738.94	-737.65	10.00	10.00	0.00	0.00
Niobrara C										
7,400.00	51.27	269.92	7,220.07	-178.28	701.22	-699.92	10.00	10.00	0.00	0.00
7,500.00	61.27	269.92	7,275.52	-178.39	618.15	-616.86	10.00	10.00	0.00	0.00
7,600.00	71.27	269.92	7,315.71	-178.51	526.72	-525.43	10.00	10.00	0.00	0.00
7,600.91	71.36	269.92	7,316.00	-178.51	525.86	-524.57	10.00	10.00	0.00	0.00
Fort Hays										
7,700.00	81.27	269.92	7,339.41	-178.64	429.70	-428.41	10.00	10.00	0.00	0.00
7,793.97	90.67	269.92	7,346.00	-178.76	336.07	-334.78	10.00	10.00	0.00	0.00
End Build @ 7793.97ft - Codell (Target-Heel) - 7"										
7,800.00	90.67	269.92	7,345.93	-178.77	330.04	-328.75	0.00	0.00	0.00	0.00

Plan Report for McKinstry 7C-21HZ - Permit Rev-2

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 (°)
7,900.00	90.67	269.92	7,344.76	-178.90	230.05	-228.76	0.00	0.00	0.00	0.00
8,000.00	90.67	269.92	7,343.59	-179.03	130.05	-128.77	0.00	0.00	0.00	0.00
8,100.00	90.67	269.92	7,342.42	-179.16	30.06	-28.78	0.00	0.00	0.00	0.00
8,200.00	90.67	269.92	7,341.25	-179.30	-69.93	71.21	0.00	0.00	0.00	0.00
8,300.00	90.67	269.92	7,340.08	-179.43	-169.93	171.21	0.00	0.00	0.00	0.00
8,400.00	90.67	269.92	7,338.91	-179.56	-269.92	271.20	0.00	0.00	0.00	0.00
8,500.00	90.67	269.92	7,337.74	-179.69	-369.91	371.19	0.00	0.00	0.00	0.00
8,600.00	90.67	269.92	7,336.58	-179.82	-469.91	471.18	0.00	0.00	0.00	0.00
8,700.00	90.67	269.92	7,335.41	-179.95	-569.90	571.17	0.00	0.00	0.00	0.00
8,800.00	90.67	269.92	7,334.24	-180.08	-669.89	671.16	0.00	0.00	0.00	0.00
8,900.00	90.67	269.92	7,333.07	-180.22	-769.88	771.15	0.00	0.00	0.00	0.00
9,000.00	90.67	269.92	7,331.90	-180.35	-869.88	871.15	0.00	0.00	0.00	0.00
9,100.00	90.67	269.92	7,330.73	-180.48	-969.87	971.14	0.00	0.00	0.00	0.00
9,200.00	90.67	269.92	7,329.56	-180.61	-1,069.86	1,071.13	0.00	0.00	0.00	0.00
9,300.00	90.67	269.92	7,328.39	-180.74	-1,169.86	1,171.12	0.00	0.00	0.00	0.00
9,400.00	90.67	269.92	7,327.22	-180.87	-1,269.85	1,271.11	0.00	0.00	0.00	0.00
9,500.00	90.67	269.92	7,326.05	-181.01	-1,369.84	1,371.10	0.00	0.00	0.00	0.00
9,600.00	90.67	269.92	7,324.88	-181.14	-1,469.84	1,471.10	0.00	0.00	0.00	0.00
9,700.00	90.67	269.92	7,323.71	-181.27	-1,569.83	1,571.09	0.00	0.00	0.00	0.00
9,800.00	90.67	269.92	7,322.54	-181.40	-1,669.82	1,671.08	0.00	0.00	0.00	0.00
9,900.00	90.67	269.92	7,321.37	-181.53	-1,769.82	1,771.07	0.00	0.00	0.00	0.00
10,000.00	90.67	269.92	7,320.20	-181.66	-1,869.81	1,871.06	0.00	0.00	0.00	0.00
10,100.00	90.67	269.92	7,319.03	-181.80	-1,969.80	1,971.05	0.00	0.00	0.00	0.00
10,200.00	90.67	269.92	7,317.86	-181.93	-2,069.79	2,071.04	0.00	0.00	0.00	0.00
10,300.00	90.67	269.92	7,316.69	-182.06	-2,169.79	2,171.04	0.00	0.00	0.00	0.00
10,400.00	90.67	269.92	7,315.52	-182.19	-2,269.78	2,271.03	0.00	0.00	0.00	0.00
10,500.00	90.67	269.92	7,314.36	-182.32	-2,369.77	2,371.02	0.00	0.00	0.00	0.00
10,600.00	90.67	269.92	7,313.19	-182.45	-2,469.77	2,471.01	0.00	0.00	0.00	0.00
10,700.00	90.67	269.92	7,312.02	-182.58	-2,569.76	2,571.00	0.00	0.00	0.00	0.00
10,800.00	90.67	269.92	7,310.85	-182.72	-2,669.75	2,670.99	0.00	0.00	0.00	0.00
10,900.00	90.67	269.92	7,309.68	-182.85	-2,769.75	2,770.98	0.00	0.00	0.00	0.00
10,940.00	90.67	269.92	7,309.21	-182.90	-2,809.74	2,810.98	0.00	0.00	0.00	0.00
Turn to BHL @ 10940.00ft - McKinstry 7C-21HZ_Lateral Tgt										
10,969.29	90.67	269.34	7,308.87	-183.09	-2,839.03	2,840.27	2.00	0.00	-2.00	-89.97
End Turn @ 10969.29ft										
11,000.00	90.67	269.34	7,308.51	-183.44	-2,869.74	2,870.98	0.00	0.00	0.00	-89.97
11,100.00	90.67	269.34	7,307.34	-184.60	-2,969.72	2,970.97	0.00	0.00	0.00	0.00
11,200.00	90.67	269.34	7,306.17	-185.75	-3,069.71	3,070.96	0.00	0.00	0.00	0.00
11,300.00	90.67	269.34	7,305.00	-186.91	-3,169.70	3,170.95	0.00	0.00	0.00	0.00
11,400.00	90.67	269.34	7,303.83	-188.06	-3,269.68	3,270.94	0.00	0.00	0.00	0.00
11,500.00	90.67	269.34	7,302.66	-189.21	-3,369.67	3,370.94	0.00	0.00	0.00	0.00
11,600.00	90.67	269.34	7,301.49	-190.37	-3,469.66	3,470.93	0.00	0.00	0.00	0.00
11,700.00	90.67	269.34	7,300.32	-191.52	-3,569.64	3,570.92	0.00	0.00	0.00	0.00
11,800.00	90.67	269.34	7,299.15	-192.68	-3,669.63	3,670.91	0.00	0.00	0.00	0.00
11,900.00	90.67	269.34	7,297.98	-193.83	-3,769.62	3,770.91	0.00	0.00	0.00	0.00
12,000.00	90.67	269.34	7,296.81	-194.98	-3,869.60	3,870.90	0.00	0.00	0.00	0.00
12,100.00	90.67	269.34	7,295.64	-196.14	-3,969.59	3,970.89	0.00	0.00	0.00	0.00
12,200.00	90.67	269.34	7,294.47	-197.29	-4,069.57	4,070.88	0.00	0.00	0.00	0.00
12,300.00	90.67	269.34	7,293.30	-198.45	-4,169.56	4,170.87	0.00	0.00	0.00	0.00
12,400.00	90.67	269.34	7,292.13	-199.60	-4,269.55	4,270.87	0.00	0.00	0.00	0.00
12,500.00	90.67	269.34	7,290.96	-200.76	-4,369.53	4,370.86	0.00	0.00	0.00	0.00
12,600.00	90.67	269.34	7,289.79	-201.91	-4,469.52	4,470.85	0.00	0.00	0.00	0.00
12,700.00	90.67	269.34	7,288.62	-203.06	-4,569.51	4,570.84	0.00	0.00	0.00	0.00
12,800.00	90.67	269.34	7,287.45	-204.22	-4,669.49	4,670.84	0.00	0.00	0.00	0.00
12,900.00	90.67	269.34	7,286.28	-205.37	-4,769.48	4,770.83	0.00	0.00	0.00	0.00
13,000.00	90.67	269.34	7,285.11	-206.53	-4,869.47	4,870.82	0.00	0.00	0.00	0.00
13,100.00	90.67	269.34	7,283.94	-207.68	-4,969.45	4,970.81	0.00	0.00	0.00	0.00
13,200.00	90.67	269.34	7,282.77	-208.84	-5,069.44	5,070.80	0.00	0.00	0.00	0.00
13,300.00	90.67	269.34	7,281.60	-209.99	-5,169.43	5,170.80	0.00	0.00	0.00	0.00
13,400.00	90.67	269.34	7,280.43	-211.14	-5,269.41	5,270.79	0.00	0.00	0.00	0.00

Plan Report for McKinstry 7C-21HZ - Permit Rev-2

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 (°)
13,500.00	90.67	269.34	7,279.26	-212.30	-5,369.40	5,370.78	0.00	0.00	0.00	0.00
13,600.00	90.67	269.34	7,278.09	-213.45	-5,469.39	5,470.77	0.00	0.00	0.00	0.00
13,700.00	90.67	269.34	7,276.92	-214.61	-5,569.37	5,570.77	0.00	0.00	0.00	0.00
13,800.00	90.67	269.34	7,275.75	-215.76	-5,669.36	5,670.76	0.00	0.00	0.00	0.00
13,900.00	90.67	269.34	7,274.58	-216.91	-5,769.35	5,770.75	0.00	0.00	0.00	0.00
14,000.00	90.67	269.34	7,273.41	-218.07	-5,869.33	5,870.74	0.00	0.00	0.00	0.00
14,100.00	90.67	269.34	7,272.24	-219.22	-5,969.32	5,970.73	0.00	0.00	0.00	0.00
14,200.00	90.67	269.34	7,271.07	-220.38	-6,069.30	6,070.73	0.00	0.00	0.00	0.00
14,300.00	90.67	269.34	7,269.90	-221.53	-6,169.29	6,170.72	0.00	0.00	0.00	0.00
14,400.00	90.67	269.34	7,268.73	-222.69	-6,269.28	6,270.71	0.00	0.00	0.00	0.00
14,500.00	90.67	269.34	7,267.56	-223.84	-6,369.26	6,370.70	0.00	0.00	0.00	0.00
14,600.00	90.67	269.34	7,266.39	-224.99	-6,469.25	6,470.69	0.00	0.00	0.00	0.00
14,700.00	90.67	269.34	7,265.22	-226.15	-6,569.24	6,570.69	0.00	0.00	0.00	0.00
14,800.00	90.67	269.34	7,264.05	-227.30	-6,669.22	6,670.68	0.00	0.00	0.00	0.00
14,900.00	90.67	269.34	7,262.88	-228.46	-6,769.21	6,770.67	0.00	0.00	0.00	0.00
15,000.00	90.67	269.34	7,261.71	-229.61	-6,869.20	6,870.66	0.00	0.00	0.00	0.00
15,060.53	90.67	269.34	7,261.00	-230.31	-6,929.72	6,931.19	0.00	0.00	0.00	0.00

TD Well @ 15060.53ft - Codell (Target--Toe) - McKinstry 7C-21HZ_BHL Location

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,430.00	2,430.00	0.00	0.00	Begin Nudge @ 2430.00ft
3,180.00	3,171.46	-18.63	95.82	End Nudge @ 3180.00ft
6,030.00	5,924.35	-159.37	819.90	Begin Drop @ 6030.00ft
6,780.00	6,665.81	-178.00	915.73	End Drop @ 6780.00ft
6,787.27	6,673.08	-178.00	915.73	Top of 4.5" Liner @ 6787.27ft
6,887.27	6,773.08	-178.00	915.73	KOP @ 6887.27ft
7,300.00	7,151.03	-178.19	773.39	DLS = 10°/100'
7,793.97	7,346.00	-178.76	336.07	End Build @ 7793.97ft
10,940.00	7,309.21	-182.90	-2,809.74	Turn to BHL @ 10940.00ft
10,969.29	7,308.87	-183.09	-2,839.03	End Turn @ 10969.29ft
15,060.53	7,261.00	-230.31	-6,929.72	TD Well @ 15060.53ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	269.59	Slot	0.00	0.00	7,261.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,793.97	Permit Rev-2	MWD+IFR1
7,793.97	15,060.53	Permit Rev-2	MWD+IFR1

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
762.00	762.00	9 5/8"	9-5/8	13-1/2
7,793.97	7,346.00	7"	7	8-3/4

Plan Report for McKinstry 7C-21HZ - Permit Rev-2

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
712.00	712.00	Fox Hills		0.00	
3,640.22	3,616.00	Parkman		0.00	
4,154.75	4,113.00	Sussex		0.00	
4,675.50	4,616.00	Shannon		0.00	
7,119.49	6,999.00	Sharon Springs		0.00	
7,205.26	7,075.00	Niobrara A		0.00	
7,253.65	7,115.00	Niobrara B		0.00	
7,349.82	7,187.00	Niobrara C		0.00	
7,600.91	7,316.00	Fort Hays		0.00	
7,793.97	7,346.00	Codell (Target--Heel)		0.00	
15,060.53	7,261.00	Codell (Target--Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
3N-R68W-Sec. 22_Section Lines	0.00	0.00	0.00	Polygon
3N-R68W-Sec. 23_Section Lines	0.00	0.00	0.00	Polygon
McKinstry 7C-21HZ_SHL	0.00	0.00	0.00	Point
3N-R68W-Sec. 21_Section Lines	0.00	0.00	0.00	Polygon
McKinstry 7C-21HZ_BHL Location	7,261.00	-230.31	-6,929.72	Point
McKinstry 7C-21HZ_Lateral Tgt	7,309.21	-182.90	-2,809.74	Point

North Reference Sheet for 3N-68W-22 McKinstry 8-22HZ Pad - McKinstry 7C-21HZ - Plan B

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' @ 5001.00usft (D Rig). Northing and Easting are relative to McKinstry 7C-21HZ

Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 13N (108 W to 102 W) using datum North American Datum 1983, ellipsoid

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -105.00°, Longitude Origin:0.000000°, Latitude Origin:0.000000°

False Easting: 1,640,416.67usft, False Northing: 0.00usft, Scale Reduction: 0.99960003

Grid Coordinates of Well: 14,604,756.56 usft N, 1,645,614.32 usft E

Geographical Coordinates of Well: 40° 12' 51.34" N, 104° 58' 52.98" W

Grid Convergence at Surface is: 0.01°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,060.53usft
the Bottom Hole Displacement is 6,933.54usft in the Direction of 268.10° (True).

Magnetic Convergence at surface is: -8.48° (11 December 2014, , IGRF2010)

