

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

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

MCKINSTRY 7N-21HZ

Plan C

Plan: Permit Rev-3

Sperry Drilling Services

Proposal Report

19 December, 2014

Well Coordinates: 14,604,726.33 N, 1,645,614.61 E (40° 12' 51.04" N, 104° 58' 52.97" W)

Ground Level: 4,984.00 usft

Local Coordinate Origin:

Centered on Well MCKINSTRY 7N-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 7N-21HZ
 Wellbore: Plan C
 Design: Permit Rev-3

US ROCKIES WATTENBERG PLANNING

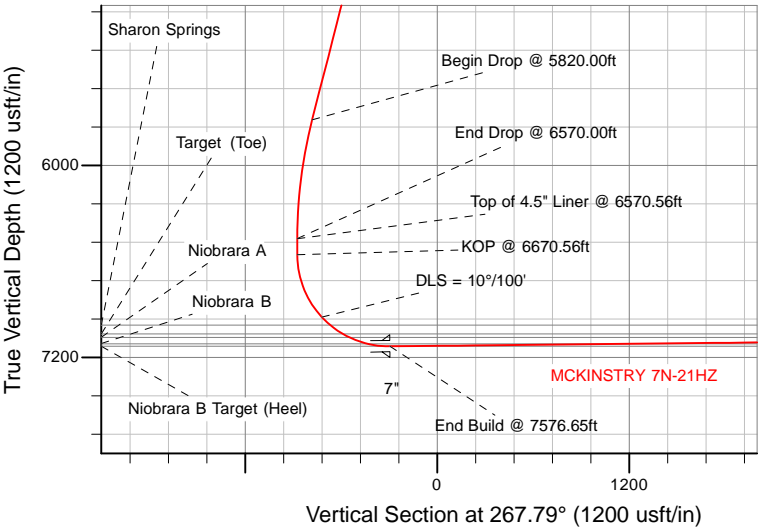
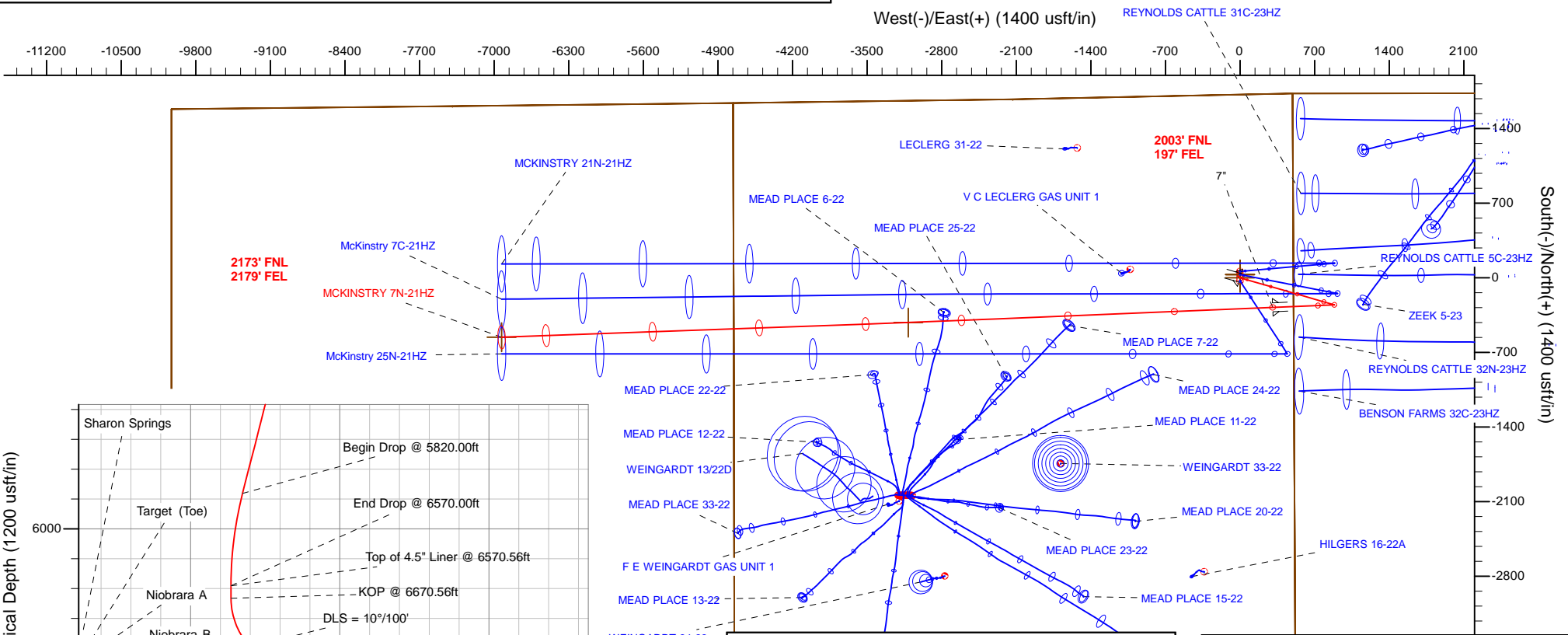


SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2270.00	0.00	0.00	2270.00	0.00	0.00	0.00	0.00	0.00	
3	3020.00	15.00	106.00	3011.46	-26.91	93.83	2.00	106.00	-92.73	
4	5820.00	15.00	106.00	5716.05	-226.66	-790.45	0.00	0.00	-781.13	
5	6570.00	0.00	0.00	6457.52	-253.57	884.29	2.00	180.00	-873.85	
6	6670.56	0.00	0.00	6558.08	-253.57	884.29	0.00	0.00	-873.85	
7	7576.65	90.61	267.62	7131.00	-277.63	305.74	10.00	267.62	-294.81	
8	11000.00	90.61	267.62	7094.61	-419.90	-3114.46	0.00	0.00	3128.34	MCKINSTRY 7N-21HZ_Lateral Tgt
9	11016.31	90.61	267.94	7094.44	-420.53	-3130.76	2.00	89.95	3144.65	
10	14818.59	90.61	267.94	7054.00	-556.91	-6930.37	0.00	0.00	6946.69	MCKINSTRY 7N-21HZ_BHL Location

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
3N-R68W-Sec. 21_Section Lines	0.00	30.22	-0.28	40.214261	-104.981382	Polygon
3N-R68W-Sec. 22_Section Lines	0.00	30.22	-0.28	40.214261	-104.981382	Polygon
3N-R68W-Sec. 23_Section Lines	0.00	30.22	-0.28	40.214261	-104.981382	Polygon
MCKINSTRY 7N-21HZ_SHL	0.00	0.00	0.00	40.214178	-104.981381	
MCKINSTRY 7N-21HZ_BHL Location	7054.00	-556.91	-6930.37	40.212646	-105.006205	
MCKINSTRY 7N-21HZ_Lateral Tgt	7094.61	-419.90	-3114.46	40.213024	-104.992537	Point



TVD	MD	
6458.08	6570.56	Top of 4.5" Liner @ 6570.56ft
6558.08	6670.56	KOP @ 6670.56ft

WELL DETAILS: MCKINSTRY 7N-21HZ	
Ground Level:	4984.00
RKB = 17' @ 5001.00usft (D Rig)	
Plan: Permit Rev-3 (MCKINSTRY 7N-21HZ/Plan C)	
Created By: Clint Eshelman	Date: 12/19/2014
Reviewed: _____	Date: _____



Plan Report for MCKINSTRY 7N-21HZ - Permit Rev-3

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 - 3N-R68W-Sec. 21_Section Lines - MCKINSTRY 7N-21HZ_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
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
2,270.00	0.00	0.00	2,270.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 2270.00ft										
2,300.00	0.60	106.00	2,300.00	-0.04	0.15	-0.15	2.00	2.00	0.00	106.00
2,400.00	2.60	106.00	2,399.96	-0.81	2.83	-2.80	2.00	2.00	0.00	0.00
2,500.00	4.60	106.00	2,499.75	-2.54	8.87	-8.77	2.00	2.00	0.00	0.00
2,600.00	6.60	106.00	2,599.27	-5.23	18.25	-18.03	2.00	2.00	0.00	0.00
2,700.00	8.60	106.00	2,698.39	-8.88	30.96	-30.60	2.00	2.00	0.00	0.00
2,800.00	10.60	106.00	2,796.98	-13.47	46.99	-46.44	2.00	2.00	0.00	0.00
2,900.00	12.60	106.00	2,894.93	-19.02	66.32	-65.54	2.00	2.00	0.00	0.00
3,000.00	14.60	106.00	2,992.13	-25.50	88.92	-87.87	2.00	2.00	0.00	0.00
3,020.00	15.00	106.00	3,011.46	-26.91	93.83	-92.73	2.00	2.00	0.00	0.00
End Nudge @ 3020.00ft										
3,100.00	15.00	106.00	3,088.74	-32.61	113.74	-112.40	0.00	0.00	0.00	0.00
3,200.00	15.00	106.00	3,185.33	-39.75	138.62	-136.98	0.00	0.00	0.00	0.00
3,300.00	15.00	106.00	3,281.92	-46.88	163.50	-161.57	0.00	0.00	0.00	0.00
3,400.00	15.00	106.00	3,378.51	-54.02	188.38	-186.15	0.00	0.00	0.00	0.00
3,500.00	15.00	106.00	3,475.11	-61.15	213.25	-210.74	0.00	0.00	0.00	0.00
3,600.00	15.00	106.00	3,571.70	-68.28	238.13	-235.32	0.00	0.00	0.00	0.00
3,645.86	15.00	106.00	3,616.00	-71.56	249.54	-246.60	0.00	0.00	0.00	0.00
Parkman										
3,700.00	15.00	106.00	3,668.29	-75.42	263.01	-259.91	0.00	0.00	0.00	0.00
3,800.00	15.00	106.00	3,764.88	-82.55	287.89	-284.49	0.00	0.00	0.00	0.00
3,900.00	15.00	106.00	3,861.48	-89.69	312.77	-309.08	0.00	0.00	0.00	0.00
4,000.00	15.00	106.00	3,958.07	-96.82	337.65	-333.67	0.00	0.00	0.00	0.00
4,100.00	15.00	106.00	4,054.66	-103.95	362.53	-358.25	0.00	0.00	0.00	0.00
4,160.40	15.00	106.00	4,113.00	-108.26	377.56	-373.10	0.00	0.00	0.00	0.00
Sussex										
4,200.00	15.00	106.00	4,151.25	-111.09	387.41	-382.84	0.00	0.00	0.00	0.00
4,300.00	15.00	106.00	4,247.85	-118.22	412.29	-407.42	0.00	0.00	0.00	0.00

Plan Report for MCKINSTRY 7N-21HZ - Permit Rev-3

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	106.00	4,344.44	-125.36	437.17	-432.01	0.00	0.00	0.00	0.00
4,500.00	15.00	106.00	4,441.03	-132.49	462.05	-456.59	0.00	0.00	0.00	0.00
4,600.00	15.00	106.00	4,537.62	-139.62	486.93	-481.18	0.00	0.00	0.00	0.00
4,681.14	15.00	106.00	4,616.00	-145.41	507.11	-501.13	0.00	0.00	0.00	0.00
Shannon										
4,700.00	15.00	106.00	4,634.22	-146.76	511.81	-505.77	0.00	0.00	0.00	0.00
4,800.00	15.00	106.00	4,730.81	-153.89	536.69	-530.35	0.00	0.00	0.00	0.00
4,900.00	15.00	106.00	4,827.40	-161.03	561.56	-554.94	0.00	0.00	0.00	0.00
5,000.00	15.00	106.00	4,924.00	-168.16	586.44	-579.52	0.00	0.00	0.00	0.00
5,100.00	15.00	106.00	5,020.59	-175.29	611.32	-604.11	0.00	0.00	0.00	0.00
5,200.00	15.00	106.00	5,117.18	-182.43	636.20	-628.69	0.00	0.00	0.00	0.00
5,300.00	15.00	106.00	5,213.77	-189.56	661.08	-653.28	0.00	0.00	0.00	0.00
5,400.00	15.00	106.00	5,310.37	-196.70	685.96	-677.87	0.00	0.00	0.00	0.00
5,500.00	15.00	106.00	5,406.96	-203.83	710.84	-702.45	0.00	0.00	0.00	0.00
5,600.00	15.00	106.00	5,503.55	-210.96	735.72	-727.04	0.00	0.00	0.00	0.00
5,700.00	15.00	106.00	5,600.14	-218.10	760.60	-751.62	0.00	0.00	0.00	0.00
5,800.00	15.00	106.00	5,696.74	-225.23	785.48	-776.21	0.00	0.00	0.00	0.00
5,820.00	15.00	106.00	5,716.05	-226.66	790.45	-781.13	0.00	0.00	0.00	0.00
Begin Drop @ 5820.00ft										
5,900.00	13.40	106.00	5,793.61	-232.07	809.32	-799.77	2.00	-2.00	0.00	180.00
6,000.00	11.40	106.00	5,891.27	-237.99	829.96	-820.16	2.00	-2.00	0.00	180.00
6,100.00	9.40	106.00	5,989.62	-242.96	847.31	-837.31	2.00	-2.00	0.00	180.00
6,200.00	7.40	106.00	6,088.54	-246.99	861.35	-851.19	2.00	-2.00	0.00	180.00
6,300.00	5.40	106.00	6,187.92	-250.06	872.07	-861.77	2.00	-2.00	0.00	180.00
6,400.00	3.40	106.00	6,287.62	-252.18	879.44	-869.06	2.00	-2.00	0.00	180.00
6,500.00	1.40	106.00	6,387.52	-253.33	883.47	-873.04	2.00	-2.00	0.00	180.00
6,570.00	0.00	0.00	6,457.52	-253.57	884.29	-873.85	2.00	-2.00	-151.43	-180.00
End Drop @ 6570.00ft										
6,570.56	0.00	0.00	6,458.08	-253.57	884.29	-873.85	0.00	0.00	0.00	180.00
Top of 4.5" Liner @ 6570.56ft										
6,600.00	0.00	0.00	6,487.52	-253.57	884.29	-873.85	0.00	0.00	0.00	0.00
6,670.56	0.00	0.00	6,558.08	-253.57	884.29	-873.85	0.00	0.00	0.00	0.00
KOP @ 6670.56ft										
6,700.00	2.94	267.62	6,587.50	-253.60	883.53	-873.10	10.00	10.00	0.00	267.62
6,800.00	12.94	267.62	6,686.42	-254.17	869.74	-859.29	10.00	10.00	0.00	0.00
6,900.00	22.94	267.62	6,781.43	-255.45	839.00	-828.52	10.00	10.00	0.00	0.00
7,000.00	32.94	267.62	6,869.66	-257.39	792.24	-781.72	10.00	10.00	0.00	0.00
7,100.00	42.94	267.62	6,948.42	-259.95	730.88	-720.31	10.00	10.00	0.00	0.00
DLS = 10°/100'										
7,173.70	50.31	267.62	6,999.00	-262.17	677.39	-666.77	10.00	10.00	0.00	0.00
Sharon Springs										
7,200.00	52.94	267.62	7,015.32	-263.03	656.79	-646.16	10.00	10.00	0.00	0.00
7,300.00	62.94	267.62	7,068.33	-266.55	572.22	-561.51	10.00	10.00	0.00	0.00
7,315.05	64.45	267.62	7,075.00	-267.11	558.74	-548.02	10.00	10.00	0.00	0.00
Niobrara A										
7,400.00	72.94	267.62	7,105.83	-270.39	479.73	-468.95	10.00	10.00	0.00	0.00
7,434.69	76.41	267.62	7,115.00	-271.78	446.31	-435.49	10.00	10.00	0.00	0.00
Niobrara B										
7,500.00	82.94	267.62	7,126.69	-274.45	382.15	-371.28	10.00	10.00	0.00	0.00
7,576.65	90.61	267.62	7,131.00	-277.63	305.74	-294.81	10.00	10.00	0.00	0.00
End Build @ 7576.65ft - Niobrara B Target (Heel) - 7"										
7,600.00	90.61	267.62	7,130.75	-278.60	282.41	-271.46	0.00	0.00	0.00	0.00
7,700.00	90.61	267.62	7,129.69	-282.76	182.50	-171.46	0.00	0.00	0.00	0.00
7,800.00	90.61	267.62	7,128.63	-286.91	82.60	-71.47	0.00	0.00	0.00	0.00
7,900.00	90.61	267.62	7,127.56	-291.07	-17.31	28.52	0.00	0.00	0.00	0.00
8,000.00	90.61	267.62	7,126.50	-295.22	-117.22	128.52	0.00	0.00	0.00	0.00
8,100.00	90.61	267.62	7,125.44	-299.38	-217.13	228.51	0.00	0.00	0.00	0.00
8,200.00	90.61	267.62	7,124.38	-303.54	-317.04	328.51	0.00	0.00	0.00	0.00
8,300.00	90.61	267.62	7,123.31	-307.69	-416.94	428.50	0.00	0.00	0.00	0.00



Plan Report for MCKINSTRY 7N-21HZ - Permit Rev-3

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 (°)
8,400.00	90.61	267.62	7,122.25	-311.85	-516.85	528.49	0.00	0.00	0.00	0.00
8,500.00	90.61	267.62	7,121.19	-316.00	-616.76	628.49	0.00	0.00	0.00	0.00
8,600.00	90.61	267.62	7,120.12	-320.16	-716.67	728.48	0.00	0.00	0.00	0.00
8,700.00	90.61	267.62	7,119.06	-324.32	-816.58	828.47	0.00	0.00	0.00	0.00
8,800.00	90.61	267.62	7,118.00	-328.47	-916.48	928.47	0.00	0.00	0.00	0.00
8,900.00	90.61	267.62	7,116.93	-332.63	-1,016.39	1,028.46	0.00	0.00	0.00	0.00
9,000.00	90.61	267.62	7,115.87	-336.78	-1,116.30	1,128.46	0.00	0.00	0.00	0.00
9,100.00	90.61	267.62	7,114.81	-340.94	-1,216.21	1,228.45	0.00	0.00	0.00	0.00
9,200.00	90.61	267.62	7,113.74	-345.09	-1,316.12	1,328.44	0.00	0.00	0.00	0.00
9,300.00	90.61	267.62	7,112.68	-349.25	-1,416.02	1,428.44	0.00	0.00	0.00	0.00
9,400.00	90.61	267.62	7,111.62	-353.41	-1,515.93	1,528.43	0.00	0.00	0.00	0.00
9,500.00	90.61	267.62	7,110.56	-357.56	-1,615.84	1,628.43	0.00	0.00	0.00	0.00
9,600.00	90.61	267.62	7,109.49	-361.72	-1,715.75	1,728.42	0.00	0.00	0.00	0.00
9,700.00	90.61	267.62	7,108.43	-365.87	-1,815.66	1,828.41	0.00	0.00	0.00	0.00
9,800.00	90.61	267.62	7,107.37	-370.03	-1,915.56	1,928.41	0.00	0.00	0.00	0.00
9,900.00	90.61	267.62	7,106.30	-374.19	-2,015.47	2,028.40	0.00	0.00	0.00	0.00
10,000.00	90.61	267.62	7,105.24	-378.34	-2,115.38	2,128.40	0.00	0.00	0.00	0.00
10,100.00	90.61	267.62	7,104.18	-382.50	-2,215.29	2,228.39	0.00	0.00	0.00	0.00
10,200.00	90.61	267.62	7,103.11	-386.65	-2,315.19	2,328.38	0.00	0.00	0.00	0.00
10,300.00	90.61	267.62	7,102.05	-390.81	-2,415.10	2,428.38	0.00	0.00	0.00	0.00
10,400.00	90.61	267.62	7,100.99	-394.96	-2,515.01	2,528.37	0.00	0.00	0.00	0.00
10,500.00	90.61	267.62	7,099.93	-399.12	-2,614.92	2,628.36	0.00	0.00	0.00	0.00
10,600.00	90.61	267.62	7,098.86	-403.28	-2,714.83	2,728.36	0.00	0.00	0.00	0.00
10,700.00	90.61	267.62	7,097.80	-407.43	-2,814.73	2,828.35	0.00	0.00	0.00	0.00
10,800.00	90.61	267.62	7,096.74	-411.59	-2,914.64	2,928.35	0.00	0.00	0.00	0.00
10,900.00	90.61	267.62	7,095.67	-415.74	-3,014.55	3,028.34	0.00	0.00	0.00	0.00
11,000.00	90.61	267.62	7,094.61	-419.90	-3,114.46	3,128.34	0.00	0.00	0.00	0.00
Turn to BHL @ 11000.00ft - MCKINSTRY 7N-21HZ_Lateral Tgt										
11,016.31	90.61	267.94	7,094.44	-420.53	-3,130.76	3,144.64	2.00	0.00	2.00	89.95
End Turn @ 11016.31ft										
11,100.00	90.61	267.94	7,093.55	-423.53	-3,214.39	3,228.33	0.00	0.00	0.00	89.96
11,200.00	90.61	267.94	7,092.48	-427.12	-3,314.32	3,328.32	0.00	0.00	0.00	0.00
11,300.00	90.61	267.94	7,091.42	-430.71	-3,414.25	3,428.32	0.00	0.00	0.00	0.00
11,400.00	90.61	267.94	7,090.36	-434.29	-3,514.18	3,528.31	0.00	0.00	0.00	0.00
11,500.00	90.61	267.94	7,089.29	-437.88	-3,614.11	3,628.30	0.00	0.00	0.00	0.00
11,600.00	90.61	267.94	7,088.23	-441.47	-3,714.04	3,728.30	0.00	0.00	0.00	0.00
11,700.00	90.61	267.94	7,087.17	-445.05	-3,813.97	3,828.29	0.00	0.00	0.00	0.00
11,800.00	90.61	267.94	7,086.10	-448.64	-3,913.90	3,928.29	0.00	0.00	0.00	0.00
11,900.00	90.61	267.94	7,085.04	-452.23	-4,013.83	4,028.28	0.00	0.00	0.00	0.00
12,000.00	90.61	267.94	7,083.98	-455.82	-4,113.76	4,128.27	0.00	0.00	0.00	0.00
12,100.00	90.61	267.94	7,082.91	-459.40	-4,213.69	4,228.27	0.00	0.00	0.00	0.00
12,200.00	90.61	267.94	7,081.85	-462.99	-4,313.62	4,328.26	0.00	0.00	0.00	0.00
12,300.00	90.61	267.94	7,080.78	-466.58	-4,413.55	4,428.26	0.00	0.00	0.00	0.00
12,400.00	90.61	267.94	7,079.72	-470.16	-4,513.48	4,528.25	0.00	0.00	0.00	0.00
12,500.00	90.61	267.94	7,078.66	-473.75	-4,613.41	4,628.24	0.00	0.00	0.00	0.00
12,600.00	90.61	267.94	7,077.59	-477.34	-4,713.34	4,728.24	0.00	0.00	0.00	0.00
12,700.00	90.61	267.94	7,076.53	-480.92	-4,813.27	4,828.23	0.00	0.00	0.00	0.00
12,800.00	90.61	267.94	7,075.47	-484.51	-4,913.20	4,928.23	0.00	0.00	0.00	0.00
12,900.00	90.61	267.94	7,074.40	-488.10	-5,013.13	5,028.22	0.00	0.00	0.00	0.00
13,000.00	90.61	267.94	7,073.34	-491.68	-5,113.06	5,128.21	0.00	0.00	0.00	0.00
13,100.00	90.61	267.94	7,072.28	-495.27	-5,212.99	5,228.21	0.00	0.00	0.00	0.00
13,200.00	90.61	267.94	7,071.21	-498.86	-5,312.92	5,328.20	0.00	0.00	0.00	0.00
13,300.00	90.61	267.94	7,070.15	-502.44	-5,412.85	5,428.20	0.00	0.00	0.00	0.00
13,400.00	90.61	267.94	7,069.09	-506.03	-5,512.78	5,528.19	0.00	0.00	0.00	0.00
13,500.00	90.61	267.94	7,068.02	-509.62	-5,612.71	5,628.18	0.00	0.00	0.00	0.00
13,600.00	90.61	267.94	7,066.96	-513.21	-5,712.64	5,728.18	0.00	0.00	0.00	0.00
13,700.00	90.61	267.94	7,065.90	-516.79	-5,812.57	5,828.17	0.00	0.00	0.00	0.00
13,800.00	90.61	267.94	7,064.83	-520.38	-5,912.50	5,928.17	0.00	0.00	0.00	0.00
13,900.00	90.61	267.94	7,063.77	-523.97	-6,012.43	6,028.16	0.00	0.00	0.00	0.00



Plan Report for MCKINSTRY 7N-21HZ - Permit Rev-3

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 (°)
14,000.00	90.61	267.94	7,062.71	-527.55	-6,112.36	6,128.15	0.00	0.00	0.00	0.00
14,100.00	90.61	267.94	7,061.64	-531.14	-6,212.29	6,228.15	0.00	0.00	0.00	0.00
14,200.00	90.61	267.94	7,060.58	-534.73	-6,312.22	6,328.14	0.00	0.00	0.00	0.00
14,300.00	90.61	267.94	7,059.52	-538.31	-6,412.15	6,428.14	0.00	0.00	0.00	0.00
14,400.00	90.61	267.94	7,058.45	-541.90	-6,512.08	6,528.13	0.00	0.00	0.00	0.00
14,500.00	90.61	267.94	7,057.39	-545.49	-6,612.01	6,628.12	0.00	0.00	0.00	0.00
14,600.00	90.61	267.94	7,056.32	-549.07	-6,711.94	6,728.12	0.00	0.00	0.00	0.00
14,700.00	90.61	267.94	7,055.26	-552.66	-6,811.87	6,828.11	0.00	0.00	0.00	0.00
14,800.00	90.61	267.94	7,054.20	-556.25	-6,911.80	6,928.11	0.00	0.00	0.00	0.00
14,818.58	90.61	267.94	7,054.00	-556.91	-6,930.36	6,946.68	0.00	0.00	0.00	0.00
Niobrara B Target (Toe)										
14,818.59	90.61	267.94	7,054.00	-556.91	-6,930.37	6,946.69	0.01	0.00	0.00	0.00
TD Well @ 14818.59ft - MCKINSTRY 7N-21HZ_BHL Location										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
2,270.00	2,270.00	0.00	0.00	Begin Nudge @ 2270.00ft
3,020.00	3,011.46	-26.91	93.83	End Nudge @ 3020.00ft
5,820.00	5,716.05	-226.66	790.45	Begin Drop @ 5820.00ft
6,570.00	6,457.52	-253.57	884.29	End Drop @ 6570.00ft
6,570.56	6,458.08	-253.57	884.29	Top of 4.5" Liner @ 6570.56ft
6,670.56	6,558.08	-253.57	884.29	KOP @ 6670.56ft
7,100.00	6,948.42	-259.95	730.88	DLS = 10°/100'
7,576.65	7,131.00	-277.63	305.74	End Build @ 7576.65ft
11,000.00	7,094.61	-419.90	-3,114.46	Turn to BHL @ 11000.00ft
11,016.31	7,094.44	-420.53	-3,130.76	End Turn @ 11016.31ft
14,818.59	7,054.00	-556.91	-6,930.37	TD Well @ 14818.59ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	+E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	267.79	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,576.65	Permit Rev-3	MWD+IFR+MS
7,576.65	14,818.59	Permit Rev-3	MWD+IFR+MS

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
7,576.65	7,131.00	7"	7	8-3/4

Plan Report for MCKINSTRY 7N-21HZ - Permit Rev-3**Formation Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
712.00	712.00	Fox Hills		0.00	
3,645.86	3,616.00	Parkman		0.00	
4,160.40	4,113.00	Sussex		0.00	
4,681.14	4,616.00	Shannon		0.00	
7,173.70	6,999.00	Sharon Springs		0.00	
7,315.05	7,075.00	Niobrara A		0.00	
7,434.69	7,115.00	Niobrara B		0.00	
7,576.65	7,131.00	Niobrara B Target (Heel)		0.00	
14,818.58	7,054.00	Niobrara B 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	30.22	-0.28	Polygon
MCKINSTRY 7N-21HZ_Lateral Tgt	7,094.61	-419.90	-3,114.46	Point
3N-R68W-Sec. 23_Section Lines	0.00	30.22	-0.28	Polygon
MCKINSTRY 7N-21HZ_BHL Location	7,054.00	-556.91	-6,930.37	Point
3N-R68W-Sec. 21_Section Lines	0.00	30.22	-0.28	Polygon
MCKINSTRY 7N-21HZ_SHL	0.00	0.00	0.00	Point

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

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 7N-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: 14,604,726.33 usft N, 1,645,614.61 usft E

Geographical Coordinates of Well: 40° 12' 51.04" N, 104° 58' 52.97" W

Grid Convergence at Surface is: 0.01°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,818.59usft
the Bottom Hole Displacement is 6,952.71usft in the Direction of 265.41° (True).

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

