

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N
3N-68W-22 McKinstry 8-22HZ Pad
MCKINSTRY 21N-21HZ

Plan A

Plan: Permit Rev-1

Sperry Drilling Services

Proposal Report

12 December, 2014

Well Coordinates: 14,604,786.42 N, 1,645,614.32 E (40° 12' 51.63" N, 104° 58' 52.98" W)

Ground Level: 4,984.00 usft

Local Coordinate Origin:	Centered on Well MCKINSTRY 21N-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 21N-21HZ
 Wellbore: Plan A
 Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

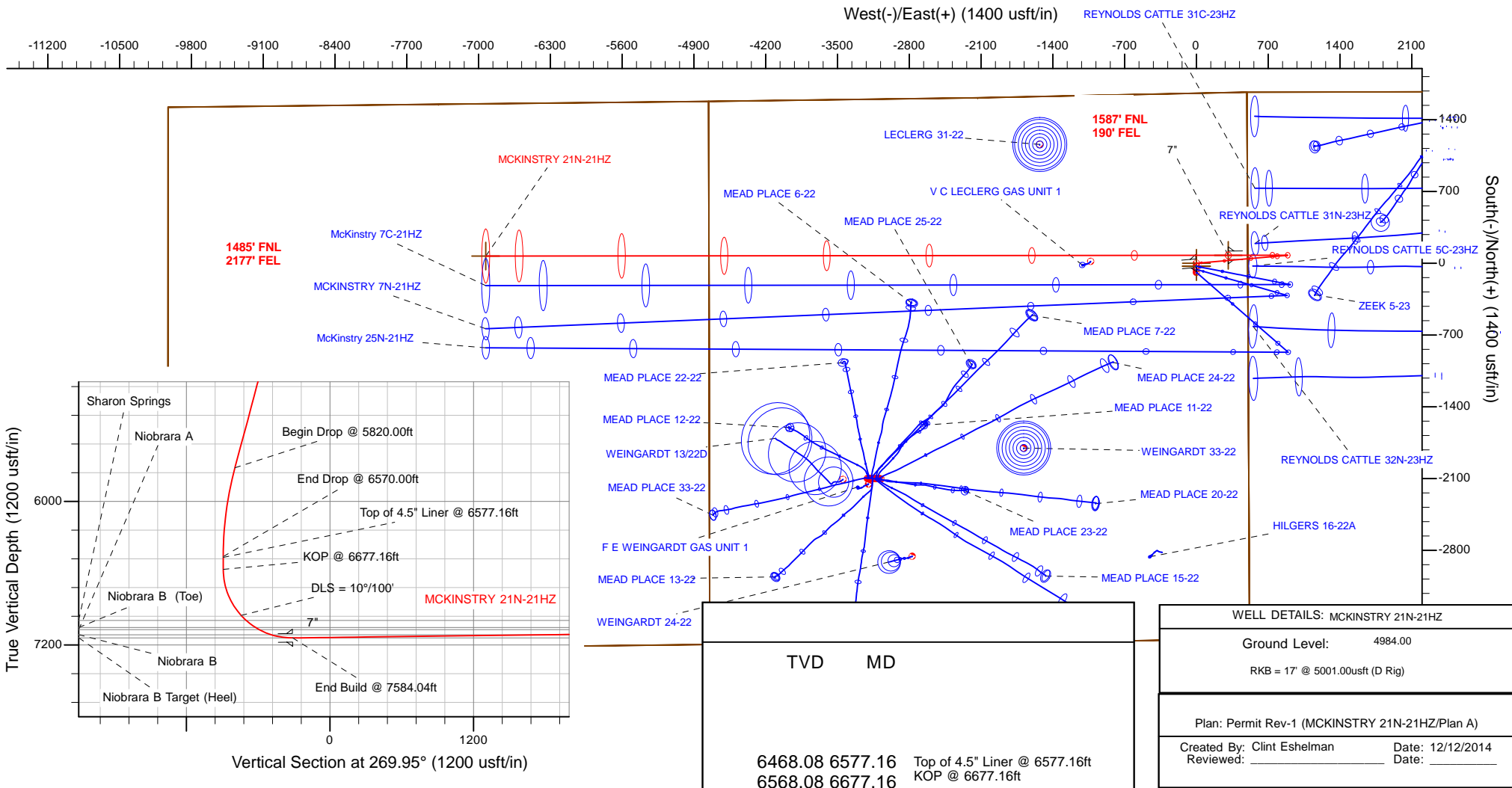


SECTION DETAILS

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	2370.00	0.00	0.00	2370.00	0.00	0.00	0.00	0.00	0.00	
3	3120.00	15.00	85.00	3111.46	8.51	-97.24	2.00	85.00	-97.25	
4	5820.00	15.00	85.00	5719.46	69.41	793.40	0.00	0.00	-793.46	
5	6570.00	0.00	0.00	6460.92	77.92	890.64	2.00	180.00	-890.71	
6	6677.16	0.00	0.00	6568.08	77.92	890.64	0.00	0.00	-890.71	
7	7584.04	90.69	269.95	7141.00	77.37	310.80	10.00	269.95	-310.87	
8	14825.27	90.69	269.95	7054.00	70.52	-6929.90	0.00	0.00	6929.84	MCKINSTRY 21N-21HZ_Toe

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Target
3N-R68W-Sec. 21_Section Lines	0.00	-29.86	0.00	40.214261	-104.981382	Polygon
3N-R68W-Sec. 22_Section Lines	0.00	-29.86	0.00	40.214261	-104.981382	Polygon
3N-R68W-Sec. 23_Section Lines	0.00	-29.86	0.00	40.214261	-104.981382	Polygon
MCKINSTRY 21N-21HZ_SHL	0.00	0.00	0.00	40.214343	-104.981382	Polygon
MCKINSTRY 21N-21HZ_Toe	7054.00	70.52	-6929.90	40.214534	-105.006205	Point
MCKINSTRY 21N-21HZ_Heel	7141.00	77.37	310.80	40.214555	-104.980269	Point





Plan Report for MCKINSTRY 21N-21HZ - Permit Rev-1

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 21N-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
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,370.00	0.00	0.00	2,370.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 2370.00ft										
2,400.00	0.60	85.00	2,400.00	0.01	0.16	-0.16	2.00	2.00	0.00	85.00
2,500.00	2.60	85.00	2,499.96	0.26	2.94	-2.94	2.00	2.00	0.00	0.00
2,600.00	4.60	85.00	2,599.75	0.80	9.19	-9.19	2.00	2.00	0.00	0.00
2,700.00	6.60	85.00	2,699.27	1.65	18.91	-18.91	2.00	2.00	0.00	0.00
2,800.00	8.60	85.00	2,798.39	2.81	32.09	-32.09	2.00	2.00	0.00	0.00
2,900.00	10.60	85.00	2,896.98	4.26	48.70	-48.70	2.00	2.00	0.00	0.00
3,000.00	12.60	85.00	2,994.93	6.01	68.73	-68.74	2.00	2.00	0.00	0.00
3,100.00	14.60	85.00	3,092.13	8.06	92.15	-92.16	2.00	2.00	0.00	0.00
3,120.00	15.00	85.00	3,111.46	8.51	97.24	-97.25	2.00	2.00	0.00	0.00
End Nudge @ 3120.00ft										
3,200.00	15.00	85.00	3,188.74	10.31	117.87	-117.88	0.00	0.00	0.00	0.00
3,300.00	15.00	85.00	3,285.33	12.57	143.65	-143.66	0.00	0.00	0.00	0.00
3,400.00	15.00	85.00	3,381.92	14.82	169.44	-169.45	0.00	0.00	0.00	0.00
3,500.00	15.00	85.00	3,478.51	17.08	195.22	-195.24	0.00	0.00	0.00	0.00
3,600.00	15.00	85.00	3,575.11	19.34	221.00	-221.02	0.00	0.00	0.00	0.00
3,642.34	15.00	85.00	3,616.00	20.29	231.92	-231.94	0.00	0.00	0.00	0.00
Parkman										
3,700.00	15.00	85.00	3,671.70	21.59	246.79	-246.81	0.00	0.00	0.00	0.00
3,800.00	15.00	85.00	3,768.29	23.85	272.57	-272.59	0.00	0.00	0.00	0.00
3,900.00	15.00	85.00	3,864.88	26.10	298.35	-298.38	0.00	0.00	0.00	0.00
4,000.00	15.00	85.00	3,961.48	28.36	324.14	-324.16	0.00	0.00	0.00	0.00
4,100.00	15.00	85.00	4,058.07	30.61	349.92	-349.95	0.00	0.00	0.00	0.00
4,156.87	15.00	85.00	4,113.00	31.90	364.58	-364.61	0.00	0.00	0.00	0.00
Sussex										
4,200.00	15.00	85.00	4,154.66	32.87	375.70	-375.73	0.00	0.00	0.00	0.00
4,300.00	15.00	85.00	4,251.25	35.13	401.49	-401.52	0.00	0.00	0.00	0.00



Plan Report for MCKINSTRY 21N-21HZ - Permit Rev-1

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	85.00	4,347.85	37.38	427.27	-427.30	0.00	0.00	0.00	0.00
4,500.00	15.00	85.00	4,444.44	39.64	453.06	-453.09	0.00	0.00	0.00	0.00
4,600.00	15.00	85.00	4,541.03	41.89	478.84	-478.87	0.00	0.00	0.00	0.00
4,677.61	15.00	85.00	4,616.00	43.64	498.85	-498.89	0.00	0.00	0.00	0.00
Shannon										
4,700.00	15.00	85.00	4,637.62	44.15	504.62	-504.66	0.00	0.00	0.00	0.00
4,800.00	15.00	85.00	4,734.22	46.40	530.41	-530.45	0.00	0.00	0.00	0.00
4,900.00	15.00	85.00	4,830.81	48.66	556.19	-556.23	0.00	0.00	0.00	0.00
5,000.00	15.00	85.00	4,927.40	50.92	581.97	-582.02	0.00	0.00	0.00	0.00
5,100.00	15.00	85.00	5,024.00	53.17	607.76	-607.80	0.00	0.00	0.00	0.00
5,200.00	15.00	85.00	5,120.59	55.43	633.54	-633.59	0.00	0.00	0.00	0.00
5,300.00	15.00	85.00	5,217.18	57.68	659.32	-659.37	0.00	0.00	0.00	0.00
5,400.00	15.00	85.00	5,313.77	59.94	685.11	-685.16	0.00	0.00	0.00	0.00
5,500.00	15.00	85.00	5,410.37	62.19	710.89	-710.94	0.00	0.00	0.00	0.00
5,600.00	15.00	85.00	5,506.96	64.45	736.67	-736.73	0.00	0.00	0.00	0.00
5,700.00	15.00	85.00	5,603.55	66.71	762.46	-762.51	0.00	0.00	0.00	0.00
5,800.00	15.00	85.00	5,700.14	68.96	788.24	-788.30	0.00	0.00	0.00	0.00
5,820.00	15.00	85.00	5,719.46	69.41	793.40	-793.46	0.00	0.00	0.00	0.00
Begin Drop @ 5820.00ft										
5,900.00	13.40	85.00	5,797.01	71.12	812.95	-813.01	2.00	-2.00	0.00	180.00
6,000.00	11.40	85.00	5,894.68	72.99	834.34	-834.40	2.00	-2.00	0.00	180.00
6,100.00	9.40	85.00	5,993.03	74.57	852.32	-852.38	2.00	-2.00	0.00	180.00
6,200.00	7.40	85.00	6,091.95	75.84	866.87	-866.94	2.00	-2.00	0.00	180.00
6,300.00	5.40	85.00	6,191.32	76.81	877.97	-878.04	2.00	-2.00	0.00	180.00
6,400.00	3.40	85.00	6,291.02	77.48	885.62	-885.68	2.00	-2.00	0.00	180.00
6,500.00	1.40	85.00	6,390.93	77.85	889.79	-889.86	2.00	-2.00	0.00	180.00
6,570.00	0.00	0.00	6,460.92	77.92	890.64	-890.71	2.00	-2.00	-121.43	-180.00
End Drop @ 6570.00ft										
6,577.16	0.00	0.00	6,468.08	77.92	890.64	-890.71	0.00	0.00	0.00	180.00
Top of 4.5" Liner @ 6577.16ft										
6,600.00	0.00	0.00	6,490.92	77.92	890.64	-890.71	0.00	0.00	0.00	0.00
6,677.16	0.00	0.00	6,568.08	77.92	890.64	-890.71	0.00	0.00	0.00	0.00
KOP @ 6677.16ft										
6,700.00	2.28	269.95	6,590.92	77.92	890.18	-890.25	10.00	10.00	0.00	269.95
6,800.00	12.28	269.95	6,689.98	77.91	877.52	-877.59	10.00	10.00	0.00	0.00
6,900.00	22.28	269.95	6,785.35	77.88	847.85	-847.92	10.00	10.00	0.00	0.00
7,000.00	32.28	269.95	6,874.11	77.84	802.07	-802.13	10.00	10.00	0.00	0.00
7,100.00	42.28	269.95	6,953.57	77.78	741.57	-741.63	10.00	10.00	0.00	0.00
DLS = 10°/100'										
7,158.85	48.17	269.95	6,995.00	77.74	699.81	-699.88	10.00	10.00	0.00	0.00
Sharon Springs										
7,200.00	52.28	269.95	7,021.32	77.71	668.19	-668.26	10.00	10.00	0.00	0.00
7,292.98	61.58	269.95	7,072.00	77.64	590.35	-590.42	10.00	10.00	0.00	0.00
Niobrara A										
7,300.00	62.28	269.95	7,075.30	77.63	584.16	-584.23	10.00	10.00	0.00	0.00
7,400.00	72.28	269.95	7,113.87	77.54	492.03	-492.10	10.00	10.00	0.00	0.00
7,403.75	72.66	269.95	7,115.00	77.54	488.45	-488.52	10.00	10.00	0.00	0.00
Niobrara B										
7,500.00	82.28	269.95	7,135.85	77.45	394.61	-394.68	10.00	10.00	0.00	0.00
7,584.04	90.69	269.95	7,141.00	77.37	310.80	-310.87	10.00	10.00	0.00	0.00
End Build @ 7584.04ft - Niobrara B Target (Heel) - 7" - MCKINSTRY 21N-21HZ_Heel										
7,600.00	90.69	269.95	7,140.81	77.36	294.84	-294.91	0.00	0.00	0.00	0.00
7,700.00	90.69	269.95	7,139.61	77.26	194.85	-194.92	0.00	0.00	0.00	0.00
7,800.00	90.69	269.95	7,138.41	77.17	94.86	-94.93	0.00	0.00	0.00	0.00
7,900.00	90.69	269.95	7,137.20	77.07	-5.13	5.07	0.00	0.00	0.00	0.00
8,000.00	90.69	269.95	7,136.00	76.98	-105.13	105.06	0.00	0.00	0.00	0.00
8,100.00	90.69	269.95	7,134.80	76.88	-205.12	205.05	0.00	0.00	0.00	0.00
8,200.00	90.69	269.95	7,133.60	76.79	-305.11	305.05	0.00	0.00	0.00	0.00
8,300.00	90.69	269.95	7,132.40	76.69	-405.11	405.04	0.00	0.00	0.00	0.00

Plan Report for MCKINSTRY 21N-21HZ - Permit Rev-1

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	90.69	269.95	7,131.20	76.60	-505.10	505.03	0.00	0.00	0.00	0.00
8,500.00	90.69	269.95	7,130.00	76.51	-605.09	605.02	0.00	0.00	0.00	0.00
8,600.00	90.69	269.95	7,128.79	76.41	-705.08	705.02	0.00	0.00	0.00	0.00
8,700.00	90.69	269.95	7,127.59	76.32	-805.08	805.01	0.00	0.00	0.00	0.00
8,800.00	90.69	269.95	7,126.39	76.22	-905.07	905.00	0.00	0.00	0.00	0.00
8,900.00	90.69	269.95	7,125.19	76.13	-1,005.06	1,004.99	0.00	0.00	0.00	0.00
9,000.00	90.69	269.95	7,123.99	76.03	-1,105.05	1,104.99	0.00	0.00	0.00	0.00
9,100.00	90.69	269.95	7,122.79	75.94	-1,205.05	1,204.98	0.00	0.00	0.00	0.00
9,200.00	90.69	269.95	7,121.59	75.84	-1,305.04	1,304.97	0.00	0.00	0.00	0.00
9,300.00	90.69	269.95	7,120.38	75.75	-1,405.03	1,404.97	0.00	0.00	0.00	0.00
9,400.00	90.69	269.95	7,119.18	75.65	-1,505.03	1,504.96	0.00	0.00	0.00	0.00
9,500.00	90.69	269.95	7,117.98	75.56	-1,605.02	1,604.95	0.00	0.00	0.00	0.00
9,600.00	90.69	269.95	7,116.78	75.46	-1,705.01	1,704.94	0.00	0.00	0.00	0.00
9,700.00	90.69	269.95	7,115.58	75.37	-1,805.00	1,804.94	0.00	0.00	0.00	0.00
9,800.00	90.69	269.95	7,114.38	75.28	-1,905.00	1,904.93	0.00	0.00	0.00	0.00
9,900.00	90.69	269.95	7,113.17	75.18	-2,004.99	2,004.92	0.00	0.00	0.00	0.00
10,000.00	90.69	269.95	7,111.97	75.09	-2,104.98	2,104.92	0.00	0.00	0.00	0.00
10,100.00	90.69	269.95	7,110.77	74.99	-2,204.97	2,204.91	0.00	0.00	0.00	0.00
10,200.00	90.69	269.95	7,109.57	74.90	-2,304.97	2,304.90	0.00	0.00	0.00	0.00
10,300.00	90.69	269.95	7,108.37	74.80	-2,404.96	2,404.89	0.00	0.00	0.00	0.00
10,400.00	90.69	269.95	7,107.17	74.71	-2,504.95	2,504.89	0.00	0.00	0.00	0.00
10,500.00	90.69	269.95	7,105.97	74.61	-2,604.95	2,604.88	0.00	0.00	0.00	0.00
10,600.00	90.69	269.95	7,104.76	74.52	-2,704.94	2,704.87	0.00	0.00	0.00	0.00
10,700.00	90.69	269.95	7,103.56	74.42	-2,804.93	2,804.87	0.00	0.00	0.00	0.00
10,800.00	90.69	269.95	7,102.36	74.33	-2,904.92	2,904.86	0.00	0.00	0.00	0.00
10,900.00	90.69	269.95	7,101.16	74.23	-3,004.92	3,004.85	0.00	0.00	0.00	0.00
11,000.00	90.69	269.95	7,099.96	74.14	-3,104.91	3,104.84	0.00	0.00	0.00	0.00
11,100.00	90.69	269.95	7,098.76	74.05	-3,204.90	3,204.84	0.00	0.00	0.00	0.00
11,200.00	90.69	269.95	7,097.56	73.95	-3,304.89	3,304.83	0.00	0.00	0.00	0.00
11,300.00	90.69	269.95	7,096.35	73.86	-3,404.89	3,404.82	0.00	0.00	0.00	0.00
11,400.00	90.69	269.95	7,095.15	73.76	-3,504.88	3,504.81	0.00	0.00	0.00	0.00
11,500.00	90.69	269.95	7,093.95	73.67	-3,604.87	3,604.81	0.00	0.00	0.00	0.00
11,600.00	90.69	269.95	7,092.75	73.57	-3,704.87	3,704.80	0.00	0.00	0.00	0.00
11,700.00	90.69	269.95	7,091.55	73.48	-3,804.86	3,804.79	0.00	0.00	0.00	0.00
11,800.00	90.69	269.95	7,090.35	73.38	-3,904.85	3,904.79	0.00	0.00	0.00	0.00
11,900.00	90.69	269.95	7,089.15	73.29	-4,004.84	4,004.78	0.00	0.00	0.00	0.00
12,000.00	90.69	269.95	7,087.94	73.19	-4,104.84	4,104.77	0.00	0.00	0.00	0.00
12,100.00	90.69	269.95	7,086.74	73.10	-4,204.83	4,204.76	0.00	0.00	0.00	0.00
12,200.00	90.69	269.95	7,085.54	73.00	-4,304.82	4,304.76	0.00	0.00	0.00	0.00
12,300.00	90.69	269.95	7,084.34	72.91	-4,404.81	4,404.75	0.00	0.00	0.00	0.00
12,400.00	90.69	269.95	7,083.14	72.81	-4,504.81	4,504.74	0.00	0.00	0.00	0.00
12,500.00	90.69	269.95	7,081.94	72.72	-4,604.80	4,604.74	0.00	0.00	0.00	0.00
12,600.00	90.69	269.95	7,080.74	72.63	-4,704.79	4,704.73	0.00	0.00	0.00	0.00
12,700.00	90.69	269.95	7,079.53	72.53	-4,804.79	4,804.72	0.00	0.00	0.00	0.00
12,800.00	90.69	269.95	7,078.33	72.44	-4,904.78	4,904.71	0.00	0.00	0.00	0.00
12,900.00	90.69	269.95	7,077.13	72.34	-5,004.77	5,004.71	0.00	0.00	0.00	0.00
13,000.00	90.69	269.95	7,075.93	72.25	-5,104.76	5,104.70	0.00	0.00	0.00	0.00
13,100.00	90.69	269.95	7,074.73	72.15	-5,204.76	5,204.69	0.00	0.00	0.00	0.00
13,200.00	90.69	269.95	7,073.53	72.06	-5,304.75	5,304.68	0.00	0.00	0.00	0.00
13,300.00	90.69	269.95	7,072.33	71.96	-5,404.74	5,404.68	0.00	0.00	0.00	0.00
13,400.00	90.69	269.95	7,071.12	71.87	-5,504.73	5,504.67	0.00	0.00	0.00	0.00
13,500.00	90.69	269.95	7,069.92	71.77	-5,604.73	5,604.66	0.00	0.00	0.00	0.00
13,600.00	90.69	269.95	7,068.72	71.68	-5,704.72	5,704.66	0.00	0.00	0.00	0.00
13,700.00	90.69	269.95	7,067.52	71.58	-5,804.71	5,804.65	0.00	0.00	0.00	0.00
13,800.00	90.69	269.95	7,066.32	71.49	-5,904.71	5,904.64	0.00	0.00	0.00	0.00
13,900.00	90.69	269.95	7,065.12	71.40	-6,004.70	6,004.63	0.00	0.00	0.00	0.00
14,000.00	90.69	269.95	7,063.92	71.30	-6,104.69	6,104.63	0.00	0.00	0.00	0.00
14,100.00	90.69	269.95	7,062.71	71.21	-6,204.68	6,204.62	0.00	0.00	0.00	0.00
14,200.00	90.69	269.95	7,061.51	71.11	-6,304.68	6,304.61	0.00	0.00	0.00	0.00
14,300.00	90.69	269.95	7,060.31	71.02	-6,404.67	6,404.61	0.00	0.00	0.00	0.00



Plan Report for MCKINSTRY 21N-21HZ - Permit Rev-1

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 (°)
14,400.00	90.69	269.95	7,059.11	70.92	-6,504.66	6,504.60	0.00	0.00	0.00	0.00
14,500.00	90.69	269.95	7,057.91	70.83	-6,604.66	6,604.59	0.00	0.00	0.00	0.00
14,600.00	90.69	269.95	7,056.71	70.73	-6,704.65	6,704.58	0.00	0.00	0.00	0.00
14,700.00	90.69	269.95	7,055.51	70.64	-6,804.64	6,804.58	0.00	0.00	0.00	0.00
14,800.00	90.69	269.95	7,054.30	70.54	-6,904.63	6,904.57	0.00	0.00	0.00	0.00
14,825.26	90.69	269.95	7,054.00	70.52	-6,929.89	6,929.83	0.00	0.00	0.00	0.00
Niobrara B Target (Toe)										
14,825.27	90.69	269.95	7,054.00	70.52	-6,929.90	6,929.84	0.00	0.00	0.00	0.00
TD Well @ 14825.27ft - MCKINSTRY 21N-21HZ_Toe										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,370.00	2,370.00	0.00	0.00	Begin Nudge @ 2370.00ft
3,120.00	3,111.46	8.51	97.24	End Nudge @ 3120.00ft
5,820.00	5,719.46	69.41	793.40	Begin Drop @ 5820.00ft
6,570.00	6,460.92	77.92	890.64	End Drop @ 6570.00ft
6,577.16	6,468.08	77.92	890.64	Top of 4.5" Liner @ 6577.16ft
6,677.16	6,568.08	77.92	890.64	KOP @ 6677.16ft
7,100.00	6,953.57	77.78	741.57	DLS = 10°/100'
7,584.04	7,141.00	77.37	310.80	End Build @ 7584.04ft
14,825.27	7,054.00	70.52	-6,929.90	TD Well @ 14825.27ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	269.95	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,584.04	Permit Rev-1	MWD+IFR1
7,584.04	14,825.27	Permit Rev-1	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
7,584.04	7,141.00	7"	7	8-3/4

Plan Report for MCKINSTRY 21N-21HZ - Permit Rev-1**Formation Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
712.00	712.00	Fox Hills		0.00	
3,642.34	3,616.00	Parkman		0.00	
4,156.87	4,113.00	Sussex		0.00	
4,677.61	4,616.00	Shannon		0.00	
7,158.85	6,995.00	Sharon Springs		0.00	
7,292.98	7,072.00	Niobrara A		0.00	
7,403.75	7,115.00	Niobrara B		0.00	
7,584.04	7,141.00	Niobrara B Target (Heel)		0.00	
14,825.26	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	-29.86	0.00	Polygon
3N-R68W-Sec. 23_Section Lines	0.00	-29.86	0.00	Polygon
MCKINSTRY 21N-21HZ_Toe	7,054.00	70.52	-6,929.90	Point
MCKINSTRY 21N-21HZ_Heel	7,141.00	77.37	310.80	Point
3N-R68W-Sec. 21_Section Lines	0.00	-29.86	0.00	Polygon
MCKINSTRY 21N-21HZ_SHL	0.00	0.00	0.00	Point

**North Reference Sheet for 3N-68W-22 McKinstry 8-22HZ Pad - MCKINSTRY
21N-21HZ - 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' @ 5001.00usft (D Rig). Northing and Easting are relative to MCKINSTRY 21N-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: 14,604,786.42 usft N, 1,645,614.32 usft E

Geographical Coordinates of Well: 40° 12' 51.63" N, 104° 58' 52.98" W

Grid Convergence at Surface is: 0.01°

Based upon Minimum Curvature type calculations, at a Measured Depth of 14,825.27usft
the Bottom Hole Displacement is 6,930.26usft in the Direction of 270.58° (True).

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

