

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N
3N-67W-15 Iceman Pad
ICEMAN STATE 5N-C16HZ

PLAN A

Plan: PERMIT REV-2

Sperry Drilling Services Proposal Report

25 February, 2015

Well Coordinates: 14,609,686.84 N, 1,673,168.98 E (40° 13' 39.87" N, 104° 52' 57.57" W)
Ground Level: 4,796.00 usft

Local Coordinate Origin:	Centered on Well ICEMAN STATE 5N-C16HZ
Viewing Datum:	GL 4797 & KB 17 @ 4813.00usft (ASSUMED)
TVDs to System:	N
North Reference:	True
Unit System:	Dec-Deg - API - US Survey Feet - Custom

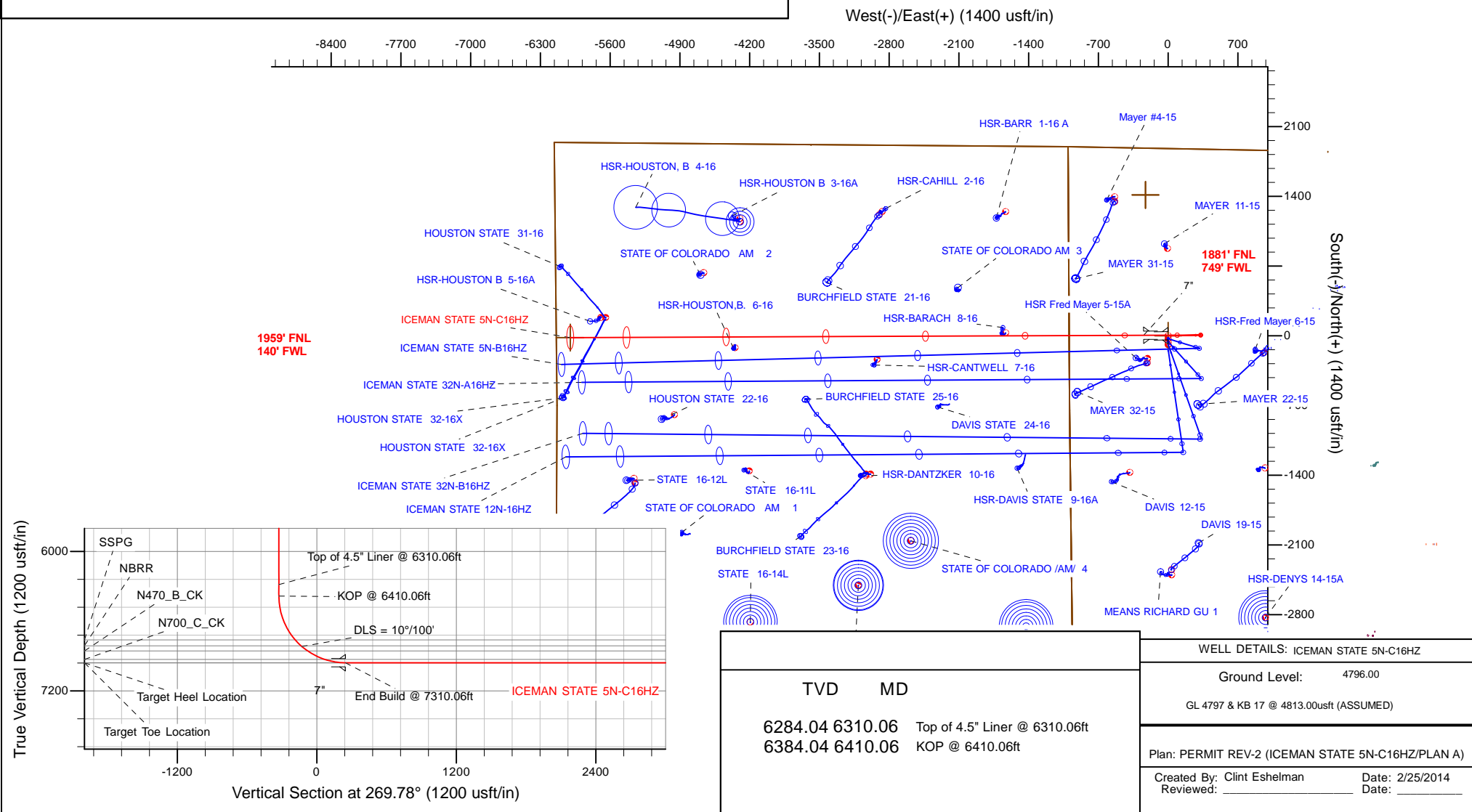
Version: 5000.1 Build: 70

HALLIBURTON

US ROCKIES WATTENBERG PLANNING



SECTION DETAILS											WELLBORE TARGET DETAILS (LAT/LONG)					
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Name	TVD	+N/-S	+E/-W	Latitude	Longitude
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		ICEMAN STATE 5N-C16HZ_SHL	0.00	0.00	0.00	40.227742	-104.882658
2	960.00	0.00	0.00	960.00	0.00	0.00	0.00	0.00	0.00		ICEMAN STATE 5N-C16HZ_BHL	6957.00	-17.82	-6000.93	40.227691	-104.904158
3	1459.45	9.99	88.81	1456.93	0.90	43.42	2.00	88.81	-43.42							Point
4	2842.57	9.99	88.81	2819.07	5.90	283.28	0.00	0.00	-283.30							
5	3342.02	0.00	0.00	3316.00	6.80	326.70	2.00	180.00	-326.72							
6	6410.06	0.00	0.00	6384.04	6.80	326.70	0.00	0.00	-326.72							
7	7310.06	90.00	269.78	6957.00	4.57	-246.25	10.00	269.78	246.23							
8	13064.78	90.00	269.78	6957.00	-17.82	-6000.93	0.00	0.00	6000.95	ICEMAN STATE 5N-C16HZ_BHL						



Plan Report for ICEMAN STATE 5N-C16HZ - 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
ICEMAN STATE 5N-C16HZ_SHL										
3.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3N-R67W-Sec. 16_Section Lines - 3N-R67W-Sec. 15_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
443.00	0.00	0.00	443.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Fox Hills										
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
760.00	0.00	0.00	760.00	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
960.00	0.00	0.00	960.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 960.00ft										
1,000.00	0.80	88.81	1,000.00	0.01	0.28	-0.28	2.00	2.00	0.00	88.81
1,100.00	2.80	88.81	1,099.94	0.07	3.42	-3.42	2.00	2.00	0.00	0.00
1,200.00	4.80	88.81	1,199.72	0.21	10.05	-10.05	2.00	2.00	0.00	0.00
1,300.00	6.80	88.81	1,299.20	0.42	20.15	-20.15	2.00	2.00	0.00	0.00
1,400.00	8.80	88.81	1,398.27	0.70	33.72	-33.72	2.00	2.00	0.00	0.00
1,459.45	9.99	88.81	1,456.92	0.90	43.42	-43.42	2.00	2.00	0.00	0.00
End Nudge @ 1459.45ft										
1,500.00	9.99	88.81	1,496.86	1.05	50.45	-50.45	0.00	0.00	0.00	0.00
1,600.00	9.99	88.81	1,595.34	1.41	67.79	-67.80	0.00	0.00	0.00	0.00
1,700.00	9.99	88.81	1,693.83	1.77	85.13	-85.14	0.00	0.00	0.00	0.00
1,800.00	9.99	88.81	1,792.31	2.13	102.48	-102.48	0.00	0.00	0.00	0.00
1,900.00	9.99	88.81	1,890.80	2.49	119.82	-119.83	0.00	0.00	0.00	0.00
2,000.00	9.99	88.81	1,989.28	2.85	137.16	-137.17	0.00	0.00	0.00	0.00
2,100.00	9.99	88.81	2,087.76	3.22	154.50	-154.51	0.00	0.00	0.00	0.00
2,200.00	9.99	88.81	2,186.25	3.58	171.85	-171.86	0.00	0.00	0.00	0.00
2,300.00	9.99	88.81	2,284.73	3.94	189.19	-189.20	0.00	0.00	0.00	0.00
2,400.00	9.99	88.81	2,383.22	4.30	206.53	-206.55	0.00	0.00	0.00	0.00
2,500.00	9.99	88.81	2,481.70	4.66	223.87	-223.89	0.00	0.00	0.00	0.00
2,600.00	9.99	88.81	2,580.18	5.02	241.22	-241.23	0.00	0.00	0.00	0.00
2,700.00	9.99	88.81	2,678.67	5.38	258.56	-258.58	0.00	0.00	0.00	0.00
2,800.00	9.99	88.81	2,777.15	5.74	275.90	-275.92	0.00	0.00	0.00	0.00
2,842.57	9.99	88.81	2,819.08	5.90	283.28	-283.30	0.00	0.00	0.00	0.00
Begin Drop @ 2842.57ft										
2,900.00	8.84	88.81	2,875.73	6.09	292.67	-292.70	2.00	-2.00	0.00	180.00
3,000.00	6.84	88.81	2,974.79	6.38	306.31	-306.33	2.00	-2.00	0.00	180.00
3,100.00	4.84	88.81	3,074.27	6.59	316.49	-316.51	2.00	-2.00	0.00	180.00
3,200.00	2.84	88.81	3,174.04	6.73	323.18	-323.20	2.00	-2.00	0.00	180.00
3,300.00	0.84	88.81	3,273.98	6.79	326.39	-326.42	2.00	-2.00	0.00	180.00
3,342.02	0.00	0.00	3,316.00	6.80	326.70	-326.72	2.00	-2.00	0.00	-180.00
End Drop @ 3342.02ft										
3,400.00	0.00	0.00	3,373.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,473.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
3,563.02	0.00	0.00	3,537.00	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
Parkman										
3,600.00	0.00	0.00	3,573.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,673.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,773.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,873.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	3,973.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00

Plan Report for ICEMAN STATE 5N-C16HZ - 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 (°)
4,017.02	0.00	0.00	3,991.00	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
Sussex										
4,100.00	0.00	0.00	4,073.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,173.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,273.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,373.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,473.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,573.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,673.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,773.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,873.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	4,973.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,073.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,173.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,273.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,373.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,473.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,573.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,673.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,773.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,873.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,973.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,073.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,173.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,273.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
6,310.06	0.00	0.00	6,284.04	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6310.06ft										
6,400.00	0.00	0.00	6,373.98	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
6,410.06	0.00	0.00	6,384.04	6.80	326.70	-326.72	0.00	0.00	0.00	0.00
KOP @ 6410.06ft										
6,500.00	8.99	269.78	6,473.61	6.77	319.66	-319.68	10.00	10.00	0.00	269.78
6,600.00	18.99	269.78	6,570.52	6.68	295.50	-295.53	10.00	10.00	0.00	0.00
6,700.00	28.99	269.78	6,661.76	6.52	254.89	-254.91	10.00	10.00	0.00	0.00
6,800.00	38.99	269.78	6,744.57	6.30	199.05	-199.08	10.00	10.00	0.00	0.00
6,820.15	41.01	269.78	6,760.00	6.25	186.10	-186.13	10.00	10.00	0.00	0.00
SSPG										
6,891.81	48.18	269.78	6,811.00	6.06	135.82	-135.85	10.00	10.00	0.00	0.00
NBRR										
6,900.00	48.99	269.78	6,816.42	6.03	129.68	-129.70	10.00	10.00	0.00	0.00
DLS = 10°/100'										
6,962.89	55.28	269.78	6,855.00	5.84	80.05	-80.07	10.00	10.00	0.00	0.00
N470_B_CK										
7,000.00	58.99	269.78	6,875.13	5.72	48.89	-48.91	10.00	10.00	0.00	0.00
7,100.00	68.99	269.78	6,918.92	5.37	-40.87	40.85	10.00	10.00	0.00	0.00
7,126.99	71.69	269.78	6,928.00	5.27	-66.29	66.27	10.00	10.00	0.00	0.00
N700_C_CK										
7,200.00	78.99	269.78	6,946.46	5.00	-136.87	136.85	10.00	10.00	0.00	0.00
7,300.00	88.99	269.78	6,956.91	4.61	-236.19	236.18	10.00	10.00	0.00	0.00
7,310.06	90.00	269.78	6,957.00	4.57	-246.25	246.23	10.00	10.00	0.00	0.00
End Build @ 7310.06ft - Target Heel Location - 7"										
7,400.00	90.00	269.78	6,957.00	4.22	-336.19	336.17	0.00	0.00	0.00	0.00
7,500.00	90.00	269.78	6,957.00	3.83	-436.19	436.17	0.00	0.00	0.00	0.00
7,600.00	90.00	269.78	6,957.00	3.44	-536.19	536.17	0.00	0.00	0.00	0.00
7,700.00	90.00	269.78	6,957.00	3.05	-636.19	636.17	0.00	0.00	0.00	0.00
7,800.00	90.00	269.78	6,957.00	2.66	-736.19	736.17	0.00	0.00	0.00	0.00
7,900.00	90.00	269.78	6,957.00	2.27	-836.19	836.17	0.00	0.00	0.00	0.00
8,000.00	90.00	269.78	6,957.00	1.89	-936.19	936.17	0.00	0.00	0.00	0.00
8,100.00	90.00	269.78	6,957.00	1.50	-1,036.19	1,036.17	0.00	0.00	0.00	0.00

Plan Report for ICEMAN STATE 5N-C16HZ - 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 (°)
8,200.00	90.00	269.78	6,957.00	1.11	-1,136.19	1,136.17	0.00	0.00	0.00	0.00
8,300.00	90.00	269.78	6,957.00	0.72	-1,236.19	1,236.17	0.00	0.00	0.00	0.00
8,400.00	90.00	269.78	6,957.00	0.33	-1,336.19	1,336.17	0.00	0.00	0.00	0.00
8,500.00	90.00	269.78	6,957.00	-0.06	-1,436.18	1,436.17	0.00	0.00	0.00	0.00
8,600.00	90.00	269.78	6,957.00	-0.45	-1,536.18	1,536.17	0.00	0.00	0.00	0.00
8,700.00	90.00	269.78	6,957.00	-0.84	-1,636.18	1,636.17	0.00	0.00	0.00	0.00
8,800.00	90.00	269.78	6,957.00	-1.23	-1,736.18	1,736.17	0.00	0.00	0.00	0.00
8,900.00	90.00	269.78	6,957.00	-1.62	-1,836.18	1,836.17	0.00	0.00	0.00	0.00
9,000.00	90.00	269.78	6,957.00	-2.01	-1,936.18	1,936.17	0.00	0.00	0.00	0.00
9,100.00	90.00	269.78	6,957.00	-2.39	-2,036.18	2,036.17	0.00	0.00	0.00	0.00
9,200.00	90.00	269.78	6,957.00	-2.78	-2,136.18	2,136.17	0.00	0.00	0.00	0.00
9,300.00	90.00	269.78	6,957.00	-3.17	-2,236.18	2,236.17	0.00	0.00	0.00	0.00
9,400.00	90.00	269.78	6,957.00	-3.56	-2,336.18	2,336.17	0.00	0.00	0.00	0.00
9,500.00	90.00	269.78	6,957.00	-3.95	-2,436.18	2,436.17	0.00	0.00	0.00	0.00
9,600.00	90.00	269.78	6,957.00	-4.34	-2,536.18	2,536.17	0.00	0.00	0.00	0.00
9,700.00	90.00	269.78	6,957.00	-4.73	-2,636.18	2,636.17	0.00	0.00	0.00	0.00
9,800.00	90.00	269.78	6,957.00	-5.12	-2,736.18	2,736.17	0.00	0.00	0.00	0.00
9,900.00	90.00	269.78	6,957.00	-5.51	-2,836.17	2,836.17	0.00	0.00	0.00	0.00
10,000.00	90.00	269.78	6,957.00	-5.90	-2,936.17	2,936.17	0.00	0.00	0.00	0.00
10,100.00	90.00	269.78	6,957.00	-6.29	-3,036.17	3,036.17	0.00	0.00	0.00	0.00
10,200.00	90.00	269.78	6,957.00	-6.67	-3,136.17	3,136.17	0.00	0.00	0.00	0.00
10,300.00	90.00	269.78	6,957.00	-7.06	-3,236.17	3,236.17	0.00	0.00	0.00	0.00
10,400.00	90.00	269.78	6,957.00	-7.45	-3,336.17	3,336.17	0.00	0.00	0.00	0.00
10,500.00	90.00	269.78	6,957.00	-7.84	-3,436.17	3,436.17	0.00	0.00	0.00	0.00
10,600.00	90.00	269.78	6,957.00	-8.23	-3,536.17	3,536.17	0.00	0.00	0.00	0.00
10,700.00	90.00	269.78	6,957.00	-8.62	-3,636.17	3,636.17	0.00	0.00	0.00	0.00
10,800.00	90.00	269.78	6,957.00	-9.01	-3,736.17	3,736.17	0.00	0.00	0.00	0.00
10,900.00	90.00	269.78	6,957.00	-9.40	-3,836.17	3,836.17	0.00	0.00	0.00	0.00
11,000.00	90.00	269.78	6,957.00	-9.79	-3,936.17	3,936.17	0.00	0.00	0.00	0.00
11,100.00	90.00	269.78	6,957.00	-10.18	-4,036.17	4,036.17	0.00	0.00	0.00	0.00
11,200.00	90.00	269.78	6,957.00	-10.57	-4,136.16	4,136.17	0.00	0.00	0.00	0.00
11,300.00	90.00	269.78	6,957.00	-10.96	-4,236.16	4,236.17	0.00	0.00	0.00	0.00
11,400.00	90.00	269.78	6,957.00	-11.34	-4,336.16	4,336.17	0.00	0.00	0.00	0.00
11,500.00	90.00	269.78	6,957.00	-11.73	-4,436.16	4,436.17	0.00	0.00	0.00	0.00
11,600.00	90.00	269.78	6,957.00	-12.12	-4,536.16	4,536.17	0.00	0.00	0.00	0.00
11,700.00	90.00	269.78	6,957.00	-12.51	-4,636.16	4,636.17	0.00	0.00	0.00	0.00
11,800.00	90.00	269.78	6,957.00	-12.90	-4,736.16	4,736.17	0.00	0.00	0.00	0.00
11,900.00	90.00	269.78	6,957.00	-13.29	-4,836.16	4,836.17	0.00	0.00	0.00	0.00
12,000.00	90.00	269.78	6,957.00	-13.68	-4,936.16	4,936.17	0.00	0.00	0.00	0.00
12,100.00	90.00	269.78	6,957.00	-14.07	-5,036.16	5,036.17	0.00	0.00	0.00	0.00
12,200.00	90.00	269.78	6,957.00	-14.46	-5,136.16	5,136.17	0.00	0.00	0.00	0.00
12,300.00	90.00	269.78	6,957.00	-14.85	-5,236.16	5,236.17	0.00	0.00	0.00	0.00
12,400.00	90.00	269.78	6,957.00	-15.24	-5,336.16	5,336.17	0.00	0.00	0.00	0.00
12,500.00	90.00	269.78	6,957.00	-15.62	-5,436.15	5,436.17	0.00	0.00	0.00	0.00
12,600.00	90.00	269.78	6,957.00	-16.01	-5,536.15	5,536.17	0.00	0.00	0.00	0.00
12,700.00	90.00	269.78	6,957.00	-16.40	-5,636.15	5,636.17	0.00	0.00	0.00	0.00
12,800.00	90.00	269.78	6,957.00	-16.79	-5,736.15	5,736.17	0.00	0.00	0.00	0.00
12,900.00	90.00	269.78	6,957.00	-17.18	-5,836.15	5,836.17	0.00	0.00	0.00	0.00
13,000.00	90.00	269.78	6,957.00	-17.57	-5,936.15	5,936.17	0.00	0.00	0.00	0.00
13,064.77	90.00	269.78	6,957.00	-17.82	-6,000.92	6,000.94	0.00	0.00	0.00	0.00

Target Toe Location

13,064.78	90.00	269.78	6,957.00	-17.82	-6,000.93	6,000.95	0.00	0.00	0.00	0.00
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TD Well @ 13064.78ft - ICEMAN STATE 5N-C16HZ_BHL

Plan Report for ICEMAN STATE 5N-C16HZ - PERMIT REV-2

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
960.00	960.00	0.00	0.00	Begin Nudge @ 960.00ft
1,459.45	1,456.92	0.90	43.42	End Nudge @ 1459.45ft
2,842.57	2,819.08	5.90	283.28	Begin Drop @ 2842.57ft
3,342.02	3,316.00	6.80	326.70	End Drop @ 3342.02ft
6,310.06	6,284.04	6.80	326.70	Top of 4.5" Liner @ 6310.06ft
6,410.06	6,384.04	6.80	326.70	KOP @ 6410.06ft
6,900.00	6,816.42	6.03	129.68	DLS = 10°/100'
7,310.06	6,957.00	4.57	-246.25	End Build @ 7310.06ft
13,064.78	6,957.00	-17.82	-6,000.93	TD Well @ 13064.78ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
User	No Target (Freehand)	269.78	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,310.06	PERMIT REV-2	MWD+IFR1+MS_GWA
7,310.06	13,064.78	PERMIT REV-2	MWD+IFR1+MS_GWA

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
760.00	760.00	9 5/8"	9-5/8	13-1/2
7,310.06	6,957.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
443.00	443.00	Base Fox Hills		0.00	
3,563.02	3,537.00	Parkman		0.00	
4,017.02	3,991.00	Sussex		0.00	
6,820.15	6,760.00	SSPG		0.00	
6,891.81	6,811.00	NBRR		0.00	
6,962.89	6,855.00	N470_B_CK		0.00	
7,126.99	6,928.00	N700_C_CK		0.00	
7,310.06	6,957.00	Target Heel Location		0.00	
13,064.77	6,957.00	Target Toe Location		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
3N-R67W-Sec. 16_Section Lines	3.00	1,414.02	-228.31	Polygon
ICEMAN STATE 5N-C16HZ_BHL	6,957.00	-17.82	-6,000.93	Point
ICEMAN STATE 5N-C16HZ_SHL	0.00	0.00	0.00	Point
3N-R67W-Sec. 15_Section Lines	3.00	1,414.02	-228.31	Polygon

North Reference Sheet for 3N-67W-15 Iceman Pad - ICEMAN STATE 5N-C16HZ - 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 GL 4797 & KB 17 @ 4813.00usft (ASSUMED). Northing and Easting are relative to ICEMAN STATE 5N-C16HZ

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: 0.99960123

Grid Coordinates of Well: 14,609,686.84 usft N, 1,673,168.98 usft E

Geographical Coordinates of Well: $40^\circ 13' 39.87''$ N, $104^\circ 52' 57.57''$ W

Grid Convergence at Surface is: 0.08°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,064.78usft
the Bottom Hole Displacement is 6,000.96usft in the Direction of 269.83° (True).

Magnetic Convergence at surface is: -8.37° (20 November 2014, , IGRF2010)

