

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N
3N-67W-15 Iceman Pad
ICEMAN STATE 32N-B16HZ

PLAN A

Plan: PERMIT REV-3

Sperry Drilling Services Proposal Report

25 February, 2015

Well Coordinates: 14,609,596.89 N, 1,673,169.65 E (40° 13' 38.98" N, 104° 52' 57.56" W)
Ground Level: 4,797.00 usft

Local Coordinate Origin:	Centered on Well ICEMAN STATE 32N-B16HZ
Viewing Datum:	GL 4797 & KB 17 @ 4814.00usft (ASSUMED)
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-67W-15 Iceman Pad
Well: ICEMAN STATE 32N-B16HZ
Wellbore: PLAN A
Design: PERMIT REV-3

US ROCKIES WATTENBERG PLANNING

HALLIBURTON
Sperry Drilling

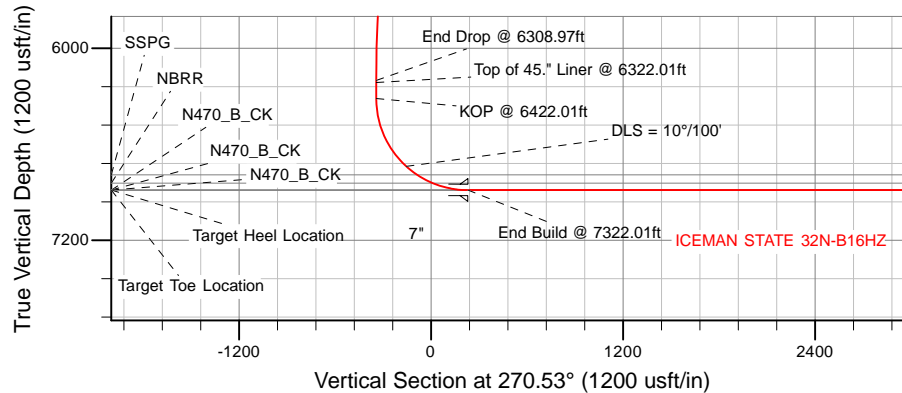
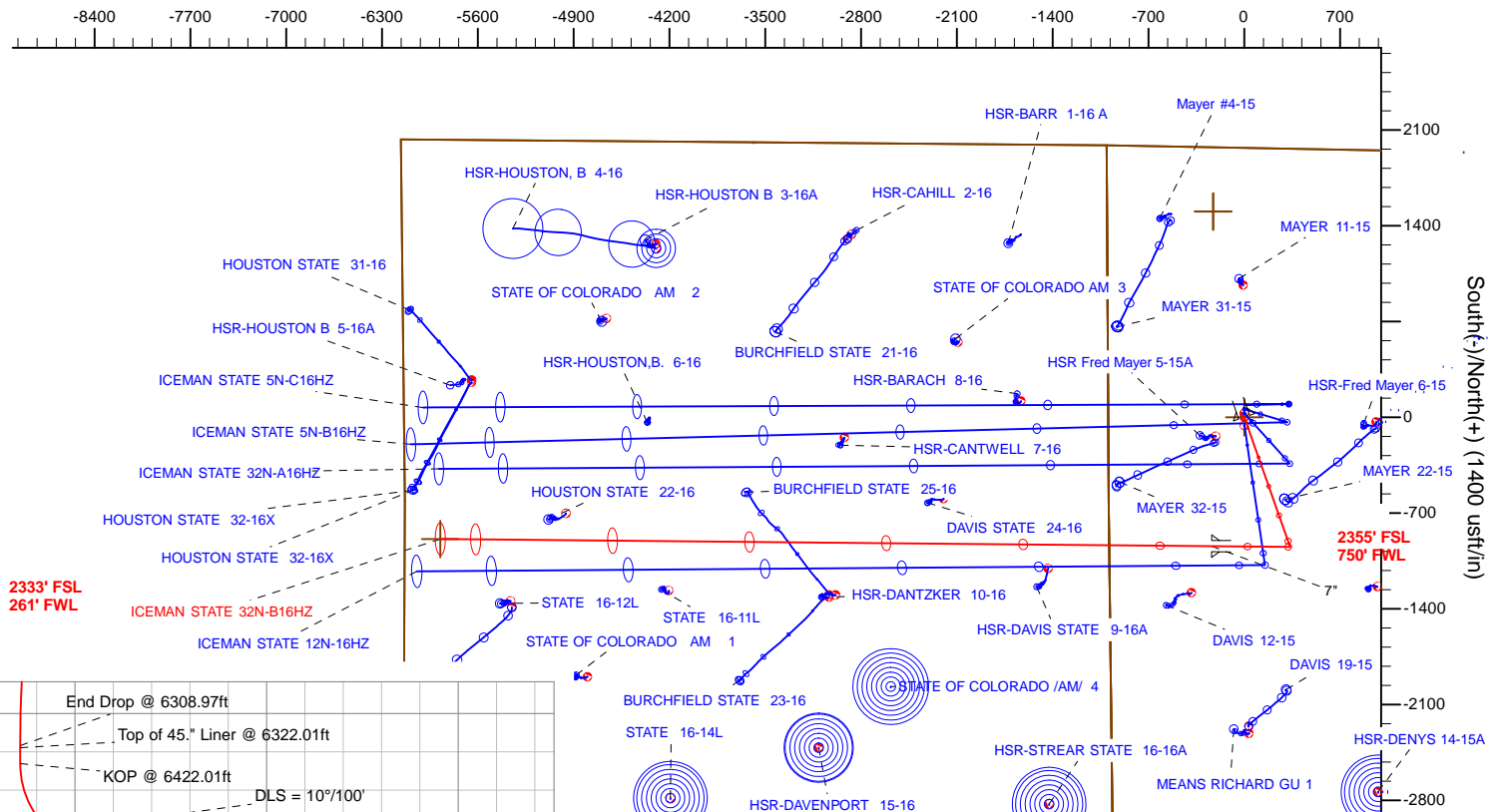
SECTION DETAILS

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	1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	
3	1850.75	13.01	160.56	1845.17	-69.40	24.49	2.00	160.56	-25.13	
4	5658.22	13.01	160.56	5554.83	-878.00	309.81	0.00	0.00	-317.92	
5	6308.97	0.00	0.00	6200.00	-947.40	334.30	2.00	180.00	-343.05	
6	6422.01	0.00	0.00	6313.04	-947.40	334.30	0.00	0.00	-343.05	
7	7322.01	90.00	270.53	6886.00	-942.10	-238.63	10.00	270.53	229.91	
8	12958.34	90.00	270.53	6886.00	-890.00	-5874.72	0.00	0.00	5866.24	ICEMAN STATE 32N-B16HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
ICEMAN STATE 32N-B16HZ_SHL	0.00	0.00	0.00	40.227495	-104.882656	
ICEMAN STATE 32N-B16HZ_BHL	6886.00	-890.00	-5874.72	40.225049	-104.903703	Point

West(-)/East(+) (1400 usft/in)



TVD MD

6213.04 6322.01 Top of 45.° Liner @ 6322.01ft
6313.04 6422.01 KOP @ 6422.01ft

WELL DETAILS: ICEMAN STATE 32N-B16HZ

Ground Level: 4797.00

GL 4797 & KB 17 @ 4814.00usft (ASSUMED)

Plan: PERMIT REV-3 (ICEMAN STATE 32N-B16HZ/PLAN A)

Created By: Clint Eshelman

Date: 2/25/2014

Reviewed:

Date:

Plan Report for ICEMAN STATE 32N-B16HZ - 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
ICEMAN STATE 32N-B16HZ_SHL										
4.00	0.00	0.00	4.00	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
444.00	0.00	0.00	444.00	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
761.00	0.00	0.00	761.00	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
Begin Nudge @ 1200.00ft										
1,300.00	2.00	160.56	1,299.98	-1.65	0.58	-0.60	2.00	2.00	0.00	160.56
1,400.00	4.00	160.56	1,399.84	-6.58	2.32	-2.38	2.00	2.00	0.00	0.00
1,500.00	6.00	160.56	1,499.45	-14.80	5.22	-5.36	2.00	2.00	0.00	0.00
1,600.00	8.00	160.56	1,598.70	-26.29	9.28	-9.52	2.00	2.00	0.00	0.00
1,700.00	10.00	160.56	1,697.47	-41.04	14.48	-14.86	2.00	2.00	0.00	0.00
1,800.00	12.00	160.56	1,795.62	-59.04	20.83	-21.38	2.00	2.00	0.00	0.00
1,850.75	13.01	160.56	1,845.17	-69.40	24.49	-25.13	2.00	2.00	0.00	0.00
End Nudge @ 1850.75ft										
1,900.00	13.01	160.56	1,893.15	-79.86	28.18	-28.92	0.00	0.00	0.00	0.00
2,000.00	13.01	160.56	1,990.58	-101.10	35.67	-36.61	0.00	0.00	0.00	0.00
2,100.00	13.01	160.56	2,088.02	-122.33	43.17	-44.30	0.00	0.00	0.00	0.00
2,200.00	13.01	160.56	2,185.45	-143.57	50.66	-51.99	0.00	0.00	0.00	0.00
2,300.00	13.01	160.56	2,282.88	-164.81	58.15	-59.68	0.00	0.00	0.00	0.00
2,400.00	13.01	160.56	2,380.31	-186.04	65.65	-67.37	0.00	0.00	0.00	0.00
2,500.00	13.01	160.56	2,477.74	-207.28	73.14	-75.06	0.00	0.00	0.00	0.00
2,600.00	13.01	160.56	2,575.17	-228.52	80.64	-82.75	0.00	0.00	0.00	0.00
2,700.00	13.01	160.56	2,672.60	-249.76	88.13	-90.44	0.00	0.00	0.00	0.00
2,800.00	13.01	160.56	2,770.03	-270.99	95.62	-98.13	0.00	0.00	0.00	0.00
2,900.00	13.01	160.56	2,867.46	-292.23	103.12	-105.82	0.00	0.00	0.00	0.00
3,000.00	13.01	160.56	2,964.90	-313.47	110.61	-113.51	0.00	0.00	0.00	0.00
3,100.00	13.01	160.56	3,062.33	-334.71	118.10	-121.20	0.00	0.00	0.00	0.00
3,200.00	13.01	160.56	3,159.76	-355.94	125.60	-128.89	0.00	0.00	0.00	0.00
3,300.00	13.01	160.56	3,257.19	-377.18	133.09	-136.58	0.00	0.00	0.00	0.00
3,400.00	13.01	160.56	3,354.62	-398.42	140.59	-144.26	0.00	0.00	0.00	0.00
3,500.00	13.01	160.56	3,452.05	-419.65	148.08	-151.95	0.00	0.00	0.00	0.00
3,600.00	13.01	160.56	3,549.48	-440.89	155.57	-159.64	0.00	0.00	0.00	0.00
3,619.01	13.01	160.56	3,568.00	-444.93	157.00	-161.11	0.00	0.00	0.00	0.00
Parkman										
3,700.00	13.01	160.56	3,646.91	-462.13	163.07	-167.33	0.00	0.00	0.00	0.00
3,800.00	13.01	160.56	3,744.34	-483.37	170.56	-175.02	0.00	0.00	0.00	0.00
3,900.00	13.01	160.56	3,841.78	-504.60	178.05	-182.71	0.00	0.00	0.00	0.00
4,000.00	13.01	160.56	3,939.21	-525.84	185.55	-190.40	0.00	0.00	0.00	0.00
4,084.98	13.01	160.56	4,022.00	-543.89	191.92	-196.94	0.00	0.00	0.00	0.00
Sussex										
4,100.00	13.01	160.56	4,036.64	-547.08	193.04	-198.09	0.00	0.00	0.00	0.00
4,200.00	13.01	160.56	4,134.07	-568.31	200.54	-205.78	0.00	0.00	0.00	0.00
4,300.00	13.01	160.56	4,231.50	-589.55	208.03	-213.47	0.00	0.00	0.00	0.00

Plan Report for ICEMAN STATE 32N-B16HZ - 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	13.01	160.56	4,328.93	-610.79	215.52	-221.16	0.00	0.00	0.00	0.00
4,500.00	13.01	160.56	4,426.36	-632.03	223.02	-228.85	0.00	0.00	0.00	0.00
4,600.00	13.01	160.56	4,523.79	-653.26	230.51	-236.54	0.00	0.00	0.00	0.00
4,700.00	13.01	160.56	4,621.22	-674.50	238.00	-244.23	0.00	0.00	0.00	0.00
4,800.00	13.01	160.56	4,718.66	-695.74	245.50	-251.92	0.00	0.00	0.00	0.00
4,900.00	13.01	160.56	4,816.09	-716.98	252.99	-259.61	0.00	0.00	0.00	0.00
5,000.00	13.01	160.56	4,913.52	-738.21	260.49	-267.30	0.00	0.00	0.00	0.00
5,100.00	13.01	160.56	5,010.95	-759.45	267.98	-274.99	0.00	0.00	0.00	0.00
5,200.00	13.01	160.56	5,108.38	-780.69	275.47	-282.68	0.00	0.00	0.00	0.00
5,300.00	13.01	160.56	5,205.81	-801.92	282.97	-290.37	0.00	0.00	0.00	0.00
5,400.00	13.01	160.56	5,303.24	-823.16	290.46	-298.06	0.00	0.00	0.00	0.00
5,500.00	13.01	160.56	5,400.67	-844.40	297.95	-305.75	0.00	0.00	0.00	0.00
5,600.00	13.01	160.56	5,498.10	-865.64	305.45	-313.44	0.00	0.00	0.00	0.00
5,658.22	13.01	160.56	5,554.83	-878.00	309.81	-317.92	0.00	0.00	0.00	0.00
Begin Drop @ 5658.22ft										
5,700.00	12.18	160.56	5,595.60	-886.59	312.84	-321.03	2.00	-2.00	0.00	180.00
5,800.00	10.18	160.56	5,693.70	-904.88	319.29	-327.65	2.00	-2.00	0.00	180.00
5,900.00	8.18	160.56	5,792.41	-919.92	324.60	-333.10	2.00	-2.00	0.00	180.00
6,000.00	6.18	160.56	5,891.63	-931.70	328.76	-337.37	2.00	-2.00	0.00	180.00
6,100.00	4.18	160.56	5,991.21	-940.22	331.76	-340.45	2.00	-2.00	0.00	180.00
6,200.00	2.18	160.56	6,091.05	-945.45	333.61	-342.34	2.00	-2.00	0.00	180.00
6,300.00	0.18	160.56	6,191.03	-947.39	334.30	-343.04	2.00	-2.00	0.00	-180.00
6,308.97	0.00	160.56	6,200.00	-947.40	334.30	-343.05	2.00	-2.00	0.00	180.00
End Drop @ 6308.97ft										
6,322.01	0.00	0.00	6,213.04	-947.40	334.30	-343.05	0.00	0.00	0.00	-180.00
Top of 45." Liner @ 6322.01ft										
6,400.00	0.00	0.00	6,291.03	-947.40	334.30	-343.05	0.00	0.00	0.00	0.00
6,422.01	0.00	0.00	6,313.04	-947.40	334.30	-343.05	0.00	0.00	0.00	0.00
KOP @ 6422.01ft										
6,500.00	7.80	270.53	6,390.79	-947.35	329.00	-337.75	10.00	10.00	0.00	270.53
6,600.00	17.80	270.53	6,488.18	-947.15	306.88	-315.63	10.00	10.00	0.00	0.00
6,700.00	27.80	270.53	6,580.25	-946.79	268.18	-276.93	10.00	10.00	0.00	0.00
6,800.00	37.80	270.53	6,664.20	-946.29	214.08	-222.83	10.00	10.00	0.00	0.00
6,900.00	47.80	270.53	6,737.48	-945.66	146.23	-154.97	10.00	10.00	0.00	0.00
DLS = 10°/100'										
6,987.34	56.53	270.53	6,791.00	-945.02	77.32	-86.06	10.00	10.00	0.00	0.00
SSPG										
7,000.00	57.80	270.53	6,797.87	-944.93	66.68	-75.42	10.00	10.00	0.00	0.00
7,096.01	67.40	270.53	6,842.00	-944.14	-18.46	9.72	10.00	10.00	0.00	0.00
NBRR										
7,100.00	67.80	270.53	6,843.52	-944.10	-22.14	13.41	10.00	10.00	0.00	0.00
7,200.00	77.80	270.53	6,873.06	-943.22	-117.55	108.82	10.00	10.00	0.00	0.00
7,300.00	87.80	270.53	6,885.57	-942.31	-216.63	207.90	10.00	10.00	0.00	0.00
7,322.01	90.00	270.53	6,886.00	-942.10	-238.63	229.91	10.00	10.00	0.00	0.00
End Build @ 7322.01ft - N470_B_CK - Target Heel Location - 7"										
7,400.00	90.00	270.53	6,886.00	-941.38	-316.62	307.90	0.00	0.00	0.00	0.00
7,500.00	90.00	270.53	6,886.00	-940.46	-416.61	407.90	0.00	0.00	0.00	0.00
7,600.00	90.00	270.53	6,886.00	-939.53	-516.61	507.90	0.00	0.00	0.00	0.00
7,700.00	90.00	270.53	6,886.00	-938.61	-616.60	607.90	0.00	0.00	0.00	0.00
7,800.00	90.00	270.53	6,886.00	-937.68	-716.60	707.90	0.00	0.00	0.00	0.00
7,900.00	90.00	270.53	6,886.00	-936.76	-816.60	807.90	0.00	0.00	0.00	0.00
8,000.00	90.00	270.53	6,886.00	-935.84	-916.59	907.90	0.00	0.00	0.00	0.00
8,100.00	90.00	270.53	6,886.00	-934.91	-1,016.59	1,007.90	0.00	0.00	0.00	0.00
8,200.00	90.00	270.53	6,886.00	-933.99	-1,116.58	1,107.90	0.00	0.00	0.00	0.00
8,300.00	90.00	270.53	6,886.00	-933.06	-1,216.58	1,207.90	0.00	0.00	0.00	0.00
8,400.00	90.00	270.53	6,886.00	-932.14	-1,316.57	1,307.90	0.00	0.00	0.00	0.00
8,500.00	90.00	270.53	6,886.00	-931.21	-1,416.57	1,407.90	0.00	0.00	0.00	0.00
8,600.00	90.00	270.53	6,886.00	-930.29	-1,516.57	1,507.90	0.00	0.00	0.00	0.00

Plan Report for ICEMAN STATE 32N-B16HZ - 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 (°)
8,700.00	90.00	270.53	6,886.00	-929.37	-1,616.56	1,607.90	0.00	0.00	0.00	0.00
8,800.00	90.00	270.53	6,886.00	-928.44	-1,716.56	1,707.90	0.00	0.00	0.00	0.00
8,900.00	90.00	270.53	6,886.00	-927.52	-1,816.55	1,807.90	0.00	0.00	0.00	0.00
9,000.00	90.00	270.53	6,886.00	-926.59	-1,916.55	1,907.90	0.00	0.00	0.00	0.00
9,100.00	90.00	270.53	6,886.00	-925.67	-2,016.54	2,007.90	0.00	0.00	0.00	0.00
9,200.00	90.00	270.53	6,886.00	-924.74	-2,116.54	2,107.90	0.00	0.00	0.00	0.00
9,300.00	90.00	270.53	6,886.00	-923.82	-2,216.54	2,207.90	0.00	0.00	0.00	0.00
9,400.00	90.00	270.53	6,886.00	-922.89	-2,316.53	2,307.90	0.00	0.00	0.00	0.00
9,500.00	90.00	270.53	6,886.00	-921.97	-2,416.53	2,407.90	0.00	0.00	0.00	0.00
9,600.00	90.00	270.53	6,886.00	-921.05	-2,516.52	2,507.90	0.00	0.00	0.00	0.00
9,700.00	90.00	270.53	6,886.00	-920.12	-2,616.52	2,607.90	0.00	0.00	0.00	0.00
9,800.00	90.00	270.53	6,886.00	-919.20	-2,716.51	2,707.90	0.00	0.00	0.00	0.00
9,900.00	90.00	270.53	6,886.00	-918.27	-2,816.51	2,807.90	0.00	0.00	0.00	0.00
10,000.00	90.00	270.53	6,886.00	-917.35	-2,916.51	2,907.90	0.00	0.00	0.00	0.00
10,100.00	90.00	270.53	6,886.00	-916.42	-3,016.50	3,007.90	0.00	0.00	0.00	0.00
10,200.00	90.00	270.53	6,886.00	-915.50	-3,116.50	3,107.90	0.00	0.00	0.00	0.00
10,300.00	90.00	270.53	6,886.00	-914.57	-3,216.49	3,207.90	0.00	0.00	0.00	0.00
10,400.00	90.00	270.53	6,886.00	-913.65	-3,316.49	3,307.90	0.00	0.00	0.00	0.00
10,500.00	90.00	270.53	6,886.00	-912.73	-3,416.48	3,407.90	0.00	0.00	0.00	0.00
10,600.00	90.00	270.53	6,886.00	-911.80	-3,516.48	3,507.90	0.00	0.00	0.00	0.00
10,700.00	90.00	270.53	6,886.00	-910.88	-3,616.48	3,607.90	0.00	0.00	0.00	0.00
10,800.00	90.00	270.53	6,886.00	-909.95	-3,716.47	3,707.90	0.00	0.00	0.00	0.00
10,900.00	90.00	270.53	6,886.00	-909.03	-3,816.47	3,807.90	0.00	0.00	0.00	0.00
11,000.00	90.00	270.53	6,886.00	-908.10	-3,916.46	3,907.90	0.00	0.00	0.00	0.00
11,100.00	90.00	270.53	6,886.00	-907.18	-4,016.46	4,007.90	0.00	0.00	0.00	0.00
11,200.00	90.00	270.53	6,886.00	-906.25	-4,116.45	4,107.90	0.00	0.00	0.00	0.00
11,300.00	90.00	270.53	6,886.00	-905.33	-4,216.45	4,207.90	0.00	0.00	0.00	0.00
11,400.00	90.00	270.53	6,886.00	-904.41	-4,316.45	4,307.90	0.00	0.00	0.00	0.00
11,500.00	90.00	270.53	6,886.00	-903.48	-4,416.44	4,407.90	0.00	0.00	0.00	0.00
11,600.00	90.00	270.53	6,886.00	-902.56	-4,516.44	4,507.90	0.00	0.00	0.00	0.00
11,700.00	90.00	270.53	6,886.00	-901.63	-4,616.43	4,607.90	0.00	0.00	0.00	0.00
11,800.00	90.00	270.53	6,886.00	-900.71	-4,716.43	4,707.90	0.00	0.00	0.00	0.00
11,900.00	90.00	270.53	6,886.00	-899.78	-4,816.42	4,807.90	0.00	0.00	0.00	0.00
12,000.00	90.00	270.53	6,886.00	-898.86	-4,916.42	4,907.90	0.00	0.00	0.00	0.00
12,100.00	90.00	270.53	6,886.00	-897.93	-5,016.42	5,007.90	0.00	0.00	0.00	0.00
12,200.00	90.00	270.53	6,886.00	-897.01	-5,116.41	5,107.90	0.00	0.00	0.00	0.00
12,300.00	90.00	270.53	6,886.00	-896.09	-5,216.41	5,207.90	0.00	0.00	0.00	0.00
12,400.00	90.00	270.53	6,886.00	-895.16	-5,316.40	5,307.90	0.00	0.00	0.00	0.00
12,500.00	90.00	270.53	6,886.00	-894.24	-5,416.40	5,407.90	0.00	0.00	0.00	0.00
12,600.00	90.00	270.53	6,886.00	-893.31	-5,516.39	5,507.90	0.00	0.00	0.00	0.00
12,700.00	90.00	270.53	6,886.00	-892.39	-5,616.39	5,607.90	0.00	0.00	0.00	0.00
12,800.00	90.00	270.53	6,886.00	-891.46	-5,716.39	5,707.90	0.00	0.00	0.00	0.00
12,900.00	90.00	270.53	6,886.00	-890.54	-5,816.38	5,807.90	0.00	0.00	0.00	0.00
12,958.34	90.00	270.53	6,886.00	-890.00	-5,874.72	5,866.24	0.00	0.00	0.00	0.00

TD Well @ 12958.34ft - Target Toe Location - ICEMAN STATE 32N-B16HZ_BHL

Plan Report for ICEMAN STATE 32N-B16HZ - PERMIT REV-3

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,200.00	1,200.00	0.00	0.00	Begin Nudge @ 1200.00ft
1,850.75	1,845.17	-69.40	24.49	End Nudge @ 1850.75ft
5,658.22	5,554.83	-878.00	309.81	Begin Drop @ 5658.22ft
6,308.97	6,200.00	-947.40	334.30	End Drop @ 6308.97ft
6,322.01	6,213.04	-947.40	334.30	Top of 45" Liner @ 6322.01ft
6,422.01	6,313.04	-947.40	334.30	KOP @ 6422.01ft
6,900.00	6,737.48	-945.66	146.23	DLS = 10°/100'
7,322.01	6,886.00	-942.10	-238.63	End Build @ 7322.01ft
12,958.34	6,886.00	-890.00	-5,874.72	TD Well @ 12958.34ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
User	No Target (Freehand)	270.53	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,322.01	PERMIT REV-3	MWD+IFR1+MS_GWA
7,322.01	12,958.34	PERMIT REV-3	MWD+IFR1+MS_GWA

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
761.00	761.00	9 5/8"	9-5/8	13-1/2
7,322.01	6,886.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
444.00	444.00	Base Fox Hills		0.00	
3,619.01	3,568.00	Parkman		0.00	
4,084.98	4,022.00	Sussex		0.00	
6,987.34	6,791.00	SSPG		0.00	
7,096.01	6,842.00	NBRR		0.00	
7,322.01	6,886.00	Target Heel Location		0.00	
7,322.01	6,886.00	N470_B_CK		0.00	
12,958.34	6,886.00	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	4.00	1,503.96	-228.86	Polygon
3N-R67W-Sec. 15_Section Lines	4.00	1,503.96	-228.86	Polygon
ICEMAN STATE 32N-B16HZ_BHL	6,886.00	-890.00	-5,874.72	Point
ICEMAN STATE 32N-B16HZ_SHL	0.00	0.00	0.00	Point

North Reference Sheet for 3N-67W-15 Iceman Pad - ICEMAN STATE 32N-B16HZ - 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 @ 4814.00usft (ASSUMED). Northing and Easting are relative to ICEMAN STATE 32N-B16HZ

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: 14,609,596.89 usft N, 1,673,169.65 usft E

Geographical Coordinates of Well: $40^\circ 13' 38.98''$ N, $104^\circ 52' 57.56''$ W

Grid Convergence at Surface is: 0.08°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,958.34usft
the Bottom Hole Displacement is 5,941.75usft in the Direction of 261.39° (True).

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

