

US ROCKIES WATTENBERG PLANNING

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

PLAN A

Plan: Rev A0

Sperry Drilling Services Proposal Report

29 April, 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:	RKB = 13' @ 4810.00usft (Ensign 145)
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: Rev A0

US ROCKIES WATTENBERG PLANNING

HALLIBURTON
Sperry Drilling

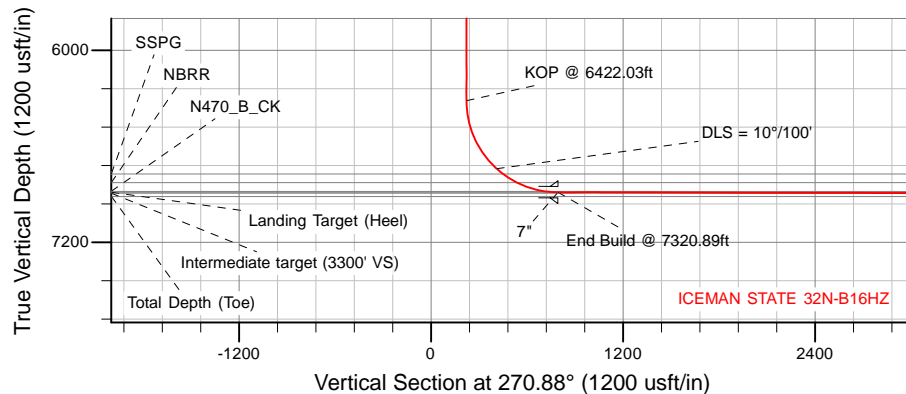
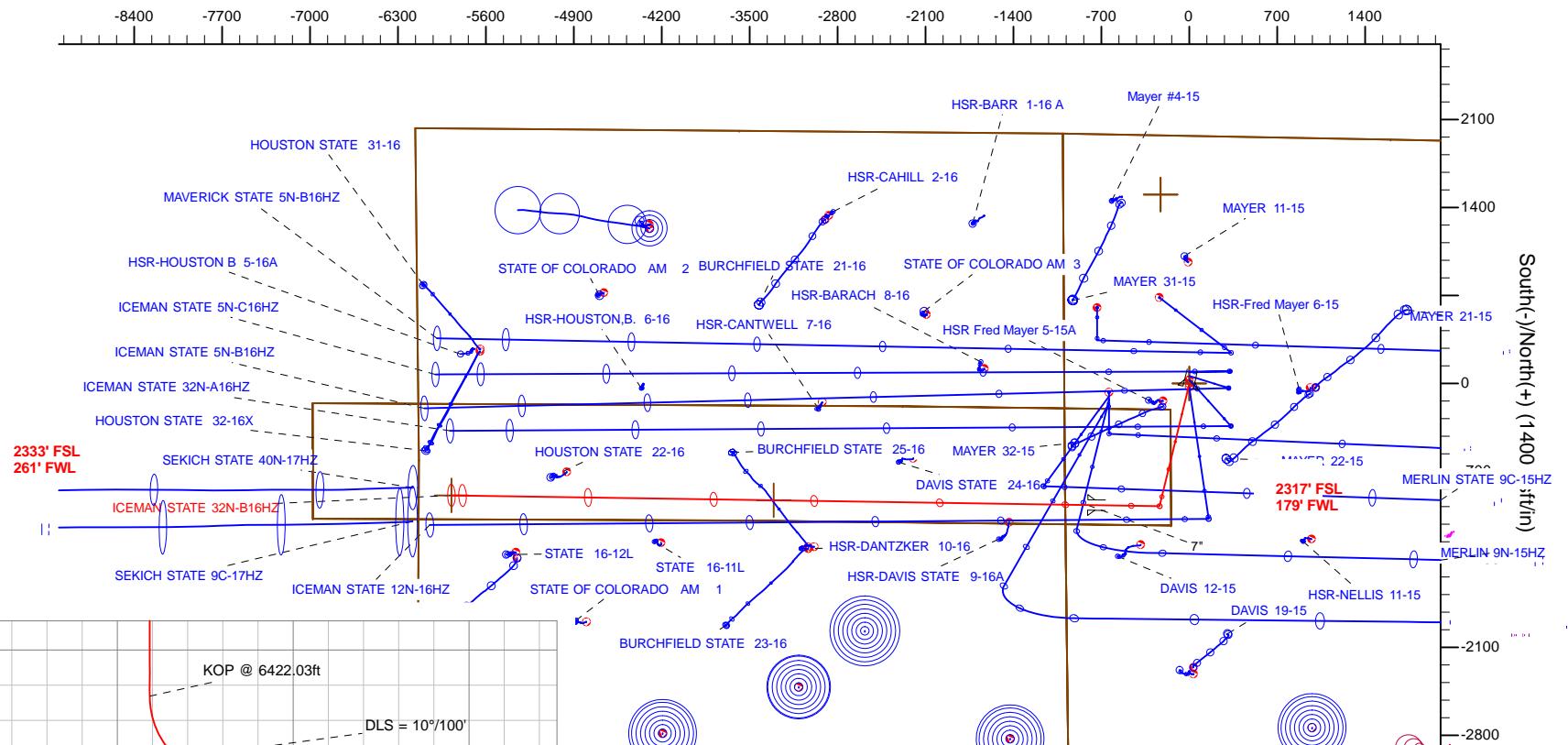
SECTION DETAILS

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	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	1117.33	13.01	193.60	1109.90	-95.30	-23.06	1.50	193.60	21.59	
4	4817.33	13.01	193.60	4714.92	-904.89	-218.92	0.00	0.00	204.99	
5	5467.83	0.00	0.00	5359.85	-976.37	-236.21	2.00	180.00	221.19	
6	6422.03	0.00	0.00	6314.05	-976.37	-236.21	0.00	0.00	221.19	
7	7320.89	89.89	270.88	6887.00	-967.61	-807.95	10.00	270.88	793.00	
8	9821.97	89.89	270.88	6892.00	-929.30	-3308.74	0.00	0.00	3294.08	ICEMAN STATE 32N-B16HZ_Lat Tgt
9	9839.75	89.53	270.88	6892.09	-929.03	-3326.52	2.00	-179.97	3311.86	
10	12388.34	89.53	270.88	6913.00	-890.00	-5874.72	0.00	0.00	5860.36	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	6913.00	-890.00	-5874.72	40.225049	-104.903703

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



TVD MD

6314.04 6422.03 KOP @ 6422.03ft

WELL DETAILS: ICEMAN STATE 32N-B16HZ

Ground Level: 4797.00

RKB = 13' @ 4810.00usft (Ensign 145)

Plan: Rev A0 (ICEMAN STATE 32N-B16HZ/PLAN A)

Created By: Clint Eshelman Date: 4/29/2015
Reviewed: _____ Date: _____

Plan Report for ICEMAN STATE 32N-B16HZ - Rev A0

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_Landing Diagram - 3N-R67W-Sec. 16_Section Lines - 3N-R67W-Sec. 15_Section Lines - ICEMAN STATE 32N-B16HZ_S1										
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
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 250.00ft										
300.00	0.75	193.60	300.00	-0.32	-0.08	0.07	1.50	1.50	0.00	193.60
400.00	2.25	193.60	399.96	-2.86	-0.69	0.65	1.50	1.50	0.00	0.00
440.08	2.85	193.60	440.00	-4.60	-1.11	1.04	1.50	1.50	0.00	0.00
Base Fox Hills										
500.00	3.75	193.60	499.82	-7.95	-1.92	1.80	1.50	1.50	0.00	0.00
600.00	5.25	193.60	599.51	-15.57	-3.77	3.53	1.50	1.50	0.00	0.00
700.00	6.75	193.60	698.96	-25.73	-6.23	5.83	1.50	1.50	0.00	0.00
757.00	7.61	193.60	755.51	-32.66	-7.90	7.40	1.50	1.50	0.00	0.00
9 5/8"										
758.50	7.63	193.60	757.00	-32.85	-7.95	7.44	1.50	1.50	0.00	0.00
Surface Csg Setting Depth										
800.00	8.25	193.60	798.10	-38.42	-9.29	8.70	1.50	1.50	0.00	0.00
900.00	9.75	193.60	896.87	-53.62	-12.97	12.15	1.50	1.50	0.00	0.00
1,000.00	11.25	193.60	995.19	-71.34	-17.26	16.16	1.50	1.50	0.00	0.00
1,100.00	12.75	193.60	1,093.00	-91.54	-22.15	20.74	1.50	1.50	0.00	0.00
1,117.33	13.01	193.60	1,109.90	-95.30	-23.06	21.59	1.50	1.50	0.00	0.00
End Nudge @ 1117.33ft										
1,200.00	13.01	193.60	1,190.44	-113.39	-27.43	25.69	0.00	0.00	0.00	0.00
1,300.00	13.01	193.60	1,287.88	-135.27	-32.73	30.64	0.00	0.00	0.00	0.00
1,400.00	13.01	193.60	1,385.31	-157.15	-38.02	35.60	0.00	0.00	0.00	0.00
1,500.00	13.01	193.60	1,482.74	-179.03	-43.31	40.56	0.00	0.00	0.00	0.00
1,600.00	13.01	193.60	1,580.18	-200.91	-48.61	45.51	0.00	0.00	0.00	0.00
1,700.00	13.01	193.60	1,677.61	-222.79	-53.90	50.47	0.00	0.00	0.00	0.00
1,800.00	13.01	193.60	1,775.04	-244.67	-59.19	55.43	0.00	0.00	0.00	0.00
1,900.00	13.01	193.60	1,872.48	-266.55	-64.49	60.38	0.00	0.00	0.00	0.00
2,000.00	13.01	193.60	1,969.91	-288.44	-69.78	65.34	0.00	0.00	0.00	0.00
2,100.00	13.01	193.60	2,067.34	-310.32	-75.07	70.30	0.00	0.00	0.00	0.00
2,200.00	13.01	193.60	2,164.77	-332.20	-80.37	75.26	0.00	0.00	0.00	0.00
2,300.00	13.01	193.60	2,262.21	-354.08	-85.66	80.21	0.00	0.00	0.00	0.00
2,400.00	13.01	193.60	2,359.64	-375.96	-90.95	85.17	0.00	0.00	0.00	0.00
2,500.00	13.01	193.60	2,457.07	-397.84	-96.25	90.13	0.00	0.00	0.00	0.00
2,600.00	13.01	193.60	2,554.51	-419.72	-101.54	95.08	0.00	0.00	0.00	0.00
2,700.00	13.01	193.60	2,651.94	-441.60	-106.83	100.04	0.00	0.00	0.00	0.00
2,800.00	13.01	193.60	2,749.37	-463.48	-112.13	105.00	0.00	0.00	0.00	0.00
2,900.00	13.01	193.60	2,846.81	-485.36	-117.42	109.95	0.00	0.00	0.00	0.00
3,000.00	13.01	193.60	2,944.24	-507.24	-122.72	114.91	0.00	0.00	0.00	0.00
3,100.00	13.01	193.60	3,041.67	-529.13	-128.01	119.87	0.00	0.00	0.00	0.00
3,200.00	13.01	193.60	3,139.11	-551.01	-133.30	124.82	0.00	0.00	0.00	0.00
3,300.00	13.01	193.60	3,236.54	-572.89	-138.60	129.78	0.00	0.00	0.00	0.00
3,400.00	13.01	193.60	3,333.97	-594.77	-143.89	134.74	0.00	0.00	0.00	0.00
3,500.00	13.01	193.60	3,431.40	-616.65	-149.18	139.69	0.00	0.00	0.00	0.00
3,600.00	13.01	193.60	3,528.84	-638.53	-154.48	144.65	0.00	0.00	0.00	0.00
3,636.09	13.01	193.60	3,564.00	-646.43	-156.39	146.44	0.00	0.00	0.00	0.00
Parkman										
3,700.00	13.01	193.60	3,626.27	-660.41	-159.77	149.61	0.00	0.00	0.00	0.00
3,800.00	13.01	193.60	3,723.70	-682.29	-165.06	154.57	0.00	0.00	0.00	0.00
3,900.00	13.01	193.60	3,821.14	-704.17	-170.36	159.52	0.00	0.00	0.00	0.00
4,000.00	13.01	193.60	3,918.57	-726.05	-175.65	164.48	0.00	0.00	0.00	0.00
4,100.00	13.01	193.60	4,016.00	-747.93	-180.94	169.44	0.00	0.00	0.00	0.00
4,102.05	13.01	193.60	4,018.00	-748.38	-181.05	169.54	0.00	0.00	0.00	0.00
Sussex										
4,200.00	13.01	193.60	4,113.44	-769.81	-186.24	174.39	0.00	0.00	0.00	0.00

Plan Report for ICEMAN STATE 32N-B16HZ - Rev A0

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 (°)
4,300.00	13.01	193.60	4,210.87	-791.70	-191.53	179.35	0.00	0.00	0.00	0.00
4,400.00	13.01	193.60	4,308.30	-813.58	-196.82	184.31	0.00	0.00	0.00	0.00
4,500.00	13.01	193.60	4,405.74	-835.46	-202.12	189.26	0.00	0.00	0.00	0.00
4,600.00	13.01	193.60	4,503.17	-857.34	-207.41	194.22	0.00	0.00	0.00	0.00
4,700.00	13.01	193.60	4,600.60	-879.22	-212.71	199.18	0.00	0.00	0.00	0.00
4,800.00	13.01	193.60	4,698.03	-901.10	-218.00	204.13	0.00	0.00	0.00	0.00
4,817.33	13.01	193.60	4,714.92	-904.89	-218.92	204.99	0.00	0.00	0.00	0.00
Begin Drop @ 4817.33ft										
4,900.00	11.36	193.60	4,795.73	-921.85	-223.02	208.83	2.00	-2.00	0.00	180.00
5,000.00	9.36	193.60	4,894.09	-939.32	-227.25	212.79	2.00	-2.00	0.00	180.00
5,100.00	7.36	193.60	4,993.02	-953.45	-230.66	215.99	2.00	-2.00	0.00	180.00
5,200.00	5.36	193.60	5,092.40	-964.21	-233.27	218.43	2.00	-2.00	0.00	180.00
5,300.00	3.36	193.60	5,192.11	-971.59	-235.05	220.10	2.00	-2.00	0.00	180.00
5,400.00	1.36	193.60	5,292.02	-975.59	-236.02	221.01	2.00	-2.00	0.00	180.00
5,467.83	0.00	193.60	5,359.84	-976.37	-236.21	221.19	2.00	-2.00	0.00	180.00
End Drop @ 5467.83ft										
5,500.00	0.00	0.00	5,392.01	-976.37	-236.21	221.19	0.00	0.00	0.00	180.00
5,600.00	0.00	0.00	5,492.01	-976.37	-236.21	221.19	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,592.01	-976.37	-236.21	221.19	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,692.01	-976.37	-236.21	221.19	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,792.01	-976.37	-236.21	221.19	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,892.01	-976.37	-236.21	221.19	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	5,992.01	-976.37	-236.21	221.19	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,092.01	-976.37	-236.21	221.19	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,192.01	-976.37	-236.21	221.19	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,292.01	-976.37	-236.21	221.19	0.00	0.00	0.00	0.00
6,422.03	0.00	0.00	6,314.04	-976.37	-236.21	221.19	0.00	0.00	0.00	0.00
KOP @ 6422.03ft										
6,500.00	7.80	270.88	6,391.77	-976.29	-241.50	226.48	10.00	10.00	0.00	270.88
6,600.00	17.80	270.88	6,489.17	-975.95	-263.62	248.60	10.00	10.00	0.00	0.00
6,700.00	27.80	270.88	6,581.24	-975.36	-302.32	287.30	10.00	10.00	0.00	0.00
6,800.00	37.80	270.88	6,665.19	-974.53	-356.41	341.40	10.00	10.00	0.00	0.00
6,900.00	47.80	270.88	6,738.48	-973.49	-424.25	409.25	10.00	10.00	0.00	0.00
DLS = 10°/100'										
6,952.65	53.06	270.88	6,772.00	-972.87	-464.81	449.82	10.00	10.00	0.00	0.00
SSPG										
7,000.00	57.80	270.88	6,798.86	-972.27	-503.79	488.80	10.00	10.00	0.00	0.00
7,057.47	63.54	270.88	6,827.00	-971.50	-553.86	538.88	10.00	10.00	0.00	0.00
NBRR										
7,100.00	67.80	270.88	6,844.52	-970.91	-592.61	577.63	10.00	10.00	0.00	0.00
7,200.00	77.80	270.88	6,874.06	-969.45	-688.00	673.03	10.00	10.00	0.00	0.00
7,246.24	82.42	270.88	6,882.00	-968.75	-733.54	718.57	10.00	10.00	0.00	0.00
N470_B_CK										
7,300.00	87.80	270.88	6,886.58	-967.93	-787.07	772.11	10.00	10.00	0.00	0.00
7,320.89	89.89	270.88	6,887.00	-967.61	-807.96	793.00	10.00	10.00	0.00	0.00
End Build @ 7320.89ft - Landing Target (Heel) - 7"										
7,400.00	89.89	270.88	6,887.16	-966.40	-887.06	872.11	0.00	0.00	0.00	0.00
7,500.00	89.89	270.88	6,887.36	-964.87	-987.04	972.11	0.00	0.00	0.00	0.00
7,600.00	89.89	270.88	6,887.56	-963.33	-1,087.03	1,072.11	0.00	0.00	0.00	0.00
7,700.00	89.89	270.88	6,887.76	-961.80	-1,187.02	1,172.11	0.00	0.00	0.00	0.00
7,800.00	89.89	270.88	6,887.96	-960.27	-1,287.01	1,272.11	0.00	0.00	0.00	0.00
7,900.00	89.89	270.88	6,888.16	-958.74	-1,387.00	1,372.11	0.00	0.00	0.00	0.00
8,000.00	89.89	270.88	6,888.36	-957.21	-1,486.98	1,472.11	0.00	0.00	0.00	0.00
8,100.00	89.89	270.88	6,888.56	-955.68	-1,586.97	1,572.11	0.00	0.00	0.00	0.00
8,200.00	89.89	270.88	6,888.76	-954.14	-1,686.96	1,672.11	0.00	0.00	0.00	0.00
8,300.00	89.89	270.88	6,888.96	-952.61	-1,786.95	1,772.11	0.00	0.00	0.00	0.00
8,400.00	89.89	270.88	6,889.16	-951.08	-1,886.94	1,872.11	0.00	0.00	0.00	0.00
8,500.00	89.89	270.88	6,889.36	-949.55	-1,986.92	1,972.11	0.00	0.00	0.00	0.00

Plan Report for ICEMAN STATE 32N-B16HZ - Rev A0

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 (°)
8,600.00	89.89	270.88	6,889.56	-948.02	-2,086.91	2,072.11	0.00	0.00	0.00	0.00
8,700.00	89.89	270.88	6,889.76	-946.49	-2,186.90	2,172.11	0.00	0.00	0.00	0.00
8,800.00	89.89	270.88	6,889.96	-944.95	-2,286.89	2,272.11	0.00	0.00	0.00	0.00
8,900.00	89.89	270.88	6,890.16	-943.42	-2,386.88	2,372.11	0.00	0.00	0.00	0.00
9,000.00	89.89	270.88	6,890.36	-941.89	-2,486.87	2,472.11	0.00	0.00	0.00	0.00
9,100.00	89.89	270.88	6,890.56	-940.36	-2,586.85	2,572.11	0.00	0.00	0.00	0.00
9,200.00	89.89	270.88	6,890.76	-938.83	-2,686.84	2,672.11	0.00	0.00	0.00	0.00
9,300.00	89.89	270.88	6,890.96	-937.30	-2,786.83	2,772.11	0.00	0.00	0.00	0.00
9,400.00	89.89	270.88	6,891.16	-935.76	-2,886.82	2,872.11	0.00	0.00	0.00	0.00
9,500.00	89.89	270.88	6,891.36	-934.23	-2,986.81	2,972.11	0.00	0.00	0.00	0.00
9,600.00	89.89	270.88	6,891.56	-932.70	-3,086.79	3,072.10	0.00	0.00	0.00	0.00
9,700.00	89.89	270.88	6,891.76	-931.17	-3,186.78	3,172.10	0.00	0.00	0.00	0.00
9,800.00	89.89	270.88	6,891.96	-929.64	-3,286.77	3,272.10	0.00	0.00	0.00	0.00
9,821.97	89.89	270.88	6,892.00	-929.30	-3,308.74	3,294.08	0.00	0.00	0.00	0.00
Begin Nudge @ 9821.97ft - Intermediate target (3300' VS) - ICEMAN STATE 32N-B16HZ_Lat Tgt										
9,839.75	89.53	270.88	6,892.09	-929.03	-3,326.51	3,311.85	2.00	-2.00	0.00	-179.97
End Nudge @ 9839.75ft										
9,900.00	89.53	270.88	6,892.58	-928.11	-3,386.76	3,372.10	0.00	0.00	0.00	-179.97
10,000.00	89.53	270.88	6,893.41	-926.57	-3,486.74	3,472.10	0.00	0.00	0.00	0.00
10,100.00	89.53	270.88	6,894.23	-925.04	-3,586.73	3,572.10	0.00	0.00	0.00	0.00
10,200.00	89.53	270.88	6,895.05	-923.51	-3,686.71	3,672.09	0.00	0.00	0.00	0.00
10,300.00	89.53	270.88	6,895.87	-921.98	-3,786.70	3,772.09	0.00	0.00	0.00	0.00
10,400.00	89.53	270.88	6,896.69	-920.45	-3,886.68	3,872.09	0.00	0.00	0.00	0.00
10,500.00	89.53	270.88	6,897.51	-918.92	-3,986.67	3,972.08	0.00	0.00	0.00	0.00
10,600.00	89.53	270.88	6,898.33	-917.39	-4,086.65	4,072.08	0.00	0.00	0.00	0.00
10,700.00	89.53	270.88	6,899.15	-915.85	-4,186.64	4,172.08	0.00	0.00	0.00	0.00
10,800.00	89.53	270.88	6,899.97	-914.32	-4,286.62	4,272.07	0.00	0.00	0.00	0.00
10,900.00	89.53	270.88	6,900.79	-912.79	-4,386.60	4,372.07	0.00	0.00	0.00	0.00
11,000.00	89.53	270.88	6,901.61	-911.26	-4,486.59	4,472.07	0.00	0.00	0.00	0.00
11,100.00	89.53	270.88	6,902.43	-909.73	-4,586.57	4,572.06	0.00	0.00	0.00	0.00
11,200.00	89.53	270.88	6,903.25	-908.20	-4,686.56	4,672.06	0.00	0.00	0.00	0.00
11,300.00	89.53	270.88	6,904.07	-906.67	-4,786.54	4,772.06	0.00	0.00	0.00	0.00
11,400.00	89.53	270.88	6,904.89	-905.13	-4,886.53	4,872.05	0.00	0.00	0.00	0.00
11,500.00	89.53	270.88	6,905.71	-903.60	-4,986.51	4,972.05	0.00	0.00	0.00	0.00
11,600.00	89.53	270.88	6,906.53	-902.07	-5,086.50	5,072.05	0.00	0.00	0.00	0.00
11,700.00	89.53	270.88	6,907.35	-900.54	-5,186.48	5,172.04	0.00	0.00	0.00	0.00
11,800.00	89.53	270.88	6,908.17	-899.01	-5,286.47	5,272.04	0.00	0.00	0.00	0.00
11,900.00	89.53	270.88	6,908.99	-897.48	-5,386.45	5,372.03	0.00	0.00	0.00	0.00
12,000.00	89.53	270.88	6,909.81	-895.95	-5,486.44	5,472.03	0.00	0.00	0.00	0.00
12,100.00	89.53	270.88	6,910.63	-894.42	-5,586.42	5,572.03	0.00	0.00	0.00	0.00
12,200.00	89.53	270.88	6,911.45	-892.88	-5,686.41	5,672.02	0.00	0.00	0.00	0.00
12,300.00	89.53	270.88	6,912.28	-891.35	-5,786.39	5,772.02	0.00	0.00	0.00	0.00
12,388.34	89.53	270.88	6,913.00	-890.00	-5,874.72	5,860.36	0.00	0.00	0.00	0.00
TD Well @ 12388.34ft - ICEMAN STATE 32N-B16HZ_BHL										

Plan Report for ICEMAN STATE 32N-B16HZ - Rev A0

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
250.00	250.00	0.00	0.00	Begin Nudge @ 250.00ft
1,117.33	1,109.90	-95.30	-23.06	End Nudge @ 1117.33ft
4,817.33	4,714.92	-904.89	-218.92	Begin Drop @ 4817.33ft
5,467.83	5,359.84	-976.37	-236.21	End Drop @ 5467.83ft
6,422.03	6,314.04	-976.37	-236.21	KOP @ 6422.03ft
6,900.00	6,738.48	-973.49	-424.25	DLS = 10°/100'
7,320.89	6,887.00	-967.61	-807.96	End Build @ 7320.89ft
9,821.97	6,892.00	-929.30	-3,308.74	Begin Nudge @ 9821.97ft
9,839.75	6,892.09	-929.03	-3,326.51	End Nudge @ 9839.75ft
12,388.34	6,913.00	-890.00	-5,874.72	TD Well @ 12388.34ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	270.88	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,320.89	Rev A0	APC_ISCWSA REV 2 MWD+IFR1+MSA
7,320.89	12,388.34	Rev A0	APC_ISCWSA REV 2 MWD+IFR1+MSA

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
757.00	755.51	9 5/8"	9-5/8	13-1/2
7,320.89	6,887.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
440.08	440.00	Base Fox Hills		0.00	
758.50	757.00	Surface Csg Setting Depth		0.00	
3,636.09	3,564.00	Parkman		0.00	
4,102.05	4,018.00	Sussex		0.00	
6,952.65	6,772.00	SSPG		0.00	
7,057.47	6,827.00	NBRR		0.00	
7,246.24	6,882.00	N470_B_CK		0.00	
7,320.89	6,887.00	Landing Target (Heel)		0.00	
9,821.97	6,892.00	Intermediate target (3300' VS)		0.00	
12,388.34	6,913.00	Total Depth (Toe)		0.00	

Plan Report for ICEMAN STATE 32N-B16HZ - Rev A0

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
ICEMAN STATE 32N-B16HZ_Landing Diagram	0.00	0.00	0.00	Polygon
3N-R67W-Sec. 16_Section Lines	0.00	1,503.96	-228.86	Polygon
3N-R67W-Sec. 15_Section Lines	0.00	1,503.96	-228.86	Polygon
ICEMAN STATE 32N-B16HZ_SHL	0.00	0.00	0.00	Point
ICEMAN STATE 32N-B16HZ_BHL	6,913.00	-890.00	-5,874.72	Point
ICEMAN STATE 32N-B16HZ_Lat Tgt	6,892.00	-929.30	-3,308.74	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 RKB = 13' @ 4810.00usft (Ensign 145). 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° 13' 38.98" N, 104° 52' 57.56" W

Grid Convergence at Surface is: 0.08°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,388.34usft
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)

