

# US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

2N-65W-20 Sarchet 1-20HZ Pad

SARCHET 16N-20HZ

Plan A

Plan: Permit Rev-2

## Sperry Drilling Services Proposal Report

23 April, 2015

Well Coordinates: 14,574,315.59 N, 1,729,974.11 E (40° 07' 48.81" N, 104° 40' 46.56" W)

Ground Level: 4,896.00 usft

Local Coordinate Origin:

Centered on Well SARCHET 16N-20HZ

Viewing Datum:

RKB = 17' @ 4913.00usft (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: 2N-65W-20 Sarchet 1-20HZ Pad

Well: SARCHET 16N-20HZ

Wellbore: Plan A

Design: Permit Rev-2

# US ROCKIES WATTENBERG PLANNING

HALLIBURTON

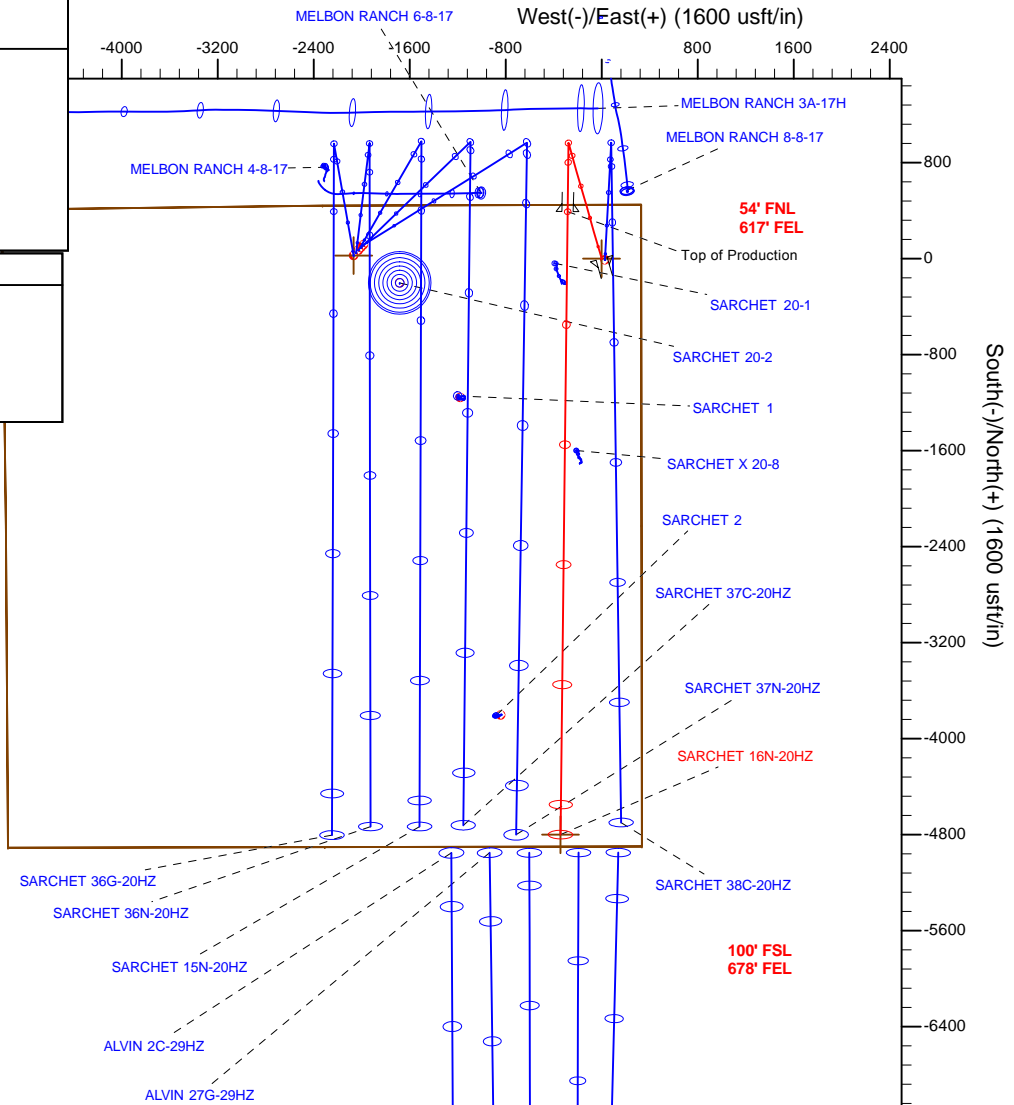
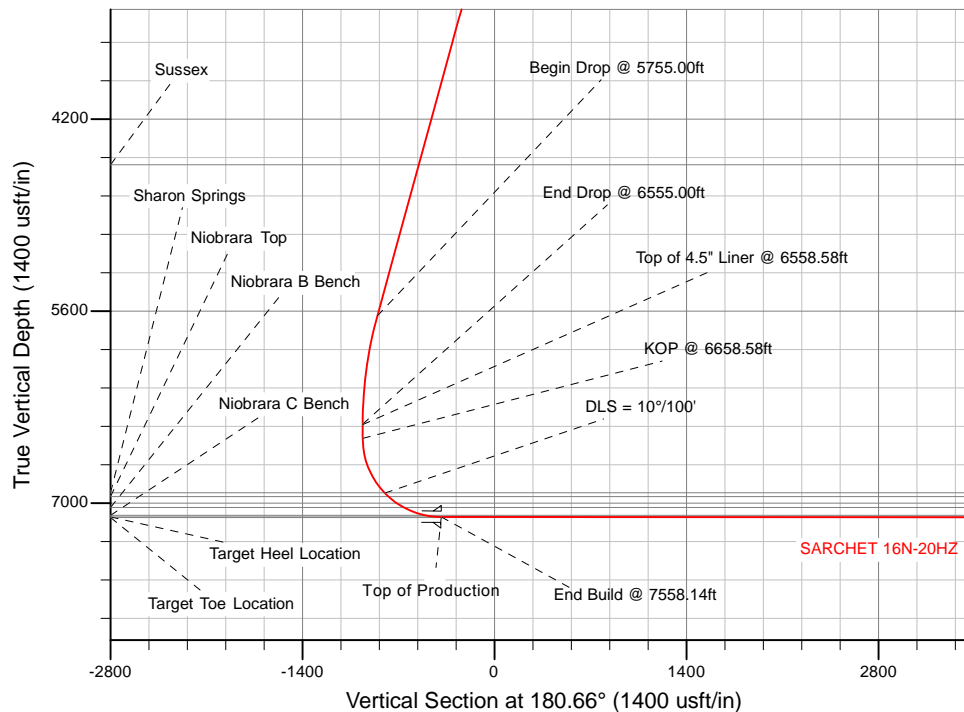
Sperry Drilling

## 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	2120.00	0.00	0.00	2120.00	0.00	0.00	0.00	0.00	0.00	
3	2920.00	16.00	344.00	2909.64	106.68	-30.59	2.00	344.00	-106.32	
4	5755.00	16.00	344.00	5634.82	857.84	-245.98	0.00	0.00	-854.95	
5	6555.00	0.00	0.00	6424.46	964.52	-276.57	2.00	180.00	-961.27	
6	6658.58	0.00	0.00	6528.04	964.52	-276.57	0.00	0.00	-961.27	
7	7558.14	89.96	180.66	7101.00	392.04	-283.16	10.00	180.66	-388.75	
8	12750.04	89.96	180.66	7105.00	-4799.52	-342.87	0.00	0.00	4803.15	SARCHET 16N-20HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
SARCHET 16N-20HZ_SHL	0.00	0.00	0.00	40.130225	-104.679601
SARCHET 16N-20HZ_BHL	7105.00	-4799.52	-342.87	40.117045	-104.680827



TVD MD  
5628.04 6658.58 KOP @ 6658.58ft

WELL DETAILS: SARCHET 16N-20HZ

Ground Level: 4896.00

RKB = 17' @ 4913.00usft (D Rig)

Plan: Permit Rev-2 (SARCHET 16N-20HZ/Plan A)

Created By: Clint Eshelman

Reviewed:

Date: 2/4/2015

Date:

## Plan Report for SARCHET 16N-20HZ - 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
<b>SARCHET 16N-20HZ_SHL - 2N-R65W-Sec. 20_Section Lines</b>										
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
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
<b>9 5/8"</b>										
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
2,120.00	0.00	0.00	2,120.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 2120.00ft</b>										
2,200.00	1.60	344.00	2,199.99	1.07	-0.31	-1.07	2.00	2.00	0.00	344.00
2,300.00	3.60	344.00	2,299.88	5.43	-1.56	-5.42	2.00	2.00	0.00	0.00
2,400.00	5.60	344.00	2,399.55	13.14	-3.77	-13.10	2.00	2.00	0.00	0.00
2,500.00	7.60	344.00	2,498.89	24.19	-6.94	-24.11	2.00	2.00	0.00	0.00
2,600.00	9.60	344.00	2,597.76	38.56	-11.06	-38.43	2.00	2.00	0.00	0.00
2,700.00	11.60	344.00	2,696.05	56.25	-16.13	-56.06	2.00	2.00	0.00	0.00
2,800.00	13.60	344.00	2,793.63	77.21	-22.14	-76.95	2.00	2.00	0.00	0.00
2,900.00	15.60	344.00	2,890.40	101.44	-29.09	-101.10	2.00	2.00	0.00	0.00
2,920.00	16.00	344.00	2,909.64	106.68	-30.59	-106.32	2.00	2.00	0.00	0.00
<b>End Nudge @ 2920.00ft</b>										
3,000.00	16.00	344.00	2,986.54	127.87	-36.67	-127.44	0.00	0.00	0.00	0.00
3,100.00	16.00	344.00	3,082.67	154.37	-44.27	-153.85	0.00	0.00	0.00	0.00
3,200.00	16.00	344.00	3,178.80	180.87	-51.86	-180.26	0.00	0.00	0.00	0.00
3,300.00	16.00	344.00	3,274.92	207.36	-59.46	-206.66	0.00	0.00	0.00	0.00
3,400.00	16.00	344.00	3,371.05	233.86	-67.06	-233.07	0.00	0.00	0.00	0.00
3,500.00	16.00	344.00	3,467.17	260.35	-74.66	-259.48	0.00	0.00	0.00	0.00
3,600.00	16.00	344.00	3,563.30	286.85	-82.25	-285.88	0.00	0.00	0.00	0.00
3,700.00	16.00	344.00	3,659.43	313.35	-89.85	-312.29	0.00	0.00	0.00	0.00
3,800.00	16.00	344.00	3,755.55	339.84	-97.45	-338.70	0.00	0.00	0.00	0.00
3,900.00	16.00	344.00	3,851.68	366.34	-105.05	-365.10	0.00	0.00	0.00	0.00
4,000.00	16.00	344.00	3,947.81	392.83	-112.64	-391.51	0.00	0.00	0.00	0.00
4,100.00	16.00	344.00	4,043.93	419.33	-120.24	-417.92	0.00	0.00	0.00	0.00
4,200.00	16.00	344.00	4,140.06	445.83	-127.84	-444.32	0.00	0.00	0.00	0.00
4,300.00	16.00	344.00	4,236.18	472.32	-135.44	-470.73	0.00	0.00	0.00	0.00
4,400.00	16.00	344.00	4,332.31	498.82	-143.03	-497.14	0.00	0.00	0.00	0.00
4,500.00	16.00	344.00	4,428.44	525.31	-150.63	-523.54	0.00	0.00	0.00	0.00
4,600.00	16.00	344.00	4,524.56	551.81	-158.23	-549.95	0.00	0.00	0.00	0.00
4,608.78	16.00	344.00	4,533.00	554.14	-158.90	-552.27	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,700.00	16.00	344.00	4,620.69	578.31	-165.83	-576.36	0.00	0.00	0.00	0.00
4,800.00	16.00	344.00	4,716.81	604.80	-173.42	-602.76	0.00	0.00	0.00	0.00
4,900.00	16.00	344.00	4,812.94	631.30	-181.02	-629.17	0.00	0.00	0.00	0.00

## Plan Report for SARCHET 16N-20HZ - 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 (°)
5,000.00	16.00	344.00	4,909.07	657.79	-188.62	-655.58	0.00	0.00	0.00	0.00
5,100.00	16.00	344.00	5,005.19	684.29	-196.22	-681.98	0.00	0.00	0.00	0.00
5,200.00	16.00	344.00	5,101.32	710.79	-203.81	-708.39	0.00	0.00	0.00	0.00
5,300.00	16.00	344.00	5,197.45	737.28	-211.41	-734.80	0.00	0.00	0.00	0.00
5,400.00	16.00	344.00	5,293.57	763.78	-219.01	-761.20	0.00	0.00	0.00	0.00
5,500.00	16.00	344.00	5,389.70	790.27	-226.61	-787.61	0.00	0.00	0.00	0.00
5,600.00	16.00	344.00	5,485.82	816.77	-234.20	-814.02	0.00	0.00	0.00	0.00
5,700.00	16.00	344.00	5,581.95	843.27	-241.80	-840.42	0.00	0.00	0.00	0.00
5,755.00	16.00	344.00	5,634.82	857.84	-245.98	-854.95	0.00	0.00	0.00	0.00
<b>Begin Drop @ 5755.00ft</b>										
5,800.00	15.10	344.00	5,678.17	869.43	-249.31	-866.51	2.00	-2.00	0.00	180.00
5,900.00	13.10	344.00	5,775.15	892.85	-256.02	-889.84	2.00	-2.00	0.00	180.00
6,000.00	11.10	344.00	5,872.93	913.00	-261.80	-909.92	2.00	-2.00	0.00	180.00
6,100.00	9.10	344.00	5,971.37	929.86	-266.63	-926.72	2.00	-2.00	0.00	180.00
6,200.00	7.10	344.00	6,070.37	943.40	-270.52	-940.22	2.00	-2.00	0.00	180.00
6,300.00	5.10	344.00	6,169.80	953.61	-273.44	-950.40	2.00	-2.00	0.00	180.00
6,400.00	3.10	344.00	6,269.54	960.49	-275.42	-957.25	2.00	-2.00	0.00	180.00
6,500.00	1.10	344.00	6,369.47	964.01	-276.43	-960.76	2.00	-2.00	0.00	180.00
6,555.00	0.00	0.00	6,424.46	964.52	-276.57	-961.27	2.00	-2.00	0.00	180.00
<b>End Drop @ 6555.00ft</b>										
6,558.58	0.00	0.00	6,428.04	964.52	-276.57	-961.27	0.00	0.00	0.00	0.00
<b>Top of 4.5" Liner @ 6558.58ft</b>										
6,600.00	0.00	0.00	6,469.46	964.52	-276.57	-961.27	0.00	0.00	0.00	0.00
6,658.58	0.00	0.00	6,528.04	964.52	-276.57	-961.27	0.00	0.00	0.00	0.00
<b>KOP @ 6658.58ft</b>										
6,700.00	4.14	180.66	6,569.43	963.02	-276.59	-959.77	10.00	10.00	-432.98	-179.34
6,800.00	14.14	180.66	6,668.03	947.15	-276.77	-943.90	10.00	10.00	0.00	0.00
6,900.00	24.14	180.66	6,762.38	914.41	-277.15	-911.15	10.00	10.00	0.00	0.00
7,000.00	34.14	180.66	6,849.61	865.77	-277.71	-862.52	10.00	10.00	0.00	0.00
7,095.94	43.74	180.66	6,924.15	805.55	-278.40	-802.29	10.00	10.00	0.00	0.00
<b>Sharon Springs</b>										
7,100.00	44.14	180.66	6,927.07	802.73	-278.43	-799.47	10.00	10.00	0.00	0.00
<b>DLS = 10°/100'</b>										
7,136.07	47.75	180.66	6,952.15	776.82	-278.73	-773.55	10.00	10.00	0.00	0.00
<b>Niobrara Top</b>										
7,200.00	54.14	180.66	6,992.41	727.20	-279.30	-723.94	10.00	10.00	0.00	0.00
7,275.48	61.69	180.66	7,032.47	663.30	-280.04	-660.03	10.00	10.00	0.00	0.00
<b>Niobrara B Bench</b>										
7,300.00	64.14	180.66	7,043.63	641.47	-280.29	-638.20	10.00	10.00	0.00	0.00
7,400.00	74.14	180.66	7,079.19	548.15	-281.36	-544.87	10.00	10.00	0.00	0.00
7,443.38	78.48	180.66	7,089.46	506.01	-281.84	-502.73	10.00	10.00	0.00	0.00
<b>Niobrara C Bench</b>										
7,500.00	84.14	180.66	7,098.01	450.07	-282.49	-446.79	10.00	10.00	0.00	0.00
7,558.14	89.96	180.66	7,101.00	392.04	-283.16	-388.75	10.00	10.00	0.00	0.00
<b>End Build @ 7558.14ft - Target Heel Location - Top of Production</b>										
7,600.00	89.96	180.66	7,101.03	350.18	-283.64	-346.89	0.00	0.00	0.00	0.00
7,700.00	89.96	180.66	7,101.11	250.19	-284.79	-246.89	0.00	0.00	0.00	0.00
7,800.00	89.96	180.66	7,101.19	150.19	-285.94	-146.89	0.00	0.00	0.00	0.00
7,900.00	89.96	180.66	7,101.26	50.20	-287.09	-46.89	0.00	0.00	0.00	0.00
8,000.00	89.96	180.66	7,101.34	-49.79	-288.24	53.11	0.00	0.00	0.00	0.00
8,100.00	89.96	180.66	7,101.42	-149.79	-289.39	153.11	0.00	0.00	0.00	0.00
8,200.00	89.96	180.66	7,101.49	-249.78	-290.54	253.11	0.00	0.00	0.00	0.00
8,300.00	89.96	180.66	7,101.57	-349.77	-291.69	353.11	0.00	0.00	0.00	0.00
8,400.00	89.96	180.66	7,101.65	-449.77	-292.84	453.11	0.00	0.00	0.00	0.00
8,500.00	89.96	180.66	7,101.73	-549.76	-293.99	553.11	0.00	0.00	0.00	0.00
8,600.00	89.96	180.66	7,101.80	-649.75	-295.14	653.11	0.00	0.00	0.00	0.00
8,700.00	89.96	180.66	7,101.88	-749.75	-296.29	753.11	0.00	0.00	0.00	0.00
8,800.00	89.96	180.66	7,101.96	-849.74	-297.44	853.11	0.00	0.00	0.00	0.00

## Plan Report for SARCHET 16N-20HZ - 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 (°)
8,900.00	89.96	180.66	7,102.03	-949.73	-298.59	953.11	0.00	0.00	0.00	0.00
9,000.00	89.96	180.66	7,102.11	-1,049.73	-299.74	1,053.11	0.00	0.00	0.00	0.00
9,100.00	89.96	180.66	7,102.19	-1,149.72	-300.89	1,153.11	0.00	0.00	0.00	0.00
9,200.00	89.96	180.66	7,102.27	-1,249.71	-302.04	1,253.11	0.00	0.00	0.00	0.00
9,300.00	89.96	180.66	7,102.34	-1,349.71	-303.19	1,353.11	0.00	0.00	0.00	0.00
9,400.00	89.96	180.66	7,102.42	-1,449.70	-304.34	1,453.11	0.00	0.00	0.00	0.00
9,500.00	89.96	180.66	7,102.50	-1,549.69	-305.49	1,553.11	0.00	0.00	0.00	0.00
9,600.00	89.96	180.66	7,102.57	-1,649.69	-306.64	1,653.11	0.00	0.00	0.00	0.00
9,700.00	89.96	180.66	7,102.65	-1,749.68	-307.79	1,753.11	0.00	0.00	0.00	0.00
9,800.00	89.96	180.66	7,102.73	-1,849.67	-308.94	1,853.11	0.00	0.00	0.00	0.00
9,900.00	89.96	180.66	7,102.80	-1,949.67	-310.09	1,953.11	0.00	0.00	0.00	0.00
10,000.00	89.96	180.66	7,102.88	-2,049.66	-311.24	2,053.11	0.00	0.00	0.00	0.00
10,100.00	89.96	180.66	7,102.96	-2,149.65	-312.39	2,153.11	0.00	0.00	0.00	0.00
10,200.00	89.96	180.66	7,103.04	-2,249.65	-313.54	2,253.11	0.00	0.00	0.00	0.00
10,300.00	89.96	180.66	7,103.11	-2,349.64	-314.69	2,353.11	0.00	0.00	0.00	0.00
10,400.00	89.96	180.66	7,103.19	-2,449.63	-315.84	2,453.11	0.00	0.00	0.00	0.00
10,500.00	89.96	180.66	7,103.27	-2,549.63	-316.99	2,553.11	0.00	0.00	0.00	0.00
10,600.00	89.96	180.66	7,103.34	-2,649.62	-318.14	2,653.11	0.00	0.00	0.00	0.00
10,700.00	89.96	180.66	7,103.42	-2,749.61	-319.29	2,753.11	0.00	0.00	0.00	0.00
10,800.00	89.96	180.66	7,103.50	-2,849.61	-320.44	2,853.11	0.00	0.00	0.00	0.00
10,900.00	89.96	180.66	7,103.57	-2,949.60	-321.59	2,953.11	0.00	0.00	0.00	0.00
11,000.00	89.96	180.66	7,103.65	-3,049.59	-322.74	3,053.11	0.00	0.00	0.00	0.00
11,100.00	89.96	180.66	7,103.73	-3,149.59	-323.89	3,153.11	0.00	0.00	0.00	0.00
11,200.00	89.96	180.66	7,103.81	-3,249.58	-325.04	3,253.11	0.00	0.00	0.00	0.00
11,300.00	89.96	180.66	7,103.88	-3,349.57	-326.19	3,353.11	0.00	0.00	0.00	0.00
11,400.00	89.96	180.66	7,103.96	-3,449.57	-327.34	3,453.11	0.00	0.00	0.00	0.00
11,500.00	89.96	180.66	7,104.04	-3,549.56	-328.49	3,553.11	0.00	0.00	0.00	0.00
11,600.00	89.96	180.66	7,104.11	-3,649.55	-329.64	3,653.11	0.00	0.00	0.00	0.00
11,700.00	89.96	180.66	7,104.19	-3,749.55	-330.79	3,753.11	0.00	0.00	0.00	0.00
11,800.00	89.96	180.66	7,104.27	-3,849.54	-331.94	3,853.11	0.00	0.00	0.00	0.00
11,900.00	89.96	180.66	7,104.35	-3,949.53	-333.09	3,953.11	0.00	0.00	0.00	0.00
12,000.00	89.96	180.66	7,104.42	-4,049.53	-334.24	4,053.11	0.00	0.00	0.00	0.00
12,100.00	89.96	180.66	7,104.50	-4,149.52	-335.39	4,153.11	0.00	0.00	0.00	0.00
12,200.00	89.96	180.66	7,104.58	-4,249.51	-336.54	4,253.11	0.00	0.00	0.00	0.00
12,300.00	89.96	180.66	7,104.65	-4,349.51	-337.69	4,353.11	0.00	0.00	0.00	0.00
12,400.00	89.96	180.66	7,104.73	-4,449.50	-338.84	4,453.11	0.00	0.00	0.00	0.00
12,500.00	89.96	180.66	7,104.81	-4,549.50	-339.99	4,553.11	0.00	0.00	0.00	0.00
12,600.00	89.96	180.66	7,104.88	-4,649.49	-341.14	4,653.11	0.00	0.00	0.00	0.00
12,700.00	89.96	180.66	7,104.96	-4,749.48	-342.29	4,753.11	0.00	0.00	0.00	0.00
12,750.04	89.96	180.66	7,105.00	-4,799.52	-342.87	4,803.15	0.00	0.00	0.00	0.00

TD Well @ 12750.04ft - Target Toe Location - SARCHET 16N-20HZ\_BHL - SARCHET 16N-20HZ\_BHL

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,120.00	2,120.00	0.00	0.00	Begin Nudge @ 2120.00ft
2,920.00	2,909.64	106.68	-30.59	End Nudge @ 2920.00ft
5,755.00	5,634.82	857.84	-245.98	Begin Drop @ 5755.00ft
6,555.00	6,424.46	964.52	-276.57	End Drop @ 6555.00ft
6,558.58	6,428.04	964.52	-276.57	Top of 4.5" Liner @ 6558.58ft
6,658.58	6,528.04	964.52	-276.57	KOP @ 6658.58ft
7,100.00	6,927.07	802.73	-278.43	DLS = 10°/100'
7,558.14	7,101.00	392.04	-283.16	End Build @ 7558.14ft
12,750.04	7,105.00	-4,799.52	-342.87	TD Well @ 12750.04ft

## Plan Report for SARCHET 16N-20HZ - Permit Rev-2

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	180.66	Slot	0.00	0.00	0.00

**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,558.14	Permit Rev-2	APC_ISCWSA REV 2 MWD+IFR1
7,558.14	12,750.04	Permit Rev-2	APC_ISCWSA REV 2 MWD+IFR1

**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,400.00	1,400.00	9 5/8"	9-5/8	13-1/2
7,558.14	7,101.00	Top of Production	5-1/2	7-7/8

**Formation Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,608.78	4,533.00	Sussex		0.00	
7,095.94	6,924.15	Sharon Springs		0.00	
7,136.07	6,952.15	Niobrara Top		0.00	
7,275.48	7,032.47	Niobrara B Bench		0.00	
7,443.38	7,089.46	Niobrara C Bench		0.00	
7,558.14	7,101.00	Target Heel Location		0.00	
12,750.04	7,105.00	Target Toe Location		0.00	

**Targets associated with this wellbore**

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
SARCHET 16N-20HZ_SHL	0.00	0.00	0.00	Point
SARCHET 16N-20HZ_BHL	7,415.00	-4,799.52	-342.87	Point
SARCHET 16N-20HZ_BHL	7,105.00	-4,799.52	-342.87	Point
2N-R65W-Sec. 20_Section Lines	-18.00	26.31	-2,066.49	Polygon

## North Reference Sheet for 2N-65W-20 Sarchet 1-20HZ Pad - SARCHET 16N-20HZ - 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' @ 4913.00usft (D Rig). Northing and Easting are relative to SARCHET 16N-20HZ

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: 0.99960917

Grid Coordinates of Well: 14,574,315.59 usft N, 1,729,974.11 usft E

Geographical Coordinates of Well: 40° 07' 48.81" N, 104° 40' 46.56" W

Grid Convergence at Surface is: 0.21°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,750.04usft the Bottom Hole Displacement is 4,811.75usft in the Direction of 184.09° (True).

Magnetic Convergence at surface is: -8.10° ( 2 February 2015, , IGRF2010)

