

# US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

2N-65W-21 Meguire 21-2HZ Pad

MEGUIRE 29N-16HZ

Plan A

Plan: Permit Rev-1

## Sperry Drilling Services Proposal Report

23 April, 2015

Well Coordinates: 14,572,335.50 N, 1,732,515.32 E (40° 07' 29.14" N, 104° 40' 13.93" W)

Ground Level: 4,888.00 usft

Local Coordinate Origin:

Centered on Well MEGUIRE 29N-16HZ

Viewing Datum:

RKB = 17' @ 4905.00usft (D Rig)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Version: 5000.1 Build: 70

**HALLIBURTON**

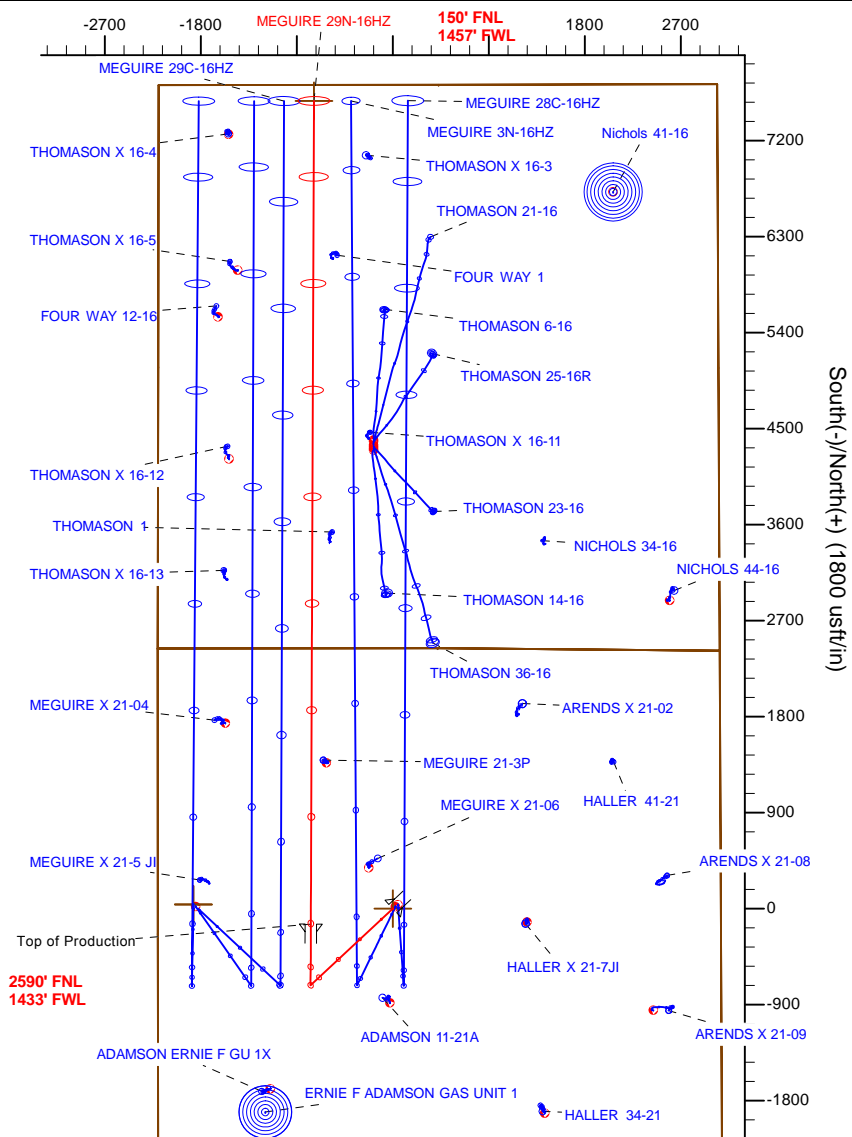
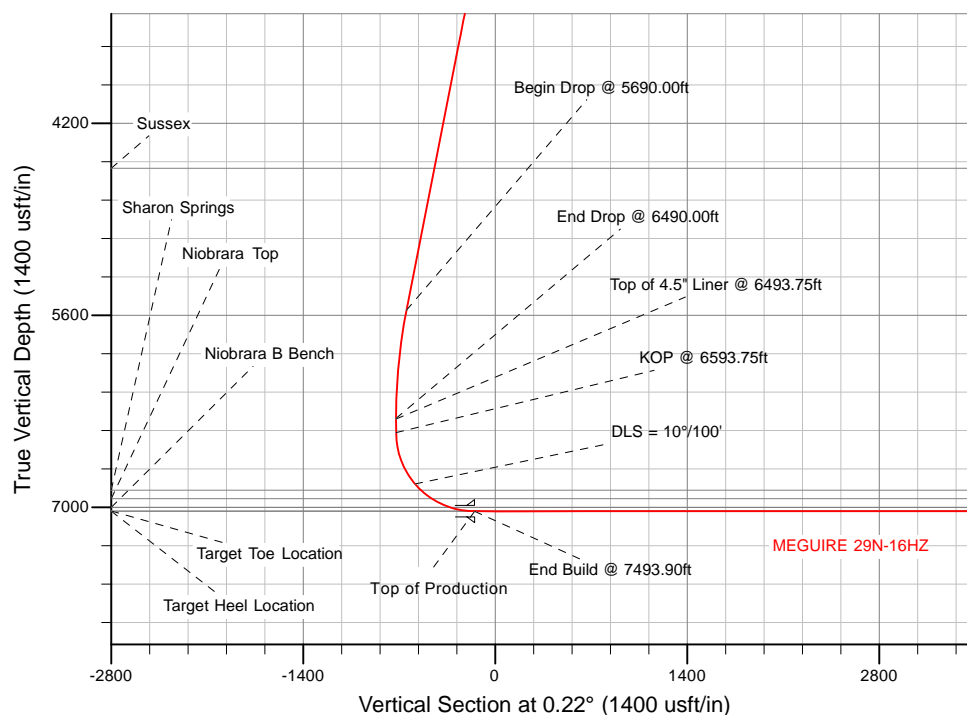
Design: Permit Rev-1

# US ROCKIES WATTENBERG PLANNING

## Sperry Drilling

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSector	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1870.00	0.00	0.00	1870.00	0.00	0.00	0.00	0.00	0.00	
3	2670.00	16.00	227.00	2659.64	-75.69	-81.16	2.00	227.00	-76.00	
4	5690.00	16.00	227.00	5562.65	-643.40	-689.96	0.00	0.00	-646.04	
5	6490.00	0.00	0.00	6352.30	-719.08	-771.12	2.00	180.00	-722.04	
6	6569.00	0.00	0.00	6456.05	-719.08	-771.12	0.00	0.00	-722.04	
7	7493.90	90.01	0.22	7029.00	-145.98	768.93	10.00	0.00	425.93	
8	15211.77	90.01	0.22	7027.00	7571.83	-739.45	0.00	0.00	7568.94	MEGUIRE 29N-16HZ BHL

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
MEGUIRE 29N-16HZ_SHL	0.00	-0.60	0.00	40.124762	-104.670536
MEGUIRE 29N-16HZ_BHL	7027.00	7571.83	-739.45	40.145555	-104.673182



TVD MD

6456.056593.75 KOP @ 6593.75ft

WELL DETAILS: MEGUIRE 29N-16HZ

Ground Level: 4888.00

RKB = 17' @ 4905.00usft (D Riq)

Plan: Permit Rev-1 (MEGUIRE 29N-16HZ/Plan A)

Created By: Clint Eshelman

Date: 1/27/2015

## Plan Report for MEGUIRE 29N-16HZ - 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
<b>2N-R65W-Sec. 16_Section Lines - MEGUIRE 29N-16HZ_SHL - 2N-R65W-Sec. 21_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
1,357.00	0.00	0.00	1,357.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>										
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
1,870.00	0.00	0.00	1,870.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 1870.00ft</b>										
1,900.00	0.60	227.00	1,900.00	-0.11	-0.11	-0.11	2.00	2.00	0.00	227.00
2,000.00	2.60	227.00	1,999.96	-2.01	-2.16	-2.02	2.00	2.00	0.00	0.00
2,100.00	4.60	227.00	2,099.75	-6.29	-6.75	-6.32	2.00	2.00	0.00	0.00
2,200.00	6.60	227.00	2,199.27	-12.95	-13.89	-13.00	2.00	2.00	0.00	0.00
2,300.00	8.60	227.00	2,298.39	-21.97	-23.56	-22.06	2.00	2.00	0.00	0.00
2,400.00	10.60	227.00	2,396.98	-33.34	-35.75	-33.48	2.00	2.00	0.00	0.00
2,500.00	12.60	227.00	2,494.93	-47.05	-50.46	-47.25	2.00	2.00	0.00	0.00
2,600.00	14.60	227.00	2,592.13	-63.09	-67.65	-63.35	2.00	2.00	0.00	0.00
2,670.00	16.00	227.00	2,659.64	-75.69	-81.16	-76.00	2.00	2.00	0.00	0.00
<b>End Nudge @ 2670.00ft</b>										
2,700.00	16.00	227.00	2,688.48	-81.33	-87.21	-81.66	0.00	0.00	0.00	0.00
2,800.00	16.00	227.00	2,784.61	-100.12	-107.37	-100.54	0.00	0.00	0.00	0.00
2,900.00	16.00	227.00	2,880.73	-118.92	-127.53	-119.41	0.00	0.00	0.00	0.00
3,000.00	16.00	227.00	2,976.86	-137.72	-147.69	-138.29	0.00	0.00	0.00	0.00
3,100.00	16.00	227.00	3,072.99	-156.52	-167.85	-157.16	0.00	0.00	0.00	0.00
3,200.00	16.00	227.00	3,169.11	-175.32	-188.01	-176.04	0.00	0.00	0.00	0.00
3,300.00	16.00	227.00	3,265.24	-194.12	-208.16	-194.91	0.00	0.00	0.00	0.00
3,400.00	16.00	227.00	3,361.36	-212.91	-228.32	-213.79	0.00	0.00	0.00	0.00
3,500.00	16.00	227.00	3,457.49	-231.71	-248.48	-232.67	0.00	0.00	0.00	0.00
3,600.00	16.00	227.00	3,553.62	-250.51	-268.64	-251.54	0.00	0.00	0.00	0.00
3,700.00	16.00	227.00	3,649.74	-269.31	-288.80	-270.42	0.00	0.00	0.00	0.00
3,800.00	16.00	227.00	3,745.87	-288.11	-308.96	-289.29	0.00	0.00	0.00	0.00
3,900.00	16.00	227.00	3,841.99	-306.91	-329.12	-308.17	0.00	0.00	0.00	0.00
4,000.00	16.00	227.00	3,938.12	-325.71	-349.28	-327.04	0.00	0.00	0.00	0.00
4,100.00	16.00	227.00	4,034.25	-344.50	-369.43	-345.92	0.00	0.00	0.00	0.00
4,200.00	16.00	227.00	4,130.37	-363.30	-389.59	-364.80	0.00	0.00	0.00	0.00
4,300.00	16.00	227.00	4,226.50	-382.10	-409.75	-383.67	0.00	0.00	0.00	0.00
4,400.00	16.00	227.00	4,322.63	-400.90	-429.91	-402.55	0.00	0.00	0.00	0.00
4,500.00	16.00	227.00	4,418.75	-419.70	-450.07	-421.42	0.00	0.00	0.00	0.00
4,600.00	16.00	227.00	4,514.88	-438.50	-470.23	-440.30	0.00	0.00	0.00	0.00
4,612.61	16.00	227.00	4,527.00	-440.87	-472.77	-442.68	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,700.00	16.00	227.00	4,611.00	-457.29	-490.39	-459.17	0.00	0.00	0.00	0.00
4,800.00	16.00	227.00	4,707.13	-476.09	-510.55	-478.05	0.00	0.00	0.00	0.00

## Plan Report for MEGUIRE 29N-16HZ - 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 (°)
4,900.00	16.00	227.00	4,803.26	-494.89	-530.71	-496.93	0.00	0.00	0.00	0.00
5,000.00	16.00	227.00	4,899.38	-513.69	-550.86	-515.80	0.00	0.00	0.00	0.00
5,100.00	16.00	227.00	4,995.51	-532.49	-571.02	-534.68	0.00	0.00	0.00	0.00
5,200.00	16.00	227.00	5,091.63	-551.29	-591.18	-553.55	0.00	0.00	0.00	0.00
5,300.00	16.00	227.00	5,187.76	-570.08	-611.34	-572.43	0.00	0.00	0.00	0.00
5,400.00	16.00	227.00	5,283.89	-588.88	-631.50	-591.30	0.00	0.00	0.00	0.00
5,500.00	16.00	227.00	5,380.01	-607.68	-651.66	-610.18	0.00	0.00	0.00	0.00
5,600.00	16.00	227.00	5,476.14	-626.48	-671.82	-629.05	0.00	0.00	0.00	0.00
5,690.00	16.00	227.00	5,562.65	-643.40	-689.96	-646.04	0.00	0.00	0.00	0.00
<b>Begin Drop @ 5690.00ft</b>										
5,700.00	15.80	227.00	5,572.27	-645.27	-691.96	-647.92	2.00	-2.00	0.00	-180.00
5,800.00	13.80	227.00	5,668.95	-662.69	-710.65	-665.41	2.00	-2.00	0.00	180.00
5,900.00	11.80	227.00	5,766.46	-677.80	-726.85	-680.58	2.00	-2.00	0.00	180.00
6,000.00	9.80	227.00	5,864.68	-690.57	-740.55	-693.41	2.00	-2.00	0.00	180.00
6,100.00	7.80	227.00	5,963.50	-701.01	-751.74	-703.89	2.00	-2.00	0.00	180.00
6,200.00	5.80	227.00	6,062.79	-709.08	-760.40	-712.00	2.00	-2.00	0.00	180.00
6,300.00	3.80	227.00	6,162.44	-714.79	-766.52	-717.73	2.00	-2.00	0.00	180.00
6,400.00	1.80	227.00	6,262.31	-718.12	-770.09	-721.07	2.00	-2.00	0.00	180.00
6,490.00	0.00	0.00	6,352.30	-719.08	-771.12	-722.04	2.00	-2.00	0.00	180.00
<b>End Drop @ 6490.00ft</b>										
6,493.75	0.00	0.00	6,356.05	-719.08	-771.12	-722.04	0.00	0.00	0.00	0.00
<b>Top of 4.5" Liner @ 6493.75ft</b>										
6,500.00	0.00	0.00	6,362.30	-719.08	-771.12	-722.04	0.00	0.00	0.00	0.00
6,593.75	0.00	0.00	6,456.05	-719.08	-771.12	-722.04	0.00	0.00	0.00	0.00
<b>KOP @ 6593.75ft</b>										
6,600.00	0.62	0.22	6,462.30	-719.05	-771.12	-722.01	10.00	10.00	0.00	0.22
6,700.00	10.62	0.22	6,561.69	-709.26	-771.09	-712.22	10.00	10.00	0.00	0.00
6,800.00	20.62	0.22	6,657.87	-682.36	-770.98	-685.32	10.00	10.00	0.00	0.00
6,900.00	30.62	0.22	6,747.92	-639.17	-770.82	-642.12	10.00	10.00	0.00	0.00
7,000.00	40.62	0.22	6,829.10	-581.00	-770.60	-583.95	10.00	10.00	0.00	0.00
<b>DLS = 10°/100'</b>										
7,063.42	46.97	0.22	6,874.86	-537.12	-770.43	-540.08	10.00	10.00	0.00	0.00
<b>Sharon Springs</b>										
7,100.00	50.62	0.22	6,898.95	-509.61	-770.32	-512.56	10.00	10.00	0.00	0.00
7,164.28	57.05	0.22	6,936.86	-457.74	-770.13	-460.69	10.00	10.00	0.00	0.00
<b>Niobrara Top</b>										
7,200.00	60.62	0.22	6,955.34	-427.18	-770.01	-430.13	10.00	10.00	0.00	0.00
7,300.00	70.62	0.22	6,996.56	-336.21	-769.66	-339.16	10.00	10.00	0.00	0.00
7,316.07	72.23	0.22	7,001.67	-320.97	-769.60	-323.93	10.00	10.00	0.00	0.00
<b>Niobrara B Bench</b>										
7,400.00	80.62	0.22	7,021.35	-239.46	-769.29	-242.41	10.00	10.00	0.00	0.00
7,493.90	90.01	0.22	7,029.00	-145.98	-768.93	-148.93	10.00	10.00	0.00	0.00
<b>End Build @ 7493.90ft - Target Heel Location - Top of Production</b>										
7,500.00	90.01	0.22	7,029.00	-139.88	-768.91	-142.83	0.00	0.00	0.00	0.00
7,600.00	90.01	0.22	7,028.98	-39.88	-768.53	-42.83	0.00	0.00	0.00	0.00
7,700.00	90.01	0.22	7,028.95	60.12	-768.15	57.17	0.00	0.00	0.00	0.00
7,800.00	90.01	0.22	7,028.92	160.12	-767.77	157.17	0.00	0.00	0.00	0.00
7,900.00	90.01	0.22	7,028.90	260.12	-767.38	257.17	0.00	0.00	0.00	0.00
8,000.00	90.01	0.22	7,028.87	360.12	-767.00	357.17	0.00	0.00	0.00	0.00
8,100.00	90.01	0.22	7,028.85	460.11	-766.62	457.17	0.00	0.00	0.00	0.00
8,200.00	90.01	0.22	7,028.82	560.11	-766.24	557.17	0.00	0.00	0.00	0.00
8,300.00	90.01	0.22	7,028.79	660.11	-765.86	657.17	0.00	0.00	0.00	0.00
8,400.00	90.01	0.22	7,028.77	760.11	-765.47	757.17	0.00	0.00	0.00	0.00
8,500.00	90.01	0.22	7,028.74	860.11	-765.09	857.17	0.00	0.00	0.00	0.00
8,600.00	90.01	0.22	7,028.72	960.11	-764.71	957.17	0.00	0.00	0.00	0.00
8,700.00	90.01	0.22	7,028.69	1,060.11	-764.33	1,057.17	0.00	0.00	0.00	0.00
8,800.00	90.01	0.22	7,028.66	1,160.11	-763.94	1,157.17	0.00	0.00	0.00	0.00
8,900.00	90.01	0.22	7,028.64	1,260.11	-763.56	1,257.17	0.00	0.00	0.00	0.00

## Plan Report for MEGUIRE 29N-16HZ - 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 (°)
9,000.00	90.01	0.22	7,028.61	1,360.11	-763.18	1,357.17	0.00	0.00	0.00	0.00
9,100.00	90.01	0.22	7,028.59	1,460.11	-762.80	1,457.17	0.00	0.00	0.00	0.00
9,200.00	90.01	0.22	7,028.56	1,560.11	-762.42	1,557.17	0.00	0.00	0.00	0.00
9,300.00	90.01	0.22	7,028.53	1,660.11	-762.03	1,657.17	0.00	0.00	0.00	0.00
9,400.00	90.01	0.22	7,028.51	1,760.10	-761.65	1,757.17	0.00	0.00	0.00	0.00
9,500.00	90.01	0.22	7,028.48	1,860.10	-761.27	1,857.17	0.00	0.00	0.00	0.00
9,600.00	90.01	0.22	7,028.46	1,960.10	-760.89	1,957.17	0.00	0.00	0.00	0.00
9,700.00	90.01	0.22	7,028.43	2,060.10	-760.51	2,057.17	0.00	0.00	0.00	0.00
9,800.00	90.01	0.22	7,028.41	2,160.10	-760.12	2,157.17	0.00	0.00	0.00	0.00
9,900.00	90.01	0.22	7,028.38	2,260.10	-759.74	2,257.17	0.00	0.00	0.00	0.00
10,000.00	90.01	0.22	7,028.35	2,360.10	-759.36	2,357.17	0.00	0.00	0.00	0.00
10,100.00	90.01	0.22	7,028.33	2,460.10	-758.98	2,457.17	0.00	0.00	0.00	0.00
10,200.00	90.01	0.22	7,028.30	2,560.10	-758.60	2,557.17	0.00	0.00	0.00	0.00
10,300.00	90.01	0.22	7,028.28	2,660.10	-758.21	2,657.17	0.00	0.00	0.00	0.00
10,400.00	90.01	0.22	7,028.25	2,760.10	-757.83	2,757.17	0.00	0.00	0.00	0.00
10,500.00	90.01	0.22	7,028.22	2,860.10	-757.45	2,857.17	0.00	0.00	0.00	0.00
10,600.00	90.01	0.22	7,028.20	2,960.10	-757.07	2,957.17	0.00	0.00	0.00	0.00
10,700.00	90.01	0.22	7,028.17	3,060.10	-756.69	3,057.17	0.00	0.00	0.00	0.00
10,800.00	90.01	0.22	7,028.15	3,160.09	-756.30	3,157.17	0.00	0.00	0.00	0.00
10,900.00	90.01	0.22	7,028.12	3,260.09	-755.92	3,257.17	0.00	0.00	0.00	0.00
11,000.00	90.01	0.22	7,028.09	3,360.09	-755.54	3,357.17	0.00	0.00	0.00	0.00
11,100.00	90.01	0.22	7,028.07	3,460.09	-755.16	3,457.17	0.00	0.00	0.00	0.00
11,200.00	90.01	0.22	7,028.04	3,560.09	-754.78	3,557.17	0.00	0.00	0.00	0.00
11,300.00	90.01	0.22	7,028.02	3,660.09	-754.39	3,657.17	0.00	0.00	0.00	0.00
11,400.00	90.01	0.22	7,027.99	3,760.09	-754.01	3,757.17	0.00	0.00	0.00	0.00
11,500.00	90.01	0.22	7,027.96	3,860.09	-753.63	3,857.17	0.00	0.00	0.00	0.00
11,600.00	90.01	0.22	7,027.94	3,960.09	-753.25	3,957.17	0.00	0.00	0.00	0.00
11,700.00	90.01	0.22	7,027.91	4,060.09	-752.87	4,057.17	0.00	0.00	0.00	0.00
11,800.00	90.01	0.22	7,027.89	4,160.09	-752.48	4,157.17	0.00	0.00	0.00	0.00
11,900.00	90.01	0.22	7,027.86	4,260.09	-752.10	4,257.17	0.00	0.00	0.00	0.00
12,000.00	90.01	0.22	7,027.83	4,360.09	-751.72	4,357.17	0.00	0.00	0.00	0.00
12,100.00	90.01	0.22	7,027.81	4,460.09	-751.34	4,457.17	0.00	0.00	0.00	0.00
12,200.00	90.01	0.22	7,027.78	4,560.08	-750.96	4,557.17	0.00	0.00	0.00	0.00
12,300.00	90.01	0.22	7,027.76	4,660.08	-750.57	4,657.17	0.00	0.00	0.00	0.00
12,400.00	90.01	0.22	7,027.73	4,760.08	-750.19	4,757.17	0.00	0.00	0.00	0.00
12,500.00	90.01	0.22	7,027.70	4,860.08	-749.81	4,857.17	0.00	0.00	0.00	0.00
12,600.00	90.01	0.22	7,027.68	4,960.08	-749.43	4,957.17	0.00	0.00	0.00	0.00
12,700.00	90.01	0.22	7,027.65	5,060.08	-749.05	5,057.17	0.00	0.00	0.00	0.00
12,800.00	90.01	0.22	7,027.63	5,160.08	-748.66	5,157.17	0.00	0.00	0.00	0.00
12,900.00	90.01	0.22	7,027.60	5,260.08	-748.28	5,257.17	0.00	0.00	0.00	0.00
13,000.00	90.01	0.22	7,027.57	5,360.08	-747.90	5,357.17	0.00	0.00	0.00	0.00
13,100.00	90.01	0.22	7,027.55	5,460.08	-747.52	5,457.17	0.00	0.00	0.00	0.00
13,200.00	90.01	0.22	7,027.52	5,560.08	-747.14	5,557.17	0.00	0.00	0.00	0.00
13,300.00	90.01	0.22	7,027.50	5,660.08	-746.75	5,657.17	0.00	0.00	0.00	0.00
13,400.00	90.01	0.22	7,027.47	5,760.08	-746.37	5,757.17	0.00	0.00	0.00	0.00
13,500.00	90.01	0.22	7,027.44	5,860.07	-745.99	5,857.17	0.00	0.00	0.00	0.00
13,600.00	90.01	0.22	7,027.42	5,960.07	-745.61	5,957.17	0.00	0.00	0.00	0.00
13,700.00	90.01	0.22	7,027.39	6,060.07	-745.23	6,057.17	0.00	0.00	0.00	0.00
13,800.00	90.01	0.22	7,027.37	6,160.07	-744.84	6,157.17	0.00	0.00	0.00	0.00
13,900.00	90.01	0.22	7,027.34	6,260.07	-744.46	6,257.17	0.00	0.00	0.00	0.00
14,000.00	90.01	0.22	7,027.31	6,360.07	-744.08	6,357.17	0.00	0.00	0.00	0.00
14,100.00	90.01	0.22	7,027.29	6,460.07	-743.70	6,457.17	0.00	0.00	0.00	0.00
14,200.00	90.01	0.22	7,027.26	6,560.07	-743.32	6,557.17	0.00	0.00	0.00	0.00
14,300.00	90.01	0.22	7,027.24	6,660.07	-742.93	6,657.17	0.00	0.00	0.00	0.00
14,400.00	90.01	0.22	7,027.21	6,760.07	-742.55	6,757.17	0.00	0.00	0.00	0.00
14,500.00	90.01	0.22	7,027.18	6,860.07	-742.17	6,857.17	0.00	0.00	0.00	0.00
14,600.00	90.01	0.22	7,027.16	6,960.07	-741.79	6,957.17	0.00	0.00	0.00	0.00
14,700.00	90.01	0.22	7,027.13	7,060.07	-741.41	7,057.17	0.00	0.00	0.00	0.00
14,800.00	90.01	0.22	7,027.11	7,160.07	-741.02	7,157.17	0.00	0.00	0.00	0.00
14,900.00	90.01	0.22	7,027.08	7,260.06	-740.64	7,257.17	0.00	0.00	0.00	0.00

## Plan Report for MEGUIRE 29N-16HZ - 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 (°)
15,000.00	90.01	0.22	7,027.05	7,360.06	-740.26	7,357.17	0.00	0.00	0.00	0.00
15,100.00	90.01	0.22	7,027.03	7,460.06	-739.88	7,457.17	0.00	0.00	0.00	0.00
15,200.00	90.01	0.22	7,027.00	7,560.06	-739.50	7,557.17	0.00	0.00	0.00	0.00
15,211.76	90.01	0.22	7,027.00	7,571.82	-739.45	7,568.93	0.00	0.00	0.00	0.00
<b>Target Toe Location</b>										
15,211.77	90.01	0.22	7,027.00	7,571.83	-739.45	7,568.94	0.01	0.00	0.00	0.00
<b>TD Well @ 15211.77ft - MEGUIRE 29N-16HZ_BHL</b>										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,870.00	1,870.00	0.00	0.00	Begin Nudge @ 1870.00ft
2,670.00	2,659.64	-75.69	-81.16	End Nudge @ 2670.00ft
5,690.00	5,562.65	-643.40	-689.96	Begin Drop @ 5690.00ft
6,490.00	6,352.30	-719.08	-771.12	End Drop @ 6490.00ft
6,493.75	6,356.05	-719.08	-771.12	Top of 4.5" Liner @ 6493.75ft
6,593.75	6,456.05	-719.08	-771.12	KOP @ 6593.75ft
7,000.00	6,829.10	-581.00	-770.60	DLS = 10°/100'
7,493.90	7,029.00	-145.98	-768.93	End Build @ 7493.90ft
15,211.77	7,027.00	7,571.83	-739.45	TD Well @ 15211.77ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	0.22	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,493.90	Permit Rev-1	APC_ISCWSA REV 2 MWD+IFR1
7,493.90	15,211.77	Permit Rev-1	APC_ISCWSA REV 2 MWD+IFR1

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,357.00	1,357.00	9 5/8"	9-5/8	13-1/2
7,493.90	7,029.00	Top of Production	5-1/2	7-7/8

**Plan Report for MEGUIRE 29N-16HZ - Permit Rev-1****Formation Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,612.61	4,527.00	Sussex		0.00	
7,063.42	6,874.86	Sharon Springs		0.00	
7,164.28	6,936.86	Niobrara Top		0.00	
7,316.07	7,001.67	Niobrara B Bench		0.00	
7,493.90	7,029.00	Target Heel Location		0.00	
15,211.76	7,027.00	Target Toe Location		0.00	

***Targets associated with this wellbore***

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
2N-R65W-Sec. 16_Section Lines	-8.00	39.76	-1,870.14	Polygon
MEGUIRE 29N-16HZ_SHL	0.00	0.00	0.00	Point
2N-R65W-Sec. 21_Section Lines	-8.00	39.76	-1,870.14	Polygon
MEGUIRE 29N-16HZ_BHL	7,027.00	7,571.83	-739.45	Point

## North Reference Sheet for 2N-65W-21 Meguire 21-2HZ Pad - MEGUIRE 29N-16HZ - 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' @ 4905.00usft (D Rig). Northing and Easting are relative to MEGUIRE 29N-16HZ

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: 0.99960970

Grid Coordinates of Well: 14,572,335.50 usft N, 1,732,515.32 usft E

Geographical Coordinates of Well: 40° 07' 29.14" N, 104° 40' 13.93" W

Grid Convergence at Surface is: 0.21°

Based upon Minimum Curvature type calculations, at a Measured Depth of 15,211.77usft the Bottom Hole Displacement is 7,607.85usft in the Direction of 354.42° (True).

Magnetic Convergence at surface is: -8.09° (26 January 2015, , IGRF2010)

