

# US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

VIPER PAD

VIPER PYRO 41N-14HZ

Plan A

Plan: PERMIT REV-1

## Sperry Drilling Services Proposal Report

05 January, 2015

Well Coordinates: 14,610,809.29 N, 1,672,431.21 E (40° 13' 50.98" N, 104° 53' 07.07" W)

Ground Level: 4,794.00 usft

Local Coordinate Origin:

Centered on Well VIPER PYRO 41N-14HZ

Viewing Datum:

RKB = 17' @ 4811.00usft (Drilling 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: VIPER PAD  
Well: VIPER PYRO 41N-14HZ  
Wellbore: Plan A  
Design: PERMIT REV-1

# US ROCKIES WATTENBERG PLANNING

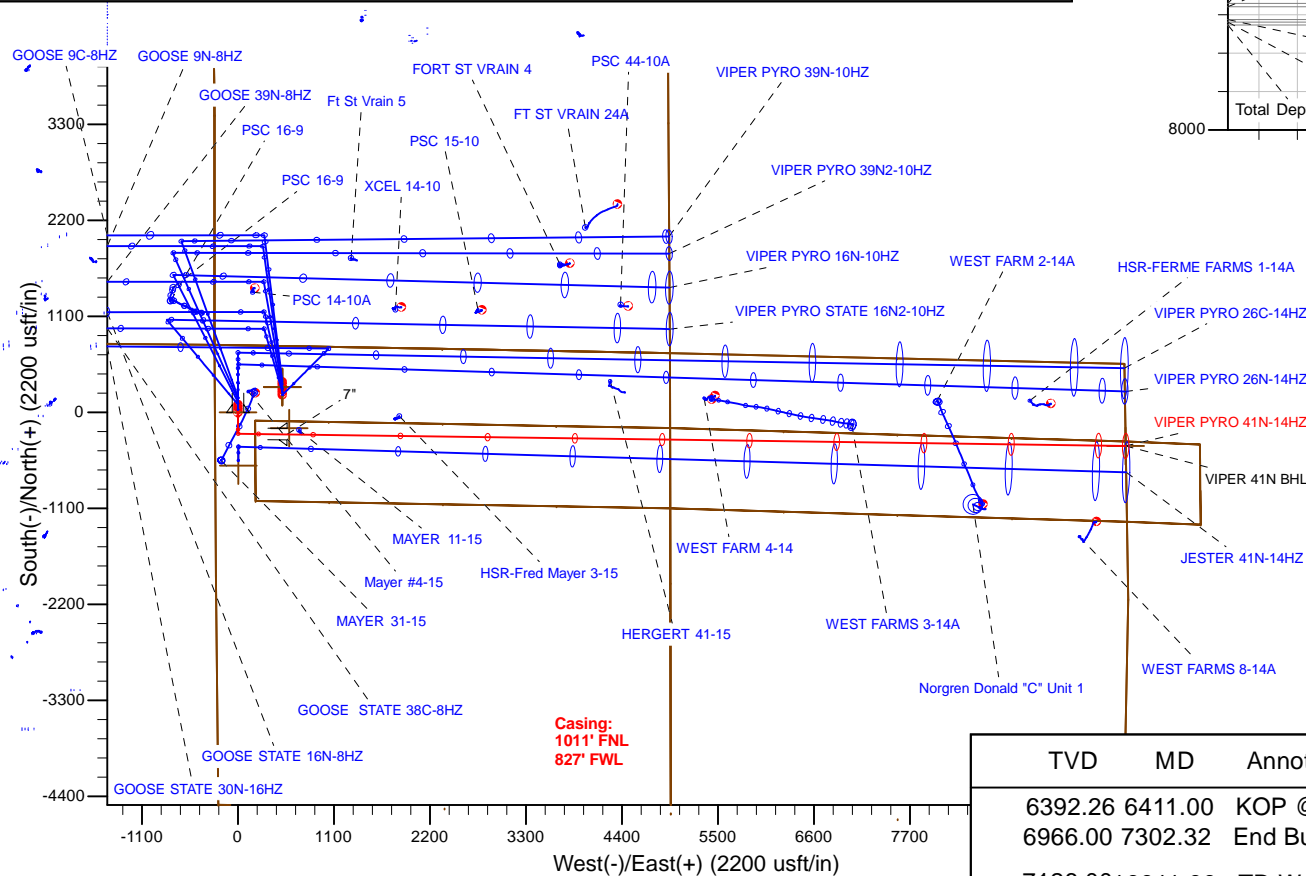
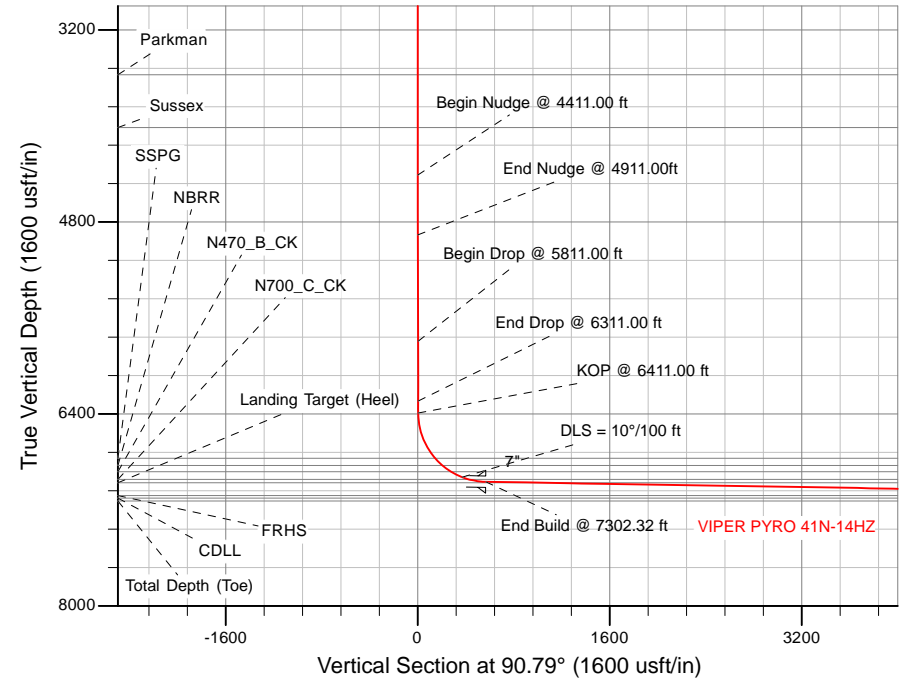
**HALLIBURTON**  
Sperry Drilling

## 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	4411.00	0.00	0.00	4411.00	0.00	0.00	0.00	0.00	0.00	
3	4911.00	10.00	180.00	4908.47	-43.52	0.00	2.00	180.00	0.60	
4	5811.00	10.00	180.00	5794.79	-199.81	0.00	0.00	0.00	2.75	
5	6311.00	0.00	0.00	6292.26	-243.33	0.00	2.00	180.00	3.35	
6	6411.86	0.00	0.00	6393.12	-243.33	0.00	0.00	0.00	3.35	
7	7302.32	89.05	90.79	6966.00	-251.14	563.36	10.00	90.79	566.77	
8	16912.00	89.05	90.79	7126.00	-384.28	10170.79	0.00	0.00	0175.12	VIPER 41N BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
VIPER 41N SHL	0.00	0.00	0.00	40.230827	-104.885296	Polygon
3N-R67W-Sec. 10_Section Lines	1.00	290.60	507.97	40.231625	-104.883476	Polygon
3N-R67W-Sec. 14_Section Lines	1.00	-609.96	3.35	40.229152	-104.885284	Polygon
3N-R67W-Sec. 15_Section Lines	1.00	290.60	507.97	40.231625	-104.883476	Polygon
3N-R67W-Sec. 9_Section Lines	1.00	290.60	507.97	40.231625	-104.883476	Polygon
VIPER 41N BHL	7126.00	-384.28	10170.79	40.229766	-104.848856	Point



BHL:  
940' FNL  
1' FEL

TVD MD Annotation

6392.26 6411.00 KOP @ 6411.00 ft  
6966.00 7302.32 End Build @ 7302.32 ft  
7126.00 16911.99 TD Well @ 16911.99 ft

## WELL DETAILS: VIPER PYRO 41N-14HZ

Ground Level: 4794.00

RKB = 17' @ 4811.00usft (Drilling Rig)

Plan: PERMIT REV-1 (VIPER PYRO 41N-14HZ/Plan A)

Created By: Katie Benner Date: 1/5/2015  
Reviewed: Date:

## Plan Report for VIPER PYRO 41N-14HZ - 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>Tie On to Surface @ 0.00 ft - VIPER 41N SHL</b>										
1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>3N-R67W-Sec. 9_Section Lines - 3N-R67W-Sec. 15_Section Lines - 3N-R67W-Sec. 14_Section Lines - 3N-R67W-Sec. 10_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
744.00	0.00	0.00	744.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>										
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
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
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,574.00	0.00	0.00	3,574.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Parkman</b>										
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,013.00	0.00	0.00	4,013.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,411.00	0.00	0.00	4,411.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 4411.00 ft</b>										
4,500.00	1.78	180.00	4,499.99	-1.38	0.00	0.02	2.00	2.00	0.00	180.00
4,600.00	3.78	180.00	4,599.86	-6.23	0.00	0.09	2.00	2.00	0.00	0.00

## Plan Report for VIPER PYRO 41N-14HZ - 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 (°)
4,700.00	5.78	180.00	4,699.51	-14.56	0.00	0.20	2.00	2.00	0.00	0.00
4,800.00	7.78	180.00	4,798.81	-26.37	0.00	0.36	2.00	2.00	0.00	0.00
4,900.00	9.78	180.00	4,897.63	-41.63	0.00	0.57	2.00	2.00	0.00	0.00
4,911.00	10.00	180.00	4,908.47	-43.52	0.00	0.60	2.00	2.00	0.00	0.00
<b>End Nudge @ 4911.00ft</b>										
5,000.00	10.00	180.00	4,996.11	-58.98	0.00	0.81	0.00	0.00	0.00	0.00
5,100.00	10.00	180.00	5,094.59	-76.34	0.00	1.05	0.00	0.00	0.00	0.00
5,200.00	10.00	180.00	5,193.07	-93.71	0.00	1.29	0.00	0.00	0.00	0.00
5,300.00	10.00	180.00	5,291.56	-111.07	0.00	1.53	0.00	0.00	0.00	0.00
5,400.00	10.00	180.00	5,390.04	-128.44	0.00	1.77	0.00	0.00	0.00	0.00
5,500.00	10.00	180.00	5,488.52	-145.80	0.00	2.01	0.00	0.00	0.00	0.00
5,600.00	10.00	180.00	5,587.00	-163.17	0.00	2.25	0.00	0.00	0.00	0.00
5,700.00	10.00	180.00	5,685.48	-180.53	0.00	2.49	0.00	0.00	0.00	0.00
5,800.00	10.00	180.00	5,783.96	-197.90	0.00	2.73	0.00	0.00	0.00	0.00
5,811.00	10.00	180.00	5,794.79	-199.81	0.00	2.75	0.00	0.00	0.00	0.00
<b>Begin Drop @ 5811.00 ft</b>										
5,900.00	8.22	180.00	5,882.67	-213.90	0.00	2.95	2.00	-2.00	0.00	180.00
6,000.00	6.22	180.00	5,981.87	-226.46	0.00	3.12	2.00	-2.00	0.00	180.00
6,100.00	4.22	180.00	6,081.45	-235.56	0.00	3.25	2.00	-2.00	0.00	180.00
6,200.00	2.22	180.00	6,181.29	-241.18	0.00	3.33	2.00	-2.00	0.00	180.00
6,300.00	0.22	180.00	6,281.26	-243.31	0.00	3.35	2.00	-2.00	0.00	180.00
6,311.00	0.00	0.00	6,292.26	-243.33	0.00	3.35	2.00	-2.00	1,636.36	180.00
<b>End Drop @ 6311.00 ft</b>										
6,400.00	0.00	0.00	6,381.26	-243.33	0.00	3.35	0.00	0.00	0.00	180.00
6,411.00	0.00	0.00	6,392.26	-243.33	0.00	3.35	0.00	0.00	0.00	0.00
<b>KOP @ 6411.00 ft</b>										
6,411.86	0.00	0.00	6,393.12	-243.33	0.00	3.35	0.00	0.00	0.00	0.00
6,500.00	8.81	90.79	6,480.91	-243.42	6.77	10.12	10.00	10.00	0.00	90.79
6,600.00	18.81	90.79	6,577.89	-243.75	30.61	33.97	10.00	10.00	0.00	0.00
6,700.00	28.81	90.79	6,669.26	-244.31	70.93	74.29	10.00	10.00	0.00	0.00
6,800.00	38.81	90.79	6,752.24	-245.08	126.51	129.87	10.00	10.00	0.00	0.00
6,824.50	41.26	90.79	6,771.00	-245.30	142.26	145.63	10.00	10.00	0.00	0.00
<b>SSPG</b>										
6,900.00	48.81	90.79	6,824.31	-246.04	195.64	199.02	10.00	10.00	0.00	0.00
6,908.71	49.69	90.79	6,830.00	-246.13	202.24	205.62	10.00	10.00	0.00	0.00
<b>NBRR</b>										
6,999.46	58.76	90.79	6,883.00	-247.15	275.78	279.17	10.00	10.00	0.00	0.00
<b>N470_B_CK</b>										
7,000.00	58.81	90.79	6,883.28	-247.16	276.24	279.62	10.00	10.00	0.00	0.00
7,100.00	68.81	90.79	6,927.35	-248.40	365.86	369.25	10.00	10.00	0.00	0.00
<b>DLS = 10°/100 ft</b>										
7,159.74	74.79	90.79	6,946.00	-249.18	422.58	425.97	10.00	10.00	0.00	0.00
<b>N700_C_CK</b>										
7,200.00	78.81	90.79	6,955.19	-249.73	461.76	465.16	10.00	10.00	0.00	0.00
7,300.00	88.81	90.79	6,965.95	-251.10	561.04	564.45	10.00	10.00	0.00	0.00
7,302.32	89.05	90.79	6,966.00	-251.14	563.36	566.77	10.00	10.00	0.00	0.00
<b>End Build @ 7302.32 ft - 7"</b>										
7,324.11	89.05	90.79	6,966.36	-251.44	585.14	588.56	0.00	0.00	0.00	0.00
<b>VIPER 41N PH</b>										
7,400.00	89.05	90.79	6,967.62	-252.49	661.02	664.44	0.00	0.00	0.00	0.00
7,500.00	89.05	90.79	6,969.29	-253.87	761.00	764.43	0.00	0.00	0.00	0.00
7,600.00	89.05	90.79	6,970.95	-255.26	860.97	864.41	0.00	0.00	0.00	0.00
7,700.00	89.05	90.79	6,972.62	-256.65	960.95	964.40	0.00	0.00	0.00	0.00
7,719.77	89.05	90.79	6,972.95	-256.92	980.72	984.17	0.00	0.00	0.00	0.00
<b>Landing Target (Heel)</b>										
7,800.00	89.05	90.79	6,974.28	-258.03	1,060.93	1,064.38	0.00	0.00	0.00	0.00
7,900.00	89.05	90.79	6,975.95	-259.42	1,160.90	1,164.37	0.00	0.00	0.00	0.00
8,000.00	89.05	90.79	6,977.61	-260.80	1,260.88	1,264.36	0.00	0.00	0.00	0.00

## Plan Report for VIPER PYRO 41N-14HZ - 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 (°)
8,100.00	89.05	90.79	6,979.28	-262.19	1,360.86	1,364.34	0.00	0.00	0.00	0.00
8,200.00	89.05	90.79	6,980.94	-263.57	1,460.83	1,464.33	0.00	0.00	0.00	0.00
8,300.00	89.05	90.79	6,982.61	-264.96	1,560.81	1,564.31	0.00	0.00	0.00	0.00
8,400.00	89.05	90.79	6,984.27	-266.34	1,660.79	1,664.30	0.00	0.00	0.00	0.00
8,500.00	89.05	90.79	6,985.94	-267.73	1,760.76	1,764.29	0.00	0.00	0.00	0.00
8,600.00	89.05	90.79	6,987.60	-269.12	1,860.74	1,864.27	0.00	0.00	0.00	0.00
8,700.00	89.05	90.79	6,989.27	-270.50	1,960.72	1,964.26	0.00	0.00	0.00	0.00
8,800.00	89.05	90.79	6,990.93	-271.89	2,060.69	2,064.25	0.00	0.00	0.00	0.00
8,900.00	89.05	90.79	6,992.60	-273.27	2,160.67	2,164.23	0.00	0.00	0.00	0.00
9,000.00	89.05	90.79	6,994.26	-274.66	2,260.65	2,264.22	0.00	0.00	0.00	0.00
9,100.00	89.05	90.79	6,995.93	-276.04	2,360.62	2,364.20	0.00	0.00	0.00	0.00
9,200.00	89.05	90.79	6,997.59	-277.43	2,460.60	2,464.19	0.00	0.00	0.00	0.00
9,300.00	89.05	90.79	6,999.26	-278.81	2,560.58	2,564.18	0.00	0.00	0.00	0.00
9,400.00	89.05	90.79	7,000.92	-280.20	2,660.55	2,664.16	0.00	0.00	0.00	0.00
9,500.00	89.05	90.79	7,002.59	-281.59	2,760.53	2,764.15	0.00	0.00	0.00	0.00
9,600.00	89.05	90.79	7,004.25	-282.97	2,860.51	2,864.13	0.00	0.00	0.00	0.00
9,700.00	89.05	90.79	7,005.92	-284.36	2,960.48	2,964.12	0.00	0.00	0.00	0.00
9,800.00	89.05	90.79	7,007.58	-285.74	3,060.46	3,064.11	0.00	0.00	0.00	0.00
9,900.00	89.05	90.79	7,009.25	-287.13	3,160.43	3,164.09	0.00	0.00	0.00	0.00
10,000.00	89.05	90.79	7,010.91	-288.51	3,260.41	3,264.08	0.00	0.00	0.00	0.00
10,100.00	89.05	90.79	7,012.58	-289.90	3,360.39	3,364.07	0.00	0.00	0.00	0.00
10,200.00	89.05	90.79	7,014.24	-291.28	3,460.36	3,464.05	0.00	0.00	0.00	0.00
10,300.00	89.05	90.79	7,015.91	-292.67	3,560.34	3,564.04	0.00	0.00	0.00	0.00
10,400.00	89.05	90.79	7,017.57	-294.06	3,660.32	3,664.02	0.00	0.00	0.00	0.00
10,500.00	89.05	90.79	7,019.24	-295.44	3,760.29	3,764.01	0.00	0.00	0.00	0.00
10,600.00	89.05	90.79	7,020.90	-296.83	3,860.27	3,864.00	0.00	0.00	0.00	0.00
10,700.00	89.05	90.79	7,022.57	-298.21	3,960.25	3,963.98	0.00	0.00	0.00	0.00
10,800.00	89.05	90.79	7,024.23	-299.60	4,060.22	4,063.97	0.00	0.00	0.00	0.00
10,900.00	89.05	90.79	7,025.90	-300.98	4,160.20	4,163.95	0.00	0.00	0.00	0.00
11,000.00	89.05	90.79	7,027.56	-302.37	4,260.18	4,263.94	0.00	0.00	0.00	0.00
11,100.00	89.05	90.79	7,029.23	-303.75	4,360.15	4,363.93	0.00	0.00	0.00	0.00
11,200.00	89.05	90.79	7,030.89	-305.14	4,460.13	4,463.91	0.00	0.00	0.00	0.00
11,300.00	89.05	90.79	7,032.56	-306.53	4,560.11	4,563.90	0.00	0.00	0.00	0.00
11,400.00	89.05	90.79	7,034.22	-307.91	4,660.08	4,663.89	0.00	0.00	0.00	0.00
11,500.00	89.05	90.79	7,035.89	-309.30	4,760.06	4,763.87	0.00	0.00	0.00	0.00
11,600.00	89.05	90.79	7,037.55	-310.68	4,860.04	4,863.86	0.00	0.00	0.00	0.00
11,700.00	89.05	90.79	7,039.22	-312.07	4,960.01	4,963.84	0.00	0.00	0.00	0.00
11,800.00	89.05	90.79	7,040.88	-313.45	5,059.99	5,063.83	0.00	0.00	0.00	0.00
11,900.00	89.05	90.79	7,042.55	-314.84	5,159.97	5,163.82	0.00	0.00	0.00	0.00
12,000.00	89.05	90.79	7,044.21	-316.22	5,259.94	5,263.80	0.00	0.00	0.00	0.00
12,100.00	89.05	90.79	7,045.88	-317.61	5,359.92	5,363.79	0.00	0.00	0.00	0.00
12,200.00	89.05	90.79	7,047.54	-318.99	5,459.89	5,463.77	0.00	0.00	0.00	0.00
12,300.00	89.05	90.79	7,049.21	-320.38	5,559.87	5,563.76	0.00	0.00	0.00	0.00
12,400.00	89.05	90.79	7,050.87	-321.77	5,659.85	5,663.75	0.00	0.00	0.00	0.00
12,500.00	89.05	90.79	7,052.54	-323.15	5,759.82	5,763.73	0.00	0.00	0.00	0.00
12,600.00	89.05	90.79	7,054.20	-324.54	5,859.80	5,863.72	0.00	0.00	0.00	0.00
12,700.00	89.05	90.79	7,055.87	-325.92	5,959.78	5,963.70	0.00	0.00	0.00	0.00
12,800.00	89.05	90.79	7,057.53	-327.31	6,059.75	6,063.69	0.00	0.00	0.00	0.00
12,900.00	89.05	90.79	7,059.20	-328.69	6,159.73	6,163.68	0.00	0.00	0.00	0.00
13,000.00	89.05	90.79	7,060.86	-330.08	6,259.71	6,263.66	0.00	0.00	0.00	0.00
13,100.00	89.05	90.79	7,062.53	-331.46	6,359.68	6,363.65	0.00	0.00	0.00	0.00
13,200.00	89.05	90.79	7,064.19	-332.85	6,459.66	6,463.64	0.00	0.00	0.00	0.00
13,300.00	89.05	90.79	7,065.86	-334.24	6,559.64	6,563.62	0.00	0.00	0.00	0.00
13,400.00	89.05	90.79	7,067.52	-335.62	6,659.61	6,663.61	0.00	0.00	0.00	0.00
13,500.00	89.05	90.79	7,069.19	-337.01	6,759.59	6,763.59	0.00	0.00	0.00	0.00
13,600.00	89.05	90.79	7,070.85	-338.39	6,859.57	6,863.58	0.00	0.00	0.00	0.00
13,700.00	89.05	90.79	7,072.52	-339.78	6,959.54	6,963.57	0.00	0.00	0.00	0.00
13,800.00	89.05	90.79	7,074.18	-341.16	7,059.52	7,063.55	0.00	0.00	0.00	0.00
13,900.00	89.05	90.79	7,075.85	-342.55	7,159.50	7,163.54	0.00	0.00	0.00	0.00
14,000.00	89.05	90.79	7,077.51	-343.93	7,259.47	7,263.52	0.00	0.00	0.00	0.00

## Plan Report for VIPER PYRO 41N-14HZ - 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 (°)
14,100.00	89.05	90.79	7,079.18	-345.32	7,359.45	7,363.51	0.00	0.00	0.00	0.00
14,149.28	89.05	90.79	7,080.00	-346.00	7,408.72	7,412.78	0.00	0.00	0.00	0.00
FRHS										
14,200.00	89.05	90.79	7,080.84	-346.71	7,459.43	7,463.50	0.00	0.00	0.00	0.00
14,300.00	89.05	90.79	7,082.51	-348.09	7,559.40	7,563.48	0.00	0.00	0.00	0.00
14,400.00	89.05	90.79	7,084.17	-349.48	7,659.38	7,663.47	0.00	0.00	0.00	0.00
14,500.00	89.05	90.79	7,085.84	-350.86	7,759.36	7,763.46	0.00	0.00	0.00	0.00
14,600.00	89.05	90.79	7,087.50	-352.25	7,859.33	7,863.44	0.00	0.00	0.00	0.00
14,700.00	89.05	90.79	7,089.17	-353.63	7,959.31	7,963.43	0.00	0.00	0.00	0.00
14,800.00	89.05	90.79	7,090.83	-355.02	8,059.28	8,063.41	0.00	0.00	0.00	0.00
14,900.00	89.05	90.79	7,092.50	-356.40	8,159.26	8,163.40	0.00	0.00	0.00	0.00
15,000.00	89.05	90.79	7,094.16	-357.79	8,259.24	8,263.39	0.00	0.00	0.00	0.00
15,100.00	89.05	90.79	7,095.83	-359.18	8,359.21	8,363.37	0.00	0.00	0.00	0.00
15,200.00	89.05	90.79	7,097.49	-360.56	8,459.19	8,463.36	0.00	0.00	0.00	0.00
15,300.00	89.05	90.79	7,099.16	-361.95	8,559.17	8,563.34	0.00	0.00	0.00	0.00
15,400.00	89.05	90.79	7,100.82	-363.33	8,659.14	8,663.33	0.00	0.00	0.00	0.00
15,410.52	89.05	90.79	7,101.00	-363.48	8,669.66	8,673.85	0.00	0.00	0.00	0.00
CDLL										
15,500.00	89.05	90.79	7,102.49	-364.72	8,759.12	8,763.32	0.00	0.00	0.00	0.00
15,600.00	89.05	90.79	7,104.15	-366.10	8,859.10	8,863.30	0.00	0.00	0.00	0.00
15,700.00	89.05	90.79	7,105.82	-367.49	8,959.07	8,963.29	0.00	0.00	0.00	0.00
15,800.00	89.05	90.79	7,107.48	-368.87	9,059.05	9,063.28	0.00	0.00	0.00	0.00
15,900.00	89.05	90.79	7,109.15	-370.26	9,159.03	9,163.26	0.00	0.00	0.00	0.00
16,000.00	89.05	90.79	7,110.81	-371.65	9,259.00	9,263.25	0.00	0.00	0.00	0.00
16,100.00	89.05	90.79	7,112.48	-373.03	9,358.98	9,363.23	0.00	0.00	0.00	0.00
16,200.00	89.05	90.79	7,114.15	-374.42	9,458.96	9,463.22	0.00	0.00	0.00	0.00
16,300.00	89.05	90.79	7,115.81	-375.80	9,558.93	9,563.21	0.00	0.00	0.00	0.00
16,400.00	89.05	90.79	7,117.48	-377.19	9,658.91	9,663.19	0.00	0.00	0.00	0.00
16,500.00	89.05	90.79	7,119.14	-378.57	9,758.89	9,763.18	0.00	0.00	0.00	0.00
16,600.00	89.05	90.79	7,120.81	-379.96	9,858.86	9,863.16	0.00	0.00	0.00	0.00
16,700.00	89.05	90.79	7,122.47	-381.34	9,958.84	9,963.15	0.00	0.00	0.00	0.00
16,800.00	89.05	90.79	7,124.14	-382.73	10,058.82	10,063.14	0.00	0.00	0.00	0.00
16,900.00	89.05	90.79	7,125.80	-384.11	10,158.79	10,163.12	0.00	0.00	0.00	0.00
16,911.99	89.05	90.79	7,126.00	-384.28	10,170.78	10,175.11	0.00	0.00	0.00	0.00
TD Well @ 16911.99 ft - Total Depth (Toe)										
16,912.00	89.05	90.79	7,126.00	-384.28	10,170.79	10,175.12	0.00	0.00	0.00	0.00
VIPER 41N BHL										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.00	0.00	0.00	0.00	Tie On to Surface @ 0.00 ft
4,411.00	4,411.00	0.00	0.00	Begin Nudge @ 4411.00 ft
4,911.00	4,908.47	-43.52	0.00	End Nudge @ 4911.00ft
5,811.00	5,794.79	-199.81	0.00	Begin Drop @ 5811.00 ft
6,311.00	6,292.26	-243.33	0.00	End Drop @ 6311.00 ft
6,411.00	6,392.26	-243.33	0.00	KOP @ 6411.00 ft
7,100.00	6,927.35	-248.40	365.86	DLS = 10°/100 ft
7,302.32	6,966.00	-251.14	563.36	End Build @ 7302.32 ft
16,911.99	7,126.00	-384.28	10,170.78	TD Well @ 16911.99 ft

## Plan Report for VIPER PYRO 41N-14HZ - PERMIT REV-1

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	90.79	Slot	0.00	0.00	0.00

**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,302.32	PERMIT REV-1	MWD+IFR+MS
7,302.32	16,912.00	PERMIT REV-1	MWD+IFR+MS

**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
744.00	744.00	9 5/8"	9-5/8	13-1/2
7,302.32	6,966.00	7"	7	8-3/4

**Formation Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,574.00	3,574.00	Parkman		0.00	
4,013.00	4,013.00	Sussex		0.00	
6,824.50	6,771.00	SSPG		0.00	
6,908.71	6,830.00	NBRR		0.00	
6,999.46	6,883.00	N470_B_CK		0.00	
7,159.74	6,946.00	N700_C_CK		0.00	
7,719.77	6,972.95	Landing Target (Heel)		0.00	
14,149.28	7,080.00	FRHS		0.00	
15,410.52	7,101.00	CDLL		0.00	
16,911.99	7,126.00	Total Depth (Toe)		0.00	

**Targets associated with this wellbore**

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
3N-R67W-Sec. 9_Section Lines	1.00	290.60	507.97	Polygon
VIPER 41N BHL	7,126.00	-384.28	10,170.79	Point
VIPER 41N PH	6,966.00	-180.98	586.13	Point
3N-R67W-Sec. 15_Section Lines	1.00	290.60	507.97	Polygon
3N-R67W-Sec. 14_Section Lines	1.00	-609.96	3.35	Polygon
VIPER 41N SHL	0.00	0.00	0.00	Polygon
3N-R67W-Sec. 10_Section Lines	1.00	290.60	507.97	Polygon

**North Reference Sheet for VIPER PAD - VIPER PYRO 41N-14HZ - 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' @ 4811.00usft (Drilling Rig). Northing and Easting are relative to VIPER PYRO 41N-14HZ

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: 0.99960117

Grid Coordinates of Well: 14,610,809.29 usft N, 1,672,431.21 usft E

Geographical Coordinates of Well: 40° 13' 50.98" N, 104° 53' 07.07" W

Grid Convergence at Surface is: 0.07°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,912.00usft the Bottom Hole Displacement is 10,178.04usft in the Direction of 92.16° ( True).

Magnetic Convergence at surface is: -8.36° (31 December 2014, , IGRF2010)

