

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

3N-67W-15 Viper Pad

VIPER PYRO 26N2-14HZ

Plan A

Plan: Permit Rev-2

Sperry Drilling Services Proposal Report

13 May, 2015

Well Coordinates: 14,610,869.01 N, 1,672,430.85 E (40° 13' 51.57" N, 104° 53' 07.07" W)

Ground Level: 4,794.00 usft

Local Coordinate Origin:

Centered on Well VIPER PYRO 26N2-14HZ

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: 3N-67W-15 Viper Pad
Well: VIPER PYRO 26N2-14HZ
Wellbore: Plan A
Design: Permit Rev-2

US ROCKIES WATTENBERG PLANNING

HALLIBURTON
Sperry Drilling

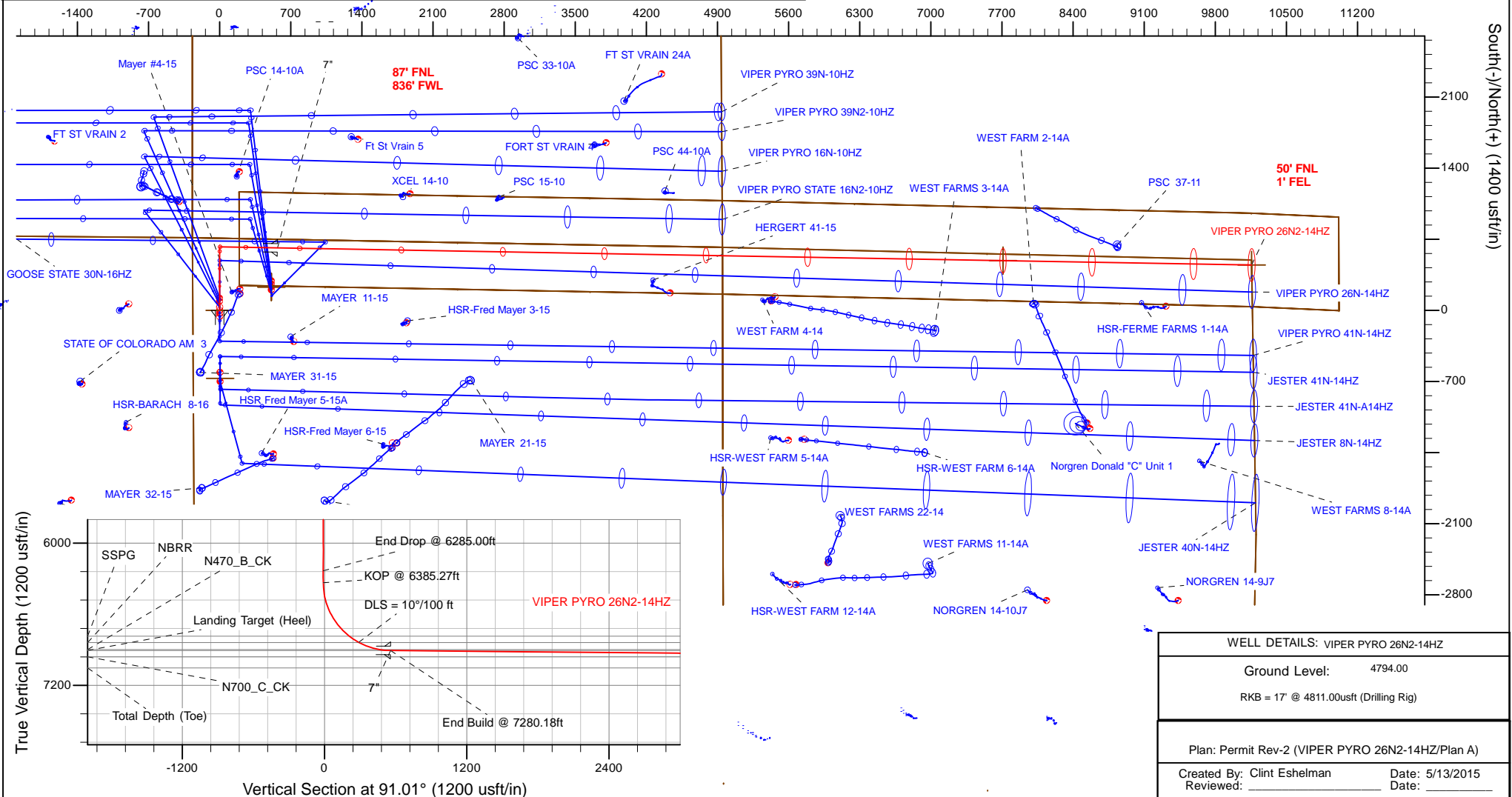
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2185.00	0.00	0.00	0.00	2185.00	0.00	0.00	0.00	0.00	
3	2685.00	10.00	0.00	2682.47	43.52	0.00	2.00	0.00	-0.77	
4	5785.00	10.00	0.00	5735.37	581.83	0.00	0.00	0.00	-10.26	
5	6285.00	0.00	0.00	6232.83	625.35	0.00	2.00	180.00	-11.02	
6	6385.23	0.00	0.00	6333.06	625.35	0.00	0.00	0.00	-11.02	
7	7280.18	89.49	91.01	6906.00	615.35	567.82	10.00	91.01	556.88	
8	14423.58	89.49	91.01	6969.00	489.48	7709.83	0.00	0.00	7700.00	Viper Pyro 26N2-14HZ_Lat Tgt 1
9	14496.52	88.04	91.01	6970.57	488.19	7782.74	2.00	180.00	7772.93	
10	16872.29	88.04	91.01	7052.00	446.35	10156.74	0.00	0.00	0147.30	VIPER 26N2-14HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape Point
Viper Pyro 26N2-14HZ_SHL	0.00	0.00	0.00	40.230991	-104.885297	
Viper Pyro 26N2-14HZ_Lat Tgt 1	6969.00	489.48	7709.83	40.232332	-104.857673	Point
VIPER 26N2-14HZ_BHL	7052.00	446.35	10156.74	40.232211	-104.848906	Point

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



Plan Report for VIPER PYRO 26N2-14HZ - 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
Viper Pyro 26N2-14HZ_SHL										
1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3N-R67W-Sec. 9_Section Lines - 3N-R67W-Sec. 15_Section Lines - 3N-R67W-Sec. 14_Section Lines - 3N-R67W-Sec. 10_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
493.00	0.00	0.00	493.00	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
744.00	0.00	0.00	744.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface Csg Setting Depth										
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
9 5/8"										
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
2,185.00	0.00	0.00	2,185.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 2185.00ft										
2,200.00	0.30	0.00	2,200.00	0.04	0.00	0.00	2.00	2.00	0.00	0.00
2,300.00	2.30	0.00	2,299.97	2.31	0.00	-0.04	2.00	2.00	0.00	0.00
2,400.00	4.30	0.00	2,399.80	8.06	0.00	-0.14	2.00	2.00	0.00	0.00
2,500.00	6.30	0.00	2,499.37	17.30	0.00	-0.30	2.00	2.00	0.00	0.00
2,600.00	8.30	0.00	2,598.55	30.01	0.00	-0.53	2.00	2.00	0.00	0.00
2,685.00	10.00	0.00	2,682.47	43.52	0.00	-0.77	2.00	2.00	0.00	0.00
End Nudge @ 2685.00ft										
2,700.00	10.00	0.00	2,697.24	46.13	0.00	-0.81	0.00	0.00	0.00	0.00
2,800.00	10.00	0.00	2,795.72	63.49	0.00	-1.12	0.00	0.00	0.00	0.00
2,900.00	10.00	0.00	2,894.20	80.86	0.00	-1.43	0.00	0.00	0.00	0.00
3,000.00	10.00	0.00	2,992.68	98.22	0.00	-1.73	0.00	0.00	0.00	0.00
3,100.00	10.00	0.00	3,091.16	115.59	0.00	-2.04	0.00	0.00	0.00	0.00
3,200.00	10.00	0.00	3,189.64	132.95	0.00	-2.34	0.00	0.00	0.00	0.00
3,300.00	10.00	0.00	3,288.12	150.32	0.00	-2.65	0.00	0.00	0.00	0.00
3,400.00	10.00	0.00	3,386.60	167.68	0.00	-2.96	0.00	0.00	0.00	0.00
3,500.00	10.00	0.00	3,485.08	185.05	0.00	-3.26	0.00	0.00	0.00	0.00
3,590.29	10.00	0.00	3,574.00	200.72	0.00	-3.54	0.00	0.00	0.00	0.00
Parkman										
3,600.00	10.00	0.00	3,583.56	202.41	0.00	-3.57	0.00	0.00	0.00	0.00
3,700.00	10.00	0.00	3,682.05	219.78	0.00	-3.87	0.00	0.00	0.00	0.00
3,800.00	10.00	0.00	3,780.53	237.14	0.00	-4.18	0.00	0.00	0.00	0.00
3,900.00	10.00	0.00	3,879.01	254.51	0.00	-4.49	0.00	0.00	0.00	0.00
4,000.00	10.00	0.00	3,977.49	271.87	0.00	-4.79	0.00	0.00	0.00	0.00
4,036.06	10.00	0.00	4,013.00	278.13	0.00	-4.90	0.00	0.00	0.00	0.00
Sussex										
4,100.00	10.00	0.00	4,075.97	289.23	0.00	-5.10	0.00	0.00	0.00	0.00

Plan Report for VIPER PYRO 26N2-14HZ - 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 (°)
4,200.00	10.00	0.00	4,174.45	306.60	0.00	-5.40	0.00	0.00	0.00	0.00
4,300.00	10.00	0.00	4,272.93	323.96	0.00	-5.71	0.00	0.00	0.00	0.00
4,400.00	10.00	0.00	4,371.41	341.33	0.00	-6.02	0.00	0.00	0.00	0.00
4,500.00	10.00	0.00	4,469.89	358.69	0.00	-6.32	0.00	0.00	0.00	0.00
4,600.00	10.00	0.00	4,568.37	376.06	0.00	-6.63	0.00	0.00	0.00	0.00
4,700.00	10.00	0.00	4,666.85	393.42	0.00	-6.93	0.00	0.00	0.00	0.00
4,800.00	10.00	0.00	4,765.33	410.79	0.00	-7.24	0.00	0.00	0.00	0.00
4,900.00	10.00	0.00	4,863.81	428.15	0.00	-7.55	0.00	0.00	0.00	0.00
5,000.00	10.00	0.00	4,962.30	445.52	0.00	-7.85	0.00	0.00	0.00	0.00
5,100.00	10.00	0.00	5,060.78	462.88	0.00	-8.16	0.00	0.00	0.00	0.00
5,200.00	10.00	0.00	5,159.26	480.25	0.00	-8.47	0.00	0.00	0.00	0.00
5,300.00	10.00	0.00	5,257.74	497.61	0.00	-8.77	0.00	0.00	0.00	0.00
5,400.00	10.00	0.00	5,356.22	514.98	0.00	-9.08	0.00	0.00	0.00	0.00
5,500.00	10.00	0.00	5,454.70	532.34	0.00	-9.38	0.00	0.00	0.00	0.00
5,600.00	10.00	0.00	5,553.18	549.71	0.00	-9.69	0.00	0.00	0.00	0.00
5,700.00	10.00	0.00	5,651.66	567.07	0.00	-10.00	0.00	0.00	0.00	0.00
5,785.00	10.00	0.00	5,735.37	581.83	0.00	-10.26	0.00	0.00	0.00	0.00
Begin Drop @ 5785.00ft										
5,800.00	9.70	0.00	5,750.15	584.40	0.00	-10.30	2.00	-2.00	0.00	180.00
5,900.00	7.70	0.00	5,848.99	599.52	0.00	-10.57	2.00	-2.00	0.00	180.00
6,000.00	5.70	0.00	5,948.30	611.19	0.00	-10.77	2.00	-2.00	0.00	180.00
6,100.00	3.70	0.00	6,047.96	619.38	0.00	-10.92	2.00	-2.00	0.00	180.00
6,200.00	1.70	0.00	6,147.85	624.09	0.00	-11.00	2.00	-2.00	0.00	180.00
6,285.00	0.00	0.00	6,232.83	625.35	0.00	-11.02	2.00	-2.00	0.00	-180.00
End Drop @ 6285.00ft										
6,300.00	0.00	0.00	6,247.83	625.35	0.00	-11.02	0.00	0.00	0.00	0.00
6,385.23	0.00	0.00	6,333.06	625.35	0.00	-11.02	0.00	0.00	0.00	0.00
6,385.27	0.00	91.01	6,333.10	625.35	0.00	-11.02	0.00	0.00	0.00	91.01
KOP @ 6385.27ft										
6,400.00	1.48	91.01	6,347.83	625.35	0.19	-10.83	10.03	10.03	0.00	91.01
6,500.00	11.48	91.01	6,447.07	625.15	11.45	0.43	10.00	10.00	0.00	0.00
6,600.00	21.48	91.01	6,542.84	624.65	39.78	28.76	10.00	10.00	0.00	0.00
6,700.00	31.48	91.01	6,632.24	623.87	84.30	73.29	10.00	10.00	0.00	0.00
6,800.00	41.48	91.01	6,712.55	622.82	143.66	132.66	10.00	10.00	0.00	0.00
6,900.00	51.48	91.01	6,781.32	621.55	216.07	205.08	10.00	10.00	0.00	0.00
6,904.32	51.91	91.01	6,784.00	621.49	219.46	208.47	10.00	10.00	0.00	0.00
SSPG										
7,000.00	61.48	91.01	6,836.48	620.08	299.32	288.34	10.00	10.00	0.00	0.00
DLS = 10°/100 ft										
7,003.20	61.80	91.01	6,838.00	620.03	302.13	291.16	10.00	10.00	0.00	0.00
NBRR										
7,100.00	71.48	91.01	6,876.34	618.47	390.88	379.91	10.00	10.00	0.00	0.00
7,183.41	79.82	91.01	6,897.00	617.04	471.60	460.65	10.00	10.00	0.00	0.00
N470_B_CK										
7,200.00	81.48	91.01	6,899.70	616.75	487.97	477.02	10.00	10.00	0.00	0.00
7,280.18	89.49	91.01	6,906.00	615.35	567.82	556.88	10.00	10.00	0.00	0.00
End Build @ 7280.18ft - Landing Target (Heel) - 7"										
7,300.00	89.49	91.01	6,906.18	615.00	587.64	576.70	0.00	0.00	0.00	0.00
7,400.00	89.49	91.01	6,907.06	613.24	687.62	676.70	0.00	0.00	0.00	0.00
7,500.00	89.49	91.01	6,907.94	611.47	787.60	776.70	0.00	0.00	0.00	0.00
7,600.00	89.49	91.01	6,908.82	609.71	887.58	876.69	0.00	0.00	0.00	0.00
7,700.00	89.49	91.01	6,909.70	607.95	987.56	976.69	0.00	0.00	0.00	0.00
7,800.00	89.49	91.01	6,910.58	606.19	1,087.54	1,076.68	0.00	0.00	0.00	0.00
7,900.00	89.49	91.01	6,911.47	604.43	1,187.52	1,176.68	0.00	0.00	0.00	0.00
8,000.00	89.49	91.01	6,912.35	602.66	1,287.50	1,276.68	0.00	0.00	0.00	0.00
8,100.00	89.49	91.01	6,913.23	600.90	1,387.48	1,376.67	0.00	0.00	0.00	0.00
8,200.00	89.49	91.01	6,914.11	599.14	1,487.46	1,476.67	0.00	0.00	0.00	0.00
8,300.00	89.49	91.01	6,914.99	597.38	1,587.44	1,576.67	0.00	0.00	0.00	0.00
8,400.00	89.49	91.01	6,915.88	595.62	1,687.42	1,676.66	0.00	0.00	0.00	0.00

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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 (°)
8,500.00	89.49	91.01	6,916.76	593.85	1,787.40	1,776.66	0.00	0.00	0.00	0.00
8,600.00	89.49	91.01	6,917.64	592.09	1,887.38	1,876.65	0.00	0.00	0.00	0.00
8,700.00	89.49	91.01	6,918.52	590.33	1,987.36	1,976.65	0.00	0.00	0.00	0.00
8,800.00	89.49	91.01	6,919.40	588.57	2,087.34	2,076.65	0.00	0.00	0.00	0.00
8,900.00	89.49	91.01	6,920.29	586.81	2,187.33	2,176.64	0.00	0.00	0.00	0.00
9,000.00	89.49	91.01	6,921.17	585.04	2,287.31	2,276.64	0.00	0.00	0.00	0.00
9,100.00	89.49	91.01	6,922.05	583.28	2,387.29	2,376.63	0.00	0.00	0.00	0.00
9,200.00	89.49	91.01	6,922.93	581.52	2,487.27	2,476.63	0.00	0.00	0.00	0.00
9,300.00	89.49	91.01	6,923.81	579.76	2,587.25	2,576.63	0.00	0.00	0.00	0.00
9,400.00	89.49	91.01	6,924.70	578.00	2,687.23	2,676.62	0.00	0.00	0.00	0.00
9,500.00	89.49	91.01	6,925.58	576.23	2,787.21	2,776.62	0.00	0.00	0.00	0.00
9,600.00	89.49	91.01	6,926.46	574.47	2,887.19	2,876.61	0.00	0.00	0.00	0.00
9,700.00	89.49	91.01	6,927.34	572.71	2,987.17	2,976.61	0.00	0.00	0.00	0.00
9,800.00	89.49	91.01	6,928.22	570.95	3,087.15	3,076.61	0.00	0.00	0.00	0.00
9,900.00	89.49	91.01	6,929.11	569.19	3,187.13	3,176.60	0.00	0.00	0.00	0.00
10,000.00	89.49	91.01	6,929.99	567.42	3,287.11	3,276.60	0.00	0.00	0.00	0.00
10,100.00	89.49	91.01	6,930.87	565.66	3,387.09	3,376.60	0.00	0.00	0.00	0.00
10,200.00	89.49	91.01	6,931.75	563.90	3,487.07	3,476.59	0.00	0.00	0.00	0.00
10,300.00	89.49	91.01	6,932.63	562.14	3,587.05	3,576.59	0.00	0.00	0.00	0.00
10,400.00	89.49	91.01	6,933.51	560.38	3,687.03	3,676.58	0.00	0.00	0.00	0.00
10,500.00	89.49	91.01	6,934.40	558.61	3,787.01	3,776.58	0.00	0.00	0.00	0.00
10,600.00	89.49	91.01	6,935.28	556.85	3,887.00	3,876.58	0.00	0.00	0.00	0.00
10,700.00	89.49	91.01	6,936.16	555.09	3,986.98	3,976.57	0.00	0.00	0.00	0.00
10,800.00	89.49	91.01	6,937.04	553.33	4,086.96	4,076.57	0.00	0.00	0.00	0.00
10,900.00	89.49	91.01	6,937.92	551.57	4,186.94	4,176.56	0.00	0.00	0.00	0.00
11,000.00	89.49	91.01	6,938.81	549.80	4,286.92	4,276.56	0.00	0.00	0.00	0.00
11,100.00	89.49	91.01	6,939.69	548.04	4,386.90	4,376.56	0.00	0.00	0.00	0.00
11,200.00	89.49	91.01	6,940.57	546.28	4,486.88	4,476.55	0.00	0.00	0.00	0.00
11,300.00	89.49	91.01	6,941.45	544.52	4,586.86	4,576.55	0.00	0.00	0.00	0.00
11,400.00	89.49	91.01	6,942.33	542.76	4,686.84	4,676.54	0.00	0.00	0.00	0.00
11,500.00	89.49	91.01	6,943.22	540.99	4,786.82	4,776.54	0.00	0.00	0.00	0.00
11,600.00	89.49	91.01	6,944.10	539.23	4,886.80	4,876.54	0.00	0.00	0.00	0.00
11,700.00	89.49	91.01	6,944.98	537.47	4,986.78	4,976.53	0.00	0.00	0.00	0.00
11,800.00	89.49	91.01	6,945.86	535.71	5,086.76	5,076.53	0.00	0.00	0.00	0.00
11,900.00	89.49	91.01	6,946.74	533.95	5,186.74	5,176.53	0.00	0.00	0.00	0.00
12,000.00	89.49	91.01	6,947.63	532.18	5,286.72	5,276.52	0.00	0.00	0.00	0.00
12,100.00	89.49	91.01	6,948.51	530.42	5,386.70	5,376.52	0.00	0.00	0.00	0.00
12,200.00	89.49	91.01	6,949.39	528.66	5,486.68	5,476.51	0.00	0.00	0.00	0.00
12,300.00	89.49	91.01	6,950.27	526.90	5,586.67	5,576.51	0.00	0.00	0.00	0.00
12,400.00	89.49	91.01	6,951.15	525.14	5,686.65	5,676.51	0.00	0.00	0.00	0.00
12,500.00	89.49	91.01	6,952.04	523.37	5,786.63	5,776.50	0.00	0.00	0.00	0.00
12,600.00	89.49	91.01	6,952.92	521.61	5,886.61	5,876.50	0.00	0.00	0.00	0.00
12,700.00	89.49	91.01	6,953.80	519.85	5,986.59	5,976.49	0.00	0.00	0.00	0.00
12,800.00	89.49	91.01	6,954.68	518.09	6,086.57	6,076.49	0.00	0.00	0.00	0.00
12,900.00	89.49	91.01	6,955.56	516.33	6,186.55	6,176.49	0.00	0.00	0.00	0.00
13,000.00	89.49	91.01	6,956.45	514.56	6,286.53	6,276.48	0.00	0.00	0.00	0.00
13,100.00	89.49	91.01	6,957.33	512.80	6,386.51	6,376.48	0.00	0.00	0.00	0.00
13,200.00	89.49	91.01	6,958.21	511.04	6,486.49	6,476.47	0.00	0.00	0.00	0.00
13,289.70	89.49	91.01	6,959.00	509.46	6,576.17	6,566.17	0.00	0.00	0.00	0.00
N700_C_CK										
13,300.00	89.49	91.01	6,959.09	509.28	6,586.47	6,576.47	0.00	0.00	0.00	0.00
13,400.00	89.49	91.01	6,959.97	507.52	6,686.45	6,676.47	0.00	0.00	0.00	0.00
13,500.00	89.49	91.01	6,960.85	505.75	6,786.43	6,776.46	0.00	0.00	0.00	0.00
13,600.00	89.49	91.01	6,961.74	503.99	6,886.41	6,876.46	0.00	0.00	0.00	0.00
13,700.00	89.49	91.01	6,962.62	502.23	6,986.39	6,976.46	0.00	0.00	0.00	0.00
13,800.00	89.49	91.01	6,963.50	500.47	7,086.37	7,076.45	0.00	0.00	0.00	0.00
13,900.00	89.49	91.01	6,964.38	498.71	7,186.35	7,176.45	0.00	0.00	0.00	0.00
14,000.00	89.49	91.01	6,965.26	496.94	7,286.34	7,276.44	0.00	0.00	0.00	0.00
14,100.00	89.49	91.01	6,966.15	495.18	7,386.32	7,376.44	0.00	0.00	0.00	0.00

Plan Report for VIPER PYRO 26N2-14HZ - 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 (°)
14,200.00	89.49	91.01	6,967.03	493.42	7,486.30	7,476.44	0.00	0.00	0.00	0.00
14,300.00	89.49	91.01	6,967.91	491.66	7,586.28	7,576.43	0.00	0.00	0.00	0.00
14,400.00	89.49	91.01	6,968.79	489.90	7,686.26	7,676.43	0.00	0.00	0.00	0.00
14,423.58	89.49	91.01	6,969.00	489.48	7,709.83	7,700.00	0.00	0.00	0.00	0.00
Begin Nudge @ 14423.58ft - Viper Pyro 26N2-14HZ_Lat Tgt 1										
14,496.52	88.04	91.01	6,970.57	488.19	7,782.74	7,772.93	2.00	-2.00	0.00	180.00
End Nudge @ 14496.52ft										
14,500.00	88.04	91.01	6,970.69	488.13	7,786.22	7,776.41	0.00	0.00	0.00	0.00
14,600.00	88.04	91.01	6,974.12	486.37	7,886.15	7,876.35	0.00	0.00	0.00	0.00
14,700.00	88.04	91.01	6,977.55	484.61	7,986.07	7,976.29	0.00	0.00	0.00	0.00
14,800.00	88.04	91.01	6,980.97	482.85	8,086.00	8,076.23	0.00	0.00	0.00	0.00
14,900.00	88.04	91.01	6,984.40	481.09	8,185.92	8,176.17	0.00	0.00	0.00	0.00
15,000.00	88.04	91.01	6,987.83	479.33	8,285.85	8,276.11	0.00	0.00	0.00	0.00
15,100.00	88.04	91.01	6,991.26	477.57	8,385.77	8,376.05	0.00	0.00	0.00	0.00
15,200.00	88.04	91.01	6,994.68	475.81	8,485.70	8,475.99	0.00	0.00	0.00	0.00
15,300.00	88.04	91.01	6,998.11	474.04	8,585.63	8,575.94	0.00	0.00	0.00	0.00
15,400.00	88.04	91.01	7,001.54	472.28	8,685.55	8,675.88	0.00	0.00	0.00	0.00
15,500.00	88.04	91.01	7,004.97	470.52	8,785.48	8,775.82	0.00	0.00	0.00	0.00
15,600.00	88.04	91.01	7,008.39	468.76	8,885.40	8,875.76	0.00	0.00	0.00	0.00
15,700.00	88.04	91.01	7,011.82	467.00	8,985.33	8,975.70	0.00	0.00	0.00	0.00
15,800.00	88.04	91.01	7,015.25	465.24	9,085.25	9,075.64	0.00	0.00	0.00	0.00
15,900.00	88.04	91.01	7,018.68	463.48	9,185.18	9,175.58	0.00	0.00	0.00	0.00
16,000.00	88.04	91.01	7,022.10	461.72	9,285.11	9,275.52	0.00	0.00	0.00	0.00
16,100.00	88.04	91.01	7,025.53	459.95	9,385.03	9,375.47	0.00	0.00	0.00	0.00
16,200.00	88.04	91.01	7,028.96	458.19	9,484.96	9,475.41	0.00	0.00	0.00	0.00
16,300.00	88.04	91.01	7,032.39	456.43	9,584.88	9,575.35	0.00	0.00	0.00	0.00
16,400.00	88.04	91.01	7,035.81	454.67	9,684.81	9,675.29	0.00	0.00	0.00	0.00
16,500.00	88.04	91.01	7,039.24	452.91	9,784.73	9,775.23	0.00	0.00	0.00	0.00
16,600.00	88.04	91.01	7,042.67	451.15	9,884.66	9,875.17	0.00	0.00	0.00	0.00
16,700.00	88.04	91.01	7,046.09	449.39	9,984.59	9,975.11	0.00	0.00	0.00	0.00
16,800.00	88.04	91.01	7,049.52	447.63	10,084.51	10,075.05	0.00	0.00	0.00	0.00
16,872.29	88.04	91.01	7,052.00	446.35	10,156.74	10,147.30	0.00	0.00	0.00	0.00
TD Well @ 16872.29ft - Total Depth (Toe) - VIPER 26N2-14HZ_BHL										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
2,185.00	2,185.00	0.00	0.00	Begin Nudge @ 2185.00ft
2,685.00	2,682.47	43.52	0.00	End Nudge @ 2685.00ft
5,785.00	5,735.37	581.83	0.00	Begin Drop @ 5785.00ft
6,285.00	6,232.83	625.35	0.00	End Drop @ 6285.00ft
6,385.27	6,333.10	625.35	0.00	KOP @ 6385.27ft
7,000.00	6,836.48	620.08	299.32	DLS = 10°/100 ft
7,280.18	6,906.00	615.35	567.82	End Build @ 7280.18ft
14,423.58	6,969.00	489.48	7,709.83	Begin Nudge @ 14423.58ft
14,496.52	6,970.57	488.19	7,782.74	End Nudge @ 14496.52ft
16,872.29	7,052.00	446.35	10,156.74	TD Well @ 16872.29ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	+E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	91.01	Slot	0.00	0.00	0.00

Plan Report for VIPER PYRO 26N2-14HZ - Permit Rev-2

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,280.18	Permit Rev-2	APC_ISCWSA REV 2 MWD+IFR1+MSA
7,280.18	16,872.29	Permit Rev-2	APC_ISCWSA REV 2 MWD+IFR1+MSA

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,600.00	1,600.00	9 5/8"	9-5/8	13-1/2
7,280.18	6,906.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
493.00	493.00	Base Fox Hills		0.00	
744.00	744.00	Surface Csg Setting Depth		0.00	
3,590.29	3,574.00	Parkman		0.00	
4,036.06	4,013.00	Sussex		0.00	
6,904.32	6,784.00	SSPG		0.00	
7,003.20	6,838.00	NBRR		0.00	
7,183.41	6,897.00	N470_B_CK		0.00	
7,280.18	6,906.00	Landing Target (Heel)		0.00	
13,289.70	6,959.00	N700_C_CK		0.00	
16,872.29	7,052.00	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	230.88	508.25	Polygon
3N-R67W-Sec. 15_Section Lines	1.00	230.88	508.25	Polygon
VIPER 26N2-14HZ_ BHL	7,052.00	446.35	10,156.74	Point
3N-R67W-Sec. 14_Section Lines	1.00	-669.68	3.63	Polygon
Viper Pyro 26N2-14HZ_SHL	0.00	0.00	0.00	Polygon
Viper Pyro 26N2-14HZ_Lat Tgt 1	6,969.00	489.48	7,709.83	Point
3N-R67W-Sec. 10_Section Lines	1.00	230.88	508.25	Polygon

North Reference Sheet for 3N-67W-15 Viper Pad - VIPER PYRO 26N2-14HZ - 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 26N2-14HZ

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: 14,610,869.01 usft N, 1,672,430.85 usft E

Geographical Coordinates of Well: 40° 13' 51.57" N, 104° 53' 07.07" W

Grid Convergence at Surface is: 0.07°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,872.29usft
the Bottom Hole Displacement is 10,166.55usft in the Direction of 87.48° (True).

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

