

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

VIPER PAD

VIPER PYRO 16N-10HZ

Plan A

Plan: PERMIT REV-2

Sperry Drilling Services Proposal Report

05 January, 2015

Well Coordinates: 14,610,929.10 N, 1,672,430.22 E (40° 13' 52.16" N, 104° 53' 07.08" W)

Ground Level: 4,794.00 usft

Local Coordinate Origin:

Centered on Well VIPER PYRO 16N-10HZ

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 16N-10HZ
Wellbore: Plan A
Design: PERMIT REV-2

US ROCKIES WATTENBERG PLANNING

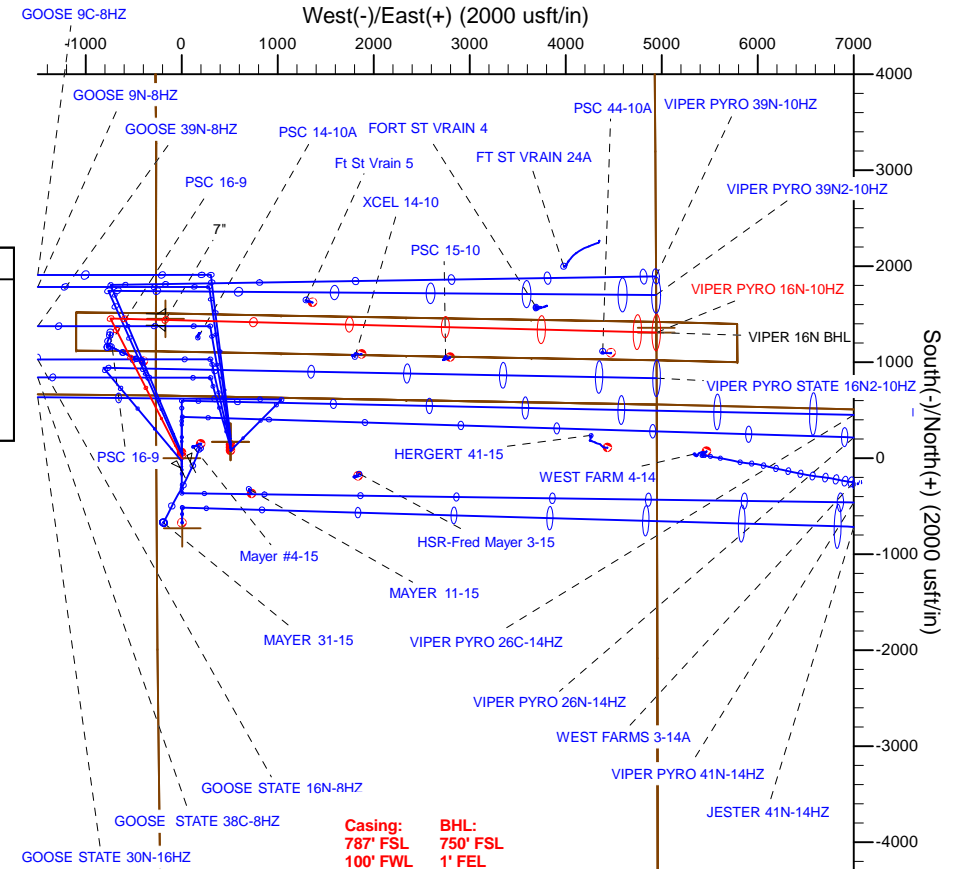
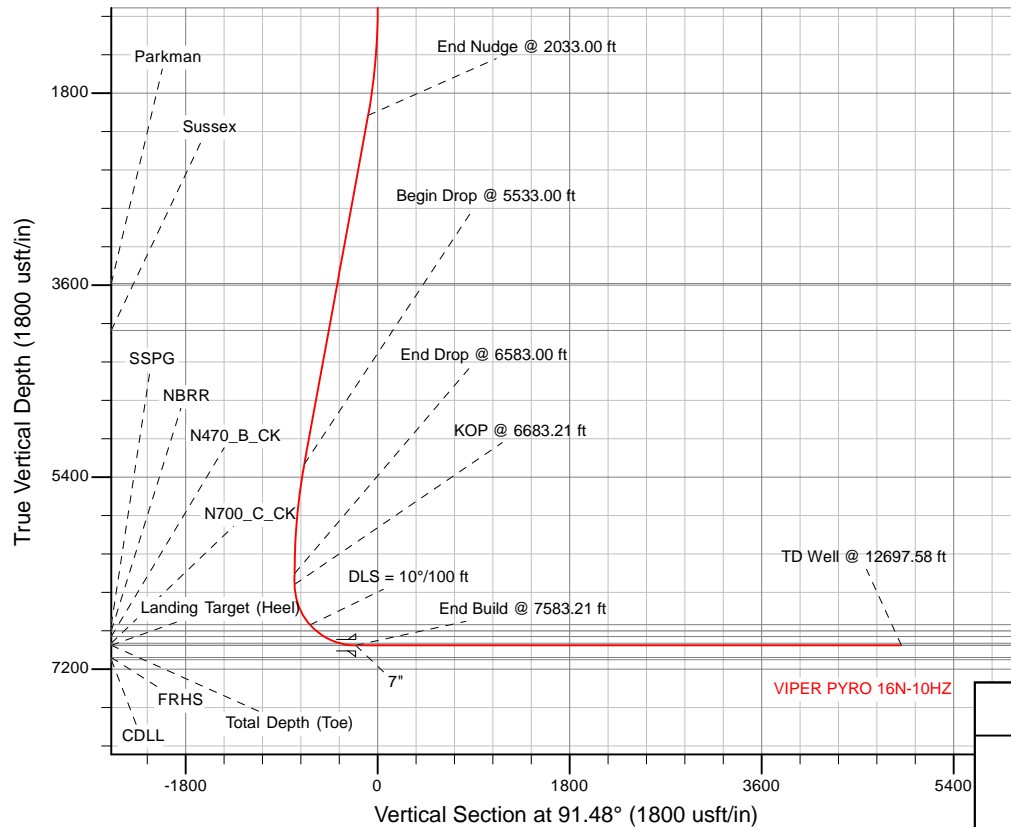
HALLIBURTON
Sperry Drilling

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	983.00	0.00	0.00	983.00	0.00	0.00	0.00	0.00	0.00	
3	2033.00	21.00	333.00	2009.65	169.54	-86.38	2.00	333.00	-90.73	
4	5533.00	21.00	333.00	5277.18	1287.12	-655.82	0.00	0.00	-688.84	
5	6583.00	0.00	0.00	6303.83	1456.66	-742.20	2.00	180.00	-779.58	
6	6683.21	0.00	0.00	6404.04	1456.66	-742.20	0.00	0.00	-779.58	
7	7583.21	90.00	91.48	6977.00	1441.87	-169.44	10.00	91.48	-206.62	
8	12697.58	90.00	91.48	6977.00	1309.89	4943.23	0.00	0.00	4907.75	VIPER 16N BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
VIPER 16N SHL	0.00	0.00	0.00	40.231156	-104.885299	Polygon
3N-R67W-Sec. 10_Section Lines	1.00	170.79	508.80	40.231625	-104.883476	Polygon
3N-R67W-Sec. 14_Section Lines	1.00	-729.77	4.19	40.229152	-104.885284	Polygon
3N-R67W-Sec. 15_Section Lines	1.00	170.79	508.80	40.231625	-104.883476	Polygon
3N-R67W-Sec. 9_Section Lines	1.00	170.79	508.80	40.231625	-104.883476	Polygon
VIPER 16N BHL	6977.00	1309.89	4943.23	40.234752	-104.867587	Point



WELL DETAILS: VIPER PYRO 16N-10HZ

Ground Level: 4794.00

RKB = 17' @ 4811.00usft (Drilling Rig)

Plan: PERMIT REV-2 (VIPER PYRO 16N-10HZ/Plan A)

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

TVD MD Annotation

6404.04	6683.21	KOP @ 6683.21 ft
6977.00	7583.21	End Build @ 7583.21 ft
6977.00	12697.58	TD Well @ 12697.58 ft

Plan Report for VIPER PYRO 16N-10HZ - 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
Tie On to Surface @ 0.00 ft - VIPER 16N 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
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
9 5/8"										
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
983.00	0.00	0.00	983.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 983.00 ft										
1,000.00	0.34	333.00	1,000.00	0.04	-0.02	-0.02	2.00	2.00	0.00	333.00
1,100.00	2.34	333.00	1,099.97	2.13	-1.08	-1.14	2.00	2.00	0.00	0.00
1,200.00	4.34	333.00	1,199.79	7.32	-3.73	-3.92	2.00	2.00	0.00	0.00
1,300.00	6.34	333.00	1,299.35	15.61	-7.95	-8.35	2.00	2.00	0.00	0.00
1,400.00	8.34	333.00	1,398.53	26.99	-13.75	-14.45	2.00	2.00	0.00	0.00
1,500.00	10.34	333.00	1,497.20	41.45	-21.12	-22.19	2.00	2.00	0.00	0.00
1,600.00	12.34	333.00	1,595.24	58.97	-30.05	-31.56	2.00	2.00	0.00	0.00
1,700.00	14.34	333.00	1,692.54	79.53	-40.52	-42.56	2.00	2.00	0.00	0.00
1,800.00	16.34	333.00	1,788.97	103.10	-52.53	-55.18	2.00	2.00	0.00	0.00
1,900.00	18.34	333.00	1,884.42	129.65	-66.06	-69.39	2.00	2.00	0.00	0.00
2,000.00	20.34	333.00	1,978.77	159.16	-81.10	-85.18	2.00	2.00	0.00	0.00
2,033.00	21.00	333.00	2,009.65	169.54	-86.38	-90.73	2.00	2.00	0.00	0.00
End Nudge @ 2033.00 ft										
2,100.00	21.00	333.00	2,072.20	190.93	-97.29	-102.18	0.00	0.00	0.00	0.00
2,200.00	21.00	333.00	2,165.56	222.86	-113.55	-119.27	0.00	0.00	0.00	0.00
2,300.00	21.00	333.00	2,258.91	254.79	-129.82	-136.36	0.00	0.00	0.00	0.00
2,400.00	21.00	333.00	2,352.27	286.73	-146.09	-153.45	0.00	0.00	0.00	0.00
2,500.00	21.00	333.00	2,445.63	318.66	-162.36	-170.54	0.00	0.00	0.00	0.00
2,600.00	21.00	333.00	2,538.99	350.59	-178.63	-187.63	0.00	0.00	0.00	0.00
2,700.00	21.00	333.00	2,632.35	382.52	-194.90	-204.72	0.00	0.00	0.00	0.00
2,800.00	21.00	333.00	2,725.70	414.45	-211.17	-221.81	0.00	0.00	0.00	0.00
2,900.00	21.00	333.00	2,819.06	446.38	-227.44	-238.89	0.00	0.00	0.00	0.00
3,000.00	21.00	333.00	2,912.42	478.31	-243.71	-255.98	0.00	0.00	0.00	0.00
3,100.00	21.00	333.00	3,005.78	510.24	-259.98	-273.07	0.00	0.00	0.00	0.00
3,200.00	21.00	333.00	3,099.14	542.17	-276.25	-290.16	0.00	0.00	0.00	0.00
3,300.00	21.00	333.00	3,192.49	574.10	-292.52	-307.25	0.00	0.00	0.00	0.00
3,400.00	21.00	333.00	3,285.85	606.03	-308.79	-324.34	0.00	0.00	0.00	0.00
3,500.00	21.00	333.00	3,379.21	637.96	-325.06	-341.43	0.00	0.00	0.00	0.00
3,600.00	21.00	333.00	3,472.57	669.89	-341.33	-358.52	0.00	0.00	0.00	0.00
3,700.00	21.00	333.00	3,565.93	701.83	-357.60	-375.61	0.00	0.00	0.00	0.00
3,720.43	21.00	333.00	3,585.00	708.35	-360.92	-379.10	0.00	0.00	0.00	0.00
Parkman										
3,800.00	21.00	333.00	3,659.29	733.76	-373.87	-392.69	0.00	0.00	0.00	0.00
3,900.00	21.00	333.00	3,752.64	765.69	-390.14	-409.78	0.00	0.00	0.00	0.00
4,000.00	21.00	333.00	3,846.00	797.62	-406.41	-426.87	0.00	0.00	0.00	0.00
4,100.00	21.00	333.00	3,939.36	829.55	-422.68	-443.96	0.00	0.00	0.00	0.00
4,190.66	21.00	333.00	4,024.00	858.50	-437.43	-459.45	0.00	0.00	0.00	0.00
Sussex										
4,200.00	21.00	333.00	4,032.72	861.48	-438.95	-461.05	0.00	0.00	0.00	0.00
4,300.00	21.00	333.00	4,126.08	893.41	-455.22	-478.14	0.00	0.00	0.00	0.00

Plan Report for VIPER PYRO 16N-10HZ - 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 (°)
4,400.00	21.00	333.00	4,219.43	925.34	-471.49	-495.23	0.00	0.00	0.00	0.00
4,500.00	21.00	333.00	4,312.79	957.27	-487.75	-512.32	0.00	0.00	0.00	0.00
4,600.00	21.00	333.00	4,406.15	989.20	-504.02	-529.41	0.00	0.00	0.00	0.00
4,700.00	21.00	333.00	4,499.51	1,021.13	-520.29	-546.49	0.00	0.00	0.00	0.00
4,800.00	21.00	333.00	4,592.87	1,053.06	-536.56	-563.58	0.00	0.00	0.00	0.00
4,900.00	21.00	333.00	4,686.22	1,085.00	-552.83	-580.67	0.00	0.00	0.00	0.00
5,000.00	21.00	333.00	4,779.58	1,116.93	-569.10	-597.76	0.00	0.00	0.00	0.00
5,100.00	21.00	333.00	4,872.94	1,148.86	-585.37	-614.85	0.00	0.00	0.00	0.00
5,200.00	21.00	333.00	4,966.30	1,180.79	-601.64	-631.94	0.00	0.00	0.00	0.00
5,300.00	21.00	333.00	5,059.66	1,212.72	-617.91	-649.03	0.00	0.00	0.00	0.00
5,400.00	21.00	333.00	5,153.01	1,244.65	-634.18	-666.12	0.00	0.00	0.00	0.00
5,500.00	21.00	333.00	5,246.37	1,276.58	-650.45	-683.20	0.00	0.00	0.00	0.00
5,533.00	21.00	333.00	5,277.18	1,287.12	-655.82	-688.84	0.00	0.00	0.00	0.00
Begin Drop @ 5533.00 ft										
5,600.00	19.66	333.00	5,340.00	1,307.86	-666.39	-699.94	2.00	-2.00	0.00	180.00
5,700.00	17.66	333.00	5,434.74	1,336.36	-680.91	-715.20	2.00	-2.00	0.00	180.00
5,800.00	15.66	333.00	5,530.54	1,361.91	-693.93	-728.87	2.00	-2.00	0.00	180.00
5,900.00	13.66	333.00	5,627.28	1,384.46	-705.42	-740.94	2.00	-2.00	0.00	180.00
6,000.00	11.66	333.00	5,724.84	1,403.98	-715.36	-751.39	2.00	-2.00	0.00	180.00
6,100.00	9.66	333.00	5,823.11	1,420.46	-723.76	-760.21	2.00	-2.00	0.00	180.00
6,200.00	7.66	333.00	5,921.97	1,433.88	-730.60	-767.39	2.00	-2.00	0.00	180.00
6,300.00	5.66	333.00	6,021.29	1,444.21	-735.86	-772.92	2.00	-2.00	0.00	180.00
6,400.00	3.66	333.00	6,120.95	1,451.45	-739.55	-776.79	2.00	-2.00	0.00	180.00
6,500.00	1.66	333.00	6,220.84	1,455.59	-741.66	-779.01	2.00	-2.00	0.00	180.00
6,583.00	0.00	0.00	6,303.83	1,456.66	-742.20	-779.58	2.00	-2.00	32.53	180.00
End Drop @ 6583.00 ft										
6,600.00	0.00	0.00	6,320.83	1,456.66	-742.20	-779.58	0.00	0.00	0.00	180.00
6,683.21	0.00	0.00	6,404.04	1,456.66	-742.20	-779.58	0.00	0.00	0.00	0.00
KOP @ 6683.21 ft										
6,700.00	1.68	91.48	6,420.83	1,456.65	-741.96	-779.33	10.00	10.00	0.00	91.48
6,800.00	11.68	91.48	6,520.02	1,456.35	-730.35	-767.72	10.00	10.00	0.00	0.00
6,900.00	21.68	91.48	6,615.69	1,455.61	-701.69	-739.05	10.00	10.00	0.00	0.00
7,000.00	31.68	91.48	6,704.93	1,454.45	-656.86	-694.21	10.00	10.00	0.00	0.00
7,095.95	41.27	91.48	6,782.00	1,452.98	-599.90	-637.23	10.00	10.00	0.00	0.00
SSPG										
7,100.00	41.68	91.48	6,785.03	1,452.91	-597.23	-634.55	10.00	10.00	0.00	0.00
DLS = 10°/100 ft										
7,180.19	49.70	91.48	6,841.00	1,451.43	-539.91	-577.22	10.00	10.00	0.00	0.00
NBRR										
7,200.00	51.68	91.48	6,853.55	1,451.04	-524.59	-561.89	10.00	10.00	0.00	0.00
7,270.97	58.78	91.48	6,894.00	1,449.54	-466.35	-503.64	10.00	10.00	0.00	0.00
N470_B_CK										
7,300.00	61.68	91.48	6,908.42	1,448.89	-441.16	-478.44	10.00	10.00	0.00	0.00
7,400.00	71.68	91.48	6,947.95	1,446.52	-349.48	-386.72	10.00	10.00	0.00	0.00
7,431.39	74.82	91.48	6,957.00	1,445.74	-319.43	-356.67	10.00	10.00	0.00	0.00
N700_C_CK										
7,500.00	81.68	91.48	6,970.96	1,444.01	-252.33	-289.54	10.00	10.00	0.00	0.00
7,583.21	90.00	91.48	6,977.00	1,441.87	-169.44	-206.62	10.00	10.00	0.00	0.00
End Build @ 7583.21 ft - Landing Target (Heel) - 7"										
7,584.07	90.00	91.48	6,977.00	1,441.85	-168.58	-205.76	0.00	0.00	0.00	0.00
VIPER 16N PH										
7,600.00	90.00	91.48	6,977.00	1,441.44	-152.65	-189.83	0.00	0.00	0.00	0.00
7,700.00	90.00	91.48	6,977.00	1,438.86	-52.69	-89.83	0.00	0.00	0.00	0.00
7,800.00	90.00	91.48	6,977.00	1,436.28	47.28	10.17	0.00	0.00	0.00	0.00
7,900.00	90.00	91.48	6,977.00	1,433.70	147.25	110.17	0.00	0.00	0.00	0.00
8,000.00	90.00	91.48	6,977.00	1,431.12	247.21	210.17	0.00	0.00	0.00	0.00
8,100.00	90.00	91.48	6,977.00	1,428.53	347.18	310.17	0.00	0.00	0.00	0.00
8,200.00	90.00	91.48	6,977.00	1,425.95	447.15	410.17	0.00	0.00	0.00	0.00
8,300.00	90.00	91.48	6,977.00	1,423.37	547.11	510.17	0.00	0.00	0.00	0.00

Plan Report for VIPER PYRO 16N-10HZ - 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 (°)
8,400.00	90.00	91.48	6,977.00	1,420.79	647.08	610.17	0.00	0.00	0.00	0.00
8,500.00	90.00	91.48	6,977.00	1,418.21	747.05	710.17	0.00	0.00	0.00	0.00
8,600.00	90.00	91.48	6,977.00	1,415.63	847.01	810.17	0.00	0.00	0.00	0.00
8,700.00	90.00	91.48	6,977.00	1,413.05	946.98	910.17	0.00	0.00	0.00	0.00
8,800.00	90.00	91.48	6,977.00	1,410.47	1,046.95	1,010.17	0.00	0.00	0.00	0.00
8,900.00	90.00	91.48	6,977.00	1,407.89	1,146.91	1,110.17	0.00	0.00	0.00	0.00
9,000.00	90.00	91.48	6,977.00	1,405.31	1,246.88	1,210.17	0.00	0.00	0.00	0.00
9,100.00	90.00	91.48	6,977.00	1,402.73	1,346.85	1,310.17	0.00	0.00	0.00	0.00
9,200.00	90.00	91.48	6,977.00	1,400.15	1,446.81	1,410.17	0.00	0.00	0.00	0.00
9,300.00	90.00	91.48	6,977.00	1,397.57	1,546.78	1,510.17	0.00	0.00	0.00	0.00
9,400.00	90.00	91.48	6,977.00	1,394.99	1,646.75	1,610.17	0.00	0.00	0.00	0.00
9,500.00	90.00	91.48	6,977.00	1,392.41	1,746.71	1,710.17	0.00	0.00	0.00	0.00
9,600.00	90.00	91.48	6,977.00	1,389.83	1,846.68	1,810.17	0.00	0.00	0.00	0.00
9,700.00	90.00	91.48	6,977.00	1,387.25	1,946.65	1,910.17	0.00	0.00	0.00	0.00
9,800.00	90.00	91.48	6,977.00	1,384.66	2,046.62	2,010.17	0.00	0.00	0.00	0.00
9,900.00	90.00	91.48	6,977.00	1,382.08	2,146.58	2,110.17	0.00	0.00	0.00	0.00
10,000.00	90.00	91.48	6,977.00	1,379.50	2,246.55	2,210.17	0.00	0.00	0.00	0.00
10,100.00	90.00	91.48	6,977.00	1,376.92	2,346.52	2,310.17	0.00	0.00	0.00	0.00
10,200.00	90.00	91.48	6,977.00	1,374.34	2,446.48	2,410.17	0.00	0.00	0.00	0.00
10,300.00	90.00	91.48	6,977.00	1,371.76	2,546.45	2,510.17	0.00	0.00	0.00	0.00
10,400.00	90.00	91.48	6,977.00	1,369.18	2,646.42	2,610.17	0.00	0.00	0.00	0.00
10,500.00	90.00	91.48	6,977.00	1,366.60	2,746.38	2,710.17	0.00	0.00	0.00	0.00
10,600.00	90.00	91.48	6,977.00	1,364.02	2,846.35	2,810.17	0.00	0.00	0.00	0.00
10,700.00	90.00	91.48	6,977.00	1,361.44	2,946.32	2,910.17	0.00	0.00	0.00	0.00
10,800.00	90.00	91.48	6,977.00	1,358.86	3,046.28	3,010.17	0.00	0.00	0.00	0.00
10,900.00	90.00	91.48	6,977.00	1,356.28	3,146.25	3,110.17	0.00	0.00	0.00	0.00
11,000.00	90.00	91.48	6,977.00	1,353.70	3,246.22	3,210.17	0.00	0.00	0.00	0.00
11,100.00	90.00	91.48	6,977.00	1,351.12	3,346.18	3,310.17	0.00	0.00	0.00	0.00
11,200.00	90.00	91.48	6,977.00	1,348.54	3,446.15	3,410.17	0.00	0.00	0.00	0.00
11,300.00	90.00	91.48	6,977.00	1,345.96	3,546.12	3,510.17	0.00	0.00	0.00	0.00
11,400.00	90.00	91.48	6,977.00	1,343.38	3,646.08	3,610.17	0.00	0.00	0.00	0.00
11,500.00	90.00	91.48	6,977.00	1,340.79	3,746.05	3,710.17	0.00	0.00	0.00	0.00
11,600.00	90.00	91.48	6,977.00	1,338.21	3,846.02	3,810.17	0.00	0.00	0.00	0.00
11,700.00	90.00	91.48	6,977.00	1,335.63	3,945.98	3,910.17	0.00	0.00	0.00	0.00
11,800.00	90.00	91.48	6,977.00	1,333.05	4,045.95	4,010.17	0.00	0.00	0.00	0.00
11,900.00	90.00	91.48	6,977.00	1,330.47	4,145.92	4,110.17	0.00	0.00	0.00	0.00
12,000.00	90.00	91.48	6,977.00	1,327.89	4,245.88	4,210.17	0.00	0.00	0.00	0.00
12,100.00	90.00	91.48	6,977.00	1,325.31	4,345.85	4,310.17	0.00	0.00	0.00	0.00
12,200.00	90.00	91.48	6,977.00	1,322.73	4,445.82	4,410.17	0.00	0.00	0.00	0.00
12,300.00	90.00	91.48	6,977.00	1,320.15	4,545.78	4,510.17	0.00	0.00	0.00	0.00
12,400.00	90.00	91.48	6,977.00	1,317.57	4,645.75	4,610.17	0.00	0.00	0.00	0.00
12,500.00	90.00	91.48	6,977.00	1,314.99	4,745.72	4,710.17	0.00	0.00	0.00	0.00
12,600.00	90.00	91.48	6,977.00	1,312.41	4,845.68	4,810.17	0.00	0.00	0.00	0.00
12,696.29	90.00	91.48	6,977.00	1,309.92	4,941.94	4,906.46	0.00	0.00	0.00	0.00
VIPER 16N PBHL										
12,697.58	90.00	91.48	6,977.00	1,309.89	4,943.23	4,907.75	0.00	0.00	0.00	0.00
TD Well @ 12697.58 ft - Total Depth (Toe) - VIPER 16N BHL										

Plan Report for VIPER PYRO 16N-10HZ - PERMIT REV-2

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
983.00	983.00	0.00	0.00	Begin Nudge @ 983.00 ft
2,033.00	2,009.65	169.54	-86.38	End Nudge @ 2033.00 ft
5,533.00	5,277.18	1,287.12	-655.82	Begin Drop @ 5533.00 ft
6,583.00	6,303.83	1,456.66	-742.20	End Drop @ 6583.00 ft
6,683.21	6,404.04	1,456.66	-742.20	KOP @ 6683.21 ft
7,100.00	6,785.03	1,452.91	-597.23	DLS = 10"/100 ft
7,583.21	6,977.00	1,441.87	-169.44	End Build @ 7583.21 ft
12,697.58	6,977.00	1,309.89	4,943.23	TD Well @ 12697.58 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
User	No Target (Freehand)	91.48	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,583.21	PERMIT REV-2	MWD+IFR1
7,583.21	12,697.58	PERMIT REV-2	MWD+IFR1

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
7,583.21	6,977.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,720.43	3,585.00	Parkman		0.00	
4,190.66	4,024.00	Sussex		0.00	
7,095.95	6,782.00	SSPG		0.00	
7,180.19	6,841.00	NBRR		0.00	
7,270.97	6,894.00	N470_B_CK		0.00	
7,431.39	6,957.00	N700_C_CK		0.00	
7,583.21	6,977.00	Landing Target (Heel)		0.00	
12,697.58	6,977.00	Total Depth (Toe)		0.00	

Plan Report for VIPER PYRO 16N-10HZ - PERMIT REV-2

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
3N-R67W-Sec. 9_Section Lines	1.00	170.79	508.80	Polygon
VIPER 16N BHL	6,977.00	1,309.89	4,943.23	Point
VIPER 16N SHL	0.00	0.00	0.00	Polygon
3N-R67W-Sec. 15_Section Lines	1.00	170.79	508.80	Polygon
3N-R67W-Sec. 14_Section Lines	1.00	-729.77	4.19	Polygon
VIPER 16N PH	6,977.00	1,452.98	-168.29	Point
VIPER 16N PBHL	6,977.00	1,359.89	4,943.23	Point
3N-R67W-Sec. 10_Section Lines	1.00	170.79	508.80	Polygon

North Reference Sheet for VIPER PAD - VIPER PYRO 16N-10HZ - 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 16N-10HZ

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: 14,610,929.10 usft N, 1,672,430.22 usft E

Geographical Coordinates of Well: 40° 13' 52.16" N, 104° 53' 07.08" W

Grid Convergence at Surface is: 0.07°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,697.58usft the Bottom Hole Displacement is 5,113.84usft in the Direction of 75.16° (True).

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

