



		TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SL 1-34	0.00	0.00	0.00	1463506.15	3390699.86	40°35'49.943N	104°05'34.990W	Point
600' entry 1-34	6299.64	498.21	-718.33	1464004.36	3389981.53	40°35'54.978N	104°05'44.199W	Point
PBHL 1-34	6317.00	4681.19	-691.97	1468187.34	3390007.89	40°36'36.302N	104°05'42.998W	Point
600' exit 1-34	6333.40	4590.48	-705.52	1468096.63	3389994.34	40°36'35.408N	104°05'43.192W	Point
BHL 1-34	6334.04	4680.47	-706.62	1468186.62	3389993.24	40°36'36.298N	104°05'43.188W	Point

# Precision Directional Services, Inc.

## Survey Report

<b>Company:</b> CARRIZO OIL & GAS, INC.		<b>Date:</b> 06/12/2013	<b>Time:</b> 11:01:13	<b>Page:</b> 1
<b>Field:</b> Niobrara CONZ'83		<b>Co-ordinate(NE) Reference:</b> Well: 1-4-34-7-60, Grid North		
<b>Site:</b> Pergamos 4-44-7-60		<b>Vertical (TVD) Reference:</b> 4910'GL+17'KB 4927.0		
<b>Well:</b> 1-4-34-7-60		<b>Section (VS) Reference:</b> Well (0.00N,0.00E,0.29Azi)		
<b>Wellpath:</b> Original Hole		<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Adapti	

  

<b>Field:</b> Niobrara CONZ'83				
<b>Map System:</b> US State Plane Coordinate System 1983		<b>Map Zone:</b> Colorado, Northern Zone		
<b>Geo Datum:</b> GRS 1980		<b>Coordinate System:</b> Well Centre		
<b>Sys Datum:</b> Mean Sea Level		<b>Geomagnetic Model:</b> IGRF2010		

  

<b>Site:</b> Pergamos 4-44-7-60 S:4,T:7N,R:60W Weld County, CO				
<b>Site Position:</b>	<b>Northing:</b> 1463521.27 ft	<b>Latitude:</b> 40 35 50.095 N		
<b>From:</b> Map	<b>Easting:</b> 3390683.38 ft	<b>Longitude:</b> 104 5 35.201 W		
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid		
<b>Ground Level:</b> 4910.00 ft		<b>Grid Convergence:</b> 0.91 deg		

  

<b>Well:</b> 1-4-34-7-60 Adjstuted slot 9-28, 10-01		<b>Slot Name:</b> #1-34		
<b>Well Position:</b> +N/-S -15.12 ft	<b>Northing:</b> 1463506.15 ft	<b>Latitude:</b> 40 35 49.943 N		
+E/-W 16.48 ft	<b>Easting :</b> 3390699.86 ft	<b>Longitude:</b> 104 5 34.990 W		
<b>Position Uncertainty:</b> 0.00 ft				

  

<b>Wellpath:</b> Original Hole		<b>Drilled From:</b> Surface	
<b>Current Datum:</b> 4910'GL+17'KB	<b>Height</b> 4927.00 ft	<b>Tie-on Depth:</b> 0.00 ft	
<b>Magnetic Data:</b> 06/01/2013		<b>Above System Datum:</b> Mean Sea Level	
<b>Field Strength:</b> 53136 nT		<b>Declination:</b> 8.25 deg	
<b>Vertical Section:</b> Depth From (TVD)	+N/-S	<b>Mag Dip Angle:</b> 67.25 deg	
ft	ft	<b>+E/-W</b>	<b>Direction</b>
		ft	deg
0.00	0.00	0.00	0.29

  

<b>Survey Program for Definitive Wellpath</b>				
<b>Date:</b> 06/12/2013		<b>Validated:</b> No	<b>Version:</b> 0	
<b>Actual From</b>	<b>To</b>	<b>Survey</b>	<b>Toolcode</b>	<b>Tool Name</b>
ft	ft			
92.00	10762.00	Survey #1 (92.00-10762.00)	MWD	Std MWD
10820.00	10820.00	Survey #2 (10820.00-10820.00)	Project	Projection

  

<b>Survey</b>										
MD	Incl	Azim	TVD	+N/-S	+E/-W	VS	DLS	Build	Turn	Tool/Comment
ft	deg	deg	ft	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
92.00	0.80	98.70	92.00	-0.10	0.63	-0.09	0.87	0.87	0.00	MWD
140.00	0.30	198.90	140.00	-0.27	0.93	-0.26	1.88	-1.04	208.75	MWD
229.00	1.70	248.30	228.98	-0.98	-0.38	-0.98	1.71	1.57	55.51	MWD
320.00	5.00	255.70	319.81	-2.45	-5.48	-2.48	3.65	3.63	8.13	MWD
412.00	7.30	263.10	411.28	-4.15	-15.16	-4.22	2.64	2.50	8.04	MWD
504.00	7.70	267.10	502.49	-5.16	-27.12	-5.30	0.71	0.43	4.35	MWD
596.00	5.60	261.70	593.87	-6.12	-37.72	-6.31	2.38	-2.28	-5.87	MWD
688.00	5.10	258.40	685.47	-7.59	-46.17	-7.82	0.64	-0.54	-3.59	MWD
780.00	5.70	259.10	777.06	-9.28	-54.66	-9.55	0.66	0.65	0.76	MWD
872.00	5.90	257.50	868.59	-11.16	-63.76	-11.49	0.28	0.22	-1.74	MWD
964.00	5.90	265.40	960.10	-12.57	-73.09	-12.94	0.88	0.00	8.59	MWD
1059.00	6.00	267.80	1054.59	-13.15	-82.92	-13.57	0.28	0.11	2.53	MWD
1151.00	5.90	267.00	1146.09	-13.58	-92.45	-14.05	0.14	-0.11	-0.87	MWD
1243.00	5.70	266.30	1237.62	-14.12	-101.73	-14.64	0.23	-0.22	-0.76	MWD
1335.00	5.60	266.80	1329.18	-14.67	-110.77	-15.23	0.12	-0.11	0.54	MWD
1366.00	5.40	267.70	1360.03	-14.81	-113.74	-15.39	0.70	-0.65	2.90	MWD
1437.00	5.40	264.70	1430.72	-15.26	-120.40	-15.86	0.40	0.00	-4.23	MWD
1494.00	6.00	265.90	1487.44	-15.72	-126.04	-16.35	1.07	1.05	2.11	MWD
1579.00	6.30	265.20	1571.95	-16.42	-135.12	-17.11	0.36	0.35	-0.82	MWD
1664.00	6.80	265.20	1656.39	-17.23	-144.78	-17.97	0.59	0.59	0.00	MWD
1750.00	6.30	265.00	1741.83	-18.07	-154.56	-18.85	0.58	-0.58	-0.23	MWD

# Precision Directional Services, Inc.

## Survey Report

<b>Company:</b> CARRIZO OIL & GAS, INC. <b>Field:</b> Niobrara CONZ'83 <b>Site:</b> Pergamos 4-44-7-60 <b>Well:</b> 1-4-34-7-60 <b>Wellpath:</b> Original Hole	<b>Date:</b> 06/12/2013 <b>Time:</b> 11:01:13 <b>Page:</b> 2 <b>Co-ordinate(NE) Reference:</b> Well: 1-4-34-7-60, Grid North <b>Vertical (TVD) Reference:</b> 4910'GL+17"KB 4927.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,0.29Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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### Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
1775.00	6.30	263.60	1766.68	-18.34	-157.29	-19.14	0.61	0.00	-5.60	MWD
1861.00	6.90	266.10	1852.11	-19.22	-167.13	-20.07	0.77	0.70	2.91	MWD
1946.00	6.90	264.20	1936.49	-20.09	-177.31	-20.98	0.27	0.00	-2.24	MWD
2031.00	6.60	263.60	2020.91	-21.15	-187.24	-22.09	0.36	-0.35	-0.71	MWD
2116.00	7.10	264.90	2105.30	-22.16	-197.33	-23.16	0.62	0.59	1.53	MWD
2202.00	6.30	261.90	2190.71	-23.29	-207.29	-24.34	1.02	-0.93	-3.49	MWD
2287.00	6.90	273.60	2275.15	-23.63	-217.01	-24.73	1.73	0.71	13.76	MWD
2371.00	6.40	276.30	2358.59	-22.80	-226.69	-23.95	0.70	-0.60	3.21	MWD
2456.00	7.00	274.90	2443.00	-21.84	-236.56	-23.04	0.73	0.71	-1.65	MWD
2541.00	6.90	273.10	2527.38	-21.12	-246.82	-22.37	0.28	-0.12	-2.12	MWD
2626.00	7.20	269.40	2611.74	-20.90	-257.25	-22.20	0.64	0.35	-4.35	MWD
2712.00	7.30	270.50	2697.05	-20.91	-268.10	-22.26	0.20	0.12	1.28	MWD
2797.00	7.90	267.00	2781.30	-21.17	-279.33	-22.58	0.89	0.71	-4.12	MWD
2882.00	7.30	268.00	2865.56	-21.66	-290.56	-23.13	0.72	-0.71	1.18	MWD
2967.00	6.60	265.70	2949.93	-22.22	-300.83	-23.74	0.89	-0.82	-2.71	MWD
3052.00	6.30	265.60	3034.39	-22.94	-310.35	-24.51	0.35	-0.35	-0.12	MWD
3138.00	6.20	268.00	3119.88	-23.46	-319.70	-25.08	0.33	-0.12	2.79	MWD
3223.00	5.60	269.80	3204.43	-23.64	-328.43	-25.30	0.74	-0.71	2.12	MWD
3308.00	5.60	262.00	3289.03	-24.23	-336.69	-25.93	0.89	0.00	-9.18	MWD
3394.00	6.20	265.70	3374.57	-25.16	-345.47	-26.91	0.83	0.70	4.30	MWD
3477.00	7.20	261.90	3457.00	-26.23	-355.09	-28.03	1.32	1.20	-4.58	MWD
3561.00	7.90	262.40	3540.28	-27.74	-366.03	-29.59	0.84	0.83	0.60	MWD
3645.00	7.50	263.10	3623.52	-29.16	-377.19	-31.07	0.49	-0.48	0.83	MWD
3730.00	7.00	262.80	3707.84	-30.47	-387.84	-32.44	0.59	-0.59	-0.35	MWD
3815.00	6.20	261.00	3792.27	-31.84	-397.51	-33.85	0.97	-0.94	-2.12	MWD
3900.00	6.20	260.60	3876.78	-33.31	-406.57	-35.37	0.05	0.00	-0.47	MWD
3983.00	4.90	259.40	3959.39	-34.69	-414.48	-36.79	1.57	-1.57	-1.45	MWD
4068.00	5.40	260.10	4044.04	-36.05	-421.99	-38.18	0.59	0.59	0.82	MWD
4154.00	4.00	262.40	4129.75	-37.14	-428.95	-39.31	1.64	-1.63	2.67	MWD
4238.00	4.40	273.50	4213.53	-37.33	-435.07	-39.53	1.08	0.48	13.21	MWD
4324.00	5.70	276.80	4299.19	-36.62	-442.60	-38.86	1.55	1.51	3.84	MWD
4409.00	7.60	265.70	4383.62	-36.55	-452.40	-38.84	2.69	2.24	-13.06	MWD
4494.00	6.70	266.80	4467.96	-37.24	-462.95	-39.59	1.07	-1.06	1.29	MWD
4579.00	6.90	267.00	4552.36	-37.79	-473.00	-40.18	0.24	0.24	0.24	MWD
4664.00	7.20	264.90	4636.72	-38.53	-483.41	-40.98	0.47	0.35	-2.47	MWD
4749.00	7.60	265.20	4721.01	-39.47	-494.32	-41.97	0.47	0.47	0.35	MWD
4835.00	6.20	267.80	4806.38	-40.13	-504.62	-42.68	1.67	-1.63	3.02	MWD
4920.00	6.40	265.00	4890.87	-40.72	-513.93	-43.32	0.43	0.24	-3.29	MWD
5005.00	6.40	261.20	4975.34	-41.85	-523.33	-44.50	0.50	0.00	-4.47	MWD
5090.00	7.40	260.50	5059.73	-43.48	-533.41	-46.18	1.18	1.18	-0.82	MWD
5175.00	7.50	263.50	5144.01	-45.01	-544.32	-47.77	0.47	0.12	3.53	MWD
5260.00	6.20	263.80	5228.40	-46.14	-554.40	-48.94	1.53	-1.53	0.35	MWD
5345.00	6.40	267.00	5312.89	-46.88	-563.69	-49.73	0.48	0.24	3.76	MWD
5430.00	6.70	264.30	5397.33	-47.62	-573.36	-50.52	0.51	0.35	-3.18	MWD
5515.00	7.00	262.00	5481.73	-48.84	-583.42	-51.79	0.48	0.35	-2.71	MWD
5600.00	7.60	258.90	5566.04	-50.64	-594.06	-53.64	0.84	0.71	-3.65	MWD
5656.00	6.20	258.70	5621.63	-51.94	-600.66	-54.98	2.50	-2.50	-0.36	MWD
5662.00	6.20	257.50	5627.59	-52.08	-601.30	-55.12	2.16	0.00	-20.00	MWD
5704.00	6.20	267.50	5669.35	-52.67	-605.78	-55.73	2.57	0.00	23.81	MWD
5746.00	8.40	303.40	5711.03	-51.08	-610.61	-54.17	11.79	5.24	85.48	MWD
5789.00	12.70	320.80	5753.30	-45.68	-616.22	-48.80	12.34	10.00	40.47	MWD
5831.00	15.70	327.80	5794.02	-37.29	-622.17	-40.44	8.22	7.14	16.67	MWD
5874.00	17.40	332.00	5835.23	-26.69	-628.29	-29.87	4.83	3.95	9.77	MWD

# Precision Directional Services, Inc.

## Survey Report

<b>Company:</b> CARRIZO OIL & GAS, INC. <b>Field:</b> Niobrara CONZ'83 <b>Site:</b> Pergamos 4-44-7-60 <b>Well:</b> 1-4-34-7-60 <b>Wellpath:</b> Original Hole	<b>Date:</b> 06/12/2013 <b>Time:</b> 11:01:13 <b>Page:</b> 3 <b>Co-ordinate(NE) Reference:</b> Well: 1-4-34-7-60, Grid North <b>Vertical (TVD) Reference:</b> 4910'GL+17"KB 4927.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,0.29Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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### Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
5916.00	17.80	332.20	5875.27	-15.47	-634.23	-18.68	0.96	0.95	0.48	MWD
5959.00	19.80	336.80	5915.97	-2.96	-640.17	-6.20	5.79	4.65	10.70	MWD
6002.00	22.40	342.70	5956.09	11.56	-645.47	8.30	7.80	6.05	13.72	MWD
6044.00	25.60	342.60	5994.46	27.87	-650.57	24.57	7.62	7.62	-0.24	MWD
6087.00	31.00	344.80	6032.30	47.43	-656.25	44.11	12.79	12.56	5.12	MWD
6129.00	36.10	346.10	6067.30	69.90	-662.07	66.54	12.26	12.14	3.10	MWD
6172.00	40.40	347.30	6101.06	95.80	-668.17	92.42	10.15	10.00	2.79	MWD
6215.00	45.50	349.20	6132.52	124.48	-674.12	121.06	12.24	11.86	4.42	MWD
6257.00	49.60	350.60	6160.86	154.98	-679.54	151.54	10.07	9.76	3.33	MWD
6300.00	53.20	352.00	6187.69	188.19	-684.61	184.73	8.75	8.37	3.26	MWD
6328.00	56.30	353.30	6203.85	210.87	-687.53	207.39	11.70	11.07	4.64	MWD
6382.00	62.80	355.40	6231.20	257.17	-692.08	253.66	12.49	12.04	3.89	MWD
6399.00	64.50	355.20	6238.75	272.35	-693.33	268.84	10.06	10.00	-1.18	MWD
6441.00	70.10	353.60	6254.95	310.89	-697.12	307.36	13.79	13.33	-3.81	MWD
6484.00	75.90	353.10	6267.51	351.72	-701.88	348.16	13.53	13.49	-1.16	MWD
6527.00	76.30	352.90	6277.84	393.15	-706.97	389.57	1.03	0.93	-0.47	MWD
6569.00	76.20	353.10	6287.83	433.64	-711.94	430.03	0.52	-0.24	0.48	MWD
6612.00	80.50	354.90	6296.51	475.51	-716.34	471.88	10.81	10.00	4.19	MWD
6635.00	83.84	355.07	6299.64	498.21	-718.33	494.57	14.54	14.52	0.72	600' entry
6654.00	86.60	355.20	6301.23	517.07	-719.94	513.42	14.54	14.52	0.71	MWD
6697.00	87.90	354.70	6303.29	559.86	-723.72	556.19	3.24	3.02	-1.16	MWD
6739.00	87.70	354.90	6304.90	601.65	-727.52	597.96	0.67	-0.48	0.48	MWD
6782.00	88.80	358.00	6306.21	644.54	-730.18	640.84	7.65	2.56	7.21	MWD
6825.00	89.10	358.70	6307.00	687.52	-731.42	683.81	1.77	0.70	1.63	MWD
6867.00	88.70	1.70	6307.81	729.51	-731.27	725.79	7.20	-0.95	7.14	MWD
6910.00	88.40	2.60	6308.90	772.46	-729.66	768.76	2.21	-0.70	2.09	MWD
6952.00	88.40	2.80	6310.07	814.40	-727.68	810.70	0.48	0.00	0.48	MWD
6995.00	88.00	2.20	6311.42	857.34	-725.81	853.65	1.68	-0.93	-1.40	MWD
7037.00	87.10	1.20	6313.22	899.28	-724.56	895.60	3.20	-2.14	-2.38	MWD
7080.00	88.40	3.10	6314.90	942.21	-722.95	938.54	5.35	3.02	4.42	MWD
7123.00	90.10	3.80	6315.47	985.13	-720.36	981.47	4.28	3.95	1.63	MWD
7166.00	90.00	3.50	6315.43	1028.04	-717.62	1024.40	0.74	-0.23	-0.70	MWD
7208.00	90.00	3.30	6315.43	1069.97	-715.13	1066.33	0.48	0.00	-0.48	MWD
7251.00	90.00	3.10	6315.43	1112.90	-712.73	1109.28	0.47	0.00	-0.47	MWD
7292.00	90.00	2.80	6315.43	1153.85	-710.62	1150.23	0.73	0.00	-0.73	MWD
7335.00	90.00	2.80	6315.43	1196.79	-708.52	1193.19	0.00	0.00	0.00	MWD
7376.00	89.70	2.40	6315.54	1237.75	-706.66	1234.16	1.22	-0.73	-0.98	MWD
7418.00	89.60	2.10	6315.79	1279.72	-705.01	1276.13	0.75	-0.24	-0.71	MWD
7459.00	89.30	1.70	6316.19	1320.69	-703.66	1317.12	1.22	-0.73	-0.98	MWD
7502.00	89.30	1.50	6316.71	1363.67	-702.45	1360.10	0.47	0.00	-0.47	MWD
7544.00	90.80	1.90	6316.67	1405.65	-701.21	1402.09	3.70	3.57	0.95	MWD
7587.00	90.90	1.20	6316.04	1448.63	-700.05	1445.07	1.64	0.23	-1.63	MWD
7630.00	91.00	1.20	6315.32	1491.62	-699.15	1488.06	0.23	0.23	0.00	MWD
7672.00	91.10	1.00	6314.55	1533.60	-698.34	1530.05	0.53	0.24	-0.48	MWD
7715.00	90.00	1.00	6314.14	1576.59	-697.59	1573.04	2.56	-2.56	0.00	MWD
7757.00	90.20	0.80	6314.07	1618.59	-696.93	1615.04	0.67	0.48	-0.48	MWD
7798.00	90.20	0.70	6313.93	1659.58	-696.39	1656.04	0.24	0.00	-0.24	MWD
7841.00	90.00	0.70	6313.85	1702.58	-695.87	1699.04	0.47	-0.47	0.00	MWD
7883.00	89.10	358.60	6314.18	1744.58	-696.12	1741.03	5.44	-2.14	-5.00	MWD
7926.00	88.90	358.90	6314.93	1787.56	-697.06	1784.01	0.84	-0.47	0.70	MWD
7968.00	89.00	358.70	6315.70	1829.54	-697.94	1825.99	0.53	0.24	-0.48	MWD
8011.00	89.30	359.10	6316.34	1872.53	-698.77	1868.97	1.16	0.70	0.93	MWD
8053.00	89.50	358.70	6316.78	1914.52	-699.57	1910.95	1.06	0.48	-0.95	MWD
8096.00	89.90	358.60	6317.00	1957.51	-700.59	1953.94	0.96	0.93	-0.23	MWD

# Precision Directional Services, Inc.

## Survey Report

**Company:** CARRIZO OIL & GAS, INC.  
**Field:** Niobrara CONZ'83  
**Site:** Pergamos 4-44-7-60  
**Well:** 1-4-34-7-60  
**Wellpath:** Original Hole

**Date:** 06/12/2013 **Time:** 11:01:13 **Page:** 4  
**Co-ordinate(NE) Reference:** Well: 1-4-34-7-60, Grid North  
**Vertical (TVD) Reference:** 4910'GL+17"KB 4927.0  
**Section (VS) Reference:** Well (0.00N,0.00E,0.29Azi)  
**Survey Calculation Method:** Minimum Curvature **Db:** Adapti

### Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
8138.00	90.20	358.20	6316.97	1999.49	-701.76	1995.91	1.19	0.71	-0.95	MWD
8181.00	90.00	356.80	6316.89	2042.45	-703.63	2038.86	3.29	-0.47	-3.26	MWD
8224.00	90.30	356.10	6316.78	2085.37	-706.30	2081.76	1.77	0.70	-1.63	MWD
8266.00	91.10	358.70	6316.27	2127.32	-708.20	2123.70	6.48	1.90	6.19	MWD
8309.00	91.60	359.10	6315.25	2170.30	-709.03	2166.68	1.49	1.16	0.93	MWD
8351.00	89.90	0.70	6314.70	2212.29	-709.10	2208.67	5.56	-4.05	3.81	MWD
8394.00	89.90	0.80	6314.78	2255.29	-708.54	2251.67	0.23	0.00	0.23	MWD
8436.00	89.40	359.80	6315.03	2297.28	-708.32	2293.67	2.66	-1.19	-2.38	MWD
8479.00	89.20	359.30	6315.56	2340.28	-708.65	2336.66	1.25	-0.47	-1.16	MWD
8522.00	89.10	359.10	6316.20	2383.27	-709.26	2379.65	0.52	-0.23	-0.47	MWD
8564.00	88.80	359.10	6316.97	2425.26	-709.91	2421.63	0.71	-0.71	0.00	MWD
8607.00	89.50	0.70	6317.61	2468.25	-709.99	2464.63	4.06	1.63	3.72	MWD
8650.00	89.30	0.70	6318.06	2511.25	-709.46	2507.62	0.47	-0.47	0.00	MWD
8692.00	90.00	1.70	6318.31	2553.23	-708.58	2549.62	2.91	1.67	2.38	MWD
8735.00	89.80	1.70	6318.39	2596.22	-707.31	2592.60	0.47	-0.47	0.00	MWD
8777.00	89.60	1.50	6318.61	2638.20	-706.14	2634.59	0.67	-0.48	-0.48	MWD
8820.00	89.60	1.70	6318.91	2681.18	-704.94	2677.58	0.47	0.00	0.47	MWD
8862.00	90.20	2.20	6318.98	2723.16	-703.51	2719.56	1.86	1.43	1.19	MWD
8905.00	91.00	2.90	6318.53	2766.11	-701.59	2762.52	2.47	1.86	1.63	MWD
8947.00	90.30	2.40	6318.05	2808.06	-699.65	2804.49	2.05	-1.67	-1.19	MWD
8990.00	90.50	2.60	6317.75	2851.02	-697.78	2847.45	0.66	0.47	0.47	MWD
9032.00	90.50	2.60	6317.39	2892.98	-695.87	2889.42	0.00	0.00	0.00	MWD
9075.00	90.10	2.10	6317.16	2935.94	-694.11	2932.39	1.49	-0.93	-1.16	MWD
9117.00	90.00	1.70	6317.13	2977.92	-692.72	2974.37	0.98	-0.24	-0.95	MWD
9160.00	90.10	1.70	6317.09	3020.90	-691.44	3017.36	0.23	0.23	0.00	MWD
9203.00	89.70	1.40	6317.16	3063.88	-690.28	3060.35	1.16	-0.93	-0.70	MWD
9245.00	89.30	0.80	6317.53	3105.87	-689.47	3102.34	1.72	-0.95	-1.43	MWD
9288.00	89.00	0.70	6318.17	3148.86	-688.91	3145.34	0.74	-0.70	-0.23	MWD
9330.00	88.90	0.10	6318.94	3190.85	-688.61	3187.33	1.45	-0.24	-1.43	MWD
9373.00	88.90	0.10	6319.76	3233.85	-688.54	3230.32	0.00	0.00	0.00	MWD
9415.00	90.10	0.70	6320.13	3275.84	-688.25	3272.32	3.19	2.86	1.43	MWD
9458.00	90.10	0.30	6320.05	3318.84	-687.87	3315.32	0.93	0.00	-0.93	MWD
9500.00	90.30	0.00	6319.91	3360.84	-687.76	3357.32	0.86	0.48	-0.71	MWD
9543.00	90.20	0.00	6319.72	3403.84	-687.76	3400.32	0.23	-0.23	0.00	MWD
9585.00	89.70	358.70	6319.76	3445.84	-688.24	3442.31	3.32	-1.19	-3.10	MWD
9628.00	90.00	358.90	6319.87	3488.83	-689.14	3485.29	0.84	0.70	0.47	MWD
9671.00	90.00	358.90	6319.87	3531.82	-689.96	3528.28	0.00	0.00	0.00	MWD
9713.00	90.00	358.90	6319.87	3573.81	-690.77	3570.27	0.00	0.00	0.00	MWD
9756.00	90.00	359.30	6319.87	3616.81	-691.45	3613.26	0.93	0.00	0.93	MWD
9798.00	89.80	359.10	6319.94	3658.80	-692.03	3655.25	0.67	-0.48	-0.48	MWD
9840.00	89.60	359.10	6320.16	3700.80	-692.69	3697.24	0.48	-0.48	0.00	MWD
9883.00	88.20	359.30	6320.99	3743.78	-693.29	3740.23	3.29	-3.26	0.47	MWD
9925.00	87.90	358.70	6322.42	3785.75	-694.02	3782.19	1.60	-0.71	-1.43	MWD
9968.00	88.30	358.40	6323.84	3828.71	-695.11	3825.15	1.16	0.93	-0.70	MWD
10011.00	88.80	358.70	6324.93	3871.69	-696.20	3868.11	1.36	1.16	0.70	MWD
10053.00	89.60	359.60	6325.52	3913.68	-696.82	3910.10	2.87	1.90	2.14	MWD
10096.00	89.70	359.10	6325.78	3956.67	-697.31	3953.09	1.19	0.23	-1.16	MWD
10138.00	88.60	358.00	6326.40	3998.65	-698.37	3995.07	3.70	-2.62	-2.62	MWD
10181.00	88.40	358.40	6327.53	4041.62	-699.72	4038.02	1.04	-0.47	0.93	MWD
10224.00	87.80	358.40	6328.95	4084.58	-700.92	4080.98	1.40	-1.40	0.00	MWD
10266.00	87.60	358.60	6330.64	4126.53	-702.02	4122.92	0.67	-0.48	0.48	MWD
10309.00	89.20	359.30	6331.84	4169.50	-702.81	4165.89	4.06	3.72	1.63	MWD
10351.00	89.30	359.60	6332.39	4211.50	-703.21	4207.88	0.75	0.24	0.71	MWD

# Precision Directional Services, Inc.

## Survey Report

<b>Company:</b> CARRIZO OIL & GAS, INC. <b>Field:</b> Niobrara CONZ'83 <b>Site:</b> Pergamos 4-44-7-60 <b>Well:</b> 1-4-34-7-60 <b>Wellpath:</b> Original Hole	<b>Date:</b> 06/12/2013 <b>Co-ordinate(NE) Reference:</b> Well: 1-4-34-7-60, Grid North <b>Vertical (TVD) Reference:</b> 4910'GL+17'KB 4927.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,0.29Azi) <b>Survey Calculation Method:</b> Minimum Curvature	<b>Page:</b> 5       <b>Db:</b> Adapti
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### Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
10394.00	90.00	0.10	6332.65	4254.50	-703.32	4250.88	2.00	1.63	1.16	MWD
10435.00	89.60	0.10	6332.80	4295.50	-703.25	4291.88	0.98	-0.98	0.00	MWD
10478.00	89.10	359.80	6333.28	4338.49	-703.29	4334.88	1.36	-1.16	-0.70	MWD
10521.00	90.50	359.60	6333.43	4381.49	-703.52	4377.87	3.29	3.26	-0.47	MWD
10563.00	90.00	359.60	6333.25	4423.49	-703.81	4419.87	1.19	-1.19	0.00	MWD
10605.00	89.20	359.60	6333.54	4465.49	-704.10	4461.87	1.90	-1.90	0.00	MWD
10648.00	90.40	359.30	6333.69	4508.48	-704.52	4504.86	2.88	2.79	-0.70	MWD
10690.00	90.20	359.30	6333.47	4550.48	-705.03	4546.85	0.48	-0.48	0.00	MWD
10730.00	90.01	359.30	6333.40	4590.48	-705.52	4586.85	0.48	-0.48	0.00	600' exit
10732.00	90.00	359.30	6333.40	4592.48	-705.54	4588.85	0.48	-0.48	0.00	MWD
10762.00	89.50	359.30	6333.53	4622.47	-705.91	4618.84	1.67	-1.67	0.00	MWD
10820.00	89.50	359.30	6334.04	4680.47	-706.62	4676.83	0.00	0.00	0.00	Project

### Annotation

MD ft	TVD ft	
6635.00	6299.64	600' entry
10730.00	6333.40	600' exit