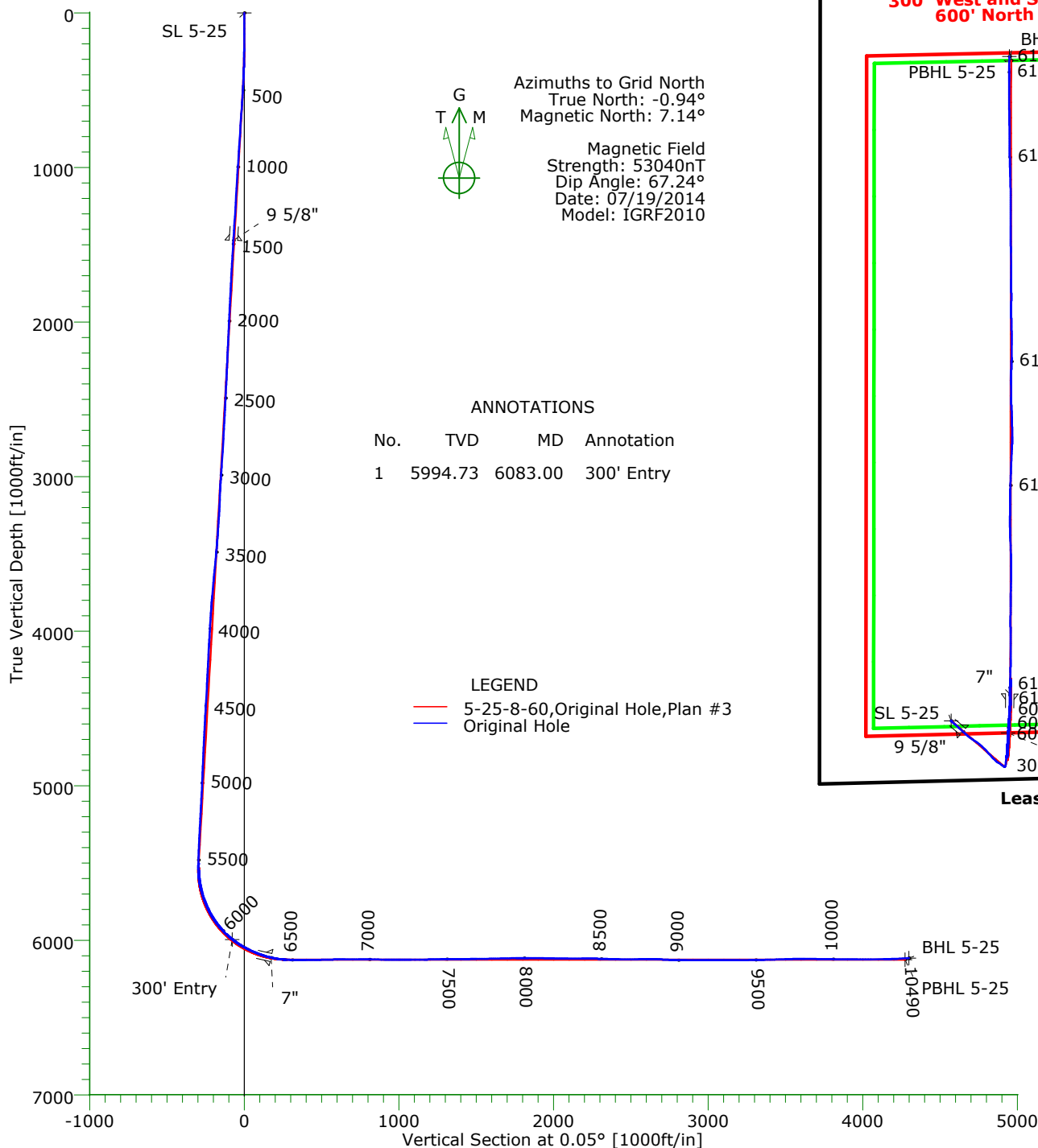




### CASING DETAILS

No.	TVD	MD	Name	Size
1	1471.26	1476.00	9 5/8"	9.625
2	6111.88	6362.00	7"	7.000



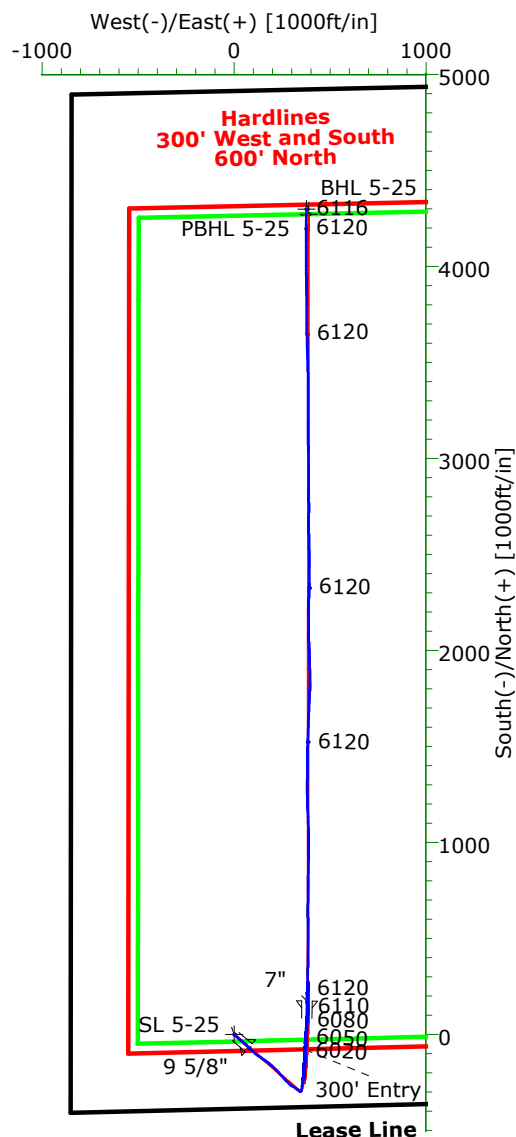
Azimuths to Grid North  
True North: -0.94°  
Magnetic North: 7.14°  
  
Magnetic Field  
Strength: 53040nT  
Dip Angle: 67.24°  
Date: 07/19/2014  
Model: IGRF2010

### ANNOTATIONS

No.	TVD	MD	Annotation
1	5994.73	6083.00	300' Entry

### LEGEND

- 5-25-8-60, Original Hole, Plan #3
- Original Hole



### TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
SL 5-25	0.00	0.00	0.00	1474648.96	3403479.23	40°37'37.999N	104°02'46.978W	Point
300' Entry 5-25	5994.73	-77.88	368.18	1474571.08	3403847.41	40°37'37.170N	104°02'42.220W	Point
BHL 5-25	6115.76	4298.18	376.34	1478947.14	3403855.57	40°38'20.405N	104°02'41.183W	Point
PBHL 5-25	6125.00	4272.21	387.63	1478921.17	3403866.86	40°38'20.146N	104°02'41.042W	Point

# Precision Directional Services, Inc.

## Survey Report

<b>Company:</b> CARRIZO OIL & GAS, INC.				<b>Date:</b> 07/28/2014		<b>Time:</b> 09:50:12		<b>Page:</b> 1	
<b>Field:</b> Niobrara CONZ'83				<b>Co-ordinate(NE) Reference:</b> Well: 5-25-8-60, Grid North					
<b>Site:</b> Hemberger 1-25-8-60 Pad				<b>Vertical (TVD) Reference:</b> 4908'GL+17"KB 4925.0					
<b>Well:</b> 5-25-8-60				<b>Section (VS) Reference:</b> Well (0.00N,0.00E,0.05Azi)					
<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> Hemberger 1-25-8-60 Pad									
<b>Site Position:</b>		<b>Northing:</b> 1474603.96 ft		<b>Latitude:</b> 40 37 37.555 N					
<b>From:</b> Map		<b>Easting:</b> 3403479.97 ft		<b>Longitude:</b> 104 2 46.978 W					
<b>Position Uncertainty:</b> 0.00 ft				<b>North Reference:</b> Grid					
<b>Ground Level:</b> 4908.00 ft				<b>Grid Convergence:</b> 0.94 deg					

<b>Well:</b> 5-25-8-60				<b>Slot Name:</b> 5-25					
<b>Well Position:</b>		<b>+N/-S</b> 45.00 ft		<b>Northing:</b> 1474648.96 ft		<b>Latitude:</b> 40 37 37.999 N			
		<b>+E/-W</b> -0.74 ft		<b>Easting :</b> 3403479.23 ft		<b>Longitude:</b> 104 2 46.978 W			
<b>Position Uncertainty:</b> 0.00 ft									

<b>Wellpath:</b> Original Hole				<b>Drilled From:</b> Surface					
<b>Current Datum:</b> 4908'GL+17"KB				<b>Tie-on Depth:</b> 0.00 ft					
<b>Magnetic Data:</b> 07/19/2014				<b>Above System Datum:</b> Mean Sea Level					
<b>Field Strength:</b> 53040 nT				<b>Declination:</b> 8.08 deg					
<b>Vertical Section:</b> Depth From (TVD)				<b>Mag Dip Angle:</b> 67.24 deg					
		ft		<b>+N/-S</b> ft		<b>+E/-W</b> ft		<b>Direction</b> bearing	
0.00				0.00		0.00		0.05	

<b>Survey Program for Definitive Wellpath</b>							
<b>Date:</b> 07/28/2014		<b>Validated:</b> No		<b>Version:</b> 3			
<b>Actual From</b> ft		<b>To</b> ft		<b>Survey</b>		<b>Tool Name</b>	
137.00		10429.00		Survey #1 (137.00-10429.00)		MWD	
10490.00		10490.00		Survey #2 (10490.00-10490.00)		Std MWD Projection	

Survey										
MD ft	Incl deg	Azim bearing	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
137.00	0.40	232.10	137.00	-0.29	-0.38	-0.29	0.29	0.29	0.00	MWD
231.00	0.40	226.90	231.00	-0.72	-0.88	-0.72	0.04	0.00	-5.53	MWD
322.00	1.70	128.80	321.98	-1.78	-0.06	-1.78	1.98	1.43	-107.80	MWD
413.00	4.60	122.50	412.84	-4.59	4.07	-4.59	3.20	3.19	-6.92	MWD
502.00	5.30	132.50	501.51	-9.28	10.12	-9.28	1.25	0.79	11.24	MWD
594.00	5.80	133.20	593.07	-15.34	16.64	-15.32	0.55	0.54	0.76	MWD
685.00	5.60	132.10	683.62	-21.46	23.28	-21.44	0.25	-0.22	-1.21	MWD
776.00	5.50	131.40	774.20	-27.32	29.85	-27.30	0.13	-0.11	-0.77	MWD
867.00	5.50	133.40	864.78	-33.20	36.29	-33.17	0.21	0.00	2.20	MWD
958.00	5.30	131.10	955.37	-38.96	42.62	-38.92	0.32	-0.22	-2.53	MWD
1049.00	5.10	131.90	1046.00	-44.43	48.80	-44.38	0.23	-0.22	0.88	MWD
1139.00	5.10	132.50	1135.64	-49.80	54.73	-49.75	0.06	0.00	0.67	MWD
1231.00	5.20	130.90	1227.27	-55.29	60.89	-55.24	0.19	0.11	-1.74	MWD
1321.00	5.30	133.20	1316.89	-60.81	67.01	-60.75	0.26	0.11	2.56	MWD
1412.00	5.10	133.70	1407.52	-66.48	73.00	-66.42	0.23	-0.22	0.55	MWD
1492.00	5.30	129.70	1487.19	-71.30	78.41	-71.23	0.52	0.25	-5.00	MWD
1577.00	5.40	129.80	1571.82	-76.36	84.50	-76.29	0.12	0.12	0.12	MWD
1662.00	4.90	129.80	1656.48	-81.25	90.36	-81.17	0.59	-0.59	0.00	MWD
1746.00	4.70	132.10	1740.18	-85.85	95.67	-85.77	0.33	-0.24	2.74	MWD
1831.00	4.00	135.50	1824.94	-90.30	100.34	-90.21	0.88	-0.82	4.00	MWD
1916.00	3.90	130.00	1909.74	-94.27	104.63	-94.18	0.46	-0.12	-6.47	MWD

# Precision Directional Services, Inc.

## Survey Report

<b>Company:</b> CARRIZO OIL & GAS, INC. <b>Field:</b> Niobrara CONZ'83 <b>Site:</b> Hemberger 1-25-8-60 Pad <b>Well:</b> 5-25-8-60 <b>Wellpath:</b> Original Hole	<b>Date:</b> 07/28/2014 <b>Time:</b> 09:50:12 <b>Page:</b> 2 <b>Co-ordinate(NE) Reference:</b> Well: 5-25-8-60, Grid North <b>Vertical (TVD) Reference:</b> 4908'GL+17"KB 4925.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,0.05Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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### Survey

MD ft	Incl deg	Azim bearing	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2001.00	4.20	133.50	1994.52	-98.27	109.10	-98.18	0.46	0.35	4.12	MWD
2086.00	3.90	131.10	2079.31	-102.32	113.54	-102.22	0.41	-0.35	-2.82	MWD
2170.00	4.30	128.30	2163.10	-106.15	118.16	-106.04	0.53	0.48	-3.33	MWD
2254.00	4.70	127.40	2246.84	-110.19	123.37	-110.08	0.48	0.48	-1.07	MWD
2339.00	4.30	120.90	2331.58	-113.94	128.87	-113.83	0.76	-0.47	-7.65	MWD
2424.00	5.00	124.60	2416.30	-117.68	134.65	-117.56	0.90	0.82	4.35	MWD
2509.00	5.10	123.20	2500.97	-121.85	140.86	-121.73	0.19	0.12	-1.65	MWD
2594.00	5.50	124.90	2585.60	-126.25	147.36	-126.12	0.51	0.47	2.00	MWD
2679.00	5.90	123.30	2670.18	-130.98	154.35	-130.85	0.51	0.47	-1.88	MWD
2764.00	6.20	121.00	2754.71	-135.74	161.94	-135.60	0.45	0.35	-2.71	MWD
2850.00	6.20	126.50	2840.21	-140.90	169.65	-140.75	0.69	0.00	6.40	MWD
2935.00	6.20	127.00	2924.71	-146.39	177.01	-146.24	0.06	0.00	0.59	MWD
3020.00	5.50	133.40	3009.27	-151.95	183.64	-151.79	1.12	-0.82	7.53	MWD
3105.00	3.90	130.50	3093.98	-156.63	188.79	-156.46	1.90	-1.88	-3.41	MWD
3190.00	4.00	127.40	3178.78	-160.31	193.35	-160.14	0.28	0.12	-3.65	MWD
3275.00	4.90	134.60	3263.52	-164.66	198.29	-164.48	1.24	1.06	8.47	MWD
3361.00	5.50	137.40	3349.17	-170.27	203.69	-170.09	0.76	0.70	3.26	MWD
3444.00	6.70	133.70	3431.69	-176.54	209.88	-176.36	1.52	1.45	-4.46	MWD
3530.00	8.00	133.70	3516.99	-184.14	217.84	-183.95	1.51	1.51	0.00	MWD
3615.00	7.70	136.00	3601.19	-192.32	226.07	-192.13	0.51	-0.35	2.71	MWD
3700.00	6.90	137.90	3685.50	-200.21	233.45	-200.01	0.98	-0.94	2.24	MWD
3785.00	6.80	137.20	3769.89	-207.69	240.29	-207.48	0.15	-0.12	-0.82	MWD
3870.00	5.40	137.70	3854.41	-214.34	246.40	-214.13	1.65	-1.65	0.59	MWD
3956.00	4.80	137.40	3940.07	-219.98	251.56	-219.76	0.70	-0.70	-0.35	MWD
4041.00	4.50	135.60	4024.79	-224.98	256.30	-224.76	0.39	-0.35	-2.12	MWD
4126.00	3.70	140.60	4109.57	-229.48	260.38	-229.26	1.03	-0.94	5.88	MWD
4211.00	3.60	139.90	4194.40	-233.65	263.84	-233.42	0.13	-0.12	-0.82	MWD
4296.00	4.00	140.60	4279.21	-237.98	267.44	-237.74	0.47	0.47	0.82	MWD
4381.00	4.70	133.40	4363.97	-242.66	271.85	-242.42	1.04	0.82	-8.47	MWD
4466.00	4.70	134.20	4448.68	-247.48	276.87	-247.24	0.08	0.00	0.94	MWD
4551.00	4.40	133.70	4533.41	-252.16	281.73	-251.92	0.36	-0.35	-0.59	MWD
4636.00	3.90	135.80	4618.19	-256.49	286.10	-256.24	0.61	-0.59	2.47	MWD
4721.00	4.30	134.10	4702.97	-260.78	290.41	-260.52	0.49	0.47	-2.00	MWD
4806.00	4.10	125.40	4787.75	-264.76	295.17	-264.50	0.78	-0.24	-10.24	MWD
4891.00	4.20	120.90	4872.52	-268.11	300.32	-267.85	0.40	0.12	-5.29	MWD
4976.00	5.20	121.70	4957.24	-271.74	306.27	-271.47	1.18	1.18	0.94	MWD
5061.00	5.00	122.50	5041.90	-275.75	312.67	-275.48	0.25	-0.24	0.94	MWD
5146.00	5.50	123.70	5126.54	-280.00	319.18	-279.72	0.60	0.59	1.41	MWD
5232.00	5.00	129.10	5212.18	-284.65	325.52	-284.37	0.82	-0.58	6.28	MWD
5317.00	4.70	127.90	5296.88	-289.13	331.14	-288.84	0.37	-0.35	-1.41	MWD
5402.00	4.60	123.30	5381.60	-293.14	336.74	-292.84	0.45	-0.12	-5.41	MWD
5485.00	4.00	119.30	5464.36	-296.38	342.04	-296.08	0.81	-0.72	-4.82	MWD
5525.00	4.00	113.10	5504.27	-297.61	344.54	-297.31	1.08	0.00	-15.50	MWD
5567.00	3.70	72.20	5546.18	-297.77	347.18	-297.47	6.44	-0.71	-97.38	MWD
5610.00	6.10	26.70	5589.03	-295.31	349.53	-295.00	10.20	5.58	-105.81	MWD
5652.00	10.30	12.80	5630.60	-289.65	351.37	-289.34	10.99	10.00	-33.10	MWD
5694.00	14.70	7.30	5671.59	-280.70	352.88	-280.39	10.84	10.48	-13.10	MWD
5737.00	18.10	4.50	5712.84	-268.62	354.09	-268.31	8.12	7.91	-6.51	MWD
5780.00	21.10	6.10	5753.34	-254.26	355.44	-253.95	7.09	6.98	3.72	MWD
5822.00	24.60	7.50	5792.04	-238.07	357.39	-237.76	8.43	8.33	3.33	MWD
5864.00	28.80	6.30	5829.56	-219.34	359.64	-219.03	10.08	10.00	-2.86	MWD
5907.00	34.00	3.60	5866.25	-197.03	361.53	-196.72	12.53	12.09	-6.28	MWD
5950.00	38.60	3.10	5900.89	-171.62	363.01	-171.31	10.72	10.70	-1.16	MWD

# Precision Directional Services, Inc.

## Survey Report

<b>Company:</b> CARRIZO OIL & GAS, INC. <b>Field:</b> Niobrara CONZ'83 <b>Site:</b> Hemberger 1-25-8-60 Pad <b>Well:</b> 5-25-8-60 <b>Wellpath:</b> Original Hole	<b>Date:</b> 07/28/2014 <b>Co-ordinate(NE) Reference:</b> Well: 5-25-8-60, Grid North <b>Vertical (TVD) Reference:</b> 4908'GL+17"KB 4925.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,0.05Azi) <b>Survey Calculation Method:</b> Minimum Curvature	<b>Time:</b> 09:50:12 <b>Page:</b> 3 <b>Db:</b> Adapti
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### Survey

MD ft	Incl deg	Azim bearing	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
5992.00	43.00	2.70	5932.68	-144.22	364.40	-143.90	10.49	10.48	-0.95	MWD
6035.00	46.60	3.30	5963.19	-113.97	365.99	-113.65	8.43	8.37	1.40	MWD
6077.00	50.60	3.60	5990.96	-82.53	367.88	-82.21	9.54	9.52	0.71	MWD
6083.00	51.39	3.63	5994.73	-77.88	368.18	-77.56	13.10	13.09	0.51	300' Entry
6119.00	56.10	3.80	6016.02	-48.92	370.06	-48.59	13.10	13.10	0.47	MWD
6161.00	60.60	3.60	6038.05	-13.25	372.36	-12.92	10.72	10.71	-0.48	MWD
6204.00	64.10	4.30	6058.00	24.75	374.99	25.07	8.27	8.14	1.63	MWD
6244.00	66.40	3.30	6074.75	60.99	377.40	61.32	6.18	5.75	-2.50	MWD
6247.00	66.50	3.40	6075.95	63.73	377.56	64.06	4.52	3.33	3.33	MWD
6289.00	70.00	2.20	6091.51	102.69	379.46	103.02	8.75	8.33	-2.86	MWD
6324.00	73.80	0.50	6102.38	135.94	380.24	136.27	11.80	10.86	-4.86	MWD
6412.00	81.80	0.30	6120.96	221.88	380.83	222.21	9.09	9.09	-0.23	MWD
6457.00	87.90	1.90	6125.00	266.67	381.70	267.00	14.01	13.56	3.56	MWD
6503.00	89.30	1.90	6126.12	312.63	383.22	312.96	3.04	3.04	0.00	MWD
6588.00	90.10	0.30	6126.57	397.61	384.85	397.95	2.10	0.94	-1.88	MWD
6673.00	90.70	359.90	6125.97	482.61	385.00	482.94	0.85	0.71	-0.47	MWD
6759.00	91.50	359.40	6124.32	568.59	384.48	568.92	1.10	0.93	-0.58	MWD
6843.00	89.90	0.10	6123.30	652.58	384.11	652.91	2.08	-1.90	0.83	MWD
6928.00	90.50	0.30	6123.00	737.58	384.41	737.91	0.74	0.71	0.24	MWD
7013.00	89.10	1.50	6123.30	822.56	385.74	822.90	2.17	-1.65	1.41	MWD
7098.00	89.00	1.20	6124.71	907.53	387.74	907.86	0.37	-0.12	-0.35	MWD
7184.00	90.40	359.80	6125.16	993.52	388.49	993.86	2.30	1.63	-1.63	MWD
7269.00	90.20	357.80	6124.71	1078.49	386.71	1078.83	2.36	-0.24	-2.35	MWD
7354.00	90.30	357.60	6124.34	1163.42	383.30	1163.76	0.26	0.12	-0.24	MWD
7439.00	91.50	359.10	6123.01	1248.37	380.86	1248.71	2.26	1.41	1.76	MWD
7524.00	90.20	1.00	6121.75	1333.36	380.93	1333.69	2.71	-1.53	2.24	MWD
7608.00	90.50	359.60	6121.23	1417.35	381.37	1417.69	1.70	0.36	-1.67	MWD
7693.00	90.70	2.20	6120.34	1502.33	382.70	1502.67	3.07	0.24	3.06	MWD
7778.00	91.10	1.90	6119.01	1587.27	385.74	1587.60	0.59	0.47	-0.35	MWD
7863.00	91.50	2.40	6117.08	1672.18	388.93	1672.52	0.75	0.47	0.59	MWD
7947.00	91.40	2.90	6114.95	1756.07	392.81	1756.41	0.61	-0.12	0.60	MWD
8032.00	89.40	359.80	6114.36	1841.03	394.82	1841.37	4.34	-2.35	-3.65	MWD
8117.00	88.90	358.70	6115.62	1926.01	393.70	1926.35	1.42	-0.59	-1.29	MWD
8201.00	88.50	357.10	6117.53	2009.93	390.63	2010.27	1.96	-0.48	-1.90	MWD
8286.00	89.60	359.60	6118.94	2094.87	388.18	2095.21	3.21	1.29	2.94	MWD
8371.00	90.40	359.40	6118.94	2179.87	387.44	2180.21	0.97	0.94	-0.24	MWD
8456.00	89.60	2.60	6118.94	2264.84	388.92	2265.18	3.88	-0.94	3.76	MWD
8541.00	87.90	0.10	6120.79	2349.79	390.92	2350.13	3.56	-2.00	-2.94	MWD
8626.00	89.70	0.10	6122.57	2434.77	391.07	2435.11	2.12	2.12	0.00	MWD
8711.00	90.20	359.60	6122.64	2519.77	390.85	2520.11	0.83	0.59	-0.59	MWD
8796.00	90.80	358.20	6121.90	2604.75	389.22	2605.09	1.79	0.71	-1.65	MWD
8881.00	87.20	1.20	6123.39	2689.71	388.77	2690.05	5.51	-4.24	3.53	MWD
8967.00	87.80	359.20	6127.14	2775.62	389.07	2775.96	2.43	0.70	-2.33	MWD
9052.00	90.20	359.80	6128.62	2860.60	388.33	2860.94	2.91	2.82	0.71	MWD
9136.00	90.80	359.20	6127.89	2944.59	387.60	2944.93	1.01	0.71	-0.71	MWD
9222.00	88.80	359.20	6128.19	3030.58	386.40	3030.91	2.33	-2.33	0.00	MWD
9307.00	90.70	359.10	6128.56	3115.56	385.14	3115.90	2.24	2.24	-0.12	MWD
9392.00	90.10	0.60	6127.97	3200.56	384.91	3200.89	1.90	-0.71	1.76	MWD
9477.00	90.90	0.30	6127.22	3285.55	385.58	3285.89	1.01	0.94	-0.35	MWD
9562.00	91.20	359.40	6125.67	3370.54	385.36	3370.87	1.12	0.35	-1.06	MWD
9647.00	91.50	358.90	6123.66	3455.50	384.10	3455.84	0.69	0.35	-0.59	MWD
9732.00	92.10	358.20	6120.99	3540.43	381.95	3540.77	1.08	0.71	-0.82	MWD
9817.00	89.60	358.70	6119.73	3625.39	379.65	3625.72	3.00	-2.94	0.59	MWD
9902.00	88.60	359.60	6121.07	3710.36	378.39	3710.69	1.58	-1.18	1.06	MWD

# Precision Directional Services, Inc.

## Survey Report

<b>Company:</b> CARRIZO OIL & GAS, INC. <b>Field:</b> Niobrara CONZ'83 <b>Site:</b> Hemberger 1-25-8-60 Pad <b>Well:</b> 5-25-8-60 <b>Wellpath:</b> Original Hole	<b>Date:</b> 07/28/2014 <b>Time:</b> 09:50:12 <b>Page:</b> 4 <b>Co-ordinate(NE) Reference:</b> Well: 5-25-8-60, Grid North <b>Vertical (TVD) Reference:</b> 4908'GL+17'KB 4925.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,0.05Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Adapti
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### Survey

MD ft	Incl deg	Azim bearing	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
9987.00	89.60	359.90	6122.40	3795.35	378.02	3795.68	1.23	1.18	0.35	MWD
10072.00	89.30	358.70	6123.22	3880.34	376.98	3880.67	1.46	-0.35	-1.41	MWD
10157.00	90.40	359.60	6123.44	3965.33	375.72	3965.65	1.67	1.29	1.06	MWD
10243.00	90.60	359.20	6122.69	4051.32	374.82	4051.65	0.52	0.23	-0.47	MWD
10328.00	90.60	0.30	6121.80	4136.31	374.45	4136.64	1.29	0.00	1.29	MWD
10413.00	92.80	0.80	6119.28	4221.27	375.26	4221.59	2.65	2.59	0.59	MWD
10429.00	92.60	0.80	6118.53	4237.25	375.49	4237.57	1.25	-1.25	0.00	MWD
10490.00	92.60	0.80	6115.76	4298.18	376.34	4298.51	0.00	0.00	0.00	PROJECTED to TD

### Annotation

MD ft	TVD ft	
6083.00	5994.73	300' Entry