



# Precision Directional Services, Inc.

## Planning Report

<b>Company:</b> CARRIZO NIOBRARA LLC, <b>Field:</b> Niobrara CONZ'83 <b>Site:</b> Shull 1-25-9-60 Pad <b>Well:</b> 4-25-9-60 <b>Wellpath:</b> Sidetrack	<b>Date:</b> 07/15/2013 <b>Co-ordinate(NE) Reference:</b> Well: 4-25-9-60, Grid North <b>Vertical (TVD) Reference:</b> 4943'GL+17'KB 4960.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,359.09Azi) <b>Plan:</b> Sidetrack	<b>Time:</b> 15:35:02 <b>Page:</b> 1
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<b>Field:</b> Niobrara CONZ'83  <b>Map System:</b> US State Plane Coordinate System 1983 <b>Geo Datum:</b> GRS 1980 <b>Sys Datum:</b> Mean Sea Level	<b>Map Zone:</b> Colorado, Northern Zone <b>Coordinate System:</b> Well Centre <b>Geomagnetic Model:</b> IGRF2010
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<b>Site:</b> Shull 1-25-9-60 Pad			
Weld County, CO			
<b>Site Position:</b>	<b>Northing:</b> 1511404.05 ft	<b>Latitude:</b> 40 43 40.724 N	
<b>From:</b> Map	<b>Easting:</b> 3406027.06 ft	<b>Longitude:</b> 104 2 6.064 W	
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid	
<b>Ground Level:</b> 4943.00 ft		<b>Grid Convergence:</b> 0.95 deg	

  

<b>Well:</b> 4-25-9-60 265FSL 1354FEL <b>Well Position:</b> +N/-S -4845.19 ft +E/-W 17.37 ft <b>Position Uncertainty:</b> 0.00 ft	<b>Slot Name:</b> 4-25  <b>Latitude:</b> 40 42 52.852 N <b>Longitude:</b> 104 2 6.878 W
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<b>Wellpath:</b> Sidetrack  <b>Current Datum:</b> 4943'GL+17'KB <b>Magnetic Data:</b> 07/13/2013 <b>Field Strength:</b> 53198 nT <b>Vertical Section:</b> Depth From (TVD) ft	<b>Height</b> 4960.00 ft	<b>Drilled From:</b> Original Hole <b>Tie-on Depth:</b> 1417.00 ft <b>Above System Datum:</b> Mean Sea Level <b>Declination:</b> 8.21 deg <b>Mag Dip Angle:</b> 67.36 deg <b>+E/-W</b> ft <b>Direction</b> deg
0.00	0.00	0.00 359.09

  

<b>Plan:</b> Sidetrack  <b>Principal:</b> No	<b>Date Composed:</b> 07/12/2013 <b>Version:</b> 1 <b>Tied-to:</b> From: Definitive Path
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Plan Section Information										
MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
1417.00	6.10	251.10	1409.61	-42.92	-123.55	0.00	0.00	0.00	0.00	
1509.00	6.10	251.10	1501.09	-46.08	-132.80	0.00	0.00	0.00	0.00	
1538.00	4.25	235.26	1529.97	-47.20	-135.14	8.00	-6.37	-54.63	210.00	
1663.98	8.00	240.00	1655.21	-54.24	-146.57	3.00	2.98	3.77	10.06	
2383.98	8.00	240.00	2368.20	-104.34	-233.35	0.00	0.00	0.00	0.00	
2564.52	8.00	253.00	2547.00	-114.30	-256.25	1.00	0.00	7.20	96.44	
5593.50	8.00	253.00	5546.50	-237.55	-659.38	0.00	0.00	0.00	0.00	
5923.89	40.00	280.00	5844.95	-225.50	-789.57	10.00	9.69	8.17	32.36	
6654.39	90.00	343.00	6170.00	227.64	-1182.23	10.00	6.84	8.62	68.68	
7194.61	90.00	359.21	6170.00	759.59	-1265.50	3.00	0.00	3.00	90.00	
10840.77	90.00	359.21	6170.00	4405.40	-1315.98	0.00	0.00	0.00	0.00	PBHL 4-25

  

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
1417.00	6.10	251.10	1409.61	-42.92	-123.55	-40.95	0.00	0.00	0.00	
1509.00	6.10	251.10	1501.09	-46.08	-132.80	-43.97	0.00	0.00	0.00	
1517.00	5.55	247.79	1509.05	-46.37	-133.56	-44.24	8.00	-6.81	-41.34	
1538.00	4.25	235.26	1529.97	-47.20	-135.14	-45.04	8.00	-6.21	-59.70	
1617.00	6.60	238.86	1608.61	-51.21	-141.43	-48.96	3.00	2.97	4.56	
1663.98	8.00	240.00	1655.21	-54.24	-146.57	-51.91	3.00	2.98	2.43	
1717.00	8.00	240.00	1707.71	-57.93	-152.96	-55.50	0.00	0.00	0.00	
1817.00	8.00	240.00	1806.74	-64.89	-165.01	-62.26	0.00	0.00	0.00	
1917.00	8.00	240.00	1905.77	-71.85	-177.07	-69.03	0.00	0.00	0.00	
2017.00	8.00	240.00	2004.79	-78.81	-189.12	-75.79	0.00	0.00	0.00	
2117.00	8.00	240.00	2103.82	-85.77	-201.17	-82.56	0.00	0.00	0.00	

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## Planning Report

**Company:** CARRIZO NIOBRARA LLC,  
**Field:** Niobrara CONZ'83  
**Site:** Shull 1-25-9-60 Pad  
**Well:** 4-25-9-60  
**Wellpath:** Sidetrack

**Date:** 07/15/2013 **Time:** 15:35:02  
**Co-ordinate(NE) Reference:** Well: 4-25-9-60, Grid North  
**Vertical (TVD) Reference:** 4943'GL+17'KB 4960.0  
**Section (VS) Reference:** Well (0.00N,0.00E,359.09Azi)  
**Plan:** Sidetrack

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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
2217.00	8.00	240.00	2202.85	-92.73	-213.22	-89.33	0.00	0.00	0.00	
2317.00	8.00	240.00	2301.87	-99.68	-225.28	-96.09	0.00	0.00	0.00	
2383.98	8.00	240.00	2368.20	-104.34	-233.35	-100.63	0.00	0.00	0.00	
2417.00	7.97	242.37	2400.90	-106.56	-237.37	-102.77	1.00	-0.09	7.17	
2517.00	7.96	249.59	2499.94	-112.19	-250.00	-108.20	1.00	-0.01	7.22	
2564.52	8.00	253.00	2547.00	-114.30	-256.25	-110.22	1.00	0.08	7.18	
2617.00	8.00	253.00	2598.97	-116.44	-263.23	-112.24	0.00	0.00	0.00	
2717.00	8.00	253.00	2698.00	-120.50	-276.54	-116.10	0.00	0.00	0.00	
2817.00	8.00	253.00	2797.02	-124.57	-289.85	-119.95	0.00	0.00	0.00	
2917.00	8.00	253.00	2896.05	-128.64	-303.16	-123.81	0.00	0.00	0.00	
3017.00	8.00	253.00	2995.08	-132.71	-316.47	-127.67	0.00	0.00	0.00	
3117.00	8.00	253.00	3094.10	-136.78	-329.78	-131.53	0.00	0.00	0.00	
3217.00	8.00	253.00	3193.13	-140.85	-343.09	-135.38	0.00	0.00	0.00	
3317.00	8.00	253.00	3292.16	-144.92	-356.40	-139.24	0.00	0.00	0.00	
3417.00	8.00	253.00	3391.18	-148.99	-369.70	-143.10	0.00	0.00	0.00	
3517.00	8.00	253.00	3490.21	-153.06	-383.01	-146.95	0.00	0.00	0.00	
3617.00	8.00	253.00	3589.24	-157.13	-396.32	-150.81	0.00	0.00	0.00	
3717.00	8.00	253.00	3688.26	-161.19	-409.63	-154.67	0.00	0.00	0.00	
3817.00	8.00	253.00	3787.29	-165.26	-422.94	-158.53	0.00	0.00	0.00	
3917.00	8.00	253.00	3886.32	-169.33	-436.25	-162.38	0.00	0.00	0.00	
4017.00	8.00	253.00	3985.34	-173.40	-449.56	-166.24	0.00	0.00	0.00	
4117.00	8.00	253.00	4084.37	-177.47	-462.87	-170.10	0.00	0.00	0.00	
4217.00	8.00	253.00	4183.40	-181.54	-476.18	-173.95	0.00	0.00	0.00	
4317.00	8.00	253.00	4282.43	-185.61	-489.49	-177.81	0.00	0.00	0.00	
4417.00	8.00	253.00	4381.45	-189.68	-502.80	-181.67	0.00	0.00	0.00	
4517.00	8.00	253.00	4480.48	-193.75	-516.11	-185.53	0.00	0.00	0.00	
4617.00	8.00	253.00	4579.51	-197.82	-529.41	-189.38	0.00	0.00	0.00	
4717.00	8.00	253.00	4678.53	-201.89	-542.72	-193.24	0.00	0.00	0.00	
4817.00	8.00	253.00	4777.56	-205.95	-556.03	-197.10	0.00	0.00	0.00	
4917.00	8.00	253.00	4876.59	-210.02	-569.34	-200.95	0.00	0.00	0.00	
5017.00	8.00	253.00	4975.61	-214.09	-582.65	-204.81	0.00	0.00	0.00	
5117.00	8.00	253.00	5074.64	-218.16	-595.96	-208.67	0.00	0.00	0.00	
5217.00	8.00	253.00	5173.67	-222.23	-609.27	-212.53	0.00	0.00	0.00	
5317.00	8.00	253.00	5272.69	-226.30	-622.58	-216.38	0.00	0.00	0.00	
5417.00	8.00	253.00	5371.72	-230.37	-635.89	-220.24	0.00	0.00	0.00	
5517.00	8.00	253.00	5470.75	-234.44	-649.20	-224.10	0.00	0.00	0.00	
5593.50	8.00	253.00	5546.50	-237.55	-659.38	-227.05	0.00	0.00	0.00	
5617.00	10.06	260.22	5569.71	-238.38	-662.97	-227.82	10.00	8.78	30.70	
5717.00	19.57	272.98	5666.30	-238.99	-688.37	-228.03	10.00	9.51	12.76	
5817.00	29.40	277.49	5757.20	-234.91	-729.54	-223.29	10.00	9.83	4.51	
5917.00	39.32	279.87	5839.65	-226.26	-785.23	-213.76	10.00	9.91	2.38	
5923.89	40.00	280.00	5844.95	-225.50	-789.57	-212.93	10.00	9.93	1.83	
6017.00	44.10	292.51	5914.20	-207.86	-849.10	-194.35	10.00	4.40	13.43	
6117.00	49.78	303.79	5982.57	-173.22	-913.14	-158.70	10.00	5.68	11.28	
6217.00	56.38	313.20	6042.69	-123.36	-975.38	-107.86	10.00	6.60	9.41	
6317.00	63.59	321.21	6092.73	-59.79	-1033.94	-43.37	10.00	7.21	8.01	
6345.67	65.74	323.31	6105.00	-39.30	-1049.80	-22.62	10.00	7.49	7.33	7"
6417.00	71.19	328.25	6131.18	15.55	-1087.04	32.81	10.00	7.65	6.93	
6517.00	79.04	334.67	6156.87	100.38	-1133.06	118.37	10.00	7.84	6.42	
6617.00	87.01	340.76	6169.02	192.13	-1170.61	210.70	10.00	7.97	6.09	
6654.39	90.00	343.00	6170.00	227.64	-1182.23	246.39	10.00	8.01	5.99	
6717.00	90.00	344.88	6170.00	287.81	-1199.55	306.82	3.00	0.00	3.00	
6817.00	90.00	347.88	6170.00	384.99	-1223.10	404.36	3.00	0.00	3.00	
6917.00	90.00	350.88	6170.00	483.26	-1241.53	502.92	3.00	0.00	3.00	

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## Planning Report

<b>Company:</b> CARRIZO NIOBRARA LLC, <b>Field:</b> Niobrara CONZ'83 <b>Site:</b> Shull 1-25-9-60 Pad <b>Well:</b> 4-25-9-60 <b>Wellpath:</b> Sidetrack	<b>Date:</b> 07/15/2013 <b>Time:</b> 15:35:02 <b>Page:</b> 3 <b>Co-ordinate(NE) Reference:</b> Well: 4-25-9-60, Grid North <b>Vertical (TVD) Reference:</b> 4943'GL+17'KB 4960.0 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,359.09Azi) <b>Plan:</b> Sidetrack
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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
7017.00	90.00	353.88	6170.00	582.37	-1254.79	602.22	3.00	0.00	3.00	
7117.00	90.00	356.88	6170.00	682.03	-1262.85	702.00	3.00	0.00	3.00	
7194.61	90.00	359.21	6170.00	759.59	-1265.50	779.59	3.00	0.00	3.00	
7217.00	90.00	359.21	6170.00	781.98	-1265.81	801.98	0.00	0.00	0.00	
7317.00	90.00	359.21	6170.00	881.97	-1267.19	901.98	0.00	0.00	0.00	
7417.00	90.00	359.21	6170.00	981.96	-1268.58	1001.98	0.00	0.00	0.00	
7517.00	90.00	359.21	6170.00	1081.95	-1269.96	1101.98	0.00	0.00	0.00	
7617.00	90.00	359.21	6170.00	1181.94	-1271.35	1201.98	0.00	0.00	0.00	
7717.00	90.00	359.21	6170.00	1281.93	-1272.73	1301.98	0.00	0.00	0.00	
7817.00	90.00	359.21	6170.00	1381.92	-1274.11	1401.98	0.00	0.00	0.00	
7917.00	90.00	359.21	6170.00	1481.91	-1275.50	1501.98	0.00	0.00	0.00	
8017.00	90.00	359.21	6170.00	1581.90	-1276.88	1601.98	0.00	0.00	0.00	
8117.00	90.00	359.21	6170.00	1681.89	-1278.27	1701.98	0.00	0.00	0.00	
8217.00	90.00	359.21	6170.00	1781.88	-1279.65	1801.98	0.00	0.00	0.00	
8317.00	90.00	359.21	6170.00	1881.87	-1281.04	1901.98	0.00	0.00	0.00	
8417.00	90.00	359.21	6170.00	1981.86	-1282.42	2001.98	0.00	0.00	0.00	
8517.00	90.00	359.21	6170.00	2081.85	-1283.81	2101.98	0.00	0.00	0.00	
8617.00	90.00	359.21	6170.00	2181.84	-1285.19	2201.98	0.00	0.00	0.00	
8717.00	90.00	359.21	6170.00	2281.83	-1286.58	2301.98	0.00	0.00	0.00	
8817.00	90.00	359.21	6170.00	2381.82	-1287.96	2401.98	0.00	0.00	0.00	
8917.00	90.00	359.21	6170.00	2481.81	-1289.34	2501.98	0.00	0.00	0.00	
9017.00	90.00	359.21	6170.00	2581.80	-1290.73	2601.98	0.00	0.00	0.00	
9117.00	90.00	359.21	6170.00	2681.79	-1292.11	2701.98	0.00	0.00	0.00	
9217.00	90.00	359.21	6170.00	2781.79	-1293.50	2801.98	0.00	0.00	0.00	
9317.00	90.00	359.21	6170.00	2881.78	-1294.88	2901.98	0.00	0.00	0.00	
9417.00	90.00	359.21	6170.00	2981.77	-1296.27	3001.98	0.00	0.00	0.00	
9517.00	90.00	359.21	6170.00	3081.76	-1297.65	3101.98	0.00	0.00	0.00	
9617.00	90.00	359.21	6170.00	3181.75	-1299.04	3201.98	0.00	0.00	0.00	
9717.00	90.00	359.21	6170.00	3281.74	-1300.42	3301.98	0.00	0.00	0.00	
9817.00	90.00	359.21	6170.00	3381.73	-1301.81	3401.98	0.00	0.00	0.00	
9917.00	90.00	359.21	6170.00	3481.72	-1303.19	3501.98	0.00	0.00	0.00	
10017.00	90.00	359.21	6170.00	3581.71	-1304.57	3601.98	0.00	0.00	0.00	
10117.00	90.00	359.21	6170.00	3681.70	-1305.96	3701.98	0.00	0.00	0.00	
10217.00	90.00	359.21	6170.00	3781.69	-1307.34	3801.98	0.00	0.00	0.00	
10317.00	90.00	359.21	6170.00	3881.68	-1308.73	3901.98	0.00	0.00	0.00	
10417.00	90.00	359.21	6170.00	3981.67	-1310.11	4001.97	0.00	0.00	0.00	
10517.00	90.00	359.21	6170.00	4081.66	-1311.50	4101.97	0.00	0.00	0.00	
10617.00	90.00	359.21	6170.00	4181.65	-1312.88	4201.97	0.00	0.00	0.00	
10717.00	90.00	359.21	6170.00	4281.64	-1314.27	4301.97	0.00	0.00	0.00	
10817.00	90.00	359.21	6170.00	4381.63	-1315.65	4401.97	0.00	0.00	0.00	
10840.77	90.00	359.21	6170.00	4405.40	-1315.98	4425.74	0.00	0.00	0.00	PBHL 4-25

### Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ---->			<--- Longitude --->		
SL 4-25			0.00	0.00	0.00	1506558.86	3406044.43	40	42	52.852 N	104	2	6.878 W
PBHL 4-25			6170.00	4405.40	-1315.98	1510964.26	3404728.45	40	43	36.591 N	104	2	23.023 W

# Precision Directional Services, Inc.

## Planning Report

**Company:** CARRIZO NIOBRARA LLC,  
**Field:** Niobrara CONZ'83  
**Site:** Shull 1-25-9-60 Pad  
**Well:** 4-25-9-60  
**Wellpath:** Sidetrack

**Date:** 07/15/2013  
**Co-ordinate(NE) Reference:** Well: 4-25-9-60, Grid North  
**Vertical (TVD) Reference:** 4943'GL+17'KB 4960.0  
**Section (VS) Reference:** Well (0.00N,0.00E,359.09Azi)  
**Plan:** Sidetrack

**Page:** 4

### Casing Points

MD ft	TVD ft	Diameter in	Hole Size in	Name
1405.00	1397.68	9.625	12.250	9 5/8"
6345.67	6105.00	7.000	8.500	7"