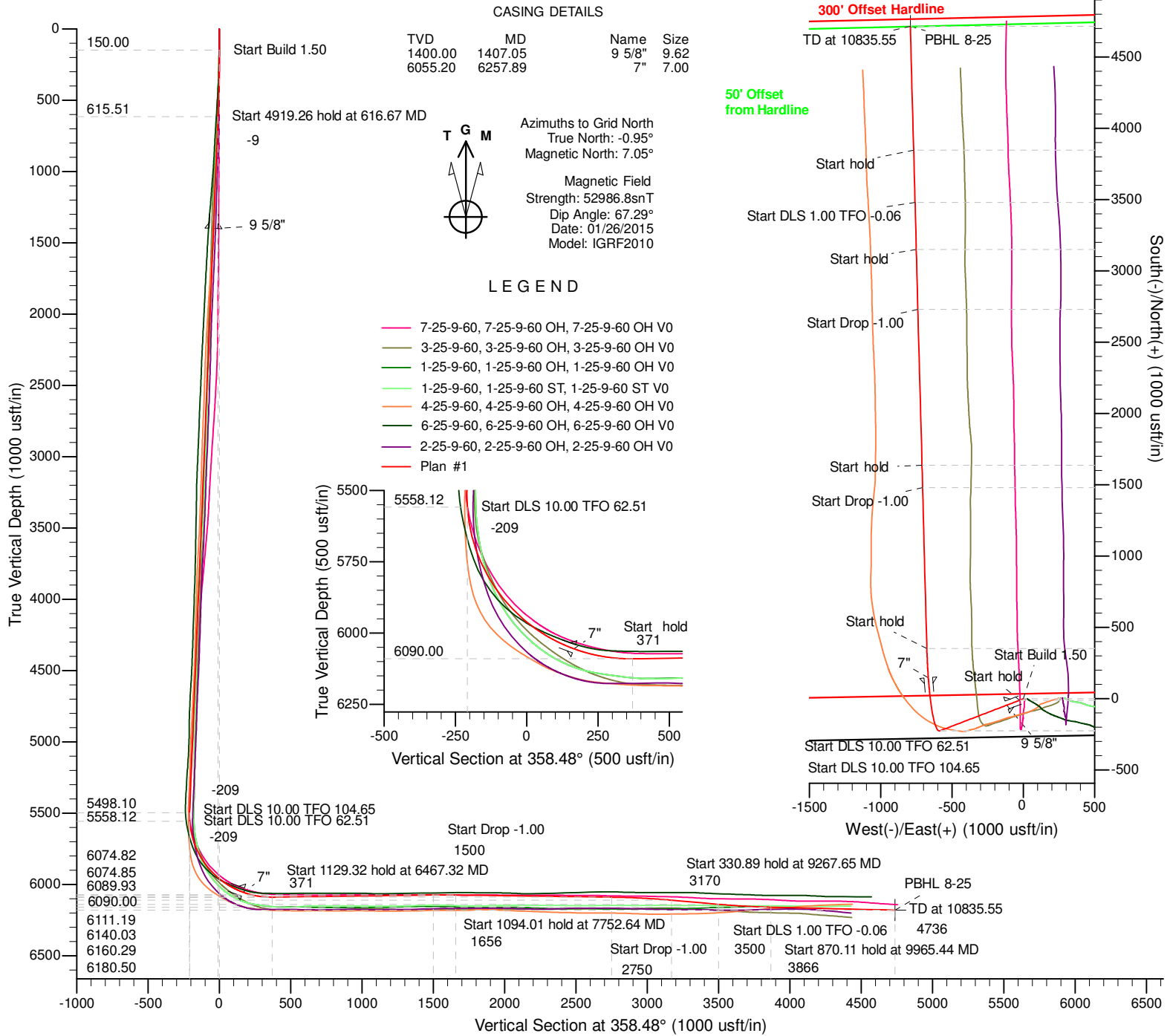




Project: Niobrara CON'83
County: Weld
Site: Shull 25-9-60 Pad
Well: 8-25-9-60
Wellbore: 8-25-9-60 OH
Design: Plan #1



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL 8-25	6180.50	4716.81	-791.85	1511270.76	3405007.26	40° 43' 39.60 N	104° 2' 19.25 W	Point

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	150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	
3	616.67	7.00	249.00	615.51	-10.20	-26.58	1.50	249.00	-9.49	
4	5535.93	7.00	249.00	5498.10	-225.05	-586.27	0.00	0.00	-209.42	
5	5596.42	8.00	296.10	5558.12	-224.52	-593.50	10.00	104.65	-208.69	
6	6467.32	90.77	358.48	6090.00	353.07	-675.99	10.00	62.51	370.88	
7	7596.64	90.77	358.48	6074.82	1481.89	-705.94	0.00	0.00	1500.10	
8	7752.64	89.21	358.48	6074.85	1637.83	-710.08	1.00	180.00	1656.09	
9	8846.65	89.21	358.48	6089.93	2731.36	-739.10	0.00	0.00	2750.00	
10	9267.65	85.00	358.48	6111.19	3151.58	-750.25	1.00	180.00	3170.37	
11	9598.54	85.00	358.48	6140.03	3481.09	-758.99	0.00	0.00	3500.00	
12	9965.44	88.67	358.48	6160.29	3847.24	-768.72	1.00	-0.06	3866.28	
13	10835.55	88.67	358.48	6180.50	4716.81	-791.85	0.00	0.00	4736.15	PBHL 8-25

Titan Directional Drilling, LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 8-25-9-60
Company:	Carrizo Oil & Gas, Inc.	TVD Reference:	GL+KB @ 4904.00usft (Xtreme 19)
Project:	Niobrara CON'83	MD Reference:	GL+KB @ 4904.00usft (Xtreme 19)
Site:	Shull 25-9-60 Pad	North Reference:	Grid
Well:	8-25-9-60	Survey Calculation Method:	Minimum Curvature
Wellbore:	8-25-9-60 OH		
Design:	Plan #1		

Project	Niobrara CON'83,		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Shull 25-9-60 Pad, Centered on 6-25-9-60			
Site Position:		Northing:	1,506,554.60 usft	Latitude: 40° 42' 52.87 N
From: Map		Easting:	3,405,828.40 usft	Longitude: 104° 2' 9.59 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence: 0.95 °

Well	8-25-9-60			
Well Position	+N/-S	-0.60 usft	Northing:	1,506,554.00 usft
	+E/-W	-29.30 usft	Easting:	3,405,799.10 usft
Position Uncertainty	0.00 usft		Wellhead Elevation:	4,904.00 usft
			Ground Level:	4,887.00 usft

Wellbore	8-25-9-60 OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	01/26/15	8.00	67.29	52,987

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	358.48

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00	
616.67	7.00	249.00	615.51	-10.20	-26.58	1.50	1.50	0.00	249.00	
5,535.93	7.00	249.00	5,498.10	-225.05	-586.27	0.00	0.00	0.00	0.00	
5,596.42	8.00	296.10	5,558.12	-224.52	-593.50	10.00	1.65	77.87	104.65	
6,467.32	90.77	358.48	6,090.00	353.07	-675.99	10.00	9.50	7.16	62.51	
7,596.64	90.77	358.48	6,074.82	1,481.89	-705.94	0.00	0.00	0.00	0.00	
7,752.64	89.21	358.48	6,074.85	1,637.83	-710.08	1.00	-1.00	0.00	180.00	
8,846.65	89.21	358.48	6,089.93	2,731.36	-739.10	0.00	0.00	0.00	0.00	
9,267.65	85.00	358.48	6,111.19	3,151.58	-750.25	1.00	-1.00	0.00	180.00	
9,598.54	85.00	358.48	6,140.03	3,481.09	-758.99	0.00	0.00	0.00	0.00	
9,965.44	88.67	358.48	6,160.29	3,847.24	-768.72	1.00	1.00	0.00	-0.06	
10,835.55	88.67	358.48	6,180.50	4,716.81	-791.85	0.00	0.00	0.00	0.00	PBHL 8-25

Titan Directional Drilling, LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 8-25-9-60
Company:	Carrizo Oil & Gas, Inc.	TVD Reference:	GL+KB @ 4904.00usft (Xtreme 19)
Project:	Niobrara CON'83	MD Reference:	GL+KB @ 4904.00usft (Xtreme 19)
Site:	Shull 25-9-60 Pad	North Reference:	Grid
Well:	8-25-9-60	Survey Calculation Method:	Minimum Curvature
Wellbore:	8-25-9-60 OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.75	249.00	200.00	-0.12	-0.31	-0.11	1.50	1.50	0.00
300.00	2.25	249.00	299.96	-1.06	-2.75	-0.98	1.50	1.50	0.00
400.00	3.75	249.00	399.82	-2.93	-7.64	-2.73	1.50	1.50	0.00
500.00	5.25	249.00	499.51	-5.74	-14.96	-5.34	1.50	1.50	0.00
600.00	6.75	249.00	598.96	-9.49	-24.72	-8.83	1.50	1.50	0.00
616.67	7.00	249.00	615.51	-10.20	-26.58	-9.49	1.50	1.50	0.00
700.00	7.00	249.00	698.22	-13.84	-36.06	-12.88	0.00	0.00	0.00
800.00	7.00	249.00	797.47	-18.21	-47.44	-16.95	0.00	0.00	0.00
900.00	7.00	249.00	896.73	-22.58	-58.82	-21.01	0.00	0.00	0.00
1,000.00	7.00	249.00	995.98	-26.95	-70.19	-25.07	0.00	0.00	0.00
1,100.00	7.00	249.00	1,095.24	-31.31	-81.57	-29.14	0.00	0.00	0.00
1,200.00	7.00	249.00	1,194.49	-35.68	-92.95	-33.20	0.00	0.00	0.00
1,300.00	7.00	249.00	1,293.75	-40.05	-104.33	-37.27	0.00	0.00	0.00
1,400.00	7.00	249.00	1,393.00	-44.41	-115.70	-41.33	0.00	0.00	0.00
1,407.05	7.00	249.00	1,400.00	-44.72	-116.51	-41.62	0.00	0.00	0.00
9 5/8"									
1,500.00	7.00	249.00	1,492.26	-48.78	-127.08	-45.39	0.00	0.00	0.00
1,600.00	7.00	249.00	1,591.51	-53.15	-138.46	-49.46	0.00	0.00	0.00
1,700.00	7.00	249.00	1,690.76	-57.52	-149.84	-53.52	0.00	0.00	0.00
1,800.00	7.00	249.00	1,790.02	-61.88	-161.21	-57.59	0.00	0.00	0.00
1,900.00	7.00	249.00	1,889.27	-66.25	-172.59	-61.65	0.00	0.00	0.00
2,000.00	7.00	249.00	1,988.53	-70.62	-183.97	-65.71	0.00	0.00	0.00
2,100.00	7.00	249.00	2,087.78	-74.99	-195.35	-69.78	0.00	0.00	0.00
2,200.00	7.00	249.00	2,187.04	-79.35	-206.72	-73.84	0.00	0.00	0.00
2,300.00	7.00	249.00	2,286.29	-83.72	-218.10	-77.91	0.00	0.00	0.00
2,400.00	7.00	249.00	2,385.55	-88.09	-229.48	-81.97	0.00	0.00	0.00
2,500.00	7.00	249.00	2,484.80	-92.46	-240.86	-86.03	0.00	0.00	0.00
2,600.00	7.00	249.00	2,584.06	-96.82	-252.23	-90.10	0.00	0.00	0.00
2,700.00	7.00	249.00	2,683.31	-101.19	-263.61	-94.16	0.00	0.00	0.00
2,800.00	7.00	249.00	2,782.57	-105.56	-274.99	-98.23	0.00	0.00	0.00
2,900.00	7.00	249.00	2,881.82	-109.93	-286.37	-102.29	0.00	0.00	0.00
3,000.00	7.00	249.00	2,981.07	-114.29	-297.74	-106.36	0.00	0.00	0.00
3,100.00	7.00	249.00	3,080.33	-118.66	-309.12	-110.42	0.00	0.00	0.00
3,200.00	7.00	249.00	3,179.58	-123.03	-320.50	-114.48	0.00	0.00	0.00
3,300.00	7.00	249.00	3,278.84	-127.40	-331.88	-118.55	0.00	0.00	0.00
3,400.00	7.00	249.00	3,378.09	-131.76	-343.25	-122.61	0.00	0.00	0.00
3,500.00	7.00	249.00	3,477.35	-136.13	-354.63	-126.68	0.00	0.00	0.00
3,600.00	7.00	249.00	3,576.60	-140.50	-366.01	-130.74	0.00	0.00	0.00
3,700.00	7.00	249.00	3,675.86	-144.87	-377.39	-134.80	0.00	0.00	0.00
3,800.00	7.00	249.00	3,775.11	-149.23	-388.76	-138.87	0.00	0.00	0.00
3,900.00	7.00	249.00	3,874.37	-153.60	-400.14	-142.93	0.00	0.00	0.00
4,000.00	7.00	249.00	3,973.62	-157.97	-411.52	-147.00	0.00	0.00	0.00
4,100.00	7.00	249.00	4,072.88	-162.33	-422.90	-151.06	0.00	0.00	0.00
4,200.00	7.00	249.00	4,172.13	-166.70	-434.27	-155.12	0.00	0.00	0.00
4,300.00	7.00	249.00	4,271.39	-171.07	-445.65	-159.19	0.00	0.00	0.00
4,400.00	7.00	249.00	4,370.64	-175.44	-457.03	-163.25	0.00	0.00	0.00
4,500.00	7.00	249.00	4,469.89	-179.80	-468.41	-167.32	0.00	0.00	0.00
4,600.00	7.00	249.00	4,569.15	-184.17	-479.78	-171.38	0.00	0.00	0.00
4,700.00	7.00	249.00	4,668.40	-188.54	-491.16	-175.44	0.00	0.00	0.00
4,800.00	7.00	249.00	4,767.66	-192.91	-502.54	-179.51	0.00	0.00	0.00
4,900.00	7.00	249.00	4,866.91	-197.27	-513.92	-183.57	0.00	0.00	0.00

Titan Directional Drilling, LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 8-25-9-60
Company:	Carrizo Oil & Gas, Inc.	TVD Reference:	GL+KB @ 4904.00usft (Xtreme 19)
Project:	Niobrara CON'83	MD Reference:	GL+KB @ 4904.00usft (Xtreme 19)
Site:	Shull 25-9-60 Pad	North Reference:	Grid
Well:	8-25-9-60	Survey Calculation Method:	Minimum Curvature
Wellbore:	8-25-9-60 OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,000.00	7.00	249.00	4,966.17	-201.64	-525.29	-187.64	0.00	0.00	0.00
5,100.00	7.00	249.00	5,065.42	-206.01	-536.67	-191.70	0.00	0.00	0.00
5,200.00	7.00	249.00	5,164.68	-210.38	-548.05	-195.76	0.00	0.00	0.00
5,300.00	7.00	249.00	5,263.93	-214.74	-559.43	-199.83	0.00	0.00	0.00
5,400.00	7.00	249.00	5,363.19	-219.11	-570.80	-203.89	0.00	0.00	0.00
5,500.00	7.00	249.00	5,462.44	-223.48	-582.18	-207.96	0.00	0.00	0.00
5,535.93	7.00	249.00	5,498.10	-225.05	-586.27	-209.42	0.00	0.00	0.00
5,596.42	8.00	296.10	5,558.12	-224.52	-593.50	-208.69	10.00	1.65	77.87
5,600.00	8.17	298.34	5,561.67	-224.29	-593.94	-208.45	10.00	4.79	62.41
5,700.00	15.72	332.15	5,659.54	-208.89	-606.56	-192.73	10.00	7.55	33.82
5,800.00	25.03	342.93	5,753.22	-176.61	-619.13	-160.13	10.00	9.31	10.78
5,900.00	34.70	348.03	5,839.85	-128.42	-631.27	-111.63	10.00	9.68	5.11
6,000.00	44.51	351.11	5,916.80	-65.78	-642.62	-48.72	10.00	9.81	3.08
6,100.00	54.37	353.27	5,981.75	9.40	-652.82	26.71	10.00	9.86	2.16
6,200.00	64.27	354.95	6,032.72	94.84	-661.58	112.36	10.00	9.89	1.68
6,257.89	70.00	355.79	6,055.21	147.98	-665.87	165.59	10.00	9.91	1.46
7"									
6,300.00	74.17	356.36	6,068.15	187.95	-668.61	205.62	10.00	9.91	1.36
6,400.00	84.09	357.65	6,086.98	285.90	-673.72	303.67	10.00	9.92	1.28
6,467.32	90.77	358.48	6,090.00	353.07	-675.99	370.88	10.00	9.92	1.24
6,500.00	90.77	358.48	6,089.56	385.74	-676.86	403.56	0.00	0.00	0.00
6,600.00	90.77	358.48	6,088.22	485.70	-679.51	503.55	0.00	0.00	0.00
6,700.00	90.77	358.48	6,086.87	585.65	-682.16	603.54	0.00	0.00	0.00
6,800.00	90.77	358.48	6,085.53	685.61	-684.81	703.53	0.00	0.00	0.00
6,900.00	90.77	358.48	6,084.19	785.56	-687.47	803.52	0.00	0.00	0.00
7,000.00	90.77	358.48	6,082.84	885.52	-690.12	903.51	0.00	0.00	0.00
7,100.00	90.77	358.48	6,081.50	985.47	-692.77	1,003.50	0.00	0.00	0.00
7,200.00	90.77	358.48	6,080.15	1,085.43	-695.42	1,103.50	0.00	0.00	0.00
7,300.00	90.77	358.48	6,078.81	1,185.39	-698.08	1,203.49	0.00	0.00	0.00
7,400.00	90.77	358.48	6,077.47	1,285.34	-700.73	1,303.48	0.00	0.00	0.00
7,500.00	90.77	358.48	6,076.12	1,385.30	-703.38	1,403.47	0.00	0.00	0.00
7,596.64	90.77	358.48	6,074.82	1,481.89	-705.94	1,500.10	0.00	0.00	0.00
7,600.00	90.74	358.48	6,074.78	1,485.25	-706.03	1,503.46	1.00	-1.00	0.00
7,700.00	89.74	358.48	6,074.37	1,585.22	-708.68	1,603.46	1.00	-1.00	0.00
7,752.64	89.21	358.48	6,074.85	1,637.83	-710.08	1,656.09	1.00	-1.00	0.00
7,800.00	89.21	358.48	6,075.50	1,685.17	-711.34	1,703.45	0.00	0.00	0.00
7,900.00	89.21	358.48	6,076.88	1,785.13	-713.99	1,803.44	0.00	0.00	0.00
8,000.00	89.21	358.48	6,078.26	1,885.08	-716.64	1,903.43	0.00	0.00	0.00
8,100.00	89.21	358.48	6,079.64	1,985.04	-719.29	2,003.42	0.00	0.00	0.00
8,200.00	89.21	358.48	6,081.02	2,085.00	-721.95	2,103.41	0.00	0.00	0.00
8,300.00	89.21	358.48	6,082.40	2,184.95	-724.60	2,203.40	0.00	0.00	0.00
8,400.00	89.21	358.48	6,083.78	2,284.91	-727.25	2,303.39	0.00	0.00	0.00
8,500.00	89.21	358.48	6,085.16	2,384.86	-729.90	2,403.38	0.00	0.00	0.00
8,600.00	89.21	358.48	6,086.53	2,484.82	-732.56	2,503.37	0.00	0.00	0.00
8,700.00	89.21	358.48	6,087.91	2,584.77	-735.21	2,603.36	0.00	0.00	0.00
8,800.00	89.21	358.48	6,089.29	2,684.73	-737.86	2,703.36	0.00	0.00	0.00
8,846.65	89.21	358.48	6,089.93	2,731.36	-739.10	2,750.00	0.00	0.00	0.00
8,900.00	88.68	358.48	6,090.92	2,784.68	-740.51	2,803.34	1.00	-1.00	0.00
9,000.00	87.68	358.48	6,094.10	2,884.59	-743.16	2,903.29	1.00	-1.00	0.00
9,100.00	86.68	358.48	6,099.03	2,984.43	-745.81	3,003.17	1.00	-1.00	0.00
9,200.00	85.68	358.48	6,105.69	3,084.17	-748.46	3,102.94	1.00	-1.00	0.00
9,267.65	85.00	358.48	6,111.19	3,151.58	-750.25	3,170.37	1.00	-1.00	0.00
9,300.00	85.00	358.48	6,114.01	3,183.79	-751.10	3,202.60	0.00	0.00	0.00

Titan Directional Drilling, LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 8-25-9-60
Company:	Carrizo Oil & Gas, Inc.	TVD Reference:	GL+KB @ 4904.00usft (Xtreme 19)
Project:	Niobrara CON'83	MD Reference:	GL+KB @ 4904.00usft (Xtreme 19)
Site:	Shull 25-9-60 Pad	North Reference:	Grid
Well:	8-25-9-60	Survey Calculation Method:	Minimum Curvature
Wellbore:	8-25-9-60 OH		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
9,400.00	85.00	358.48	6,122.73	3,283.38	-753.75	3,302.22	0.00	0.00	0.00	
9,500.00	85.00	358.48	6,131.44	3,382.96	-756.39	3,401.83	0.00	0.00	0.00	
9,598.54	85.00	358.48	6,140.03	3,481.09	-758.99	3,500.00	0.00	0.00	0.00	
9,600.00	85.01	358.48	6,140.16	3,482.55	-759.03	3,501.45	1.00	1.00	0.00	
9,700.00	86.01	358.48	6,147.98	3,582.20	-761.68	3,601.15	1.00	1.00	0.00	
9,800.00	87.01	358.48	6,154.06	3,681.98	-764.33	3,700.96	1.00	1.00	0.00	
9,900.00	88.01	358.48	6,158.40	3,781.85	-766.98	3,800.86	1.00	1.00	0.00	
9,965.44	88.67	358.48	6,160.29	3,847.24	-768.72	3,866.28	1.00	1.00	0.00	
10,000.00	88.67	358.48	6,161.09	3,881.78	-769.64	3,900.83	0.00	0.00	0.00	
10,100.00	88.67	358.48	6,163.41	3,981.72	-772.30	4,000.80	0.00	0.00	0.00	
10,200.00	88.67	358.48	6,165.74	4,081.65	-774.95	4,100.77	0.00	0.00	0.00	
10,300.00	88.67	358.48	6,168.06	4,181.59	-777.61	4,200.75	0.00	0.00	0.00	
10,400.00	88.67	358.48	6,170.38	4,281.53	-780.27	4,300.72	0.00	0.00	0.00	
10,500.00	88.67	358.48	6,172.71	4,381.47	-782.93	4,400.69	0.00	0.00	0.00	
10,600.00	88.67	358.48	6,175.03	4,481.40	-785.59	4,500.67	0.00	0.00	0.00	
10,700.00	88.67	358.48	6,177.35	4,581.34	-788.25	4,600.64	0.00	0.00	0.00	
10,800.00	88.67	358.48	6,179.67	4,681.28	-790.90	4,700.61	0.00	0.00	0.00	
10,835.55	88.67	358.48	6,180.50	4,716.81	-791.85	4,736.15	0.00	0.00	0.00	

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL 8-25	0.00	0.00	6,180.50	4,716.81	-791.85	1,511,270.76	3,405,007.26	40° 43' 39.60 N	104° 2' 19.25 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,407.05	1,400.00	9 5/8"	9.62	12.25	
6,257.89	6,055.21	7"	7.00	7.50	