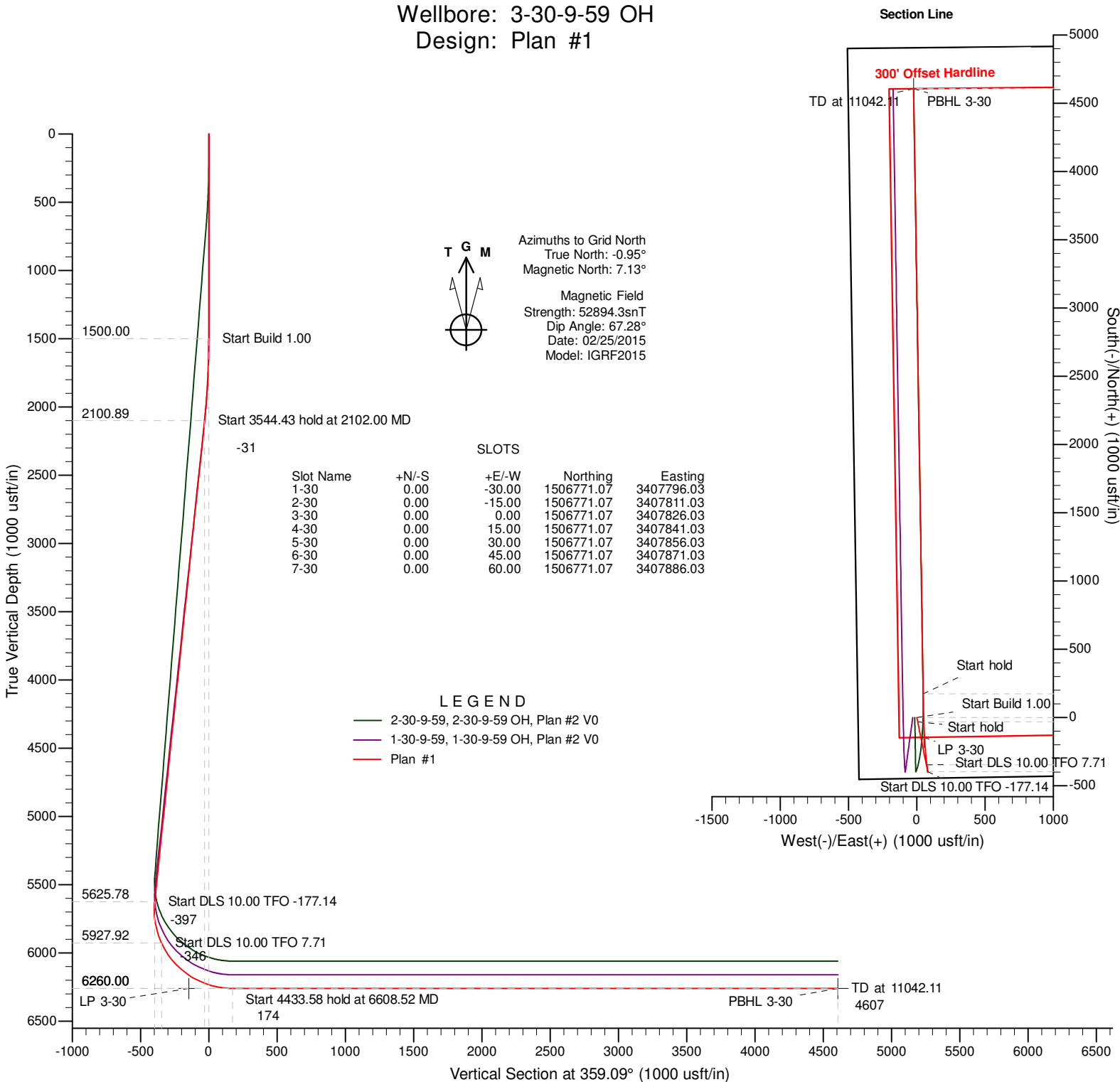




Project: Niobrara CON'83
County: Weld County, CO
Site: Ptasnik 1-30-9-59 Pad
Well: 3-30-9-59
Wellbore: 3-30-9-59 OH
Design: Plan #1



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
LP 3-30	6260.00	-144.75	51.37	1506626.32	3407877.40	40° 42' 53.25 N	104° 1' 42.97 W	Point
PBHL 3-30	6260.00	4607.59	-23.75	1511378.61	3407802.28	40° 43' 40.21 N	104° 1' 42.93 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	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	
3	2102.00	6.02	168.61	2100.89	-30.97	6.24	1.00	168.61	-31.07	
4	5646.43	6.02	168.61	5625.78	-395.38	79.65	0.00	0.00	-396.59	
5	5956.54	25.00	352.10	5927.92	-345.18	73.71	10.00	-177.14	-346.31	
6	6608.52	90.00	359.09	6260.00	174.56	46.61	10.00	7.71	173.80	
7	11042.11	90.00	359.09	6260.00	4607.59	-23.75	0.00	0.00	4607.38	PBHL 3-30

Titan Directional Drilling, LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3-30-9-59
Company:	Carrizo Oil & Gas, Inc.	TVD Reference:	GL+KB @ 4934.00usft (Xtreme 19)
Project:	Niobrara CON'83	MD Reference:	GL+KB @ 4934.00usft (Xtreme 19)
Site:	Ptasnik 1-30-9-59 Pad	North Reference:	Grid
Well:	3-30-9-59	Survey Calculation Method:	Minimum Curvature
Wellbore:	3-30-9-59 OH		
Design:	Plan #1		

Project	Niobrara CON'83, Weld County, CO		
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	Ptasnik 1-30-9-59 Pad,		
Site Position:		Northing:	1,506,771.07 usft
From:	Map	Easting:	3,407,796.03 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in
		Latitude:	40° 42' 54.69 N
		Longitude:	104° 1' 44.00 W
		Grid Convergence:	0.95 °

Well	3-30-9-59		
Well Position	+N/-S	0.00 usft	Northing: 1,506,771.07 usft
	+E/-W	30.00 usft	Easting: 3,407,826.03 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	40° 42' 54.69 N
		Longitude:	104° 1' 43.61 W
		Ground Level:	4,917.00 usft

Wellbore	3-30-9-59 OH		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	02/25/15	8.08
			Dip Angle (°)
			67.28
			Field Strength (nT)
			52,894

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°)
			359.09

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	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,102.00	6.02	168.61	2,100.89	-30.97	6.24	1.00	1.00	0.00	168.61	
5,646.43	6.02	168.61	5,625.78	-395.38	79.65	0.00	0.00	0.00	0.00	
5,956.54	25.00	352.10	5,927.92	-345.18	73.71	10.00	6.12	-56.92	-177.14	
6,608.52	90.00	359.09	6,260.00	174.56	46.61	10.00	9.97	1.07	7.71	
11,042.11	90.00	359.09	6,260.00	4,607.59	-23.75	0.00	0.00	0.00	0.00	PBHL 3-30

Titan Directional Drilling, LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3-30-9-59
Company:	Carrizo Oil & Gas, Inc.	TVD Reference:	GL+KB @ 4934.00usft (Xtreme 19)
Project:	Niobrara CON'83	MD Reference:	GL+KB @ 4934.00usft (Xtreme 19)
Site:	Ptasnik 1-30-9-59 Pad	North Reference:	Grid
Well:	3-30-9-59	Survey Calculation Method:	Minimum Curvature
Wellbore:	3-30-9-59 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
200.00	0.00	0.00	200.00	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
400.00	0.00	0.00	400.00	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
600.00	0.00	0.00	600.00	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
800.00	0.00	0.00	800.00	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
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	1.00	168.61	1,599.99	-0.86	0.17	-0.86	1.00	1.00	0.00
1,700.00	2.00	168.61	1,699.96	-3.42	0.69	-3.43	1.00	1.00	0.00
1,800.00	3.00	168.61	1,799.86	-7.70	1.55	-7.72	1.00	1.00	0.00
1,900.00	4.00	168.61	1,899.68	-13.68	2.76	-13.72	1.00	1.00	0.00
2,000.00	5.00	168.61	1,999.37	-21.37	4.31	-21.44	1.00	1.00	0.00
2,100.00	6.00	168.61	2,098.90	-30.77	6.20	-30.86	1.00	1.00	0.00
2,102.00	6.02	168.61	2,100.89	-30.97	6.24	-31.07	1.00	1.00	0.00
2,200.00	6.02	168.61	2,198.35	-41.05	8.27	-41.18	0.00	0.00	0.00
2,300.00	6.02	168.61	2,297.80	-51.33	10.34	-51.49	0.00	0.00	0.00
2,400.00	6.02	168.61	2,397.25	-61.61	12.41	-61.80	0.00	0.00	0.00
2,500.00	6.02	168.61	2,496.70	-71.89	14.48	-72.11	0.00	0.00	0.00
2,600.00	6.02	168.61	2,596.15	-82.17	16.55	-82.43	0.00	0.00	0.00
2,700.00	6.02	168.61	2,695.60	-92.45	18.63	-92.74	0.00	0.00	0.00
2,800.00	6.02	168.61	2,795.04	-102.74	20.70	-103.05	0.00	0.00	0.00
2,900.00	6.02	168.61	2,894.49	-113.02	22.77	-113.36	0.00	0.00	0.00
3,000.00	6.02	168.61	2,993.94	-123.30	24.84	-123.68	0.00	0.00	0.00
3,100.00	6.02	168.61	3,093.39	-133.58	26.91	-133.99	0.00	0.00	0.00
3,200.00	6.02	168.61	3,192.84	-143.86	28.98	-144.30	0.00	0.00	0.00
3,300.00	6.02	168.61	3,292.29	-154.14	31.05	-154.61	0.00	0.00	0.00
3,400.00	6.02	168.61	3,391.74	-164.42	33.12	-164.93	0.00	0.00	0.00
3,500.00	6.02	168.61	3,491.18	-174.70	35.19	-175.24	0.00	0.00	0.00
3,600.00	6.02	168.61	3,590.63	-184.98	37.27	-185.55	0.00	0.00	0.00
3,700.00	6.02	168.61	3,690.08	-195.27	39.34	-195.87	0.00	0.00	0.00
3,800.00	6.02	168.61	3,789.53	-205.55	41.41	-206.18	0.00	0.00	0.00
3,900.00	6.02	168.61	3,888.98	-215.83	43.48	-216.49	0.00	0.00	0.00
4,000.00	6.02	168.61	3,988.43	-226.11	45.55	-226.80	0.00	0.00	0.00
4,100.00	6.02	168.61	4,087.87	-236.39	47.62	-237.12	0.00	0.00	0.00
4,200.00	6.02	168.61	4,187.32	-246.67	49.69	-247.43	0.00	0.00	0.00
4,300.00	6.02	168.61	4,286.77	-256.95	51.76	-257.74	0.00	0.00	0.00
4,400.00	6.02	168.61	4,386.22	-267.23	53.83	-268.05	0.00	0.00	0.00
4,500.00	6.02	168.61	4,485.67	-277.51	55.91	-278.37	0.00	0.00	0.00
4,600.00	6.02	168.61	4,585.12	-287.79	57.98	-288.68	0.00	0.00	0.00
4,700.00	6.02	168.61	4,684.57	-298.08	60.05	-298.99	0.00	0.00	0.00
4,800.00	6.02	168.61	4,784.01	-308.36	62.12	-309.30	0.00	0.00	0.00
4,900.00	6.02	168.61	4,883.46	-318.64	64.19	-319.62	0.00	0.00	0.00
5,000.00	6.02	168.61	4,982.91	-328.92	66.26	-329.93	0.00	0.00	0.00
5,100.00	6.02	168.61	5,082.36	-339.20	68.33	-340.24	0.00	0.00	0.00
5,200.00	6.02	168.61	5,181.81	-349.48	70.40	-350.55	0.00	0.00	0.00

Titan Directional Drilling, LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3-30-9-59
Company:	Carrizo Oil & Gas, Inc.	TVD Reference:	GL+KB @ 4934.00usft (Xtreme 19)
Project:	Niobrara CON'83	MD Reference:	GL+KB @ 4934.00usft (Xtreme 19)
Site:	Ptasnik 1-30-9-59 Pad	North Reference:	Grid
Well:	3-30-9-59	Survey Calculation Method:	Minimum Curvature
Wellbore:	3-30-9-59 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)
5,300.00	6.02	168.61	5,281.26	-359.76	72.48	-360.87	0.00	0.00	0.00
5,400.00	6.02	168.61	5,380.71	-370.04	74.55	-371.18	0.00	0.00	0.00
5,500.00	6.02	168.61	5,480.15	-380.32	76.62	-381.49	0.00	0.00	0.00
5,600.00	6.02	168.61	5,579.60	-390.60	78.69	-391.80	0.00	0.00	0.00
5,646.43	6.02	168.61	5,625.78	-395.38	79.65	-396.59	0.00	0.00	0.00
5,700.00	0.72	146.87	5,679.24	-398.42	80.39	-399.64	10.00	-9.89	-40.58
5,800.00	9.35	353.28	5,778.82	-390.86	79.78	-392.08	10.00	8.63	-153.59
5,900.00	19.35	352.31	5,875.58	-366.31	76.61	-367.48	10.00	10.00	-0.97
5,956.54	25.00	352.10	5,927.92	-345.18	73.71	-346.31	10.00	10.00	-0.37
6,000.00	29.31	353.29	5,966.58	-325.51	71.20	-326.60	10.00	9.92	2.74
6,100.00	39.26	355.11	6,049.10	-269.53	65.63	-270.54	10.00	9.95	1.82
6,200.00	49.23	356.29	6,120.65	-200.04	60.47	-200.98	10.00	9.97	1.18
6,300.00	59.20	357.15	6,179.05	-119.15	55.87	-120.03	10.00	9.98	0.87
6,400.00	69.18	357.85	6,222.53	-29.33	51.97	-30.15	10.00	9.98	0.70
6,500.00	79.17	358.47	6,249.77	66.71	48.90	65.93	10.00	9.98	0.61
6,600.00	89.15	359.04	6,259.93	166.04	46.75	165.28	10.00	9.98	0.57
6,608.52	90.00	359.09	6,260.00	174.56	46.61	173.80	10.00	9.98	0.57
6,700.00	90.00	359.09	6,260.00	266.03	45.16	265.28	0.00	0.00	0.00
6,800.00	90.00	359.09	6,260.00	366.02	43.57	365.28	0.00	0.00	0.00
6,900.00	90.00	359.09	6,260.00	466.00	41.99	465.28	0.00	0.00	0.00
7,000.00	90.00	359.09	6,260.00	565.99	40.40	565.28	0.00	0.00	0.00
7,100.00	90.00	359.09	6,260.00	665.98	38.81	665.28	0.00	0.00	0.00
7,200.00	90.00	359.09	6,260.00	765.97	37.22	765.28	0.00	0.00	0.00
7,300.00	90.00	359.09	6,260.00	865.95	35.64	865.28	0.00	0.00	0.00
7,400.00	90.00	359.09	6,260.00	965.94	34.05	965.28	0.00	0.00	0.00
7,500.00	90.00	359.09	6,260.00	1,065.93	32.46	1,065.28	0.00	0.00	0.00
7,600.00	90.00	359.09	6,260.00	1,165.92	30.88	1,165.28	0.00	0.00	0.00
7,700.00	90.00	359.09	6,260.00	1,265.90	29.29	1,265.28	0.00	0.00	0.00
7,800.00	90.00	359.09	6,260.00	1,365.89	27.70	1,365.28	0.00	0.00	0.00
7,900.00	90.00	359.09	6,260.00	1,465.88	26.12	1,465.28	0.00	0.00	0.00
8,000.00	90.00	359.09	6,260.00	1,565.87	24.53	1,565.28	0.00	0.00	0.00
8,100.00	90.00	359.09	6,260.00	1,665.85	22.94	1,665.28	0.00	0.00	0.00
8,200.00	90.00	359.09	6,260.00	1,765.84	21.35	1,765.28	0.00	0.00	0.00
8,300.00	90.00	359.09	6,260.00	1,865.83	19.77	1,865.28	0.00	0.00	0.00
8,400.00	90.00	359.09	6,260.00	1,965.81	18.18	1,965.28	0.00	0.00	0.00
8,500.00	90.00	359.09	6,260.00	2,065.80	16.59	2,065.28	0.00	0.00	0.00
8,600.00	90.00	359.09	6,260.00	2,165.79	15.01	2,165.28	0.00	0.00	0.00
8,700.00	90.00	359.09	6,260.00	2,265.78	13.42	2,265.28	0.00	0.00	0.00
8,800.00	90.00	359.09	6,260.00	2,365.76	11.83	2,365.28	0.00	0.00	0.00
8,900.00	90.00	359.09	6,260.00	2,465.75	10.25	2,465.28	0.00	0.00	0.00
9,000.00	90.00	359.09	6,260.00	2,565.74	8.66	2,565.28	0.00	0.00	0.00
9,100.00	90.00	359.09	6,260.00	2,665.73	7.07	2,665.28	0.00	0.00	0.00
9,200.00	90.00	359.09	6,260.00	2,765.71	5.48	2,765.28	0.00	0.00	0.00
9,300.00	90.00	359.09	6,260.00	2,865.70	3.90	2,865.28	0.00	0.00	0.00
9,400.00	90.00	359.09	6,260.00	2,965.69	2.31	2,965.28	0.00	0.00	0.00
9,500.00	90.00	359.09	6,260.00	3,065.68	0.72	3,065.28	0.00	0.00	0.00
9,600.00	90.00	359.09	6,260.00	3,165.66	-0.86	3,165.28	0.00	0.00	0.00
9,700.00	90.00	359.09	6,260.00	3,265.65	-2.45	3,265.28	0.00	0.00	0.00
9,800.00	90.00	359.09	6,260.00	3,365.64	-4.04	3,365.28	0.00	0.00	0.00
9,900.00	90.00	359.09	6,260.00	3,465.63	-5.62	3,465.28	0.00	0.00	0.00
10,000.00	90.00	359.09	6,260.00	3,565.61	-7.21	3,565.28	0.00	0.00	0.00
10,100.00	90.00	359.09	6,260.00	3,665.60	-8.80	3,665.28	0.00	0.00	0.00
10,200.00	90.00	359.09	6,260.00	3,765.59	-10.39	3,765.28	0.00	0.00	0.00
10,300.00	90.00	359.09	6,260.00	3,865.58	-11.97	3,865.28	0.00	0.00	0.00

Titan Directional Drilling, LLC

Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 3-30-9-59
Company:	Carrizo Oil & Gas, Inc.	TVD Reference:	GL+KB @ 4934.00usft (Xtreme 19)
Project:	Niobrara CON'83	MD Reference:	GL+KB @ 4934.00usft (Xtreme 19)
Site:	Ptasnik 1-30-9-59 Pad	North Reference:	Grid
Well:	3-30-9-59	Survey Calculation Method:	Minimum Curvature
Wellbore:	3-30-9-59 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)	
10,400.00	90.00	359.09	6,260.00	3,965.56	-13.56	3,965.28	0.00	0.00	0.00	
10,500.00	90.00	359.09	6,260.00	4,065.55	-15.15	4,065.28	0.00	0.00	0.00	
10,600.00	90.00	359.09	6,260.00	4,165.54	-16.73	4,165.28	0.00	0.00	0.00	
10,700.00	90.00	359.09	6,260.00	4,265.53	-18.32	4,265.28	0.00	0.00	0.00	
10,800.00	90.00	359.09	6,260.00	4,365.51	-19.91	4,365.28	0.00	0.00	0.00	
10,900.00	90.00	359.09	6,260.00	4,465.50	-21.50	4,465.28	0.00	0.00	0.00	
11,000.00	90.00	359.09	6,260.00	4,565.49	-23.08	4,565.28	0.00	0.00	0.00	
11,042.11	90.00	359.09	6,260.00	4,607.59	-23.75	4,607.38	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										
LP 3-30	0.00	0.00	6,260.00	-144.75	51.37	1,506,626.32	3,407,877.40	40° 42' 53.25 N	104° 1' 42.97 W	
- plan misses target center by 83.16usft at 6312.41usft MD (6185.29 TVD, -108.44 N, 55.34 E)										
- Point										
PBHL 3-30	0.00	0.00	6,260.00	4,607.59	-23.75	1,511,378.61	3,407,802.28	40° 43' 40.21 N	104° 1' 42.93 W	
- plan hits target center										
- Point										