



Company: Carrizo Oil & Gas
Site: Barracuda
Well: 20-14-7-60
Project: Weld County, Colorado (NAD83)
Rig Name: Xtreme 19



Planning: 936.442.2510 Fax: 936.442.2515
Operations: 936.442.2500 Fax: 936.442.2599



Azimuths to Grid North
True North: -0.89°
Magnetic North: 7.58°

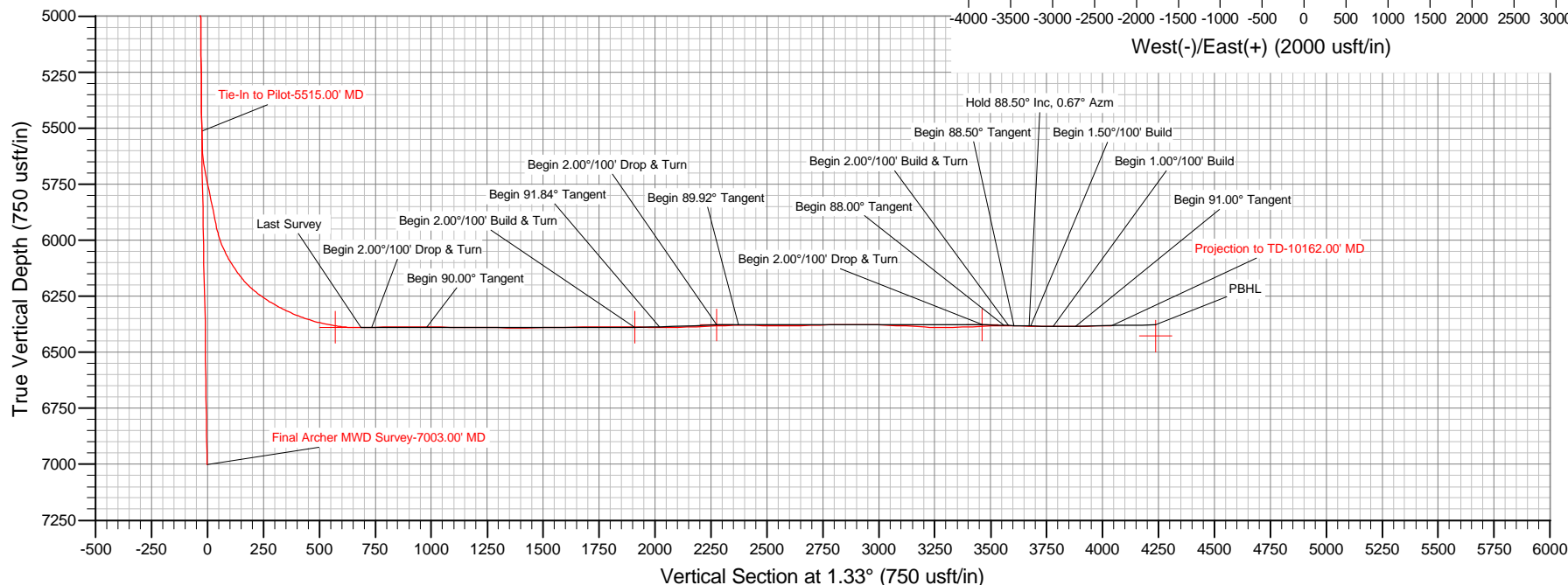
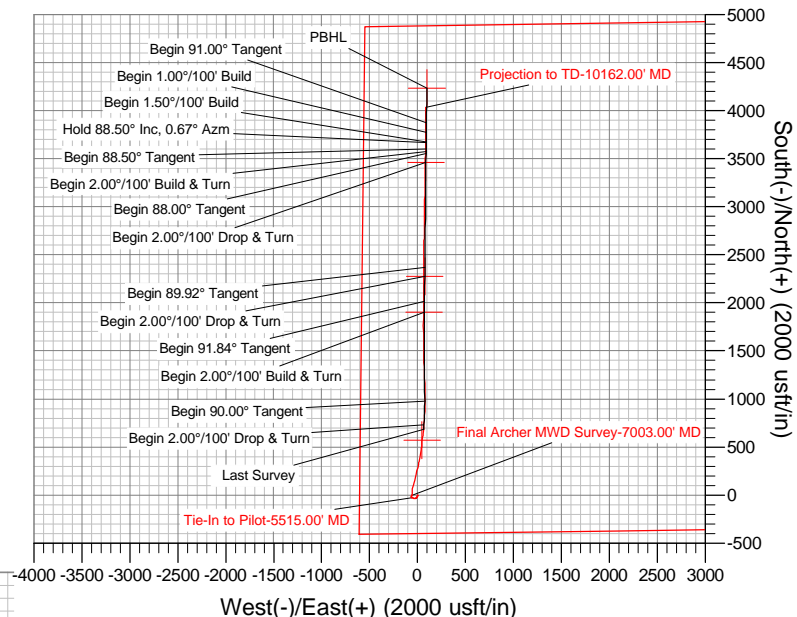
Magnetic Field
Strength: 53241.4snT
Dip Angle: 67.26°
Date: 11/20/2011
Model: WMM_2010

US State Plane 1983
Colorado Northern Zone

Created By: Megan Pope
Date: 10:51, December 01 2011
Plan: Design #4

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
6806.00	90.40	4.60	6389.19	683.75	62.99	685.03	0.00	Last Survey
6853.79	90.40	4.60	6388.86	731.39	66.83	732.75	47.79	Begin 2.00°/100' Drop & Turn
7099.65	90.00	359.70	6388.00	977.00	76.05	978.50	293.65	Begin 90.00° Tangent
8030.08	90.00	359.70	6388.00	1907.42	71.16	1908.56	1224.08	Begin 2.00°/100' Build & Turn
8142.10	91.84	0.98	6386.20	2019.41	71.82	2020.53	1336.08	Begin 91.84° Tangent
8397.28	91.84	0.98	6378.00	2274.42	76.16	2275.57	1591.12	Begin 2.00°/100' Drop & Turn
8495.00	89.92	0.61	6376.50	2372.12	77.51	2373.28	1688.83	Begin 89.92° Tangent
9584.36	89.92	0.61	6378.00	3461.42	89.16	3462.56	2778.19	Begin 2.00°/100' Drop & Turn
9680.43	88.00	0.65	6379.74	3557.46	90.22	3558.59	2874.24	Begin 88.00° Tangent
9700.00	88.00	0.65	6380.43	3577.02	90.44	3578.15	2893.80	Begin 2.00°/100' Build & Turn
9725.02	88.50	0.67	6381.19	3602.02	90.73	3603.16	2918.80	Begin 2.00°/100' Drop & Turn
9793.37	88.50	0.67	6382.98	3670.34	91.53	3671.48	2987.13	Hold 88.50° Inc, 0.67° Azm
9800.00	88.50	0.67	6383.15	3676.97	91.61	3678.11	2993.76	Begin 1.50°/100' Build
9900.00	90.00	0.67	6384.46	3776.95	92.78	3778.09	3093.75	Begin 1.00°/100' Build
10000.00	91.00	0.67	6383.59	3876.94	93.95	3878.08	3193.74	Begin 91.00° Tangent
10358.56	91.00	0.67	6377.33	4235.42	98.16	4236.56	3552.25	PBHL



The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented. Any decisions made or wells drilled utilizing this or any other information supplied by MS Energy are at the sole risk and responsibility of the customer. MS Energy is not responsible for the accuracy of this schematic or the information contained herein.



Carrizo Oil & Gas

Weld County, Colorado (NAD83)

Barracuda

20-14-7-60

Pilot

Survey: Archer MWD

Standard Survey Report

01 December, 2011

Company:	Carrizo Oil & Gas	Local Co-ordinate Reference:	Well 20-14-7-60
Project:	Weld County, Colorado (NAD83)	TVD Reference:	Well @ 4990.50usft (Xtreme 19)
Site:	Barracuda	MD Reference:	Well @ 4990.50usft (Xtreme 19)
Well:	20-14-7-60	North Reference:	Grid
Wellbore:	Pilot	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Southern Region

Project	Weld County, Colorado (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Well	20-14-7-60					
Well Position	+N/-S	0.00 usft	Northing:	1,447,812.58 usft	Latitude:	40° 33' 16.2701 N
	+E/-W	0.00 usft	Easting:	3,381,933.84 usft	Longitude:	104° 7' 31.681 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,973.50 usft

Wellbore	Pilot				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM_2010	11/20/11	8.46	67.26	53,241

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	1.33	

Survey Program	Date	12/01/11			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
1,425.00	7,003.00	Archer MWD (Pilot)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,425.00	0.00	0.00	1,425.00	0.00	0.00	0.00	0.00	0.00	0.00	
Assumed Vertical - 1425.00' MD										
1,515.00	0.70	94.42	1,515.00	-0.04	0.55	-0.03	0.78	0.78	0.00	
1,603.00	0.62	98.73	1,602.99	-0.16	1.55	-0.12	0.11	-0.09	4.90	
1,687.00	0.62	113.14	1,686.99	-0.40	2.42	-0.35	0.19	0.00	17.15	
1,772.00	0.70	96.53	1,771.98	-0.64	3.36	-0.57	0.24	0.09	-19.54	
1,858.00	0.44	118.33	1,857.98	-0.86	4.17	-0.76	0.39	-0.30	25.35	
1,944.00	0.44	117.32	1,943.97	-1.17	4.76	-1.06	0.01	0.00	-1.17	
2,029.00	0.62	99.21	2,028.97	-1.39	5.50	-1.26	0.29	0.21	-21.31	
2,115.00	0.62	104.22	2,114.97	-1.58	6.41	-1.43	0.06	0.00	5.83	
2,200.00	0.97	168.60	2,199.96	-2.40	7.00	-2.24	1.06	0.41	75.74	
2,286.00	0.70	177.72	2,285.95	-3.64	7.16	-3.47	0.35	-0.31	10.60	
2,371.00	0.53	237.42	2,370.95	-4.37	6.85	-4.21	0.74	-0.20	70.24	
2,456.00	0.53	224.92	2,455.94	-4.86	6.24	-4.71	0.14	0.00	-14.71	
2,542.00	0.53	221.92	2,541.94	-5.44	5.70	-5.30	0.03	0.00	-3.49	

Company:	Carrizo Oil & Gas	Local Co-ordinate Reference:	Well 20-14-7-60
Project:	Weld County, Colorado (NAD83)	TVD Reference:	Well @ 4990.50usft (Xtreme 19)
Site:	Barracuda	MD Reference:	Well @ 4990.50usft (Xtreme 19)
Well:	20-14-7-60	North Reference:	Grid
Wellbore:	Pilot	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Southern Region

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,626.00	0.62	225.42	2,625.93	-6.04	5.11	-5.92	0.11	0.11	4.17
2,712.00	0.70	235.32	2,711.93	-6.67	4.35	-6.57	0.16	0.09	11.51
2,797.00	0.70	214.72	2,796.92	-7.39	3.63	-7.30	0.29	0.00	-24.24
2,882.00	0.62	231.52	2,881.92	-8.10	2.97	-8.03	0.25	-0.09	19.76
2,967.00	0.80	243.32	2,966.91	-8.66	2.08	-8.61	0.27	0.21	13.88
3,052.00	0.60	242.52	3,051.90	-9.13	1.16	-9.10	0.24	-0.24	-0.94
3,138.00	0.60	211.52	3,137.90	-9.72	0.52	-9.71	0.37	0.00	-36.05
3,223.00	0.90	200.52	3,222.89	-10.72	0.06	-10.72	0.39	0.35	-12.94
3,307.00	1.40	191.02	3,306.88	-12.35	-0.37	-12.35	0.64	0.60	-11.31
3,394.00	1.90	191.82	3,393.84	-14.80	-0.87	-14.82	0.58	0.57	0.92
3,478.00	1.70	201.12	3,477.80	-17.33	-1.60	-17.36	0.42	-0.24	11.07
3,564.00	1.50	201.82	3,563.76	-19.56	-2.48	-19.62	0.23	-0.23	0.81
3,648.00	1.20	206.52	3,647.74	-21.37	-3.28	-21.44	0.38	-0.36	5.60
3,732.00	1.30	211.42	3,731.72	-22.97	-4.17	-23.06	0.17	0.12	5.83
3,817.00	1.20	200.52	3,816.70	-24.63	-4.99	-24.74	0.30	-0.12	-12.82
3,902.00	1.14	211.62	3,901.68	-26.18	-5.74	-26.31	0.28	-0.07	13.06
3,988.00	1.23	231.52	3,987.66	-27.49	-6.91	-27.64	0.49	0.10	23.14
4,073.00	1.67	251.22	4,072.64	-28.45	-8.80	-28.65	0.78	0.52	23.18
4,157.00	2.29	252.12	4,156.59	-29.36	-11.56	-29.62	0.74	0.74	1.07
4,243.00	2.72	252.42	4,242.50	-30.51	-15.14	-30.85	0.50	0.50	0.35
4,327.00	2.81	259.32	4,326.41	-31.49	-19.06	-31.92	0.41	0.11	8.21
4,412.00	2.90	264.02	4,411.30	-32.10	-23.25	-32.63	0.29	0.11	5.53
4,497.00	2.46	263.22	4,496.21	-32.54	-27.20	-33.16	0.52	-0.52	-0.94
4,583.00	2.46	268.02	4,582.13	-32.82	-30.87	-33.53	0.24	0.00	5.58
4,666.00	2.11	280.12	4,665.06	-32.61	-34.16	-33.40	0.72	-0.42	14.58
4,751.00	2.02	283.02	4,750.01	-32.00	-37.16	-32.85	0.16	-0.11	3.41
4,838.00	2.20	290.82	4,836.95	-31.06	-40.21	-31.99	0.39	0.21	8.97
4,923.00	1.80	278.62	4,921.90	-30.28	-43.06	-31.27	0.68	-0.47	-14.35
5,008.00	1.90	285.32	5,006.85	-29.71	-45.74	-30.76	0.28	0.12	7.88
5,094.00	2.20	281.92	5,092.80	-28.99	-48.73	-30.11	0.38	0.35	-3.95
5,178.00	1.80	286.32	5,176.75	-28.29	-51.57	-29.48	0.51	-0.48	5.24
5,260.00	1.60	292.42	5,258.71	-27.49	-53.86	-28.73	0.33	-0.24	7.44
5,348.00	1.70	289.82	5,346.68	-26.58	-56.23	-27.88	0.14	0.11	-2.95
5,430.00	1.58	302.72	5,428.64	-25.55	-58.32	-26.90	0.47	-0.15	15.73
5,515.00	1.20	307.42	5,513.62	-24.38	-60.02	-25.77	0.47	-0.45	5.53
5,601.00	1.10	307.12	5,599.60	-23.34	-61.39	-24.75	0.12	-0.12	-0.35
5,686.00	0.90	311.42	5,684.59	-22.40	-62.54	-23.85	0.25	-0.24	5.06
5,771.00	1.20	320.82	5,769.57	-21.27	-63.60	-22.74	0.41	0.35	11.06
5,853.00	1.23	334.02	5,851.55	-19.81	-64.53	-21.31	0.34	0.04	16.10
5,940.00	1.23	352.92	5,938.53	-18.05	-65.06	-19.55	0.46	0.00	21.72
6,024.00	0.97	348.32	6,022.52	-16.46	-65.31	-17.97	0.33	-0.31	-5.48
6,108.00	1.10	12.32	6,106.51	-14.97	-65.28	-16.48	0.53	0.15	28.57
6,192.00	1.30	21.12	6,190.49	-13.30	-64.77	-14.79	0.32	0.24	10.48

Company:	Carrizo Oil & Gas	Local Co-ordinate Reference:	Well 20-14-7-60
Project:	Weld County, Colorado (NAD83)	TVD Reference:	Well @ 4990.50usft (Xtreme 19)
Site:	Barracuda	MD Reference:	Well @ 4990.50usft (Xtreme 19)
Well:	20-14-7-60	North Reference:	Grid
Wellbore:	Pilot	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Southern Region

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
6,278.00	1.20	29.29	6,276.47	-11.60	-63.98	-13.08	0.24	-0.12	9.50	
6,363.00	1.10	32.42	6,361.45	-10.13	-63.10	-11.60	0.14	-0.12	3.68	
6,448.00	0.88	23.02	6,446.44	-8.85	-62.41	-10.29	0.32	-0.26	-11.06	
6,536.00	0.90	23.92	6,534.43	-7.59	-61.87	-9.03	0.03	0.02	1.02	
6,624.00	0.80	34.04	6,622.42	-6.45	-61.24	-7.87	0.20	-0.11	11.50	
6,706.00	1.10	40.52	6,704.41	-5.38	-60.41	-6.78	0.39	0.37	7.90	
6,791.00	0.90	51.62	6,789.39	-4.34	-59.36	-5.72	0.33	-0.24	13.06	
6,876.00	1.40	45.62	6,874.37	-3.20	-58.09	-4.55	0.60	0.59	-7.06	
6,949.00	1.50	34.92	6,947.35	-1.80	-56.91	-3.12	0.39	0.14	-14.66	
7,003.00	0.90	60.72	7,001.34	-1.01	-56.13	-2.31	1.47	-1.11	47.78	
Final Archer MWD Survey-7003.00' MD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,425.00	1,425.00	0.00	0.00	Assumed Vertical - 1425.00' MD	
7,003.00	7,001.34	-1.01	-56.13	Final Archer MWD Survey-7003.00' MD	



Carrizo Oil & Gas

Weld County, Colorado (NAD83)

Barracuda

20-14-7-60

Wellbore #1

Survey: Archer MWD

Standard Survey Report

01 December, 2011



Company:	Carrizo Oil & Gas	Local Co-ordinate Reference:	Well 20-14-7-60
Project:	Weld County, Colorado (NAD83)	TVD Reference:	Well @ 4990.50usft (Xtreme 19)
Site:	Barracuda	MD Reference:	Well @ 4990.50usft (Xtreme 19)
Well:	20-14-7-60	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Southern Region

Project	Weld County, Colorado (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Well	20-14-7-60				
Well Position	+N/-S	0.00 usft	Northing:	1,447,812.58 usft	Latitude: 40° 33' 16.2701 N
	+E/-W	0.00 usft	Easting:	3,381,933.84 usft	Longitude: 104° 7' 31.681 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level: 4,973.50 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM_2010	11/20/11	8.46	67.26	53,241

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	5,515.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	1.33	

Survey Program	Date	12/01/11			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
1,425.00	5,515.00	Archer MWD (Pilot)	MWD	MWD - Standard	
5,515.00	10,162.00	Archer MWD (Wellbore #1)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
5,515.00	1.20	307.42	5,513.62	-24.38	-60.02	-25.77	0.00	0.00	0.00	
Tie-In to Pilot-5515.00' MD										
5,615.00	3.00	348.40	5,613.55	-21.18	-61.37	-22.60	2.24	1.80	40.98	
5,658.00	9.10	6.40	5,656.29	-16.69	-61.22	-18.11	14.69	14.19	41.86	
5,700.00	12.00	8.80	5,697.58	-9.08	-60.18	-10.47	6.98	6.90	5.71	
5,743.00	12.00	7.40	5,739.64	-0.23	-58.92	-1.59	0.68	0.00	-3.26	
5,785.00	11.60	5.70	5,780.75	8.30	-57.94	6.96	1.26	-0.95	-4.05	
5,828.00	11.60	5.00	5,822.87	16.91	-57.14	15.58	0.33	0.00	-1.63	
5,871.00	11.40	4.30	5,865.01	25.46	-56.44	24.14	0.57	-0.47	-1.63	
5,913.00	11.30	1.80	5,906.19	33.71	-56.00	32.40	1.20	-0.24	-5.95	
5,956.00	12.70	4.30	5,948.25	42.63	-55.51	41.33	3.47	3.26	5.81	
5,998.00	17.80	7.80	5,988.76	53.61	-54.29	52.33	12.33	12.14	8.33	
6,041.00	22.50	9.20	6,029.11	68.25	-52.09	67.02	10.99	10.93	3.26	
6,083.00	28.50	14.10	6,067.01	85.92	-48.36	84.77	15.13	14.29	11.67	
6,126.00	33.30	15.90	6,103.90	107.23	-42.62	106.21	11.37	11.16	4.19	

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Site:	Barracuda	MD Reference:	Well @ 4990.50usft (Xtreme 19)
Well:	20-14-7-60	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Southern Region

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
6,169.00	36.10	17.30	6,139.25	130.68	-35.62	129.82	6.77	6.51	3.26	
6,211.00	40.60	15.90	6,172.18	155.65	-28.19	154.96	10.91	10.71	-3.33	
6,254.00	46.80	15.10	6,203.25	184.27	-20.27	183.75	14.48	14.42	-1.86	
6,296.00	52.80	13.40	6,230.35	215.35	-12.39	215.01	14.62	14.29	-4.05	
6,338.00	55.20	13.70	6,255.03	248.38	-4.43	248.21	5.74	5.71	0.71	
6,380.00	60.00	12.30	6,277.53	282.93	3.53	282.93	11.77	11.43	-3.33	
6,423.00	61.40	11.60	6,298.57	319.61	11.29	319.79	3.55	3.26	-1.63	
6,465.00	65.50	10.20	6,317.34	356.50	18.39	356.83	10.21	9.76	-3.33	
6,508.00	68.40	9.50	6,334.18	395.48	25.15	395.95	6.91	6.74	-1.63	
6,551.00	72.30	9.50	6,348.64	435.41	31.84	436.03	9.07	9.07	0.00	
6,593.00	73.40	9.20	6,361.02	475.01	38.36	475.77	2.71	2.62	-0.71	
6,636.00	77.40	7.40	6,371.86	516.17	44.36	517.06	10.15	9.30	-4.19	
6,679.00	79.90	7.40	6,380.32	557.98	49.78	558.98	5.81	5.81	0.00	
6,721.00	84.10	6.70	6,386.16	599.25	54.89	600.36	10.14	10.00	-1.67	
6,764.00	88.70	5.30	6,388.86	641.91	59.37	643.12	11.18	10.70	-3.26	
6,806.00	90.40	4.60	6,389.19	683.75	62.99	685.03	4.38	4.05	-1.67	
6,824.00	91.00	5.30	6,388.97	701.69	64.55	702.99	5.12	3.33	3.89	
6,866.00	91.30	4.60	6,388.13	743.52	68.17	744.90	1.81	0.71	-1.67	
6,908.00	90.60	3.90	6,387.43	785.40	71.28	786.84	2.36	-1.67	-1.67	
6,951.00	89.90	3.20	6,387.25	828.32	73.94	829.81	2.30	-1.63	-1.63	
6,993.00	91.30	2.50	6,386.81	870.26	76.03	871.79	3.73	3.33	-1.67	
7,036.00	90.40	1.40	6,386.17	913.23	77.50	914.78	3.31	-2.09	-2.56	
7,078.00	89.60	1.10	6,386.17	955.22	78.41	956.78	2.03	-1.90	-0.71	
7,121.00	89.00	0.00	6,386.69	998.21	78.82	999.77	2.91	-1.40	-2.56	
7,164.00	88.20	359.70	6,387.74	1,041.20	78.71	1,042.75	1.99	-1.86	-0.70	
7,206.00	88.50	359.30	6,388.95	1,083.18	78.35	1,084.71	1.19	0.71	-0.95	
7,248.00	88.70	358.60	6,389.98	1,125.16	77.58	1,126.66	1.73	0.48	-1.67	
7,290.00	88.90	358.30	6,390.86	1,167.14	76.44	1,168.60	0.86	0.48	-0.71	
7,333.00	91.00	358.30	6,390.90	1,210.11	75.16	1,211.53	4.88	4.88	0.00	
7,375.00	90.80	358.30	6,390.24	1,252.09	73.92	1,253.47	0.48	-0.48	0.00	
7,418.00	89.00	357.90	6,390.31	1,295.06	72.49	1,296.40	4.29	-4.19	-0.93	
7,460.00	88.90	357.60	6,391.08	1,337.03	70.84	1,338.31	0.75	-0.24	-0.71	
7,502.00	89.70	357.60	6,391.59	1,378.98	69.09	1,380.22	1.90	1.90	0.00	
7,544.00	91.00	357.20	6,391.34	1,420.94	67.18	1,422.12	3.24	3.10	-0.95	
7,629.00	91.00	359.30	6,389.85	1,505.88	64.59	1,506.98	2.47	0.00	2.47	
7,713.00	91.10	359.30	6,388.32	1,589.86	63.56	1,590.91	0.12	0.12	0.00	
7,799.00	91.10	359.30	6,386.66	1,675.84	62.51	1,676.84	0.00	0.00	0.00	
7,884.00	89.60	0.00	6,386.14	1,760.83	61.99	1,761.80	1.95	-1.76	0.82	
7,969.00	89.70	0.70	6,386.66	1,845.83	62.51	1,846.78	0.83	0.12	0.82	
8,054.00	88.50	1.40	6,388.00	1,930.80	64.07	1,931.77	1.63	-1.41	0.82	
8,095.00	89.00	1.80	6,388.89	1,971.78	65.21	1,972.76	1.56	1.22	0.98	
8,138.00	89.60	1.10	6,389.42	2,014.76	66.30	2,015.76	2.14	1.40	-1.63	
8,180.00	91.30	1.10	6,389.09	2,056.75	67.11	2,057.75	4.05	4.05	0.00	

Company:	Carrizo Oil & Gas	Local Co-ordinate Reference:	Well 20-14-7-60
Project:	Weld County, Colorado (NAD83)	TVD Reference:	Well @ 4990.50usft (Xtreme 19)
Site:	Barracuda	MD Reference:	Well @ 4990.50usft (Xtreme 19)
Well:	20-14-7-60	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Southern Region

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,223.00	91.50	0.70	6,388.04	2,099.73	67.78	2,100.74	1.04	0.47	-0.93	
8,265.00	90.60	0.70	6,387.27	2,141.72	68.29	2,142.73	2.14	-2.14	0.00	
8,308.00	91.50	1.10	6,386.48	2,184.71	68.97	2,185.72	2.29	2.09	0.93	
8,351.00	92.40	0.70	6,385.02	2,227.68	69.64	2,228.69	2.29	2.09	-0.93	
8,393.00	91.80	359.70	6,383.48	2,269.65	69.79	2,270.66	2.78	-1.43	-2.38	
8,436.00	92.40	359.70	6,381.90	2,312.62	69.57	2,313.61	1.40	1.40	0.00	
8,478.00	91.70	359.00	6,380.40	2,354.59	69.09	2,355.56	2.36	-1.67	-1.67	
8,520.00	90.40	358.60	6,379.63	2,396.57	68.21	2,397.51	3.24	-3.10	-0.95	
8,562.00	89.20	359.30	6,379.78	2,438.56	67.44	2,439.47	3.31	-2.86	1.67	
8,605.00	88.70	0.70	6,380.57	2,481.55	67.44	2,482.45	3.46	-1.16	3.26	
8,647.00	89.20	0.40	6,381.34	2,523.54	67.84	2,524.44	1.39	1.19	-0.71	
8,689.00	89.70	0.70	6,381.74	2,565.54	68.25	2,566.43	1.39	1.19	0.71	
8,732.00	90.30	1.10	6,381.74	2,608.53	68.92	2,609.43	1.68	1.40	0.93	
8,774.00	91.30	1.40	6,381.15	2,650.52	69.84	2,651.43	2.49	2.38	0.71	
8,817.00	92.00	0.40	6,379.91	2,693.50	70.51	2,694.41	2.84	1.63	-2.33	
8,860.00	92.00	0.70	6,378.41	2,736.47	70.93	2,737.38	0.70	0.00	0.70	
8,902.00	91.10	0.40	6,377.28	2,778.45	71.33	2,779.36	2.26	-2.14	-0.71	
8,945.00	90.10	359.70	6,376.83	2,821.45	71.37	2,822.34	2.84	-2.33	-1.63	
8,987.00	90.10	0.70	6,376.75	2,863.45	71.51	2,864.33	2.38	0.00	2.38	
9,030.00	89.90	0.40	6,376.75	2,906.44	71.93	2,907.33	0.84	-0.47	-0.70	
9,073.00	88.70	0.70	6,377.28	2,949.44	72.34	2,950.32	2.88	-2.79	0.70	
9,115.00	88.90	1.80	6,378.16	2,991.42	73.25	2,992.31	2.66	0.48	2.62	
9,158.00	88.30	1.80	6,379.21	3,034.38	74.60	3,035.30	1.40	-1.40	0.00	
9,201.00	87.40	1.10	6,380.82	3,077.34	75.69	3,078.27	2.65	-2.09	-1.63	
9,243.00	86.40	0.70	6,383.09	3,119.27	76.35	3,120.20	2.56	-2.38	-0.95	
9,286.00	86.90	1.10	6,385.61	3,162.19	77.02	3,163.13	1.49	1.16	0.93	
9,328.00	87.30	0.40	6,387.73	3,204.14	77.57	3,205.07	1.92	0.95	-1.67	
9,371.00	88.90	0.70	6,389.16	3,247.11	77.99	3,248.04	3.79	3.72	0.70	
9,413.00	90.60	0.40	6,389.34	3,289.10	78.39	3,290.04	4.11	4.05	-0.71	
9,455.00	91.30	0.40	6,388.64	3,331.10	78.68	3,332.03	1.67	1.67	0.00	
9,498.00	92.00	0.70	6,387.41	3,374.08	79.10	3,375.00	1.77	1.63	0.70	
9,541.00	91.50	0.70	6,386.09	3,417.05	79.62	3,417.98	1.16	-1.16	0.00	
9,583.00	92.20	1.80	6,384.74	3,459.02	80.54	3,459.96	3.10	1.67	2.62	
9,626.00	91.70	2.10	6,383.27	3,501.97	82.00	3,502.93	1.36	-1.16	0.70	
9,669.00	90.40	1.40	6,382.49	3,544.94	83.31	3,545.92	3.43	-3.02	-1.63	
9,711.00	89.00	1.40	6,382.71	3,586.93	84.34	3,587.92	3.33	-3.33	0.00	
9,754.00	89.20	0.40	6,383.38	3,629.92	85.01	3,630.91	2.37	0.47	-2.33	
9,796.00	89.70	0.70	6,383.78	3,671.91	85.42	3,672.91	1.39	1.19	0.71	
9,839.00	90.60	0.00	6,383.67	3,714.91	85.68	3,715.90	2.65	2.09	-1.63	
9,882.00	89.20	0.40	6,383.75	3,757.91	85.83	3,758.89	3.39	-3.26	0.93	
9,924.00	88.90	0.70	6,384.44	3,799.90	86.23	3,800.88	1.01	-0.71	0.71	
9,967.00	90.10	1.10	6,384.82	3,842.89	86.91	3,843.88	2.94	2.79	0.93	
10,009.00	90.40	1.10	6,384.63	3,884.89	87.71	3,885.88	0.71	0.71	0.00	

Company:	Carrizo Oil & Gas	Local Co-ordinate Reference:	Well 20-14-7-60
Project:	Weld County, Colorado (NAD83)	TVD Reference:	Well @ 4990.50usft (Xtreme 19)
Site:	Barracuda	MD Reference:	Well @ 4990.50usft (Xtreme 19)
Well:	20-14-7-60	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	Southern Region

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
10,052.00	91.00	0.70	6,384.11	3,927.88	88.39	3,928.87	1.68	1.40	-0.93	
10,095.00	91.30	0.40	6,383.25	3,970.87	88.80	3,971.86	0.99	0.70	-0.70	
10,105.00	91.00	359.70	6,383.05	3,980.86	88.81	3,981.85	7.61	-3.00	-7.00	
10,162.00	91.00	359.70	6,382.05	4,037.86	88.51	4,038.82	0.00	0.00	0.00	
Projection to TD-10162.00' MD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
5,515.00	5,513.62	-24.38	-60.02	Tie-In to Pilot-5515.00' MD	
10,162.00	6,382.05	4,037.86	88.51	Projection to TD-10162.00' MD	