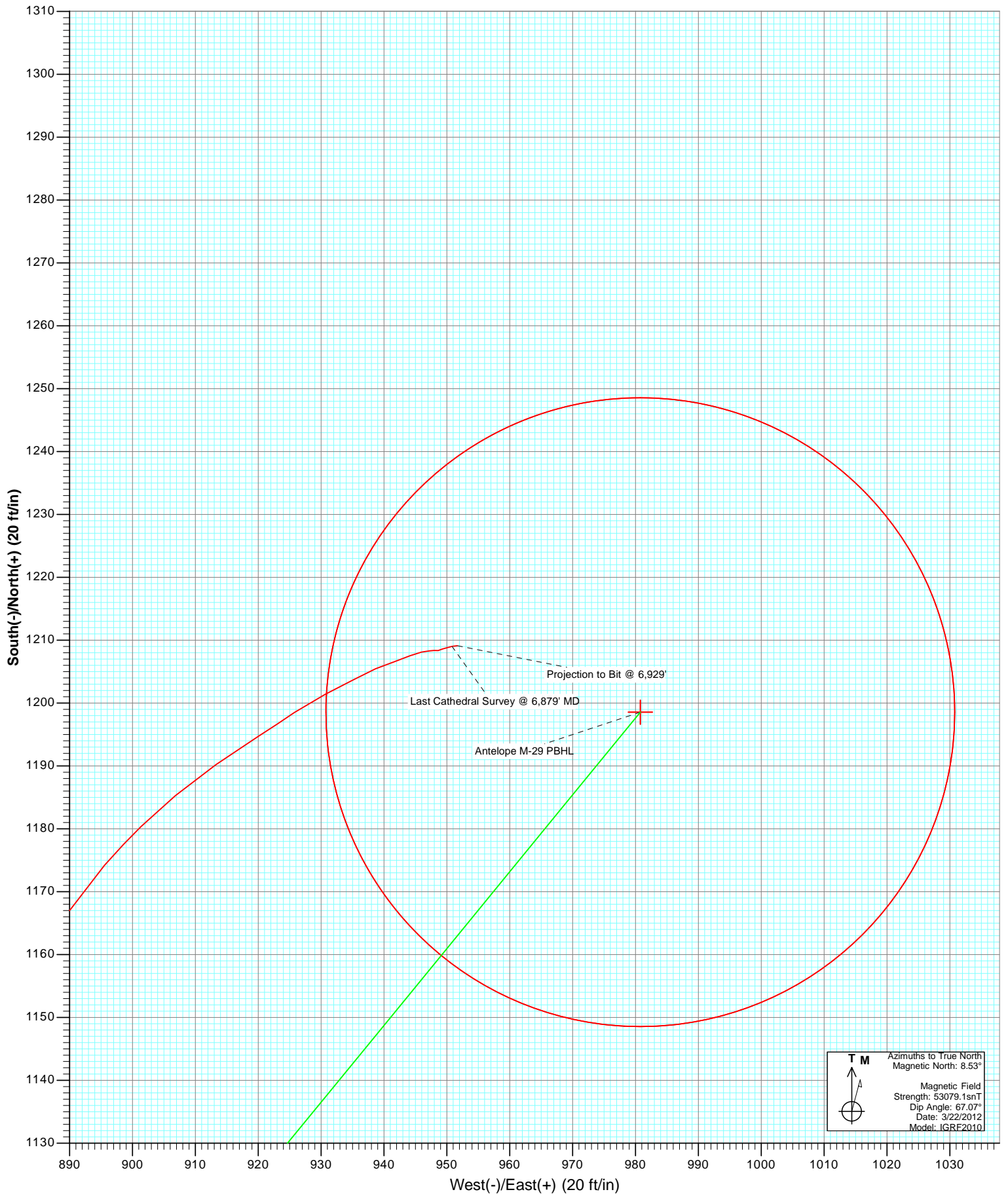




Project: Weld County  
Site: Antelope I 29 Pad  
Well: Antelope M-29  
Wellbore: DD  
Plan: FINAL



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well Antelope M-29
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KBE @ 4599.0ft (Original Well Elev)
<b>Site:</b>	Antelope I 29 Pad	<b>MD Reference:</b>	KBE @ 4599.0ft (Original Well Elev)
<b>Well:</b>	Antelope M-29	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB

<b>Project</b>	Weld County		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		Antelope I 29 Pad			
Site Position:		Northing:	1,378,781.88 ft	Latitude:	40.367460
From:	Lat/Long	Easting:	3,320,059.38 ft	Longitude:	-104.351360
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.74 °

Well	Antelope M-29					
Well Position	+N/-S	0.0 ft	Northing:	1,378,793.31 ft	Latitude:	40.367490
	+E/-W	0.0 ft	Easting:	3,320,098.24 ft	Longitude:	-104.351220
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,589.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/22/2012	8.53	67.07	53,079

Design	DD			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	39.29

<b>Survey Program</b>	<b>Date</b>	5/8/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
525.0	6,929.0	Survey #1 (DD)	MWD	Geolink MWD	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Formations / Comments</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
525.0	0.20	233.60	525.0	-0.5	-0.7	-0.9	0.04	0.04		
619.0	1.40	38.10	619.0	0.3	-0.2	0.1	1.70	1.28		
713.0	3.10	54.50	712.9	2.6	2.6	3.7	1.92	1.81		
808.0	4.60	48.00	807.7	6.7	7.5	9.9	1.64	1.58		
902.0	7.00	44.30	901.2	13.3	14.3	19.4	2.58	2.55		
997.0	9.60	44.70	995.2	23.1	24.0	33.0	2.74	2.74		
1,091.0	10.60	40.20	1,087.8	35.3	35.1	49.5	1.35	1.06		
1,186.0	12.60	38.50	1,180.8	50.0	47.1	68.6	2.14	2.11		
1,280.0	14.20	39.00	1,272.2	67.0	60.8	90.4	1.71	1.70		
1,375.0	15.10	42.60	1,364.2	85.2	76.5	114.4	1.35	0.95		
1,468.0	16.90	40.20	1,453.6	104.4	93.4	140.0	2.06	1.94		
1,563.0	18.80	37.90	1,544.0	127.1	111.7	169.1	2.13	2.00		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well Antelope M-29
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KBE @ 4599.0ft (Original Well Elev)
<b>Site:</b>	Antelope I 29 Pad	<b>MD Reference:</b>	KBE @ 4599.0ft (Original Well Elev)
<b>Well:</b>	Antelope M-29	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
1,657.0	20.50	38.00	1,632.5	152.0	131.2	200.7	1.81	1.81	
1,751.0	22.10	39.10	1,720.1	178.7	152.5	234.8	1.75	1.70	
1,845.0	23.30	39.60	1,806.8	206.7	175.5	271.1	1.29	1.28	
2,034.0	22.00	40.80	1,981.2	262.3	222.4	343.9	0.73	-0.69	
2,129.0	20.20	41.80	2,069.8	288.0	245.0	378.1	1.93	-1.89	
2,223.0	20.30	37.90	2,158.0	313.0	265.8	410.6	1.44	0.11	
2,319.0	20.60	38.00	2,248.0	339.4	286.4	444.1	0.31	0.31	
2,413.0	21.00	35.90	2,335.9	366.1	306.5	477.5	0.90	0.43	
2,507.0	22.30	36.00	2,423.2	394.2	326.9	512.1	1.38	1.38	
2,601.0	22.90	36.20	2,510.0	423.4	348.2	548.1	0.64	0.64	
2,695.0	25.00	36.40	2,595.9	454.1	370.7	586.2	2.24	2.23	
2,790.0	26.90	35.30	2,681.3	487.8	395.1	627.7	2.06	2.00	
2,884.0	25.40	35.20	2,765.7	521.7	419.0	669.1	1.60	-1.60	
2,979.0	25.00	35.10	2,851.7	554.7	442.3	709.4	0.42	-0.42	
3,073.0	24.70	34.10	2,937.0	587.2	464.7	748.8	0.55	-0.32	
3,168.0	24.00	34.50	3,023.5	619.6	486.8	787.8	0.76	-0.74	
3,262.0	22.80	35.20	3,109.8	650.2	508.1	825.0	1.31	-1.28	
3,356.0	22.20	34.50	3,196.6	679.8	528.7	860.9	0.70	-0.64	
3,451.0	24.00	34.50	3,284.0	710.5	549.8	898.0	1.89	1.89	
3,545.0	23.40	34.70	3,370.1	741.6	571.2	935.7	0.64	-0.64	
3,640.0	23.60	37.80	3,457.2	772.1	593.6	973.5	1.32	0.21	
3,735.0	23.40	37.50	3,544.3	802.1	616.8	1,011.4	0.25	-0.21	
3,829.0	23.90	36.10	3,630.4	832.3	639.3	1,049.0	0.80	0.53	
3,924.0	22.60	36.50	3,717.7	862.5	661.5	1,086.5	1.38	-1.37	
4,018.0	23.20	37.50	3,804.3	891.7	683.6	1,123.0	0.76	0.64	
4,113.0	22.10	38.30	3,892.0	920.6	706.0	1,159.6	1.20	-1.16	
4,208.0	23.00	38.40	3,979.7	949.2	728.6	1,196.0	0.95	0.95	
4,302.0	22.50	37.00	4,066.4	977.9	750.9	1,232.3	0.78	-0.53	
4,396.0	21.00	37.20	4,153.7	1,005.7	771.9	1,267.2	1.60	-1.60	
4,491.0	20.00	36.90	4,242.7	1,032.3	791.9	1,300.4	1.06	-1.05	
4,585.0	17.60	36.60	4,331.7	1,056.5	810.0	1,330.7	2.56	-2.55	
4,679.0	14.80	37.40	4,421.9	1,077.5	825.8	1,356.9	2.99	-2.98	
4,774.0	13.80	35.80	4,514.0	1,096.3	839.8	1,380.3	1.13	-1.05	
4,869.0	12.30	35.90	4,606.5	1,113.7	852.4	1,401.7	1.58	-1.58	
4,961.0	11.10	35.80	4,696.6	1,128.8	863.3	1,420.3	1.30	-1.30	
5,056.0	10.30	34.20	4,789.9	1,143.3	873.4	1,437.9	0.90	-0.84	
5,151.0	8.50	35.20	4,883.7	1,156.0	882.2	1,453.4	1.90	-1.89	
5,246.0	6.50	34.70	4,977.9	1,166.2	889.4	1,465.7	2.11	-2.11	
5,341.0	5.80	41.20	5,072.3	1,174.2	895.6	1,475.9	1.04	-0.74	
5,436.0	4.40	46.10	5,166.9	1,180.4	901.4	1,484.3	1.54	-1.47	
5,529.0	4.70	50.00	5,259.6	1,185.3	906.9	1,491.6	0.46	0.32	
5,624.0	5.10	54.90	5,354.3	1,190.2	913.3	1,499.5	0.61	0.42	
5,718.0	4.70	57.70	5,447.9	1,194.7	920.0	1,507.2	0.50	-0.43	
5,813.0	3.70	55.10	5,542.7	1,198.5	925.8	1,513.8	1.07	-1.05	
5,907.0	3.30	64.50	5,636.5	1,201.4	930.7	1,519.2	0.74	-0.43	
6,002.0	2.70	60.60	5,731.4	1,203.7	935.1	1,523.7	0.67	-0.63	
6,095.0	2.20	66.90	5,824.3	1,205.5	938.7	1,527.4	0.61	-0.54	
6,189.0	1.80	72.60	5,918.2	1,206.6	941.7	1,530.2	0.47	-0.43	
6,284.0	1.30	63.60	6,013.2	1,207.5	944.1	1,532.4	0.58	-0.53	
6,378.0	1.10	83.30	6,107.2	1,208.1	946.0	1,534.0	0.48	-0.21	
6,472.0	0.50	75.50	6,201.2	1,208.3	947.3	1,535.0	0.65	-0.64	
6,566.0	0.40	98.20	6,295.2	1,208.4	948.0	1,535.5	0.22	-0.11	
6,660.0	0.40	86.10	6,389.2	1,208.3	948.6	1,535.9	0.09	0.00	

# Cathedral Energy Services

## Survey Report

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<b>Site:</b>	Antelope I 29 Pad	<b>MD Reference:</b>	KBE @ 4599.0ft (Original Well Elev)
<b>Well:</b>	Antelope M-29	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
6,755.0	0.50	56.10	6,484.2	1,208.6	949.3	1,536.5	0.27	0.11	
6,879.0	1.00	83.60	6,608.2	1,209.0	950.8	1,537.8	0.49	0.40	Last Cathedral Survey @ 6,879' MD Projection to Bit @ 6,929'
6,929.0	1.00	83.60	6,658.2	1,209.1	951.7	1,538.5	0.00	0.00	

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Antelope M-29 PBHL - actual wellpath misses target center by 31.3ft at 6907.3ft MD (6636.5 TVD, 1209.1 N, 951.3 E) - Circle (radius 50.0)	0.00	0.00	6,636.0	1,198.6	980.8	1,380,004.47	3,321,063.41	40.370780	-104.347700
Antelope M-29 TGT - actual wellpath misses target center by 37.7ft at 6285.5ft MD (6014.7 TVD, 1207.5 N, 944.2 E) - Point	0.00	0.00	6,014.0	1,198.6	980.8	1,380,004.47	3,321,063.41	40.370780	-104.347700

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
6,879.0	6,608.2	1,209.0	950.8	Last Cathedral Survey @ 6,879' MD	
6,929.0	6,658.2	1,209.1	951.7	Projection to Bit @ 6,929'	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_