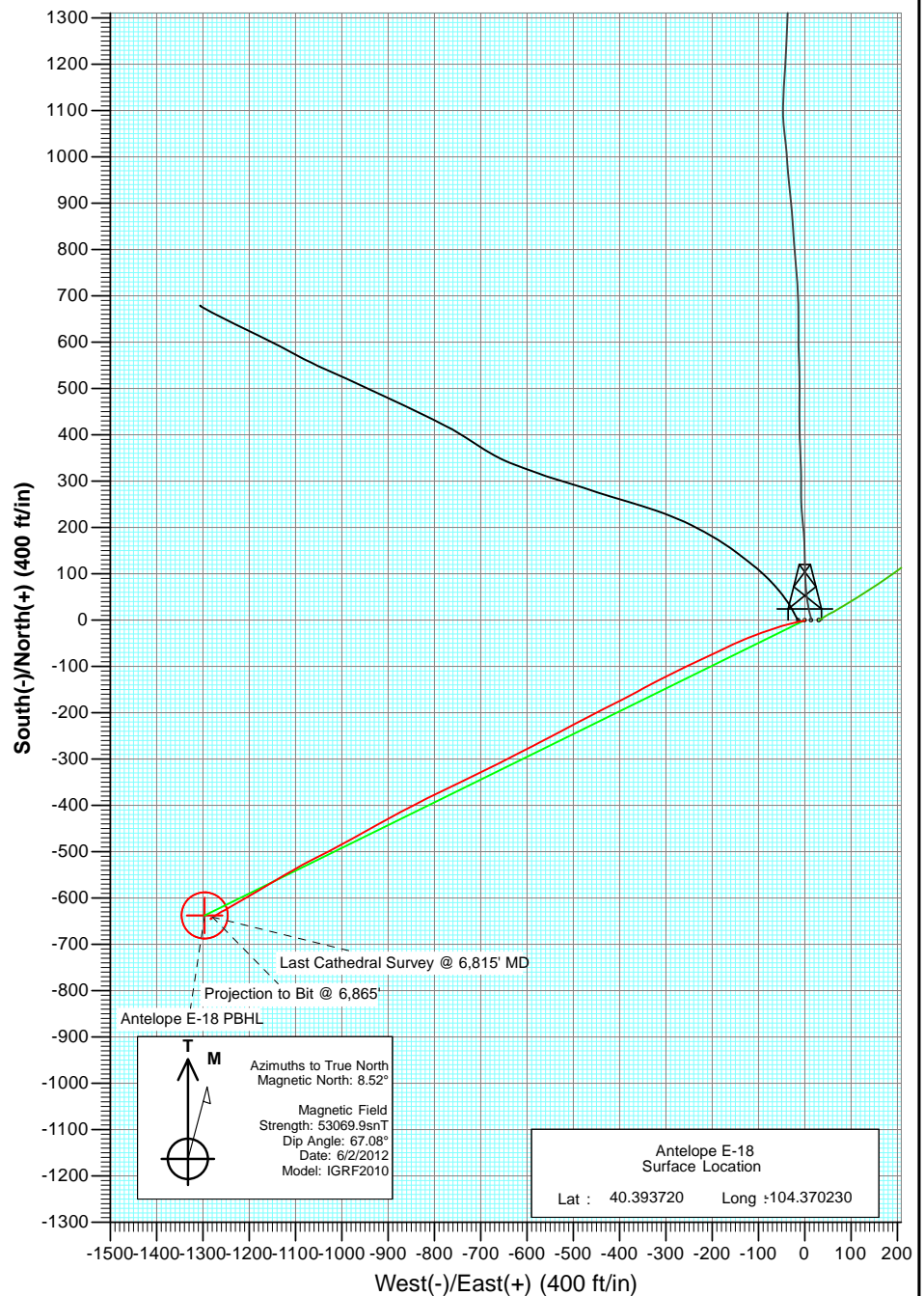
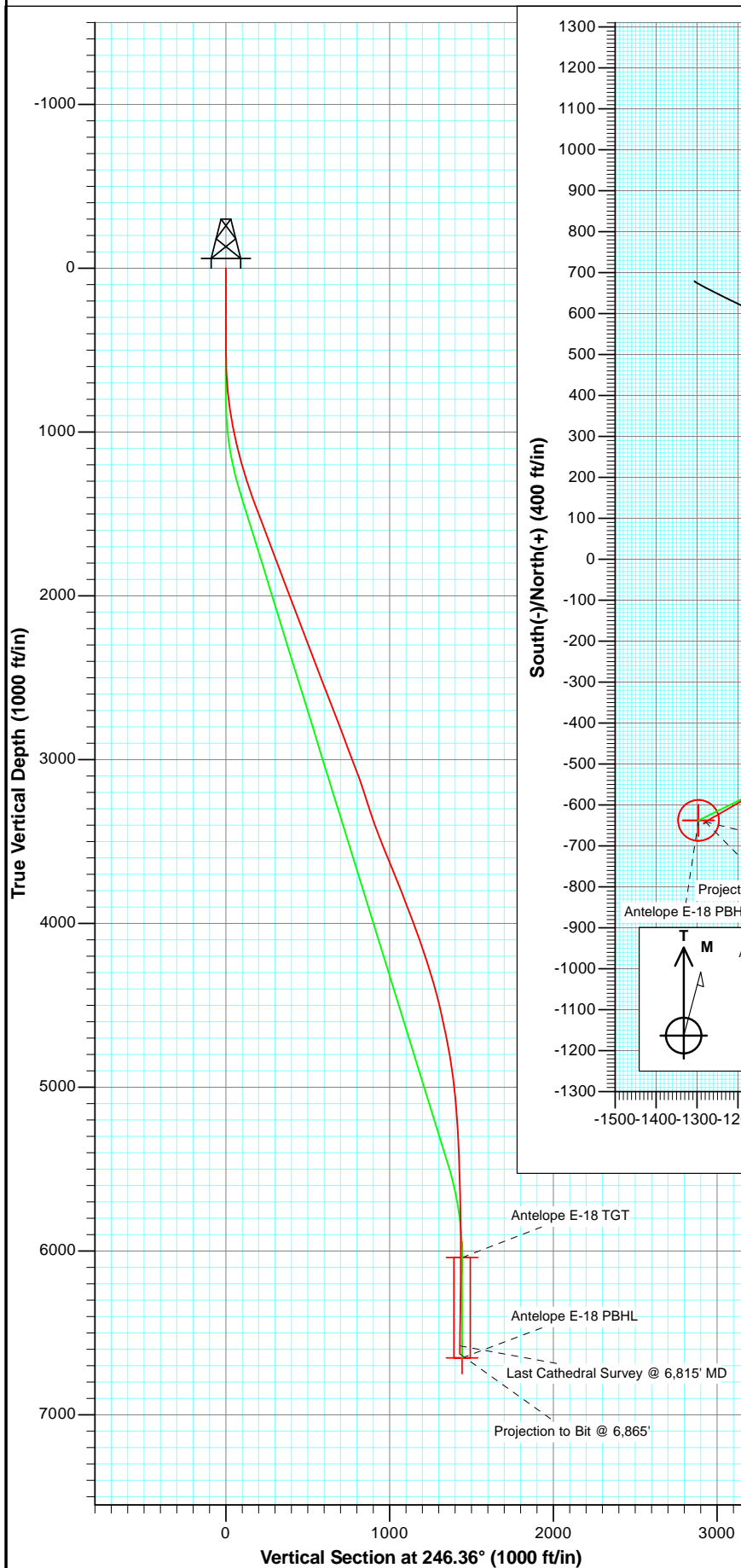




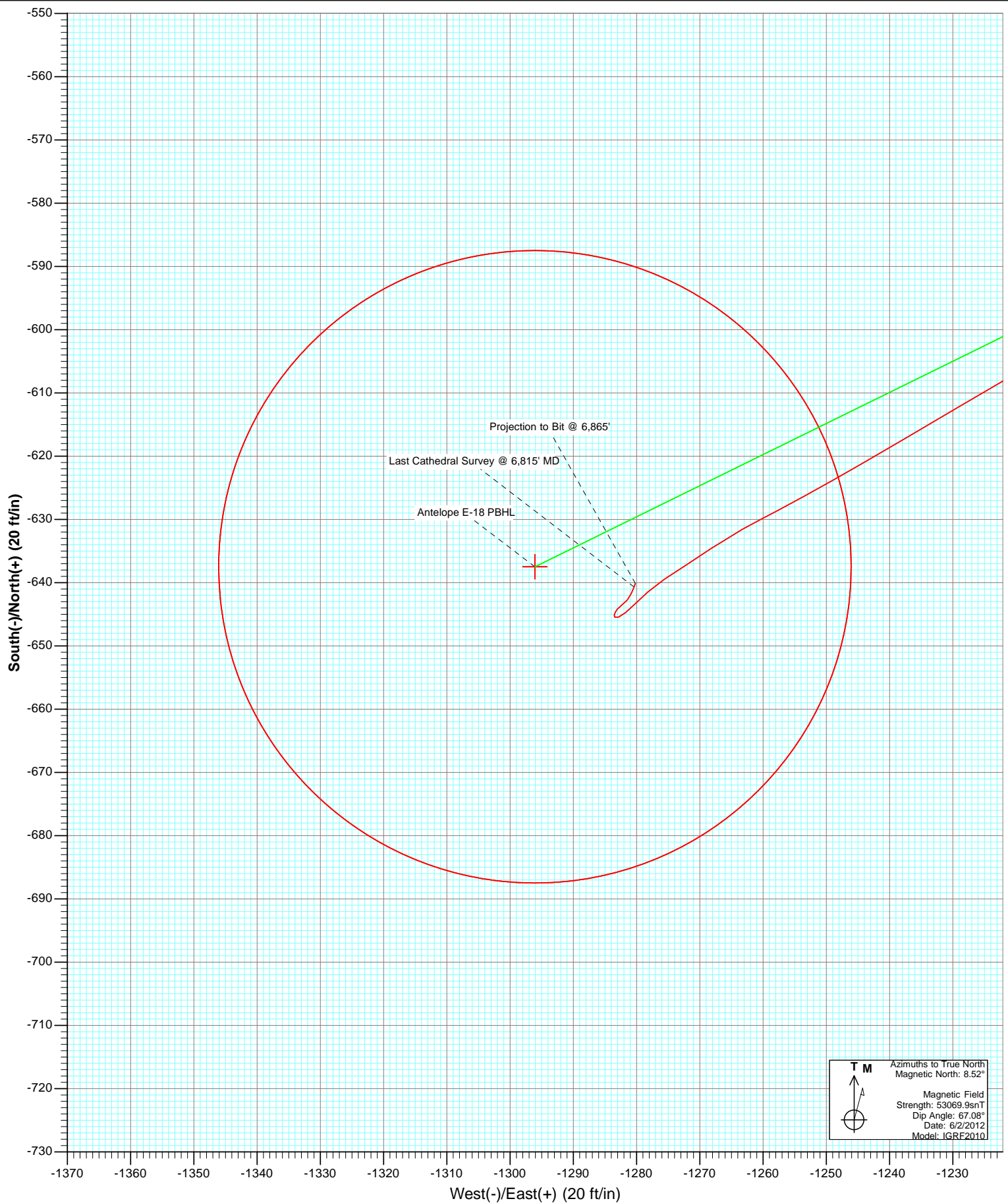
Project: Weld County  
Site: Antelope D-18 Pad  
Well: Antelope E-18  
Wellbore: DD  
Plan: FINAL



DD Antelope E-18 125371; 172255; DN						
KBE @ 4605.0ft (Mid Continent #1) North American Datum 1983 Well Antelope E-18, True North						
Type	Target	Azimuth	Origin	Type	N/S	E/W
User	No Target (Freehand)	246.36	Slot		0.0	0.0
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
Antelope E-18 TGT	6040.0	-637.5	-1296.1	40.391970	-104.374883	
Antelope E-18 PBHL	6653.0	-637.5	-1296.1	40.391970	-104.374883	



Project: Weld County  
Site: Antelope D-18 Pad  
Well: Antelope E-18  
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 E-18
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KBE @ 4605.0ft (Mid Continent #1)
<b>Site:</b>	Antelope D-18 Pad	<b>MD Reference:</b>	KBE @ 4605.0ft (Mid Continent #1)
<b>Well:</b>	Antelope E-18	<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 D-18 Pad			
Site Position:		Northing:	1,388,280.15 ft	Latitude:	40.393721
From:	Lat/Long	Easting:	3,314,665.42 ft	Longitude:	-104.370282
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.73 °

Well	Antelope E-18					
Well Position	+N/-S	0.0 ft	Northing:	1,388,279.97 ft	Latitude:	40.393720
	+E/-W	0.0 ft	Easting:	3,314,679.91 ft	Longitude:	-104.370230
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,595.0 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	6/2/2012	8.52	67.08	53,070

<b>Design</b>	DD				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	246.36	

<b>Survey Program</b>	<b>Date</b>	7/24/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
525.0	6,865.0	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	0.30	197.00	525.0	-1.3	-0.4	0.9	0.06	0.06		
620.0	2.30	258.00	620.0	-1.9	-2.3	2.9	2.28	2.11		
713.0	4.40	263.60	712.8	-2.7	-7.7	8.2	2.28	2.26		
807.0	6.80	257.10	806.4	-4.4	-16.7	17.1	2.64	2.55		
902.0	9.80	257.40	900.3	-7.4	-30.1	30.5	3.16	3.16		
996.0	11.70	254.60	992.7	-11.7	-47.1	47.8	2.10	2.02		
1,090.0	13.10	249.80	1,084.5	-17.9	-66.3	67.9	1.85	1.49		
1,185.0	15.50	251.40	1,176.6	-25.7	-88.4	91.3	2.56	2.53		
1,279.0	17.10	248.80	1,266.8	-34.7	-113.2	117.6	1.87	1.70		
1,372.0	19.00	246.40	1,355.2	-45.7	-139.8	146.4	2.19	2.04		
1,465.0	20.70	244.20	1,442.7	-58.9	-168.5	178.0	2.00	1.83		
1,560.0	21.20	245.30	1,531.4	-73.4	-199.2	211.9	0.67	0.53		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well Antelope E-18
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KBE @ 4605.0ft (Mid Continent #1)
<b>Site:</b>	Antelope D-18 Pad	<b>MD Reference:</b>	KBE @ 4605.0ft (Mid Continent #1)
<b>Well:</b>	Antelope E-18	<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
1,655.0	20.00	244.20	1,620.3	-87.6	-229.5	245.3	1.33	-1.26	
1,749.0	21.30	244.70	1,708.3	-101.9	-259.4	278.5	1.40	1.38	
1,844.0	20.00	243.70	1,797.2	-116.5	-289.5	311.9	1.42	-1.37	
1,938.0	20.60	242.20	1,885.3	-131.3	-318.6	344.5	0.84	0.64	
2,030.0	21.70	242.70	1,971.1	-146.7	-348.0	377.6	1.21	1.20	
2,123.0	20.60	240.70	2,057.9	-162.6	-377.6	411.1	1.41	-1.18	
2,218.0	21.40	243.70	2,146.6	-178.4	-407.7	445.0	1.41	0.84	
2,311.0	20.30	243.50	2,233.5	-193.1	-437.3	478.1	1.19	-1.18	
2,405.0	21.50	242.00	2,321.3	-208.5	-467.1	511.5	1.40	1.28	
2,499.0	20.20	241.90	2,409.1	-224.2	-496.6	544.9	1.38	-1.38	
2,593.0	21.50	242.70	2,497.0	-239.8	-526.3	578.3	1.42	1.38	
2,687.0	20.40	242.20	2,584.7	-255.3	-556.1	611.8	1.19	-1.17	
2,781.0	22.10	243.40	2,672.4	-270.9	-586.4	645.8	1.87	1.81	
2,874.0	21.30	242.80	2,758.8	-286.4	-617.0	680.1	0.89	-0.86	
2,968.0	20.10	242.60	2,846.7	-301.7	-646.6	713.3	1.28	-1.28	
3,060.0	20.70	242.70	2,932.9	-316.4	-675.1	745.3	0.65	0.65	
3,153.0	21.50	244.40	3,019.7	-331.3	-705.0	778.7	1.08	0.86	
3,246.0	19.20	244.90	3,106.9	-345.2	-734.2	811.0	2.48	-2.47	
3,339.0	18.50	243.80	3,194.9	-358.2	-761.3	841.1	0.84	-0.75	
3,432.0	18.30	244.50	3,283.1	-371.0	-787.8	870.4	0.32	-0.22	
3,526.0	18.90	243.00	3,372.2	-384.2	-814.6	900.3	0.82	0.64	
3,620.0	21.30	242.70	3,460.5	-399.0	-843.4	932.6	2.56	2.55	
3,716.0	21.90	242.10	3,549.7	-415.3	-874.7	967.8	0.67	0.62	
3,810.0	22.50	241.10	3,636.8	-432.2	-905.9	1,003.2	0.75	0.64	
3,905.0	22.20	241.50	3,724.6	-449.6	-937.6	1,039.2	0.35	-0.32	
3,999.0	21.50	240.90	3,811.9	-466.4	-968.3	1,074.1	0.78	-0.74	
4,093.0	20.70	240.70	3,899.6	-482.9	-997.8	1,107.7	0.85	-0.85	
4,187.0	21.00	243.30	3,987.4	-498.6	-1,027.4	1,141.1	1.03	0.32	
4,282.0	19.90	242.40	4,076.4	-513.8	-1,056.9	1,174.2	1.20	-1.16	
4,376.0	18.80	241.70	4,165.1	-528.4	-1,084.4	1,205.3	1.20	-1.17	
4,470.0	17.80	240.30	4,254.4	-542.7	-1,110.2	1,234.7	1.16	-1.06	
4,564.0	16.30	239.10	4,344.2	-556.6	-1,134.0	1,262.0	1.64	-1.60	
4,659.0	14.90	239.60	4,435.7	-569.6	-1,156.0	1,287.4	1.48	-1.47	
4,753.0	13.50	239.50	4,526.9	-581.3	-1,175.9	1,310.3	1.49	-1.49	
4,848.0	11.80	240.10	4,619.6	-591.8	-1,193.9	1,331.0	1.79	-1.79	
4,942.0	11.10	239.90	4,711.7	-601.1	-1,210.0	1,349.5	0.75	-0.74	
5,036.0	9.80	239.50	4,804.1	-609.7	-1,224.7	1,366.4	1.39	-1.38	
5,130.0	8.20	239.70	4,897.0	-617.1	-1,237.4	1,381.0	1.70	-1.70	
5,224.0	6.50	240.10	4,990.2	-623.2	-1,247.8	1,393.0	1.81	-1.81	
5,318.0	5.40	242.30	5,083.7	-627.9	-1,256.3	1,402.7	1.19	-1.17	
5,413.0	4.00	241.20	5,178.4	-631.5	-1,263.2	1,410.4	1.48	-1.47	
5,506.0	3.20	235.50	5,271.2	-634.6	-1,268.2	1,416.2	0.94	-0.86	
5,601.0	2.60	237.70	5,366.1	-637.2	-1,272.2	1,421.0	0.64	-0.63	
5,694.0	2.30	235.60	5,459.0	-639.4	-1,275.5	1,424.9	0.34	-0.32	
5,788.0	1.80	228.90	5,552.9	-641.4	-1,278.2	1,428.1	0.59	-0.53	
5,882.0	1.50	224.60	5,646.9	-643.3	-1,280.2	1,430.7	0.35	-0.32	
5,977.0	1.10	231.40	5,741.8	-644.7	-1,281.8	1,432.7	0.45	-0.42	
6,071.0	0.50	250.20	5,835.8	-645.4	-1,282.8	1,434.0	0.69	-0.64	
6,165.0	0.30	301.80	5,929.8	-645.5	-1,283.4	1,434.6	0.42	-0.21	
6,260.0	0.30	34.20	6,024.8	-645.1	-1,283.5	1,434.5	0.46	0.00	
6,354.0	0.20	355.90	6,118.8	-644.8	-1,283.4	1,434.2	0.20	-0.11	
6,449.0	0.60	39.30	6,213.8	-644.2	-1,283.1	1,433.7	0.50	0.42	
6,543.0	0.70	55.70	6,307.8	-643.5	-1,282.3	1,432.7	0.22	0.11	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well Antelope E-18
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KBE @ 4605.0ft (Mid Continent #1)
<b>Site:</b>	Antelope D-18 Pad	<b>MD Reference:</b>	KBE @ 4605.0ft (Mid Continent #1)
<b>Well:</b>	Antelope E-18	<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
6,637.0	0.70	38.70	6,401.8	-642.7	-1,281.5	1,431.6	0.22	0.00	
6,732.0	0.80	26.20	6,496.8	-641.7	-1,280.8	1,430.6	0.20	0.11	
6,815.0	0.70	19.10	6,579.8	-640.7	-1,280.4	1,429.8	0.16	-0.12	Last Cathedral Survey @ 6,815' MD Projection to Bit @ 6,865'
6,865.0	0.70	19.10	6,629.8	-640.1	-1,280.2	1,429.4	0.00	0.00	

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Antelope E-18 TGT	0.00	0.00	6,040.0	-637.5	-1,296.1	1,387,626.03	3,313,392.07	40.391970	-104.374883
- hit/miss target									
- Shape									
- actual wellpath misses target center by 14.7ft at 6275.2ft MD (6040.0 TVD, -645.1 N, -1283.5 E)									
- Point									
Antelope E-18 PBHL	0.00	0.00	6,653.0	-637.5	-1,296.1	1,387,626.03	3,313,392.07	40.391970	-104.374883
- actual wellpath misses target center by 28.2ft at 6865.0ft MD (6629.8 TVD, -640.1 N, -1280.2 E)									
- Circle (radius 50.0)									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
6,815.0	6,579.8	-640.7	-1,280.4	Last Cathedral Survey @ 6,815' MD	
6,865.0	6,629.8	-640.1	-1,280.2	Projection to Bit @ 6,865'	

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