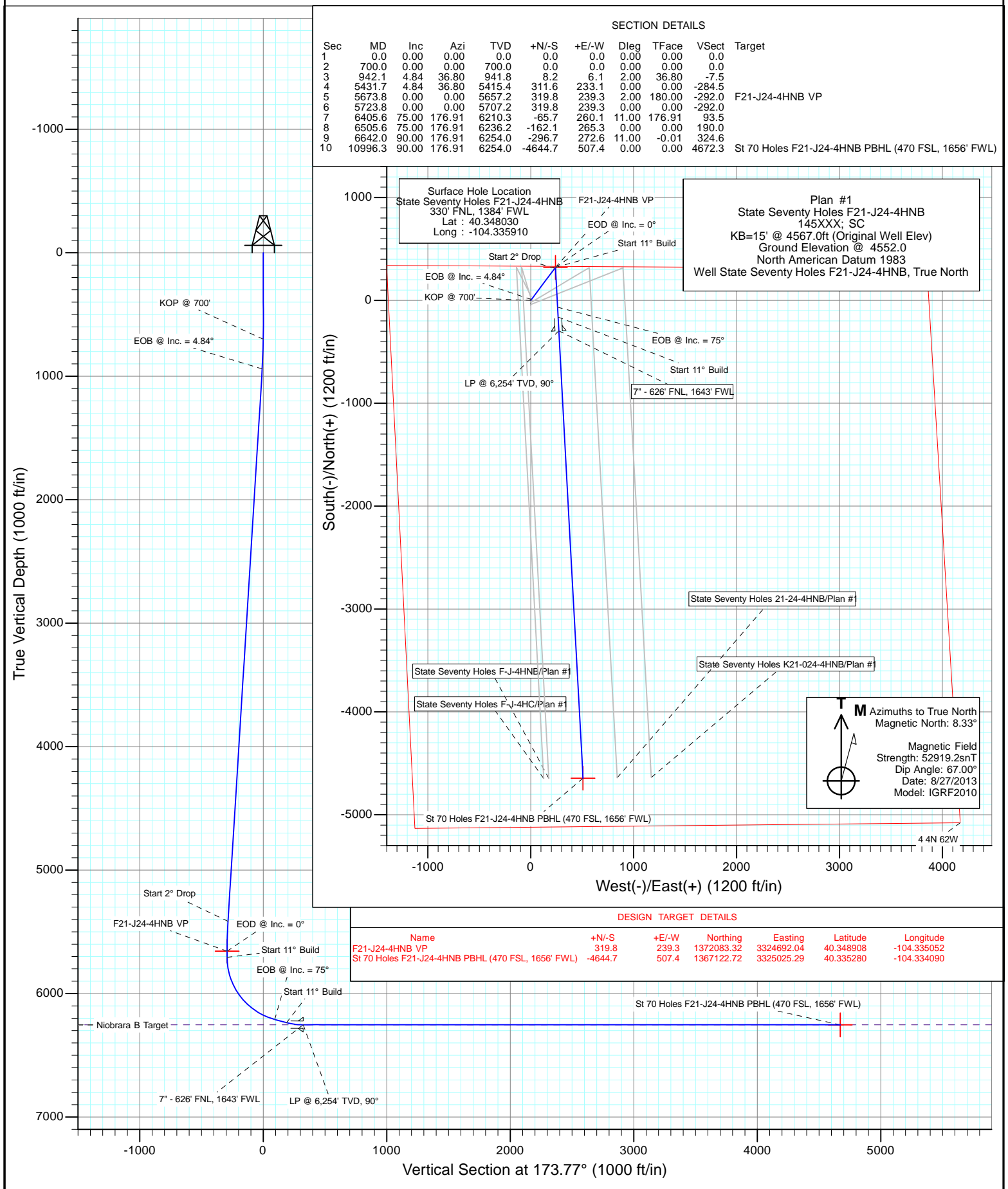




Project: Weld County  
Site: State 70 Holes F-4 Pad  
Well: State Seventy Holes F21-J24-4HNB  
Wellbore: OH  
Design: Plan #1



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site:</b>	State 70 Holes F-4 Pad	<b>North Reference:</b>	True
<b>Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

<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		State 70 Holes F-4 Pad			
Site Position:		Northing:	1,371,738.54 ft	Latitude:	40.347970
From:	Lat/Long	Easting:	3,324,457.27 ft	Longitude:	-104.335910
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.75 °

Well	State Seventy Holes F21-J24-4HNB					
Well Position	+N/-S	0.0 ft	Northing:	1,371,760.38 ft	Latitude:	40.348030
	+E/-W	0.0 ft	Easting:	3,324,456.99 ft	Longitude:	-104.335910
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,552.0 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
			(°)	(°)	(nT)
	IGRF2010	8/27/2013	8.33	67.00	52,919

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<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	173.77

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.00	0.00	
942.1	4.84	36.80	941.8	8.2	6.1	2.00	2.00	0.00	36.80	
5,431.7	4.84	36.80	5,415.4	311.6	233.1	0.00	0.00	0.00	0.00	
5,673.8	0.00	0.00	5,657.2	319.8	239.3	2.00	-2.00	0.00	180.00	F21-J24-4HNB VP
5,723.8	0.00	0.00	5,707.2	319.8	239.3	0.00	0.00	0.00	0.00	
6,405.6	75.00	176.91	6,210.3	-65.7	260.1	11.00	11.00	0.00	176.91	
6,505.6	75.00	176.91	6,236.2	-162.1	265.3	0.00	0.00	0.00	0.00	
6,642.0	90.00	176.91	6,254.0	-296.7	272.6	11.00	11.00	0.00	-0.01	
10,996.3	90.00	176.91	6,254.0	-4,644.7	507.4	0.00	0.00	0.00	0.00	St 70 Holes F21-J24-4

# Cathedral Energy Services

## Planning Report

**Database:** USA EDM 5000 Multi Users DB  
**Company:** Bonanza Creek Energy Operating Company, LLC  
**Project:** Weld County  
**Site:** State 70 Holes F-4 Pad  
**Well:** State Seventy Holes F21-J24-4HNB  
**Wellbore:** OH  
**Design:** Plan #1

**Local Co-ordinate Reference:** Well State Seventy Holes F21-J24-4HNB  
**TVD Reference:** KB=15' @ 4567.0ft (Original Well Elev)  
**MD Reference:** KB=15' @ 4567.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	KOP @ 700'
800.0	2.00	36.80	800.0	1.4	1.0	-1.3	2.00	2.00	
900.0	4.00	36.80	899.8	5.6	4.2	-5.1	2.00	2.00	
942.1	4.84	36.80	941.8	8.2	6.1	-7.5	2.00	2.00	EOB @ Inc. = 4.84°
1,000.0	4.84	36.80	999.5	12.1	9.1	-11.0	0.00	0.00	
1,100.0	4.84	36.80	1,099.1	18.9	14.1	-17.2	0.00	0.00	
1,200.0	4.84	36.80	1,198.8	25.6	19.2	-23.4	0.00	0.00	
1,300.0	4.84	36.80	1,298.4	32.4	24.2	-29.6	0.00	0.00	
1,400.0	4.84	36.80	1,398.1	39.1	29.3	-35.7	0.00	0.00	
1,500.0	4.84	36.80	1,497.7	45.9	34.3	-41.9	0.00	0.00	
1,600.0	4.84	36.80	1,597.4	52.7	39.4	-48.1	0.00	0.00	
1,700.0	4.84	36.80	1,697.0	59.4	44.4	-54.2	0.00	0.00	
1,800.0	4.84	36.80	1,796.7	66.2	49.5	-60.4	0.00	0.00	
1,900.0	4.84	36.80	1,896.3	72.9	54.6	-66.6	0.00	0.00	
2,000.0	4.84	36.80	1,995.9	79.7	59.6	-72.7	0.00	0.00	
2,100.0	4.84	36.80	2,095.6	86.4	64.7	-78.9	0.00	0.00	
2,200.0	4.84	36.80	2,195.2	93.2	69.7	-85.1	0.00	0.00	
2,300.0	4.84	36.80	2,294.9	100.0	74.8	-91.3	0.00	0.00	
2,400.0	4.84	36.80	2,394.5	106.7	79.8	-97.4	0.00	0.00	
2,500.0	4.84	36.80	2,494.2	113.5	84.9	-103.6	0.00	0.00	
2,600.0	4.84	36.80	2,593.8	120.2	90.0	-109.8	0.00	0.00	
2,700.0	4.84	36.80	2,693.4	127.0	95.0	-115.9	0.00	0.00	
2,800.0	4.84	36.80	2,793.1	133.8	100.1	-122.1	0.00	0.00	
2,900.0	4.84	36.80	2,892.7	140.5	105.1	-128.3	0.00	0.00	
3,000.0	4.84	36.80	2,992.4	147.3	110.2	-134.4	0.00	0.00	
3,100.0	4.84	36.80	3,092.0	154.0	115.2	-140.6	0.00	0.00	
3,200.0	4.84	36.80	3,191.7	160.8	120.3	-146.8	0.00	0.00	
3,300.0	4.84	36.80	3,291.3	167.6	125.4	-153.0	0.00	0.00	
3,400.0	4.84	36.80	3,390.9	174.3	130.4	-159.1	0.00	0.00	
3,500.0	4.84	36.80	3,490.6	181.1	135.5	-165.3	0.00	0.00	
3,600.0	4.84	36.80	3,590.2	187.8	140.5	-171.5	0.00	0.00	
3,700.0	4.84	36.80	3,689.9	194.6	145.6	-177.6	0.00	0.00	
3,800.0	4.84	36.80	3,789.5	201.4	150.6	-183.8	0.00	0.00	
3,900.0	4.84	36.80	3,889.2	208.1	155.7	-190.0	0.00	0.00	
4,000.0	4.84	36.80	3,988.8	214.9	160.8	-196.1	0.00	0.00	
4,100.0	4.84	36.80	4,088.4	221.6	165.8	-202.3	0.00	0.00	
4,200.0	4.84	36.80	4,188.1	228.4	170.9	-208.5	0.00	0.00	
4,300.0	4.84	36.80	4,287.7	235.1	175.9	-214.7	0.00	0.00	
4,400.0	4.84	36.80	4,387.4	241.9	181.0	-220.8	0.00	0.00	
4,500.0	4.84	36.80	4,487.0	248.7	186.0	-227.0	0.00	0.00	
4,600.0	4.84	36.80	4,586.7	255.4	191.1	-233.2	0.00	0.00	
4,700.0	4.84	36.80	4,686.3	262.2	196.1	-239.3	0.00	0.00	
4,800.0	4.84	36.80	4,785.9	268.9	201.2	-245.5	0.00	0.00	
4,900.0	4.84	36.80	4,885.6	275.7	206.3	-251.7	0.00	0.00	
5,000.0	4.84	36.80	4,985.2	282.5	211.3	-257.8	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site:</b>	State 70 Holes F-4 Pad	<b>North Reference:</b>	True
<b>Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,100.0	4.84	36.80	5,084.9	289.2	216.4	-264.0	0.00	0.00	
5,200.0	4.84	36.80	5,184.5	296.0	221.4	-270.2	0.00	0.00	
5,300.0	4.84	36.80	5,284.2	302.7	226.5	-276.4	0.00	0.00	
5,400.0	4.84	36.80	5,383.8	309.5	231.5	-282.5	0.00	0.00	
5,431.7	4.84	36.80	5,415.4	311.6	233.1	-284.5	0.00	0.00	Start 2° Drop
5,500.0	3.48	36.80	5,483.5	315.6	236.1	-288.1	2.00	-2.00	
5,600.0	1.48	36.80	5,583.4	319.1	238.7	-291.3	2.00	-2.00	
5,673.8	0.00	0.00	5,657.2	319.8	239.3	-292.0	2.00	-2.00	EOD @ Inc. = 0°
5,700.0	0.00	0.00	5,683.4	319.8	239.3	-292.0	0.00	0.00	
5,723.8	0.00	0.00	5,707.2	319.8	239.3	-292.0	0.00	0.00	Start 11° Build
5,750.0	2.88	176.91	5,733.4	319.2	239.3	-291.3	11.00	11.00	
5,800.0	8.38	176.91	5,783.1	314.3	239.6	-286.4	11.00	11.00	
5,850.0	13.88	176.91	5,832.2	304.6	240.1	-276.8	11.00	11.00	
5,900.0	19.38	176.91	5,880.1	290.3	240.9	-262.5	11.00	11.00	
5,950.0	24.88	176.91	5,926.4	271.5	241.9	-243.7	11.00	11.00	
6,000.0	30.38	176.91	5,970.6	248.4	243.1	-220.5	11.00	11.00	
6,050.0	35.88	176.91	6,012.5	221.1	244.6	-193.3	11.00	11.00	
6,100.0	41.38	176.91	6,051.5	190.0	246.3	-162.1	11.00	11.00	
6,150.0	46.88	176.91	6,087.4	155.2	248.2	-127.3	11.00	11.00	
6,200.0	52.38	176.91	6,119.8	117.2	250.2	-89.3	11.00	11.00	
6,250.0	57.88	176.91	6,148.4	76.2	252.4	-48.4	11.00	11.00	
6,300.0	63.38	176.91	6,172.9	32.7	254.8	-4.9	11.00	11.00	
6,350.0	68.88	176.91	6,193.1	-12.9	257.2	40.8	11.00	11.00	
6,400.0	74.38	176.91	6,208.8	-60.3	259.8	88.1	11.00	11.00	
6,405.6	75.00	176.91	6,210.3	-65.7	260.1	93.5	11.00	11.00	EOB @ Inc. = 75°
6,505.6	75.00	176.91	6,236.2	-162.1	265.3	190.0	0.00	0.00	Start 11° Build
6,550.0	79.88	176.91	6,245.9	-205.4	267.6	233.2	11.00	11.00	
6,600.0	85.38	176.91	6,252.3	-254.9	270.3	282.7	11.00	11.00	
6,642.0	90.00	176.91	6,254.0	-296.8	272.6	324.6	10.99	10.99	LP @ 6,254' TVD, 90° - 7" - 626' FNL, 1643' FV
6,700.0	90.00	176.91	6,254.0	-354.7	275.7	382.5	0.00	0.00	
6,800.0	90.00	176.91	6,254.0	-454.5	281.1	482.4	0.00	0.00	
6,900.0	90.00	176.91	6,254.0	-554.4	286.5	582.2	0.00	0.00	
7,000.0	90.00	176.91	6,254.0	-654.2	291.9	682.1	0.00	0.00	
7,100.0	90.00	176.91	6,254.0	-754.1	297.3	781.9	0.00	0.00	
7,200.0	90.00	176.91	6,254.0	-853.9	302.6	881.8	0.00	0.00	
7,300.0	90.00	176.91	6,254.0	-953.8	308.0	981.6	0.00	0.00	
7,400.0	90.00	176.91	6,254.0	-1,053.7	313.4	1,081.5	0.00	0.00	
7,500.0	90.00	176.91	6,254.0	-1,153.5	318.8	1,181.3	0.00	0.00	
7,600.0	90.00	176.91	6,254.0	-1,253.4	324.2	1,281.2	0.00	0.00	
7,700.0	90.00	176.91	6,254.0	-1,353.2	329.6	1,381.0	0.00	0.00	
7,800.0	90.00	176.91	6,254.0	-1,453.1	335.0	1,480.9	0.00	0.00	
7,900.0	90.00	176.91	6,254.0	-1,552.9	340.4	1,580.7	0.00	0.00	
8,000.0	90.00	176.91	6,254.0	-1,652.8	345.8	1,680.6	0.00	0.00	
8,100.0	90.00	176.91	6,254.0	-1,752.6	351.2	1,780.4	0.00	0.00	
8,200.0	90.00	176.91	6,254.0	-1,852.5	356.6	1,880.3	0.00	0.00	
8,300.0	90.00	176.91	6,254.0	-1,952.3	362.0	1,980.1	0.00	0.00	
8,400.0	90.00	176.91	6,254.0	-2,052.2	367.4	2,080.0	0.00	0.00	
8,500.0	90.00	176.91	6,254.0	-2,152.1	372.8	2,179.8	0.00	0.00	
8,600.0	90.00	176.91	6,254.0	-2,251.9	378.1	2,279.7	0.00	0.00	
8,700.0	90.00	176.91	6,254.0	-2,351.8	383.5	2,379.5	0.00	0.00	
8,800.0	90.00	176.91	6,254.0	-2,451.6	388.9	2,479.4	0.00	0.00	
8,900.0	90.00	176.91	6,254.0	-2,551.5	394.3	2,579.2	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site:</b>	State 70 Holes F-4 Pad	<b>North Reference:</b>	True
<b>Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,000.0	90.00	176.91	6,254.0	-2,651.3	399.7	2,679.1	0.00	0.00	
9,100.0	90.00	176.91	6,254.0	-2,751.2	405.1	2,778.9	0.00	0.00	
9,200.0	90.00	176.91	6,254.0	-2,851.0	410.5	2,878.8	0.00	0.00	
9,300.0	90.00	176.91	6,254.0	-2,950.9	415.9	2,978.6	0.00	0.00	
9,400.0	90.00	176.91	6,254.0	-3,050.7	421.3	3,078.5	0.00	0.00	
9,500.0	90.00	176.91	6,254.0	-3,150.6	426.7	3,178.3	0.00	0.00	
9,600.0	90.00	176.91	6,254.0	-3,250.5	432.1	3,278.2	0.00	0.00	
9,700.0	90.00	176.91	6,254.0	-3,350.3	437.5	3,378.0	0.00	0.00	
9,800.0	90.00	176.91	6,254.0	-3,450.2	442.9	3,477.9	0.00	0.00	
9,900.0	90.00	176.91	6,254.0	-3,550.0	448.3	3,577.7	0.00	0.00	
10,000.0	90.00	176.91	6,254.0	-3,649.9	453.6	3,677.6	0.00	0.00	
10,100.0	90.00	176.91	6,254.0	-3,749.7	459.0	3,777.4	0.00	0.00	
10,200.0	90.00	176.91	6,254.0	-3,849.6	464.4	3,877.3	0.00	0.00	
10,300.0	90.00	176.91	6,254.0	-3,949.4	469.8	3,977.1	0.00	0.00	
10,400.0	90.00	176.91	6,254.0	-4,049.3	475.2	4,077.0	0.00	0.00	
10,500.0	90.00	176.91	6,254.0	-4,149.1	480.6	4,176.8	0.00	0.00	
10,600.0	90.00	176.91	6,254.0	-4,249.0	486.0	4,276.6	0.00	0.00	
10,700.0	90.00	176.91	6,254.0	-4,348.9	491.4	4,376.5	0.00	0.00	
10,800.0	90.00	176.91	6,254.0	-4,448.7	496.8	4,476.3	0.00	0.00	
10,900.0	90.00	176.91	6,254.0	-4,548.6	502.2	4,576.2	0.00	0.00	
10,996.3	90.00	176.91	6,254.0	-4,644.7	507.4	4,672.3	0.00	0.00	TD @ 10,996.3' MD - Niobrara B Target

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
St 70 Holes F21-J24-4H - hit/miss target - Shape - Point	0.00	0.00	6,254.0	-4,644.7	507.4	1,367,122.72	3,325,025.29	40.335280	-104.334090
F21-J24-4HNB VP - plan hits target center - Point	0.00	0.00	5,657.2	319.8	239.3	1,372,083.32	3,324,692.04	40.348908	-104.335052
F21-J24-4HNB TGT - plan misses target center by 8.3ft at 6550.0ft MD (6245.9 TVD, -205.4 N, 267.6 E) - Point	0.00	0.00	6,254.0	-204.0	267.6	1,371,559.92	3,324,727.22	40.347470	-104.334950

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
6,642.0	6,254.0	7" - 626' FNL, 1643' FWL			

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
10,996.3	6,254.0	Niobrara B Target		0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Project:</b>	Weld County	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site:</b>	State 70 Holes F-4 Pad	<b>North Reference:</b>	True
<b>Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
700.0	700.0	0.0	0.0	KOP @ 700'
942.1	941.8	8.2	6.1	EOB @ Inc. = 4.84°
5,431.7	5,415.4	311.6	233.1	Start 2° Drop
5,673.8	5,657.2	319.8	239.3	EOD @ Inc. = 0°
5,723.8	5,707.2	319.8	239.3	Start 11° Build
6,405.6	6,210.3	-65.7	260.1	EOB @ Inc. = 75°
6,505.6	6,236.2	-162.1	265.3	Start 11° Build
6,642.0	6,254.0	-296.7	272.6	LP @ 6,254' TVD, 90°
10,996.3	6,254.0	-4,644.7	507.4	TD @ 10,996.3' MD

# **Bonanza Creek Energy Operating Company, LLC**

**Weld County**

**State 70 Holes F-4 Pad**

**State Seventy Holes F21-J24-4HNB**

**OH**

**Plan #1**

## **Anticollision Report**

**27 August, 2013**

## Anticollision Report

Reference	Plan #1
<b>Filter type:</b>	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference
<b>Interpolation Method:</b>	MD Interval 100.0ft
<b>Depth Range:</b>	Unlimited
<b>Results Limited by:</b>	Maximum center-center distance of 1,299.6ft
<b>Warning Levels Evaluated at:</b>	2.00 Sigma
	<div> <div><b>Error Model:</b></div> <div>Systematic Ellipse</div> </div> <div> <div><b>Scan Method:</b></div> <div>Closest Approach 3D</div> </div> <div> <div><b>Error Surface:</b></div> <div>Elliptical Conic</div> </div>

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
State 70 Holes F-4 Pad						
State Seventy Holes 21-24-4HNB - OH - Plan #1	790.6	791.2	20.3	17.5	7.453	CC
State Seventy Holes 21-24-4HNB - OH - Plan #1	800.0	800.6	20.3	17.5	7.364	ES
State Seventy Holes 21-24-4HNB - OH - Plan #1	10,996.3	11,005.4	331.4	163.5	1.974	SF
State Seventy Holes F-J-4HC - OH - Plan #1	1,039.5	1,037.5	29.9	26.3	8.311	CC, ES
State Seventy Holes F-J-4HC - OH - Plan #1	10,996.3	11,186.6	427.0	275.3	2.814	SF
State Seventy Holes F-J-4HNB - OH - Plan #1	932.8	932.0	14.1	10.9	4.405	CC, ES
State Seventy Holes F-J-4HNB - OH - Plan #1	10,996.3	10,995.5	331.8	163.4	1.970	SF
State Seventy Holes K21-024-4HNB - OH - Plan #1	747.0	747.7	37.7	35.1	14.579	CC, ES
State Seventy Holes K21-024-4HNB - OH - Plan #1	10,996.3	11,036.3	662.9	495.3	3.955	SF



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design State 70 Holes F-4 Pad - State Seventy Holes 21-24-4HNB - OH - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-21.9	0.0	21.9					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-21.9	0.0	21.9	21.6	0.30	73.654		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-21.9	0.0	21.9	21.2	0.65	33.841		
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-21.9	0.0	21.9	20.9	0.99	21.967		
400.0	400.0	400.0	400.0	0.7	0.7	180.00	-21.9	0.0	21.9	20.5	1.34	16.261		
500.0	500.0	500.0	500.0	0.8	0.8	180.00	-21.9	0.0	21.9	20.2	1.69	12.908		
600.0	600.0	600.0	600.0	1.0	1.0	180.00	-21.9	0.0	21.9	19.8	2.04	10.702		
700.0	700.0	700.4	700.3	1.2	1.2	175.88	-21.0	1.5	21.0	18.6	2.39	8.778		
790.6	790.6	791.2	791.0	1.4	1.4	130.05	-18.6	5.5	20.3	17.5	2.72	7.453 CC		
800.0	800.0	800.6	800.4	1.4	1.4	129.00	-18.3	6.0	20.3	17.5	2.75	7.364 ES		
900.0	899.8	900.6	900.0	1.6	1.6	117.41	-13.8	13.5	21.5	18.3	3.14	6.842		
1,000.0	999.5	1,000.4	999.1	1.8	1.8	105.80	-7.5	24.0	24.6	21.1	3.57	6.897		
1,100.0	1,099.1	1,100.2	1,097.9	2.0	2.1	94.12	-0.3	36.0	29.1	25.1	4.02	7.256		
1,200.0	1,198.8	1,199.9	1,196.6	2.2	2.3	85.79	6.9	48.1	34.5	30.1	4.45	7.748		
1,300.0	1,298.4	1,299.7	1,295.4	2.4	2.6	79.79	14.1	60.1	40.4	35.5	4.89	8.271		
1,400.0	1,398.1	1,399.4	1,394.1	2.6	2.9	75.36	21.4	72.2	46.6	41.3	5.31	8.779		
1,500.0	1,497.7	1,499.2	1,492.9	2.8	3.2	71.98	28.6	84.3	53.1	47.3	5.73	9.256		
1,600.0	1,597.4	1,598.9	1,591.6	3.0	3.5	69.34	35.8	96.3	59.6	53.5	6.15	9.694		
1,700.0	1,697.0	1,698.7	1,690.4	3.2	3.8	67.23	43.0	108.4	66.3	59.8	6.57	10.093		
1,800.0	1,796.7	1,798.4	1,789.2	3.5	4.0	65.50	50.2	120.4	73.1	66.1	6.99	10.458		
1,900.0	1,896.3	1,898.2	1,887.9	3.7	4.3	64.07	57.4	132.5	79.9	72.5	7.41	10.790		
2,000.0	1,995.9	1,997.9	1,986.7	3.9	4.6	62.87	64.6	144.6	86.8	78.9	7.82	11.092		
2,100.0	2,095.6	2,097.7	2,085.4	4.1	4.9	61.84	71.9	156.6	93.6	85.4	8.24	11.369		
2,200.0	2,195.2	2,197.4	2,184.2	4.4	5.2	60.95	79.1	168.7	100.5	91.9	8.65	11.622		
2,300.0	2,294.9	2,297.2	2,282.9	4.6	5.5	60.17	86.3	180.7	107.5	98.4	9.07	11.855		
2,400.0	2,394.5	2,396.9	2,381.7	4.8	5.8	59.50	93.5	192.8	114.4	104.9	9.48	12.070		
2,500.0	2,494.2	2,496.7	2,480.4	5.0	6.1	58.89	100.7	204.8	121.4	111.5	9.90	12.268		
2,600.0	2,593.8	2,596.4	2,579.2	5.3	6.4	58.36	107.9	216.9	128.4	118.1	10.31	12.451		
2,700.0	2,693.4	2,696.2	2,677.9	5.5	6.7	57.88	115.1	229.0	135.4	124.6	10.72	12.622		
2,800.0	2,793.1	2,795.9	2,776.7	5.7	7.0	57.44	122.4	241.0	142.3	131.2	11.14	12.780		
2,900.0	2,892.7	2,895.7	2,875.5	5.9	7.3	57.05	129.6	253.1	149.3	137.8	11.55	12.928		
3,000.0	2,992.4	2,995.4	2,974.2	6.2	7.6	56.69	136.8	265.1	156.4	144.4	11.97	13.066		
3,100.0	3,092.0	3,095.2	3,073.0	6.4	7.9	56.36	144.0	277.2	163.4	151.0	12.38	13.196		
3,200.0	3,191.7	3,194.9	3,171.7	6.6	8.2	56.06	151.2	289.2	170.4	157.6	12.79	13.317		
3,300.0	3,291.3	3,294.7	3,270.5	6.8	8.5	55.79	158.4	301.3	177.4	164.2	13.21	13.431		
3,400.0	3,390.9	3,394.4	3,369.2	7.1	8.8	55.53	165.7	313.4	184.4	170.8	13.62	13.539		
3,500.0	3,490.6	3,494.2	3,468.0	7.3	9.1	55.29	172.9	325.4	191.5	177.4	14.04	13.640		
3,600.0	3,590.2	3,593.9	3,566.7	7.5	9.4	55.07	180.1	337.5	198.5	184.0	14.45	13.736		
3,700.0	3,689.9	3,693.7	3,665.5	7.7	9.7	54.87	187.3	349.5	205.5	190.7	14.86	13.827		
3,800.0	3,789.5	3,793.4	3,764.3	8.0	10.0	54.68	194.5	361.6	212.6	197.3	15.28	13.913		
3,900.0	3,889.2	3,893.2	3,863.0	8.2	10.3	54.50	201.7	373.7	219.6	203.9	15.69	13.995		
4,000.0	3,988.8	3,992.9	3,961.8	8.4	10.6	54.33	208.9	385.7	226.7	210.5	16.11	14.072		
4,100.0	4,088.4	4,092.7	4,060.5	8.7	10.9	54.17	216.2	397.8	233.7	217.2	16.52	14.146		
4,200.0	4,188.1	4,192.4	4,159.3	8.9	11.2	54.02	223.4	409.8	240.7	223.8	16.93	14.216		
4,300.0	4,287.7	4,292.2	4,258.0	9.1	11.5	53.88	230.6	421.9	247.8	230.4	17.35	14.283		
4,400.0	4,387.4	4,391.9	4,356.8	9.3	11.8	53.75	237.8	433.9	254.8	237.1	17.76	14.347		
4,500.0	4,487.0	4,491.7	4,455.5	9.6	12.1	53.63	245.0	446.0	261.9	243.7	18.18	14.408		
4,600.0	4,586.7	4,591.4	4,554.3	9.8	12.4	53.51	252.2	458.1	268.9	250.3	18.59	14.467		
4,700.0	4,686.3	4,691.2	4,653.0	10.0	12.7	53.40	259.5	470.1	276.0	257.0	19.00	14.522		
4,800.0	4,785.9	4,790.9	4,751.8	10.2	13.0	53.29	266.7	482.2	283.0	263.6	19.42	14.576		
4,900.0	4,885.6	4,890.7	4,850.6	10.5	13.3	53.19	273.9	494.2	290.1	270.3	19.83	14.628		
5,000.0	4,985.2	4,990.4	4,949.3	10.7	13.6	53.09	281.1	506.3	297.2	276.9	20.25	14.677		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design State 70 Holes F-4 Pad - State Seventy Holes 21-24-4HNB - OH - Plan #1														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning		
5,100.0	5,084.9	5,090.2	5,048.1	10.9	13.9	53.00	288.3	518.3	304.2	283.5	20.66	14.724			
5,200.0	5,184.5	5,189.9	5,146.8	11.2	14.2	52.91	295.5	530.4	311.3	290.2	21.07	14.770			
5,300.0	5,284.2	5,289.7	5,245.6	11.4	14.5	52.82	302.7	542.5	318.3	296.8	21.49	14.814			
5,400.0	5,383.8	5,399.3	5,354.4	11.6	14.8	52.90	309.8	554.2	324.0	302.1	21.93	14.776			
5,500.0	5,483.5	5,510.0	5,464.7	11.8	15.0	53.25	314.7	562.4	326.8	304.5	22.36	14.615			
5,600.0	5,583.4	5,620.9	5,575.4	12.0	15.2	53.47	317.4	567.0	328.4	305.6	22.73	14.448			
5,700.0	5,683.4	5,728.9	5,683.4	12.1	15.3	90.32	318.0	568.0	328.7	305.3	23.42	14.032			
5,800.0	5,783.1	5,826.1	5,780.4	12.2	15.4	-86.63	312.8	568.2	328.7	305.5	23.18	14.181			
5,900.0	5,880.1	5,922.6	5,874.1	12.2	15.3	-86.78	290.6	569.5	328.7	305.6	23.00	14.287			
6,000.0	5,970.6	6,019.2	5,962.2	12.0	15.2	-87.04	251.4	571.6	328.6	306.0	22.63	14.524			
6,100.0	6,051.5	6,116.2	6,041.9	11.9	15.1	-87.42	196.4	574.6	328.5	306.3	22.20	14.799			
6,200.0	6,119.8	6,213.6	6,110.3	11.8	15.0	-87.88	127.3	578.4	328.5	306.6	21.92	14.985			
6,300.0	6,172.9	6,311.5	6,164.8	11.8	15.1	-88.42	46.3	582.8	328.4	306.4	21.98	14.943			
6,387.6	6,205.4	6,397.9	6,199.6	12.1	15.2	-88.95	-32.5	587.1	328.4	306.0	22.42	14.650			
6,400.0	6,208.8	6,410.1	6,203.4	12.1	15.2	-89.02	-44.1	587.8	328.4	305.9	22.50	14.593			
6,500.0	6,234.8	6,509.8	6,229.8	12.6	15.6	-89.12	-140.1	593.0	328.5	304.9	23.53	13.959			
6,600.0	6,252.3	6,609.3	6,250.3	13.4	16.1	-89.66	-237.2	598.3	328.5	303.5	25.01	13.135			
6,700.0	6,254.0	6,709.1	6,254.0	14.3	16.9	-90.00	-336.7	603.8	328.6	301.7	26.88	12.223			
6,800.0	6,254.0	6,809.1	6,254.0	15.3	17.7	-90.00	-436.6	609.2	328.6	299.6	29.06	11.310			
6,900.0	6,254.0	6,909.1	6,254.0	16.5	18.7	-90.00	-536.4	614.7	328.7	297.2	31.48	10.443			
7,000.0	6,254.0	7,009.1	6,254.0	17.8	19.8	-90.00	-636.3	620.1	328.8	294.7	34.09	9.645			
7,100.0	6,254.0	7,109.1	6,254.0	19.1	21.0	-90.00	-736.1	625.6	328.8	292.0	36.85	8.925			
7,200.0	6,254.0	7,209.1	6,254.0	20.5	22.2	-90.00	-836.0	631.1	328.9	289.2	39.73	8.279			
7,300.0	6,254.0	7,309.1	6,254.0	22.0	23.6	-90.00	-935.8	636.5	329.0	286.3	42.70	7.704			
7,400.0	6,254.0	7,409.1	6,254.0	23.5	24.9	-90.00	-1,035.7	642.0	329.0	283.3	45.75	7.192			
7,500.0	6,254.0	7,509.1	6,254.0	25.0	26.4	-90.00	-1,135.5	647.4	329.1	280.2	48.86	6.735			
7,600.0	6,254.0	7,609.1	6,254.0	26.6	27.8	-90.00	-1,235.4	652.9	329.2	277.1	52.03	6.327			
7,700.0	6,254.0	7,709.1	6,254.0	28.1	29.3	-90.00	-1,335.2	658.4	329.2	274.0	55.24	5.961			
7,800.0	6,254.0	7,809.1	6,254.0	29.8	30.8	-90.00	-1,435.1	663.8	329.3	270.8	58.48	5.631			
7,900.0	6,254.0	7,909.1	6,254.0	31.4	32.4	-90.00	-1,534.9	669.3	329.4	267.6	61.75	5.334			
8,000.0	6,254.0	8,009.1	6,254.0	33.0	34.0	-90.00	-1,634.8	674.7	329.4	264.4	65.05	5.065			
8,100.0	6,254.0	8,109.1	6,254.0	34.7	35.5	-90.00	-1,734.6	680.2	329.5	261.1	68.36	4.820			
8,200.0	6,254.0	8,209.1	6,254.0	36.3	37.1	-90.00	-1,834.5	685.7	329.6	257.9	71.70	4.597			
8,300.0	6,254.0	8,309.1	6,254.0	38.0	38.7	-90.00	-1,934.3	691.1	329.6	254.6	75.05	4.392			
8,400.0	6,254.0	8,409.1	6,254.0	39.6	40.4	-90.00	-2,034.2	696.6	329.7	251.3	78.42	4.204			
8,500.0	6,254.0	8,509.1	6,254.0	41.3	42.0	-90.00	-2,134.1	702.0	329.8	248.0	81.80	4.031			
8,600.0	6,254.0	8,609.1	6,254.0	43.0	43.7	-90.00	-2,233.9	707.5	329.8	244.7	85.19	3.872			
8,700.0	6,254.0	8,709.1	6,254.0	44.7	45.3	-90.00	-2,333.8	713.0	329.9	241.3	88.59	3.724			
8,800.0	6,254.0	8,809.1	6,254.0	46.4	47.0	-90.00	-2,433.6	718.4	330.0	238.0	92.00	3.587			
8,900.0	6,254.0	8,909.1	6,254.0	48.1	48.6	-90.00	-2,533.5	723.9	330.0	234.6	95.41	3.459			
9,000.0	6,254.0	9,009.1	6,254.0	49.8	50.3	-90.00	-2,633.3	729.3	330.1	231.3	98.84	3.340			
9,100.0	6,254.0	9,109.1	6,254.0	51.5	52.0	-90.00	-2,733.2	734.8	330.2	227.9	102.27	3.229			
9,200.0	6,254.0	9,209.1	6,254.0	53.2	53.7	-90.00	-2,833.0	740.3	330.2	224.5	105.70	3.124			
9,300.0	6,254.0	9,309.1	6,254.0	54.9	55.4	-90.00	-2,932.9	745.7	330.3	221.2	109.14	3.027			
9,400.0	6,254.0	9,409.1	6,254.0	56.7	57.0	-90.00	-3,032.7	751.2	330.4	217.8	112.58	2.935			
9,500.0	6,254.0	9,509.1	6,254.0	58.4	58.7	-90.00	-3,132.6	756.6	330.4	214.4	116.03	2.848			
9,600.0	6,254.0	9,609.1	6,254.0	60.1	60.4	-90.00	-3,232.4	762.1	330.5	211.0	119.48	2.766			
9,700.0	6,254.0	9,709.1	6,254.0	61.8	62.1	-90.00	-3,332.3	767.6	330.6	207.6	122.94	2.689			
9,800.0	6,254.0	9,809.1	6,254.0	63.5	63.9	-90.00	-3,432.1	773.0	330.6	204.3	126.40	2.616			
9,900.0	6,254.0	9,909.1	6,254.0	65.3	65.6	-90.00	-3,532.0	778.5	330.7	200.9	129.86	2.547			
10,000.0	6,254.0	10,009.1	6,254.0	67.0	67.3	-90.00	-3,631.8	783.9	330.8	197.5	133.32	2.481			
10,100.0	6,254.0	10,109.1	6,254.0	68.7	69.0	-90.00	-3,731.7	789.4	330.8	194.1	136.79	2.419			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		State 70 Holes F-4 Pad - State Seventy Holes 21-24-4HNB - OH - Plan #1										Offset Site Error:		0.0 ft			
Survey Program:		0-MWD												Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance										
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore	Centre	Between	Between	Total	Separation			Warning		
Depth	Depth	Depth	Depth			Toolface	+N/-S	+E/-W	Centres	Ellipses	Uncertainty	Factor					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	Axis						
10,200.0	6,254.0	10,209.1	6,254.0	70.5	70.7	-90.00	-3,831.5	794.9	330.9	190.7	140.26	2.359					
10,300.0	6,254.0	10,309.1	6,254.0	72.2	72.4	-90.00	-3,931.4	800.3	331.0	187.3	143.73	2.303					
10,400.0	6,254.0	10,409.1	6,254.0	73.9	74.1	-90.00	-4,031.2	805.8	331.0	183.8	147.20	2.249					
10,500.0	6,254.0	10,509.1	6,254.0	75.7	75.9	-90.00	-4,131.1	811.2	331.1	180.4	150.68	2.198					
10,600.0	6,254.0	10,609.1	6,254.0	77.4	77.6	-90.00	-4,230.9	816.7	331.2	177.0	154.15	2.148					
10,700.0	6,254.0	10,709.1	6,254.0	79.1	79.3	-90.00	-4,330.8	822.2	331.3	173.6	157.63	2.101					
10,800.0	6,254.0	10,809.1	6,254.0	80.9	81.0	-90.00	-4,430.6	827.6	331.3	170.2	161.11	2.056					
10,900.0	6,254.0	10,909.1	6,254.0	82.6	82.8	-90.00	-4,530.5	833.1	331.4	166.8	164.59	2.013					
10,996.3	6,254.0	11,005.4	6,254.0	84.3	84.4	-90.00	-4,626.6	838.3	331.4	163.5	167.95	1.974 SF					

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design State 70 Holes F-4 Pad - State Seventy Holes F-J-4HC - OH - Plan #1														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	3.98	40.1	2.8	40.2						
100.0	100.0	100.0	100.0	0.1	0.1	3.98	40.1	2.8	40.2	39.9	0.30	135.383			
200.0	200.0	200.0	200.0	0.3	0.3	3.98	40.1	2.8	40.2	39.5	0.65	62.203			
300.0	300.0	300.0	300.0	0.5	0.5	3.98	40.1	2.8	40.2	39.2	0.99	40.378			
400.0	400.0	400.0	400.0	0.7	0.7	3.98	40.1	2.8	40.2	38.8	1.34	29.890			
500.0	500.0	500.0	500.0	0.8	0.8	3.98	40.1	2.8	40.2	38.5	1.69	23.727			
600.0	600.0	600.0	600.0	1.0	1.0	3.98	40.1	2.8	40.2	38.1	2.04	19.671			
700.0	700.0	700.0	700.0	1.2	1.2	3.98	40.1	2.8	40.2	37.8	2.39	16.799			
800.0	800.0	800.0	800.0	1.4	1.4	-34.24	40.1	2.8	38.7	36.0	2.74	14.130			
900.0	899.8	899.8	899.8	1.6	1.5	-39.18	40.1	2.8	34.5	31.4	3.09	11.167			
1,000.0	999.5	998.5	998.5	1.8	1.7	-50.18	41.6	2.0	30.3	26.9	3.45	8.787			
1,039.5	1,038.8	1,037.5	1,037.4	1.8	1.8	-55.74	43.0	1.3	29.9	26.3	3.60	8.311 CC, ES			
1,100.0	1,099.1	1,097.3	1,097.1	2.0	1.9	-64.39	46.1	-0.3	30.9	27.1	3.83	8.066			
1,200.0	1,198.8	1,196.9	1,196.6	2.2	2.1	-76.86	52.0	-3.2	34.7	30.5	4.22	8.221			
1,300.0	1,298.4	1,296.6	1,296.0	2.4	2.3	-86.52	57.9	-6.2	39.8	35.2	4.61	8.624			
1,400.0	1,398.1	1,396.3	1,395.5	2.6	2.5	-93.84	63.8	-9.2	45.8	40.7	5.01	9.132			
1,500.0	1,497.7	1,496.0	1,494.9	2.8	2.7	-99.40	69.7	-12.1	52.3	46.9	5.41	9.669			
1,600.0	1,597.4	1,595.6	1,594.4	3.0	2.9	-103.71	75.6	-15.1	59.2	53.4	5.81	10.195			
1,700.0	1,697.0	1,695.3	1,693.8	3.2	3.1	-107.09	81.5	-18.1	66.4	60.2	6.21	10.695			
1,800.0	1,796.7	1,795.0	1,793.3	3.5	3.3	-109.81	87.4	-21.1	73.7	67.1	6.61	11.161			
1,900.0	1,896.3	1,894.6	1,892.7	3.7	3.5	-112.04	93.3	-24.0	81.2	74.2	7.01	11.591			
2,000.0	1,995.9	1,994.3	1,992.2	3.9	3.7	-113.88	99.1	-27.0	88.8	81.4	7.41	11.987			
2,100.0	2,095.6	2,094.0	2,091.7	4.1	3.9	-115.43	105.0	-30.0	96.5	88.7	7.82	12.351			
2,200.0	2,195.2	2,193.7	2,191.1	4.4	4.1	-116.76	110.9	-32.9	104.3	96.0	8.22	12.686			
2,300.0	2,294.9	2,293.3	2,290.6	4.6	4.3	-117.90	116.8	-35.9	112.1	103.4	8.62	12.995			
2,400.0	2,394.5	2,393.0	2,390.0	4.8	4.5	-118.89	122.7	-38.9	119.9	110.8	9.03	13.279			
2,500.0	2,494.2	2,492.7	2,489.5	5.0	4.7	-119.76	128.6	-41.8	127.7	118.3	9.43	13.541			
2,600.0	2,593.8	2,592.4	2,588.9	5.3	4.9	-120.53	134.5	-44.8	135.6	125.8	9.84	13.784			
2,700.0	2,693.4	2,692.0	2,688.4	5.5	5.1	-121.21	140.4	-47.8	143.5	133.3	10.24	14.010			
2,800.0	2,793.1	2,791.7	2,787.8	5.7	5.3	-121.83	146.3	-50.8	151.4	140.8	10.65	14.220			
2,900.0	2,892.7	2,891.4	2,887.3	5.9	5.5	-122.38	152.2	-53.7	159.4	148.3	11.06	14.415			
3,000.0	2,992.4	2,991.1	2,986.7	6.2	5.7	-122.88	158.0	-56.7	167.3	155.9	11.46	14.597			
3,100.0	3,092.0	3,090.7	3,086.2	6.4	5.9	-123.33	163.9	-59.7	175.3	163.4	11.87	14.768			
3,200.0	3,191.7	3,190.4	3,185.7	6.6	6.1	-123.75	169.8	-62.6	183.3	171.0	12.28	14.928			
3,300.0	3,291.3	3,290.1	3,285.1	6.8	6.3	-124.13	175.7	-65.6	191.2	178.6	12.68	15.078			
3,400.0	3,390.9	3,389.7	3,384.6	7.1	6.5	-124.48	181.6	-68.6	199.2	186.1	13.09	15.219			
3,500.0	3,490.6	3,489.4	3,484.0	7.3	6.7	-124.80	187.5	-71.5	207.2	193.7	13.50	15.352			
3,600.0	3,590.2	3,589.1	3,583.5	7.5	6.9	-125.10	193.4	-74.5	215.2	201.3	13.91	15.478			
3,700.0	3,689.9	3,688.8	3,682.9	7.7	7.2	-125.38	199.3	-77.5	223.2	208.9	14.31	15.596			
3,800.0	3,789.5	3,788.4	3,782.4	8.0	7.4	-125.64	205.2	-80.5	231.2	216.5	14.72	15.708			
3,900.0	3,889.2	3,888.1	3,881.8	8.2	7.6	-125.88	211.1	-83.4	239.2	224.1	15.13	15.815			
4,000.0	3,988.8	3,987.8	3,981.3	8.4	7.8	-126.10	217.0	-86.4	247.3	231.7	15.54	15.916			
4,100.0	4,088.4	4,087.5	4,080.7	8.7	8.0	-126.31	222.8	-89.4	255.3	239.3	15.94	16.012			
4,200.0	4,188.1	4,187.1	4,180.2	8.9	8.2	-126.51	228.7	-92.3	263.3	247.0	16.35	16.103			
4,300.0	4,287.7	4,286.8	4,279.7	9.1	8.4	-126.70	234.6	-95.3	271.3	254.6	16.76	16.190			
4,400.0	4,387.4	4,386.5	4,379.1	9.3	8.6	-126.87	240.5	-98.3	279.4	262.2	17.17	16.273			
4,500.0	4,487.0	4,486.2	4,478.6	9.6	8.8	-127.04	246.4	-101.2	287.4	269.8	17.58	16.352			
4,600.0	4,586.7	4,585.8	4,578.0	9.8	9.0	-127.20	252.3	-104.2	295.4	277.5	17.99	16.427			
4,700.0	4,686.3	4,685.5	4,677.5	10.0	9.2	-127.34	258.2	-107.2	303.5	285.1	18.39	16.500			
4,800.0	4,785.9	4,785.2	4,776.9	10.2	9.4	-127.49	264.1	-110.2	311.5	292.7	18.80	16.569			
4,900.0	4,885.6	4,884.8	4,876.4	10.5	9.6	-127.62	270.0	-113.1	319.6	300.4	19.21	16.635			
5,000.0	4,985.2	4,984.5	4,975.8	10.7	9.8	-127.75	275.9	-116.1	327.6	308.0	19.62	16.699			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design State 70 Holes F-4 Pad - State Seventy Holes F-J-4HC - OH - Plan #1													Offset Site Error: 0.0 ft			
Survey Program: 0-MWD															Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning			
5,100.0	5,084.9	5,084.2	5,075.3	10.9	10.1	-127.87	281.7	-119.1	335.7	315.6	20.03	16.760				
5,200.0	5,184.5	5,183.9	5,174.8	11.2	10.3	-127.98	287.6	-122.0	343.7	323.3	20.44	16.818				
5,300.0	5,284.2	5,283.5	5,274.2	11.4	10.5	-128.09	293.5	-125.0	351.8	330.9	20.84	16.875				
5,400.0	5,383.8	5,383.2	5,373.7	11.6	10.7	-128.20	299.4	-128.0	359.8	338.5	21.25	16.929				
5,500.0	5,483.5	5,482.9	5,473.2	11.8	10.9	-128.28	305.3	-130.9	367.3	345.7	21.66	16.960				
5,600.0	5,583.4	5,582.7	5,572.7	12.0	11.1	-127.97	311.2	-133.9	372.9	350.8	22.04	16.915				
5,700.0	5,683.4	5,683.4	5,673.2	12.1	11.3	-90.41	317.1	-136.9	376.3	353.9	22.46	16.755				
5,800.0	5,783.1	5,789.2	5,778.9	12.2	11.5	93.99	321.2	-138.9	378.6	355.9	22.70	16.680				
5,900.0	5,880.1	5,890.4	5,880.1	12.2	11.6	97.40	321.9	-139.3	381.5	358.7	22.81	16.727				
6,000.0	5,970.6	5,996.0	5,985.3	12.0	11.7	102.27	314.6	-138.9	388.0	365.4	22.66	17.124				
6,100.0	6,051.5	6,113.9	6,098.3	11.9	11.7	106.97	282.0	-137.2	397.1	374.9	22.20	17.887				
6,200.0	6,119.8	6,243.5	6,210.5	11.8	11.5	111.12	218.0	-133.8	407.2	385.6	21.60	18.854				
6,300.0	6,172.9	6,385.3	6,311.2	11.8	11.4	114.39	118.8	-128.5	416.4	395.2	21.18	19.664				
6,400.0	6,208.8	6,537.6	6,385.1	12.1	11.7	116.42	-13.5	-121.4	422.6	401.2	21.37	19.780				
6,500.0	6,234.8	6,656.7	6,418.5	12.6	12.2	116.71	-127.7	-115.4	423.4	401.1	22.35	18.943				
6,600.0	6,252.3	6,795.4	6,444.0	13.4	13.3	116.92	-263.5	-108.1	424.3	400.4	23.88	17.766				
6,698.1	6,256.3	6,905.0	6,445.0	14.2	14.4	116.50	-372.9	-102.3	422.8	397.1	25.76	16.414				
6,700.0	6,254.0	6,906.9	6,445.0	14.3	14.4	116.78	-374.8	-102.2	423.9	398.1	25.76	16.458				
6,800.0	6,254.0	7,006.9	6,445.0	15.3	15.5	116.78	-474.7	-96.9	423.9	396.2	27.75	15.277				
6,900.0	6,254.0	7,106.9	6,445.0	16.5	16.7	116.77	-574.5	-91.6	424.0	394.1	29.94	14.160				
7,000.0	6,254.0	7,206.9	6,445.0	17.8	18.1	116.77	-674.4	-86.2	424.1	391.8	32.30	13.131				
7,100.0	6,254.0	7,306.9	6,445.0	19.1	19.5	116.76	-774.2	-80.9	424.1	389.4	34.77	12.198				
7,200.0	6,254.0	7,406.9	6,445.0	20.5	20.9	116.76	-874.1	-75.6	424.2	386.9	37.35	11.358				
7,300.0	6,254.0	7,506.9	6,445.0	22.0	22.4	116.76	-974.0	-70.3	424.3	384.3	40.01	10.605				
7,400.0	6,254.0	7,606.9	6,445.0	23.5	23.9	116.75	-1,073.8	-65.0	424.3	381.6	42.73	9.931				
7,500.0	6,254.0	7,706.9	6,445.0	25.0	25.5	116.75	-1,173.7	-59.6	424.4	378.9	45.51	9.326				
7,600.0	6,254.0	7,806.9	6,445.0	26.6	27.1	116.74	-1,273.5	-54.3	424.5	376.1	48.33	8.782				
7,700.0	6,254.0	7,906.9	6,445.0	28.1	28.7	116.74	-1,373.4	-49.0	424.5	373.3	51.19	8.293				
7,800.0	6,254.0	8,006.9	6,445.0	29.8	30.3	116.73	-1,473.2	-43.7	424.6	370.5	54.09	7.851				
7,900.0	6,254.0	8,106.9	6,445.0	31.4	31.9	116.73	-1,573.1	-38.4	424.7	367.7	57.01	7.450				
8,000.0	6,254.0	8,206.9	6,445.0	33.0	33.6	116.72	-1,673.0	-33.0	424.7	364.8	59.95	7.085				
8,100.0	6,254.0	8,306.9	6,445.0	34.7	35.2	116.72	-1,772.8	-27.7	424.8	361.9	62.91	6.752				
8,200.0	6,254.0	8,406.9	6,445.0	36.3	36.9	116.71	-1,872.7	-22.4	424.9	359.0	65.89	6.448				
8,300.0	6,254.0	8,506.9	6,445.0	38.0	38.6	116.71	-1,972.5	-17.1	424.9	356.1	68.88	6.169				
8,400.0	6,254.0	8,606.9	6,445.0	39.6	40.2	116.71	-2,072.4	-11.8	425.0	353.1	71.89	5.912				
8,500.0	6,254.0	8,706.9	6,445.0	41.3	41.9	116.70	-2,172.3	-6.4	425.1	350.2	74.91	5.674				
8,600.0	6,254.0	8,806.9	6,445.0	43.0	43.6	116.70	-2,272.1	-1.1	425.1	347.2	77.94	5.455				
8,700.0	6,254.0	8,906.9	6,445.0	44.7	45.3	116.69	-2,372.0	4.2	425.2	344.2	80.98	5.251				
8,800.0	6,254.0	9,006.9	6,445.0	46.4	47.0	116.69	-2,471.8	9.5	425.3	341.2	84.03	5.061				
8,900.0	6,254.0	9,106.9	6,445.0	48.1	48.7	116.68	-2,571.7	14.8	425.3	338.3	87.08	4.884				
9,000.0	6,254.0	9,206.9	6,445.0	49.8	50.4	116.68	-2,671.5	20.1	425.4	335.3	90.14	4.719				
9,100.0	6,254.0	9,306.9	6,445.0	51.5	52.1	116.67	-2,771.4	25.5	425.5	332.3	93.21	4.565				
9,200.0	6,254.0	9,406.9	6,445.0	53.2	53.9	116.67	-2,871.3	30.8	425.5	329.2	96.28	4.420				
9,300.0	6,254.0	9,506.9	6,445.0	54.9	55.6	116.67	-2,971.1	36.1	425.6	326.2	99.36	4.284				
9,400.0	6,254.0	9,606.9	6,445.0	56.7	57.3	116.66	-3,071.0	41.4	425.7	323.2	102.44	4.155				
9,500.0	6,254.0	9,706.9	6,445.0	58.4	59.0	116.66	-3,170.8	46.7	425.7	320.2	105.52	4.034				
9,600.0	6,254.0	9,806.9	6,445.0	60.1	60.7	116.65	-3,270.7	52.1	425.8	317.2	108.61	3.920				
9,700.0	6,254.0	9,906.9	6,445.0	61.8	62.5	116.65	-3,370.6	57.4	425.9	314.2	111.71	3.812				
9,800.0	6,254.0	10,006.9	6,445.0	63.5	64.2	116.64	-3,470.4	62.7	425.9	311.1	114.80	3.710				
9,900.0	6,254.0	10,106.9	6,445.0	65.3	65.9	116.64	-3,570.3	68.0	426.0	308.1	117.90	3.613				
10,000.0	6,254.0	10,206.9	6,445.0	67.0	67.7	116.63	-3,670.1	73.3	426.1	305.1	121.00	3.521				
10,100.0	6,254.0	10,306.9	6,445.0	68.7	69.4	116.63	-3,770.0	78.7	426.1	302.0	124.11	3.433				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													State 70 Holes F-4 Pad - State Seventy Holes F-J-4HC - OH - Plan #1		Offset Site Error:		0.0 ft	
Survey Program: 0-MWD													Offset Well Error:		0.0 ft			
Reference		Offset		Semi Major Axis			Distance							Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor						
10,200.0	6,254.0	10,406.9	6,445.0	70.5	71.1	116.63	-3,869.8	84.0	426.2	299.0	127.22	3.350						
10,300.0	6,254.0	10,506.9	6,445.0	72.2	72.8	116.62	-3,969.7	89.3	426.3	295.9	130.33	3.271						
10,400.0	6,254.0	10,606.9	6,445.0	73.9	74.6	116.62	-4,069.6	94.6	426.3	292.9	133.44	3.195						
10,500.0	6,254.0	10,706.9	6,445.0	75.7	76.3	116.61	-4,169.4	99.9	426.4	289.8	136.55	3.123						
10,600.0	6,254.0	10,806.9	6,445.0	77.4	78.1	116.61	-4,269.3	105.3	426.5	286.8	139.67	3.053						
10,700.0	6,254.0	10,906.9	6,445.0	79.1	79.8	116.60	-4,369.1	110.6	426.5	283.7	142.78	2.987						
10,800.0	6,254.0	11,006.9	6,445.0	80.9	81.5	116.60	-4,469.0	115.9	426.6	280.7	145.90	2.924						
10,900.0	6,254.0	11,106.9	6,445.0	82.6	83.3	116.59	-4,568.9	121.2	426.6	277.6	149.02	2.863						
10,950.8	6,254.0	11,157.7	6,445.0	83.5	84.2	116.59	-4,619.6	123.9	426.7	276.1	150.61	2.833						
10,996.3	6,254.0	11,186.6	6,445.0	84.3	84.7	116.59	-4,648.4	125.4	427.0	275.3	151.77	2.814 SF						

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design State 70 Holes F-4 Pad - State Seventy Holes F-J-4HNB - OH - Plan #1														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Factor			
0.0	0.0	0.0	0.0	0.0	0.0	8.70	18.2	2.8	18.4						
100.0	100.0	100.0	100.0	0.1	0.1	8.70	18.2	2.8	18.4	18.1	0.30	62.104			
200.0	200.0	200.0	200.0	0.3	0.3	8.70	18.2	2.8	18.4	17.8	0.65	28.534			
300.0	300.0	300.0	300.0	0.5	0.5	8.70	18.2	2.8	18.4	17.4	0.99	18.522			
400.0	400.0	400.0	400.0	0.7	0.7	8.70	18.2	2.8	18.4	17.1	1.34	13.711			
500.0	500.0	500.0	500.0	0.8	0.8	8.70	18.2	2.8	18.4	16.7	1.69	10.884			
600.0	600.0	600.0	600.0	1.0	1.0	8.70	18.2	2.8	18.4	16.4	2.04	9.024			
700.0	700.0	700.0	700.0	1.2	1.2	8.70	18.2	2.8	18.4	16.0	2.39	7.706			
800.0	800.0	800.0	800.0	1.4	1.4	-30.90	18.2	2.8	16.9	14.2	2.74	6.171			
900.0	899.8	899.4	899.3	1.6	1.5	-44.33	19.9	2.3	14.4	11.3	3.09	4.661			
932.8	932.6	932.0	931.9	1.6	1.6	-51.88	21.1	1.9	14.1	10.9	3.21	4.405 CC, ES			
1,000.0	999.5	998.7	998.5	1.8	1.7	-69.61	24.8	0.8	15.2	11.7	3.46	4.384			
1,100.0	1,099.1	1,098.4	1,098.0	2.0	1.9	-87.43	31.3	-1.2	19.7	15.9	3.85	5.121			
1,200.0	1,198.8	1,198.2	1,197.6	2.2	2.1	-97.99	37.8	-3.1	25.4	21.2	4.24	5.989			
1,300.0	1,298.4	1,297.9	1,297.1	2.4	2.3	-104.54	44.2	-5.1	31.6	27.0	4.64	6.821			
1,400.0	1,398.1	1,397.7	1,396.6	2.6	2.5	-108.90	50.7	-7.1	38.2	33.1	5.04	7.572			
1,500.0	1,497.7	1,497.4	1,496.1	2.8	2.7	-111.98	57.2	-9.0	44.8	39.4	5.44	8.238			
1,600.0	1,597.4	1,597.2	1,595.7	3.0	2.9	-114.26	63.7	-11.0	51.6	45.7	5.84	8.826			
1,700.0	1,697.0	1,696.9	1,695.2	3.2	3.1	-116.01	70.1	-12.9	58.4	52.2	6.25	9.345			
1,800.0	1,796.7	1,796.7	1,794.7	3.5	3.3	-117.39	76.6	-14.9	65.3	58.6	6.66	9.806			
1,900.0	1,896.3	1,896.5	1,894.2	3.7	3.5	-118.51	83.1	-16.9	72.2	65.1	7.06	10.216			
2,000.0	1,995.9	1,996.2	1,993.7	3.9	3.7	-119.43	89.6	-18.8	79.1	71.6	7.47	10.583			
2,100.0	2,095.6	2,096.0	2,093.3	4.1	3.9	-120.20	96.0	-20.8	86.0	78.1	7.88	10.913			
2,200.0	2,195.2	2,195.7	2,192.8	4.4	4.1	-120.86	102.5	-22.8	93.0	84.7	8.29	11.211			
2,300.0	2,294.9	2,295.5	2,292.3	4.6	4.3	-121.43	109.0	-24.7	99.9	91.2	8.70	11.481			
2,400.0	2,394.5	2,395.2	2,391.8	4.8	4.5	-121.92	115.5	-26.7	106.9	97.8	9.12	11.727			
2,500.0	2,494.2	2,495.0	2,491.4	5.0	4.7	-122.36	121.9	-28.6	113.9	104.4	9.53	11.952			
2,600.0	2,593.8	2,594.7	2,590.9	5.3	5.0	-122.74	128.4	-30.6	120.9	110.9	9.94	12.159			
2,700.0	2,693.4	2,694.5	2,690.4	5.5	5.2	-123.08	134.9	-32.6	127.9	117.5	10.35	12.349			
2,800.0	2,793.1	2,794.2	2,789.9	5.7	5.4	-123.38	141.4	-34.5	134.8	124.1	10.77	12.525			
2,900.0	2,892.7	2,894.0	2,889.5	5.9	5.6	-123.66	147.8	-36.5	141.8	130.7	11.18	12.687			
3,000.0	2,992.4	2,993.7	2,989.0	6.2	5.8	-123.91	154.3	-38.4	148.8	137.2	11.59	12.838			
3,100.0	3,092.0	3,093.5	3,088.5	6.4	6.0	-124.14	160.8	-40.4	155.8	143.8	12.01	12.979			
3,200.0	3,191.7	3,193.2	3,188.0	6.6	6.2	-124.34	167.3	-42.4	162.8	150.4	12.42	13.110			
3,300.0	3,291.3	3,293.0	3,287.6	6.8	6.4	-124.53	173.7	-44.3	169.8	157.0	12.83	13.232			
3,400.0	3,390.9	3,392.7	3,387.1	7.1	6.6	-124.71	180.2	-46.3	176.8	163.6	13.25	13.347			
3,500.0	3,490.6	3,492.5	3,486.6	7.3	6.8	-124.87	186.7	-48.3	183.8	170.2	13.66	13.455			
3,600.0	3,590.2	3,592.3	3,586.1	7.5	7.0	-125.02	193.2	-50.2	190.9	176.8	14.08	13.557			
3,700.0	3,689.9	3,692.0	3,685.6	7.7	7.2	-125.16	199.6	-52.2	197.9	183.4	14.49	13.653			
3,800.0	3,789.5	3,791.8	3,785.2	8.0	7.5	-125.29	206.1	-54.1	204.9	190.0	14.91	13.743			
3,900.0	3,889.2	3,891.5	3,884.7	8.2	7.7	-125.41	212.6	-56.1	211.9	196.6	15.32	13.828			
4,000.0	3,988.8	3,991.3	3,984.2	8.4	7.9	-125.53	219.1	-58.1	218.9	203.2	15.74	13.909			
4,100.0	4,088.4	4,091.0	4,083.7	8.7	8.1	-125.63	225.5	-60.0	225.9	209.8	16.15	13.986			
4,200.0	4,188.1	4,190.8	4,183.3	8.9	8.3	-125.73	232.0	-62.0	232.9	216.4	16.57	14.059			
4,300.0	4,287.7	4,290.5	4,282.8	9.1	8.5	-125.83	238.5	-63.9	239.9	223.0	16.98	14.128			
4,400.0	4,387.4	4,390.3	4,382.3	9.3	8.7	-125.92	245.0	-65.9	247.0	229.6	17.40	14.194			
4,500.0	4,487.0	4,490.0	4,481.8	9.6	8.9	-126.00	251.4	-67.9	254.0	236.2	17.81	14.257			
4,600.0	4,586.7	4,589.8	4,581.4	9.8	9.1	-126.08	257.9	-69.8	261.0	242.8	18.23	14.317			
4,700.0	4,686.3	4,689.5	4,680.9	10.0	9.3	-126.16	264.4	-71.8	268.0	249.4	18.65	14.374			
4,800.0	4,785.9	4,789.3	4,780.4	10.2	9.6	-126.23	270.9	-73.8	275.0	256.0	19.06	14.429			
4,900.0	4,885.6	4,889.0	4,879.9	10.5	9.8	-126.29	277.3	-75.7	282.0	262.6	19.48	14.481			
5,000.0	4,985.2	4,988.8	4,979.4	10.7	10.0	-126.36	283.8	-77.7	289.1	269.2	19.89	14.531			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design State 70 Holes F-4 Pad - State Seventy Holes F-J-4HNB - OH - Plan #1												Offset Site Error: 0.0 ft	
Survey Program: 0-MWD												Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	
5,100.0	5,084.9	5,088.5	5,079.0	10.9	10.2	-126.42	290.3	-79.6	296.1	275.8	20.31	14.579	
5,200.0	5,184.5	5,188.3	5,178.5	11.2	10.4	-126.48	296.8	-81.6	303.1	282.4	20.72	14.625	
5,300.0	5,284.2	5,288.1	5,278.0	11.4	10.6	-126.54	303.2	-83.6	310.1	289.0	21.14	14.670	
5,400.0	5,383.8	5,387.8	5,377.5	11.6	10.8	-126.59	309.7	-85.5	317.1	295.6	21.56	14.712	
5,500.0	5,483.5	5,488.1	5,477.6	11.8	11.0	-126.60	316.2	-87.5	323.7	301.7	21.97	14.733	
5,600.0	5,583.4	5,591.4	5,580.8	12.0	11.2	-126.51	320.6	-88.8	327.5	305.2	22.33	14.672	
5,700.0	5,683.4	5,694.0	5,683.4	12.1	11.4	-89.70	321.6	-89.1	328.4	305.7	22.70	14.468	
5,800.0	5,783.1	5,796.9	5,786.0	12.2	11.4	93.36	315.6	-88.8	328.4	305.6	22.80	14.404	
5,900.0	5,880.1	5,900.6	5,886.3	12.2	11.4	93.19	289.9	-87.4	328.4	305.7	22.65	14.494	
6,000.0	5,970.6	6,004.0	5,979.2	12.0	11.2	92.91	245.0	-85.0	328.3	306.0	22.33	14.705	
6,100.0	6,051.5	6,107.1	6,061.2	11.9	11.0	92.52	183.0	-81.7	328.2	306.3	21.98	14.937	
6,200.0	6,119.8	6,209.6	6,129.1	11.8	11.0	92.03	106.5	-77.7	328.2	306.4	21.79	15.058	
6,300.0	6,172.9	6,311.5	6,180.4	11.8	11.1	91.47	18.8	-73.0	328.1	306.2	21.97	14.938	
6,363.6	6,197.8	6,375.9	6,203.7	12.0	11.3	91.08	-41.2	-69.8	328.1	305.8	22.34	14.687	
6,400.0	6,208.8	6,412.6	6,213.7	12.1	11.4	90.88	-76.4	-67.9	328.1	305.5	22.62	14.505	
6,500.0	6,234.8	6,512.7	6,239.4	12.6	12.0	90.85	-173.0	-62.8	328.2	304.5	23.74	13.824	
6,600.0	6,252.3	6,613.2	6,253.5	13.4	12.8	90.21	-272.3	-57.5	328.2	302.9	25.31	12.970	
6,700.0	6,254.0	6,713.2	6,254.0	14.3	13.8	90.00	-372.1	-52.2	328.3	301.1	27.26	12.046	
6,800.0	6,254.0	6,813.2	6,254.0	15.3	14.9	90.00	-472.0	-46.8	328.4	298.9	29.49	11.136	
6,900.0	6,254.0	6,913.2	6,254.0	16.5	16.1	90.00	-571.9	-41.5	328.5	296.5	31.95	10.280	
7,000.0	6,254.0	7,013.2	6,254.0	17.8	17.5	90.00	-671.7	-36.2	328.5	293.9	34.60	9.496	
7,100.0	6,254.0	7,113.2	6,254.0	19.1	18.9	90.00	-771.6	-30.9	328.6	291.2	37.39	8.789	
7,200.0	6,254.0	7,213.2	6,254.0	20.5	20.3	90.00	-871.4	-25.6	328.7	288.4	40.29	8.158	
7,300.0	6,254.0	7,313.2	6,254.0	22.0	21.8	90.00	-971.3	-20.2	328.8	285.5	43.28	7.595	
7,400.0	6,254.0	7,413.2	6,254.0	23.5	23.4	90.00	-1,071.1	-14.9	328.8	282.5	46.35	7.095	
7,500.0	6,254.0	7,513.2	6,254.0	25.0	24.9	90.00	-1,171.0	-9.6	328.9	279.4	49.48	6.648	
7,600.0	6,254.0	7,613.2	6,254.0	26.6	26.5	90.00	-1,270.9	-4.3	329.0	276.3	52.65	6.248	
7,700.0	6,254.0	7,713.2	6,254.0	28.1	28.1	90.00	-1,370.7	1.0	329.0	273.2	55.86	5.890	
7,800.0	6,254.0	7,813.2	6,254.0	29.8	29.7	90.00	-1,470.6	6.4	329.1	270.0	59.11	5.568	
7,900.0	6,254.0	7,913.2	6,254.0	31.4	31.4	90.00	-1,570.4	11.7	329.2	266.8	62.39	5.276	
8,000.0	6,254.0	8,013.2	6,254.0	33.0	33.0	90.00	-1,670.3	17.0	329.3	263.6	65.69	5.012	
8,100.0	6,254.0	8,113.2	6,254.0	34.7	34.7	90.00	-1,770.2	22.3	329.3	260.3	69.02	4.772	
8,200.0	6,254.0	8,213.2	6,254.0	36.3	36.4	90.00	-1,870.0	27.6	329.4	257.1	72.36	4.553	
8,300.0	6,254.0	8,313.2	6,254.0	38.0	38.0	90.00	-1,969.9	32.9	329.5	253.8	75.71	4.352	
8,400.0	6,254.0	8,413.2	6,254.0	39.6	39.7	90.00	-2,069.7	38.3	329.6	250.5	79.08	4.167	
8,500.0	6,254.0	8,513.2	6,254.0	41.3	41.4	90.00	-2,169.6	43.6	329.6	247.2	82.47	3.997	
8,600.0	6,254.0	8,613.2	6,254.0	43.0	43.1	90.00	-2,269.4	48.9	329.7	243.8	85.86	3.840	
8,700.0	6,254.0	8,713.2	6,254.0	44.7	44.8	90.00	-2,369.3	54.2	329.8	240.5	89.26	3.695	
8,800.0	6,254.0	8,813.2	6,254.0	46.4	46.5	90.00	-2,469.2	59.5	329.9	237.2	92.67	3.559	
8,900.0	6,254.0	8,913.2	6,254.0	48.1	48.2	90.00	-2,569.0	64.9	329.9	233.8	96.09	3.434	
9,000.0	6,254.0	9,013.2	6,254.0	49.8	49.9	90.00	-2,668.9	70.2	330.0	230.5	99.51	3.316	
9,100.0	6,254.0	9,113.2	6,254.0	51.5	51.6	90.00	-2,768.7	75.5	330.1	227.1	102.94	3.206	
9,200.0	6,254.0	9,213.2	6,254.0	53.2	53.4	90.00	-2,868.6	80.8	330.1	223.8	106.38	3.104	
9,300.0	6,254.0	9,313.2	6,254.0	54.9	55.1	90.00	-2,968.5	86.1	330.2	220.4	109.82	3.007	
9,400.0	6,254.0	9,413.2	6,254.0	56.7	56.8	90.00	-3,068.3	91.5	330.3	217.0	113.26	2.916	
9,500.0	6,254.0	9,513.2	6,254.0	58.4	58.5	90.00	-3,168.2	96.8	330.4	213.7	116.71	2.831	
9,600.0	6,254.0	9,613.2	6,254.0	60.1	60.3	90.00	-3,268.0	102.1	330.4	210.3	120.17	2.750	
9,700.0	6,254.0	9,713.2	6,254.0	61.8	62.0	90.00	-3,367.9	107.4	330.5	206.9	123.62	2.674	
9,800.0	6,254.0	9,813.2	6,254.0	63.5	63.7	90.00	-3,467.7	112.7	330.6	203.5	127.08	2.601	
9,900.0	6,254.0	9,913.2	6,254.0	65.3	65.4	90.00	-3,567.6	118.1	330.7	200.1	130.54	2.533	
10,000.0	6,254.0	10,013.2	6,254.0	67.0	67.2	90.00	-3,667.5	123.4	330.7	196.7	134.01	2.468	
10,100.0	6,254.0	10,113.2	6,254.0	68.7	68.9	90.00	-3,767.3	128.7	330.8	193.3	137.48	2.406	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													State 70 Holes F-4 Pad - State Seventy Holes F-J-4HNB - OH - Plan #1		Offset Site Error:		0.0 ft	
Survey Program:													0-MWD		Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor						
10,200.0	6,254.0	10,213.2	6,254.0	70.5	70.6	90.00	-3,867.2	134.0	330.9	189.9	140.94	2.348						
10,300.0	6,254.0	10,313.2	6,254.0	72.2	72.4	90.00	-3,967.0	139.3	331.0	186.5	144.42	2.292						
10,400.0	6,254.0	10,413.2	6,254.0	73.9	74.1	90.00	-4,066.9	144.7	331.0	183.1	147.89	2.238						
10,500.0	6,254.0	10,513.2	6,254.0	75.7	75.9	90.00	-4,166.8	150.0	331.1	179.7	151.37	2.187						
10,600.0	6,254.0	10,613.2	6,254.0	77.4	77.6	90.00	-4,266.6	155.3	331.2	176.3	154.84	2.139						
10,700.0	6,254.0	10,713.2	6,254.0	79.1	79.3	90.00	-4,366.5	160.6	331.3	172.9	158.32	2.092						
10,800.0	6,254.0	10,813.2	6,254.0	80.9	81.1	90.00	-4,466.3	165.9	331.3	169.5	161.80	2.048						
10,900.0	6,254.0	10,913.2	6,254.0	82.6	82.8	90.00	-4,566.2	171.3	331.4	166.1	165.28	2.005						
10,952.1	6,254.0	10,965.3	6,254.0	83.5	83.7	90.00	-4,618.2	174.0	331.4	164.3	167.10	1.983						
10,996.3	6,254.0	10,995.5	6,254.0	84.3	84.2	90.00	-4,648.4	175.6	331.8	163.4	168.39	1.970 SF						

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design State 70 Holes F-4 Pad - State Seventy Holes K21-024-4HNB - OH - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: O-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-40.1	0.0	40.1					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-40.1	0.0	40.1	39.8	0.30	135.057		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-40.1	0.0	40.1	39.4	0.65	62.053		
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-40.1	0.0	40.1	39.1	0.99	40.280		
400.0	400.0	400.0	400.0	0.7	0.7	180.00	-40.1	0.0	40.1	38.7	1.34	29.818		
500.0	500.0	500.0	500.0	0.8	0.8	180.00	-40.1	0.0	40.1	38.4	1.69	23.670		
600.0	600.0	600.5	600.5	1.0	1.0	177.62	-39.4	1.6	39.5	37.4	2.04	19.299		
700.0	700.0	700.7	700.5	1.2	1.2	170.11	-37.5	6.5	38.0	35.6	2.40	15.826		
747.0	747.0	747.7	747.4	1.3	1.3	128.27	-36.1	9.9	37.7	35.1	2.59	14.579 CC, ES		
800.0	800.0	800.6	800.0	1.4	1.4	122.31	-34.3	14.6	38.2	35.4	2.79	13.675		
900.0	899.8	900.1	898.8	1.6	1.7	111.47	-29.8	25.9	41.5	38.3	3.21	12.931		
1,000.0	999.5	999.3	996.7	1.8	1.9	102.02	-24.0	40.3	47.9	44.2	3.67	13.043		
1,100.0	1,099.1	1,097.7	1,093.4	2.0	2.3	92.22	-17.1	57.7	56.8	52.7	4.15	13.713		
1,200.0	1,198.8	1,196.7	1,190.2	2.2	2.6	84.01	-9.6	76.8	68.1	63.5	4.60	14.799		
1,300.0	1,298.4	1,295.7	1,287.0	2.4	3.0	78.20	-2.0	95.8	80.2	75.2	5.04	15.933		
1,400.0	1,398.1	1,394.6	1,383.9	2.6	3.4	73.94	5.6	114.9	93.0	87.6	5.46	17.025		
1,500.0	1,497.7	1,493.6	1,480.7	2.8	3.8	70.72	13.1	133.9	106.2	100.3	5.89	18.040		
1,600.0	1,597.4	1,592.6	1,577.5	3.0	4.1	68.22	20.7	153.0	119.6	113.3	6.31	18.971		
1,700.0	1,697.0	1,691.5	1,674.3	3.2	4.5	66.22	28.3	172.0	133.2	126.5	6.72	19.818		
1,800.0	1,796.7	1,790.5	1,771.2	3.5	4.9	64.60	35.8	191.1	147.0	139.8	7.14	20.589		
1,900.0	1,896.3	1,889.5	1,868.0	3.7	5.3	63.25	43.4	210.1	160.8	153.3	7.55	21.290		
2,000.0	1,995.9	1,988.5	1,964.8	3.9	5.7	62.12	51.0	229.1	174.7	166.8	7.97	21.929		
2,100.0	2,095.6	2,087.4	2,061.7	4.1	6.1	61.15	58.6	248.2	188.7	180.3	8.38	22.514		
2,200.0	2,195.2	2,186.4	2,158.5	4.4	6.5	60.32	66.1	267.2	202.7	193.9	8.79	23.049		
2,300.0	2,294.9	2,285.4	2,255.3	4.6	6.9	59.59	73.7	286.3	216.8	207.6	9.21	23.541		
2,400.0	2,394.5	2,384.4	2,352.1	4.8	7.3	58.96	81.3	305.3	230.8	221.2	9.62	23.994		
2,500.0	2,494.2	2,483.3	2,449.0	5.0	7.7	58.39	88.8	324.4	244.9	234.9	10.03	24.413		
2,600.0	2,593.8	2,582.3	2,545.8	5.3	8.1	57.89	96.4	343.4	259.1	248.6	10.45	24.800		
2,700.0	2,693.4	2,681.3	2,642.6	5.5	8.5	57.44	104.0	362.5	273.2	262.4	10.86	25.160		
2,800.0	2,793.1	2,780.3	2,739.5	5.7	8.9	57.04	111.5	381.5	287.4	276.1	11.27	25.496		
2,900.0	2,892.7	2,879.2	2,836.3	5.9	9.3	56.67	119.1	400.6	301.5	289.9	11.68	25.808		
3,000.0	2,992.4	2,978.2	2,933.1	6.2	9.7	56.33	126.7	419.6	315.7	303.6	12.10	26.101		
3,100.0	3,092.0	3,077.2	3,029.9	6.4	10.1	56.03	134.2	438.7	329.9	317.4	12.51	26.374		
3,200.0	3,191.7	3,176.1	3,126.8	6.6	10.5	55.75	141.8	457.7	344.1	331.2	12.92	26.631		
3,300.0	3,291.3	3,275.1	3,223.6	6.8	10.9	55.49	149.4	476.7	358.3	345.0	13.33	26.873		
3,400.0	3,390.9	3,374.1	3,320.4	7.1	11.3	55.25	156.9	495.8	372.5	358.8	13.75	27.101		
3,500.0	3,490.6	3,473.1	3,417.3	7.3	11.7	55.03	164.5	514.8	386.7	372.6	14.16	27.316		
3,600.0	3,590.2	3,572.0	3,514.1	7.5	12.1	54.82	172.1	533.9	401.0	386.4	14.57	27.519		
3,700.0	3,689.9	3,671.0	3,610.9	7.7	12.5	54.63	179.6	552.9	415.2	400.2	14.98	27.711		
3,800.0	3,789.5	3,770.0	3,707.7	8.0	12.9	54.45	187.2	572.0	429.4	414.0	15.40	27.893		
3,900.0	3,889.2	3,869.0	3,804.6	8.2	13.3	54.29	194.8	591.0	443.7	427.9	15.81	28.066		
4,000.0	3,988.8	3,967.9	3,901.4	8.4	13.7	54.13	202.3	610.1	457.9	441.7	16.22	28.231		
4,100.0	4,088.4	4,066.9	3,998.2	8.7	14.1	53.98	209.9	629.1	472.2	455.5	16.63	28.387		
4,200.0	4,188.1	4,165.9	4,095.1	8.9	14.5	53.84	217.5	648.2	486.4	469.4	17.04	28.536		
4,300.0	4,287.7	4,264.9	4,191.9	9.1	14.9	53.71	225.1	667.2	500.6	483.2	17.46	28.678		
4,400.0	4,387.4	4,363.8	4,288.7	9.3	15.3	53.59	232.6	686.3	514.9	497.0	17.87	28.814		
4,500.0	4,487.0	4,462.8	4,385.5	9.6	15.7	53.47	240.2	705.3	529.2	510.9	18.28	28.944		
4,600.0	4,586.7	4,561.8	4,482.4	9.8	16.1	53.36	247.8	724.3	543.4	524.7	18.69	29.068		
4,700.0	4,686.3	4,660.7	4,579.2	10.0	16.5	53.25	255.3	743.4	557.7	538.6	19.11	29.187		
4,800.0	4,785.9	4,759.7	4,676.0	10.2	16.9	53.15	262.9	762.4	571.9	552.4	19.52	29.301		
4,900.0	4,885.6	4,858.7	4,772.9	10.5	17.3	53.06	270.5	781.5	586.2	566.3	19.93	29.410		
5,000.0	4,985.2	4,957.7	4,869.7	10.7	17.7	52.97	278.0	800.5	600.5	580.1	20.34	29.515		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design State 70 Holes F-4 Pad - State Seventy Holes K21-024-4HNB - OH - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
5,100.0	5,084.9	5,056.6	4,966.5	10.9	18.1	52.88	285.6	819.6	614.7	594.0	20.76	29.615		
5,200.0	5,184.5	5,155.6	5,063.3	11.2	18.5	52.80	293.2	838.6	629.0	607.8	21.17	29.712		
5,300.0	5,284.2	5,280.5	5,186.0	11.4	19.0	52.79	301.7	860.2	641.3	619.6	21.63	29.642		
5,400.0	5,383.8	5,406.6	5,310.8	11.6	19.3	52.96	308.4	876.9	649.5	627.4	22.11	29.369		
5,500.0	5,483.5	5,533.2	5,436.8	11.8	19.6	53.28	313.0	888.6	654.1	631.5	22.58	28.970		
5,600.0	5,583.4	5,660.1	5,563.5	12.0	19.8	53.48	315.6	895.0	656.6	633.7	22.97	28.592		
5,700.0	5,683.4	5,780.0	5,683.4	12.1	19.9	90.32	316.1	896.4	657.2	633.3	23.88	27.526		
5,800.0	5,783.1	5,874.6	5,777.8	12.2	19.9	-86.62	311.4	896.7	657.2	633.7	23.43	28.052		
5,900.0	5,880.1	5,967.6	5,868.3	12.2	19.9	-86.77	290.6	897.9	657.1	633.9	23.24	28.275		
6,000.0	5,970.6	6,061.0	5,954.1	12.0	19.8	-87.03	254.0	899.9	657.0	634.2	22.84	28.768		
6,100.0	6,051.5	6,155.0	6,032.4	11.9	19.7	-87.39	202.3	902.8	656.9	634.5	22.38	29.354		
6,200.0	6,119.8	6,250.0	6,100.8	11.8	19.7	-87.84	136.7	906.4	656.7	634.7	22.05	29.785		
6,300.0	6,172.9	6,345.5	6,156.4	11.8	19.7	-88.37	59.4	910.7	656.7	634.6	22.05	29.775		
6,399.4	6,208.7	6,441.7	6,197.2	12.1	19.8	-88.96	-27.5	915.5	656.6	634.1	22.52	29.151		
6,400.0	6,208.8	6,442.3	6,197.4	12.1	19.8	-88.96	-28.1	915.5	656.6	634.1	22.53	29.147		
6,500.0	6,234.8	6,541.4	6,224.7	12.6	20.0	-89.12	-123.1	920.8	656.7	633.2	23.51	27.932		
6,600.0	6,252.3	6,640.4	6,247.6	13.4	20.4	-89.59	-219.3	926.1	656.8	631.9	24.93	26.349		
6,700.0	6,254.0	6,740.0	6,254.0	14.3	20.9	-90.00	-318.3	931.6	656.9	630.2	26.75	24.553		
6,800.0	6,254.0	6,840.0	6,254.0	15.3	21.6	-90.00	-418.2	937.1	657.1	628.1	28.91	22.731		
6,900.0	6,254.0	6,940.0	6,254.0	16.5	22.4	-90.00	-518.0	942.7	657.2	625.9	31.30	20.999		
7,000.0	6,254.0	7,040.0	6,254.0	17.8	23.3	-90.00	-617.9	948.2	657.3	623.4	33.88	19.400		
7,100.0	6,254.0	7,140.0	6,254.0	19.1	24.2	-90.00	-717.7	953.7	657.5	620.8	36.62	17.952		
7,200.0	6,254.0	7,240.0	6,254.0	20.5	25.3	-90.00	-817.6	959.2	657.6	618.1	39.49	16.654		
7,300.0	6,254.0	7,340.0	6,254.0	22.0	26.5	-90.00	-917.4	964.8	657.7	615.3	42.45	15.495		
7,400.0	6,254.0	7,440.0	6,254.0	23.5	27.7	-90.00	-1,017.3	970.3	657.9	612.4	45.49	14.462		
7,500.0	6,254.0	7,540.0	6,254.0	25.0	28.9	-90.00	-1,117.1	975.8	658.0	609.4	48.59	13.541		
7,600.0	6,254.0	7,640.0	6,254.0	26.6	30.3	-90.00	-1,217.0	981.4	658.2	606.4	51.75	12.718		
7,700.0	6,254.0	7,740.0	6,254.0	28.1	31.6	-90.00	-1,316.8	986.9	658.3	603.3	54.95	11.980		
7,800.0	6,254.0	7,840.0	6,254.0	29.8	33.0	-90.00	-1,416.7	992.4	658.4	600.3	58.19	11.316		
7,900.0	6,254.0	7,940.0	6,254.0	31.4	34.4	-90.00	-1,516.5	998.0	658.6	597.1	61.46	10.716		
8,000.0	6,254.0	8,040.0	6,254.0	33.0	35.9	-90.00	-1,616.3	1,003.5	658.7	594.0	64.75	10.174		
8,100.0	6,254.0	8,140.0	6,254.0	34.7	37.4	-90.00	-1,716.2	1,009.0	658.9	590.8	68.06	9.680		
8,200.0	6,254.0	8,240.0	6,254.0	36.3	38.9	-90.00	-1,816.0	1,014.6	659.0	587.6	71.40	9.230		
8,300.0	6,254.0	8,340.0	6,254.0	38.0	40.4	-90.00	-1,915.9	1,020.1	659.1	584.4	74.75	8.818		
8,400.0	6,254.0	8,440.0	6,254.0	39.6	42.0	-90.00	-2,015.7	1,025.6	659.3	581.2	78.11	8.440		
8,500.0	6,254.0	8,540.0	6,254.0	41.3	43.5	-90.00	-2,115.6	1,031.2	659.4	577.9	81.49	8.092		
8,600.0	6,254.0	8,640.0	6,254.0	43.0	45.1	-90.00	-2,215.4	1,036.7	659.6	574.7	84.88	7.771		
8,700.0	6,254.0	8,740.0	6,254.0	44.7	46.7	-90.00	-2,315.3	1,042.2	659.7	571.4	88.27	7.473		
8,800.0	6,254.0	8,840.0	6,254.0	46.4	48.3	-90.00	-2,415.1	1,047.8	659.8	568.1	91.68	7.197		
8,900.0	6,254.0	8,940.0	6,254.0	48.1	49.9	-90.00	-2,515.0	1,053.3	660.0	564.9	95.10	6.940		
9,000.0	6,254.0	9,040.0	6,254.0	49.8	51.5	-90.00	-2,614.8	1,058.8	660.1	561.6	98.52	6.700		
9,100.0	6,254.0	9,140.0	6,254.0	51.5	53.2	-90.00	-2,714.7	1,064.3	660.2	558.3	101.95	6.476		
9,200.0	6,254.0	9,240.0	6,254.0	53.2	54.8	-90.00	-2,814.5	1,069.9	660.4	555.0	105.38	6.267		
9,300.0	6,254.0	9,340.0	6,254.0	54.9	56.4	-90.00	-2,914.4	1,075.4	660.5	551.7	108.82	6.070		
9,400.0	6,254.0	9,440.0	6,254.0	56.7	58.1	-90.00	-3,014.2	1,080.9	660.7	548.4	112.26	5.885		
9,500.0	6,254.0	9,540.0	6,254.0	58.4	59.7	-90.00	-3,114.0	1,086.5	660.8	545.1	115.71	5.711		
9,600.0	6,254.0	9,640.0	6,254.0	60.1	61.4	-90.00	-3,213.9	1,092.0	660.9	541.8	119.16	5.547		
9,700.0	6,254.0	9,740.0	6,254.0	61.8	63.1	-90.00	-3,313.7	1,097.5	661.1	538.5	122.61	5.392		
9,800.0	6,254.0	9,840.0	6,254.0	63.5	64.8	-90.00	-3,413.6	1,103.1	661.2	535.1	126.07	5.245		
9,900.0	6,254.0	9,940.0	6,254.0	65.3	66.4	-90.00	-3,513.4	1,108.6	661.4	531.8	129.53	5.106		
10,000.0	6,254.0	10,040.0	6,254.0	67.0	68.1	-90.00	-3,613.3	1,114.1	661.5	528.5	133.00	4.974		
10,100.0	6,254.0	10,140.0	6,254.0	68.7	69.8	-90.00	-3,713.1	1,119.7	661.6	525.2	136.46	4.848		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Bonanza Creek Energy Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well State Seventy Holes F21-J24-4HNB
<b>Project:</b>	Weld County	<b>TVD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Reference Site:</b>	State 70 Holes F-4 Pad	<b>MD Reference:</b>	KB=15' @ 4567.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	State Seventy Holes F21-J24-4HNB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		State 70 Holes F-4 Pad - State Seventy Holes K21-024-4HNB - OH - Plan #1										Offset Site Error:		0.0 ft			
Survey Program:		0-MWD												Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance										
Measured Depth Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning				
10,200.0	6,254.0	10,240.0	6,254.0	70.5	71.5	-90.00	-3,813.0	1,125.2	661.8	521.8	139.93	4.729					
10,300.0	6,254.0	10,340.0	6,254.0	72.2	73.2	-90.00	-3,912.8	1,130.7	661.9	518.5	143.40	4.616					
10,400.0	6,254.0	10,440.0	6,254.0	73.9	74.9	-90.00	-4,012.7	1,136.3	662.0	515.2	146.87	4.508					
10,500.0	6,254.0	10,540.0	6,254.0	75.7	76.6	-90.00	-4,112.5	1,141.8	662.2	511.8	150.35	4.404					
10,600.0	6,254.0	10,640.0	6,254.0	77.4	78.3	-90.00	-4,212.4	1,147.3	662.3	508.5	153.82	4.306					
10,700.0	6,254.0	10,740.0	6,254.0	79.1	80.0	-90.00	-4,312.2	1,152.8	662.5	505.2	157.30	4.211					
10,800.0	6,254.0	10,840.0	6,254.0	80.9	81.7	-90.00	-4,412.1	1,158.4	662.6	501.8	160.78	4.121					
10,900.0	6,254.0	10,940.0	6,254.0	82.6	83.4	-90.00	-4,511.9	1,163.9	662.7	498.5	164.26	4.035					
10,996.3	6,254.0	11,036.3	6,254.0	84.3	85.0	-90.00	-4,608.1	1,169.2	662.9	495.3	167.62	3.955 SF					

# Cathedral Energy Services

## Anticollision Report

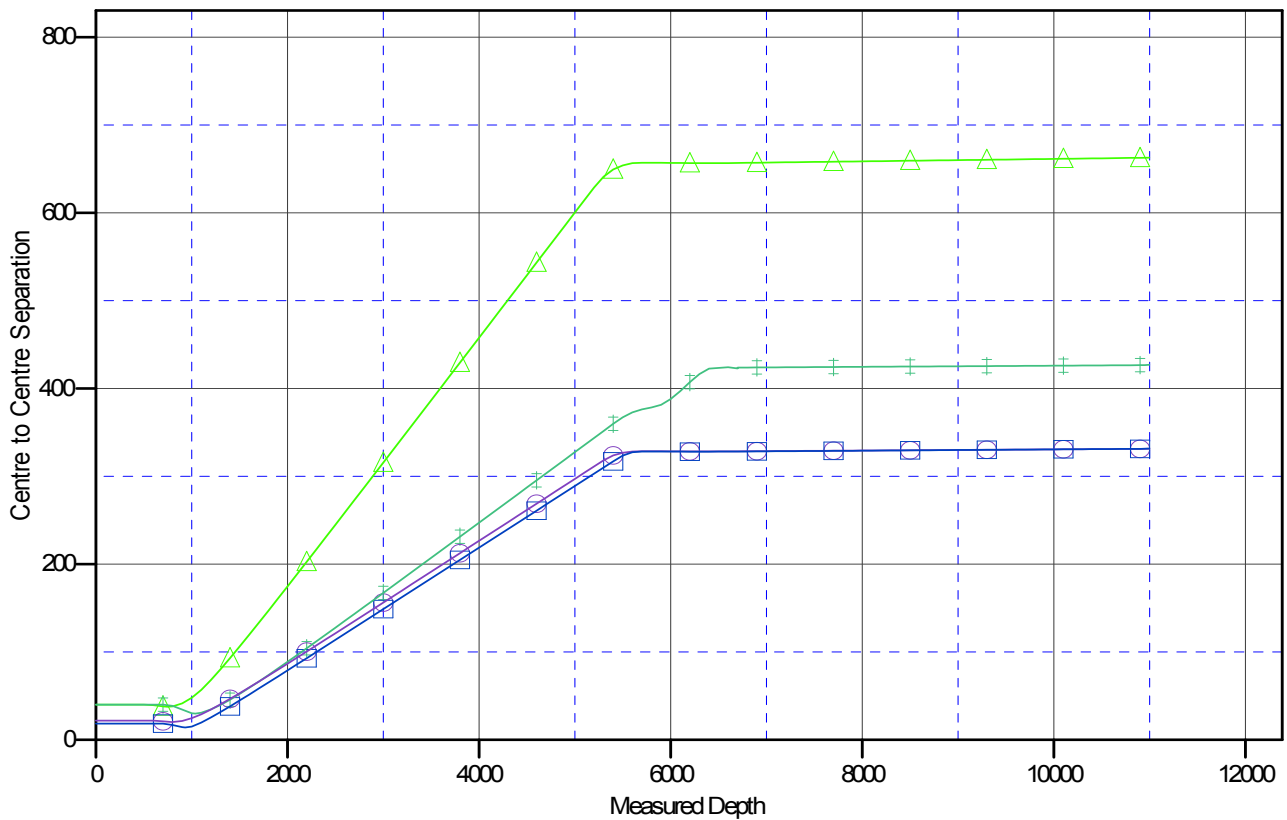
**Company:** Bonanza Creek Energy Operating Company, LLC  
**Project:** Weld County  
**Reference Site:** State 70 Holes F-4 Pad  
**Site Error:** 0.0ft  
**Reference Well:** State Seventy Holes F21-J24-4HNB  
**Well Error:** 0.0ft  
**Reference Wellbore:** OH  
**Reference Design:** Plan #1

**Local Co-ordinate Reference:** Well State Seventy Holes F21-J24-4HNB  
**TVD Reference:** KB=15' @ 4567.0ft (Original Well Elev)  
**MD Reference:** KB=15' @ 4567.0ft (Original Well Elev)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** USA EDM 5000 Multi Users DB  
**Offset TVD Reference:** Offset Datum

Reference Depths are relative to KB=15' @ 4567.0ft (Original Well Elev)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000 °

Coordinates are relative to: State Seventy Holes F21-J24-4HNB  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 0.75°

### Ladder Plot



### LEGEND

State Seventy Holes K21-024-4HNB, OH, Plan #1 V0  
 State Seventy Holes F-J4HC, OH, Plan #1 V0  
 State Seventy Holes 21-24-4HNB, OH, Plan #1 V0  
 State Seventy Holes F-J4HNB, OH, Plan #1 V0