

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Antelope A-20
Company:	Bonanza Creek Energy Operating Company, LLC	TVD Reference:	KBE @ 4660.0ft (Original Well Elev)
Project:	Weld County	MD Reference:	KBE @ 4660.0ft (Original Well Elev)
Site:	Antelope 11-20 Pad	North Reference:	True
Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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

Site		Antelope 11-20 Pad			
Site Position:		Northing:	1,387,248.61 ft	Latitude:	40.390730
From:	Lat/Long	Easting:	3,319,197.55 ft	Longitude:	-104.354060
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.74 °

Well	Antelope A-20					
Well Position	+N/-S	0.0 ft	Northing:	1,387,314.31 ft	Latitude:	40.390910
	+E/-W	0.0 ft	Easting:	3,319,207.85 ft	Longitude:	-104.354020
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,650.0 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF2010	11/23/2011	8.58	67.10	53,125

Design	Plan #1				
Audit Notes:					
Version:	Phase:	PLAN		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	303.85	

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(°/100ft)	(°/100ft)	(°/100ft)	(°)	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
886.8	8.60	303.85	885.7	12.0	-17.8	3.00	3.00	0.00	303.85	
5,846.2	8.60	303.85	5,789.3	425.2	-633.9	0.00	0.00	0.00	0.00	
6,133.0	0.00	0.00	6,075.0	437.2	-651.8	3.00	-3.00	0.00	180.00	Antelope A-20 TGT
6,748.0	0.00	0.00	6,690.0	437.2	-651.8	0.00	0.00	0.00	0.00	Antelope A-20 PBHL

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Site:	Antelope 11-20 Pad	North Reference:	True
Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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
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	KOP @ 600'
700.0	3.00	303.85	700.0	1.5	-2.2	2.6	3.00	3.00	
800.0	6.00	303.85	799.6	5.8	-8.7	10.5	3.00	3.00	
886.8	8.60	303.85	885.7	12.0	-17.8	21.5	3.00	3.00	EOB @ Inc. = 8.6°
900.0	8.60	303.85	898.8	13.1	-19.5	23.5	0.00	0.00	
1,000.0	8.60	303.85	997.6	21.4	-31.9	38.4	0.00	0.00	
1,100.0	8.60	303.85	1,096.5	29.7	-44.3	53.4	0.00	0.00	
1,200.0	8.60	303.85	1,195.4	38.1	-56.8	68.3	0.00	0.00	
1,300.0	8.60	303.85	1,294.3	46.4	-69.2	83.3	0.00	0.00	
1,400.0	8.60	303.85	1,393.1	54.7	-81.6	98.3	0.00	0.00	
1,500.0	8.60	303.85	1,492.0	63.1	-94.0	113.2	0.00	0.00	
1,600.0	8.60	303.85	1,590.9	71.4	-106.4	128.2	0.00	0.00	
1,700.0	8.60	303.85	1,689.8	79.7	-118.9	143.1	0.00	0.00	
1,800.0	8.60	303.85	1,788.6	88.1	-131.3	158.1	0.00	0.00	
1,900.0	8.60	303.85	1,887.5	96.4	-143.7	173.1	0.00	0.00	
2,000.0	8.60	303.85	1,986.4	104.7	-156.1	188.0	0.00	0.00	
2,100.0	8.60	303.85	2,085.3	113.1	-168.6	203.0	0.00	0.00	
2,200.0	8.60	303.85	2,184.1	121.4	-181.0	217.9	0.00	0.00	
2,300.0	8.60	303.85	2,283.0	129.7	-193.4	232.9	0.00	0.00	
2,400.0	8.60	303.85	2,381.9	138.1	-205.8	247.8	0.00	0.00	
2,500.0	8.60	303.85	2,480.8	146.4	-218.3	262.8	0.00	0.00	
2,600.0	8.60	303.85	2,579.6	154.7	-230.7	277.8	0.00	0.00	
2,700.0	8.60	303.85	2,678.5	163.1	-243.1	292.7	0.00	0.00	
2,800.0	8.60	303.85	2,777.4	171.4	-255.5	307.7	0.00	0.00	
2,900.0	8.60	303.85	2,876.3	179.7	-267.9	322.6	0.00	0.00	
3,000.0	8.60	303.85	2,975.1	188.1	-280.4	337.6	0.00	0.00	
3,100.0	8.60	303.85	3,074.0	196.4	-292.8	352.6	0.00	0.00	
3,200.0	8.60	303.85	3,172.9	204.7	-305.2	367.5	0.00	0.00	
3,300.0	8.60	303.85	3,271.8	213.0	-317.6	382.5	0.00	0.00	
3,400.0	8.60	303.85	3,370.6	221.4	-330.1	397.4	0.00	0.00	
3,449.9	8.60	303.85	3,420.0	225.5	-336.3	404.9	0.00	0.00	Parkman
3,500.0	8.60	303.85	3,469.5	229.7	-342.5	412.4	0.00	0.00	
3,600.0	8.60	303.85	3,568.4	238.0	-354.9	427.3	0.00	0.00	
3,700.0	8.60	303.85	3,667.3	246.4	-367.3	442.3	0.00	0.00	
3,800.0	8.60	303.85	3,766.1	254.7	-379.8	457.3	0.00	0.00	
3,900.0	8.60	303.85	3,865.0	263.0	-392.2	472.2	0.00	0.00	
4,000.0	8.60	303.85	3,963.9	271.4	-404.6	487.2	0.00	0.00	
4,100.0	8.60	303.85	4,062.8	279.7	-417.0	502.1	0.00	0.00	
4,183.2	8.60	303.85	4,145.0	286.6	-427.4	514.6	0.00	0.00	Sussex
4,200.0	8.60	303.85	4,161.6	288.0	-429.4	517.1	0.00	0.00	
4,300.0	8.60	303.85	4,260.5	296.4	-441.9	532.1	0.00	0.00	
4,400.0	8.60	303.85	4,359.4	304.7	-454.3	547.0	0.00	0.00	
4,500.0	8.60	303.85	4,458.3	313.0	-466.7	562.0	0.00	0.00	
4,600.0	8.60	303.85	4,557.1	321.4	-479.1	576.9	0.00	0.00	
4,700.0	8.60	303.85	4,656.0	329.7	-491.6	591.9	0.00	0.00	
4,800.0	8.60	303.85	4,754.9	338.0	-504.0	606.8	0.00	0.00	

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Project:	Weld County	MD Reference:	KBE @ 4660.0ft (Original Well Elev)
Site:	Antelope 11-20 Pad	North Reference:	True
Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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
4,900.0	8.60	303.85	4,853.8	346.4	-516.4	621.8	0.00	0.00	
5,000.0	8.60	303.85	4,952.6	354.7	-528.8	636.8	0.00	0.00	
5,100.0	8.60	303.85	5,051.5	363.0	-541.2	651.7	0.00	0.00	
5,200.0	8.60	303.85	5,150.4	371.4	-553.7	666.7	0.00	0.00	
5,300.0	8.60	303.85	5,249.3	379.7	-566.1	681.6	0.00	0.00	
5,400.0	8.60	303.85	5,348.1	388.0	-578.5	696.6	0.00	0.00	
5,500.0	8.60	303.85	5,447.0	396.4	-590.9	711.6	0.00	0.00	
5,600.0	8.60	303.85	5,545.9	404.7	-603.4	726.5	0.00	0.00	
5,700.0	8.60	303.85	5,644.8	413.0	-615.8	741.5	0.00	0.00	
5,800.0	8.60	303.85	5,743.6	421.4	-628.2	756.4	0.00	0.00	
5,846.2	8.60	303.85	5,789.3	425.2	-633.9	763.3	0.00	0.00	Start 3° Drop
5,900.0	6.99	303.85	5,842.6	429.3	-640.0	770.6	3.00	-3.00	
6,000.0	3.99	303.85	5,942.2	434.6	-647.9	780.2	3.00	-3.00	
6,100.0	0.99	303.85	6,042.1	437.0	-651.6	784.5	3.00	-3.00	
6,133.0	0.00	0.00	6,075.0	437.2	-651.8	784.8	3.00	-3.00	EOD @ Inc. = 0°
6,200.0	0.00	0.00	6,142.0	437.2	-651.8	784.8	0.00	0.00	
6,300.0	0.00	0.00	6,242.0	437.2	-651.8	784.8	0.00	0.00	
6,333.0	0.00	0.00	6,275.0	437.2	-651.8	784.8	0.00	0.00	Niobrara
6,400.0	0.00	0.00	6,342.0	437.2	-651.8	784.8	0.00	0.00	
6,500.0	0.00	0.00	6,442.0	437.2	-651.8	784.8	0.00	0.00	
6,565.0	0.00	0.00	6,507.0	437.2	-651.8	784.8	0.00	0.00	Ft. Hayes
6,588.0	0.00	0.00	6,530.0	437.2	-651.8	784.8	0.00	0.00	Codell
6,600.0	0.00	0.00	6,542.0	437.2	-651.8	784.8	0.00	0.00	Carlile
6,635.0	0.00	0.00	6,577.0	437.2	-651.8	784.8	0.00	0.00	Greenhorn
6,700.0	0.00	0.00	6,642.0	437.2	-651.8	784.8	0.00	0.00	
6,748.0	0.00	0.00	6,690.0	437.2	-651.8	784.8	0.00	0.00	TD @ 6,748' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Antelope A-20 PBHL	0.00	0.00	6,690.0	437.2	-651.8	1,387,743.03	3,318,550.46	40.392110	-104.356360
- plan hits target center									
- Circle (radius 50.0)									
Antelope A-20 TGT	0.00	0.00	6,075.0	437.2	-651.8	1,387,743.03	3,318,550.46	40.392110	-104.356360
- plan hits target center									
- Point									

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Project:	Weld County	MD Reference:	KBE @ 4660.0ft (Original Well Elev)
Site:	Antelope 11-20 Pad	North Reference:	True
Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,449.9	3,420.0	Parkman				
4,183.2	4,145.0	Sussex				
6,333.0	6,275.0	Niobrara				
6,565.0	6,507.0	Ft. Hayes				
6,588.0	6,530.0	Codell				
6,600.0	6,542.0	Carlile				
6,635.0	6,577.0	Greenhorn				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
600.0	600.0	0.0	0.0	KOP @ 600'	
886.8	885.7	12.0	-17.8	EOB @ Inc. = 8.6°	
5,846.2	5,789.3	425.2	-633.9	Start 3° Drop	
6,133.0	6,075.0	437.2	-651.8	EOD @ Inc. = 0°	
6,748.0	6,690.0	437.2	-651.8	TD @ 6,748' MD	

Bonanza Creek Energy Operating Company, LLC

Weld County

Antelope 11-20 Pad

Antelope A-20

OH

Plan #1

Anticollision Report

28 November, 2011

Cathedral Energy Services

Anticollision Report

Company:	Bonanza Creek Energy Operating Company, LLC	Local Co-ordinate Reference:	Well Antelope A-20
Project:	Weld County	TVD Reference:	KBE @ 4660.0ft (Original Well Elev)
Reference Site:	Antelope 11-20 Pad	MD Reference:	KBE @ 4660.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	11/28/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	6,748.0	Plan #1 (OH)	MWD	Geolink MWD	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Antelope 11-20 Pad						
Antelope 11-20 (vert) - V - Plan #3	0.0	2.0	81.4			
Antelope 11-20 (vert) - V - Plan #3	600.0	602.0	81.4	81.4	10,000.000	CC, ES
Antelope 12-20 - DD - DD	0.0	1.0	113.5			
Antelope 21-20 - DD - DD	0.0	1.0	52.9			
Antelope 21-20 - DD - DD	590.6	591.6	52.3	52.3	10,000.000	CC, ES
Antelope 22-20 - DD - DD	0.0	1.0	67.0			
Antelope 22-20 - DD - DD	577.6	578.6	62.2	62.2	10,000.000	CC, ES
Antelope B-20 - OH - Plan #1	0.0	0.0	15.4			
Antelope B-20 - OH - Plan #1	600.0	595.0	14.6	14.6	10,000.000	CC, ES
Antelope F-20 - OH - Plan #1	0.0	5.0	29.3			
Antelope F-20 - OH - Plan #1	633.4	638.8	29.2	29.2	10,000.000	CC, ES

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Site Error:	0.0ft	North Reference:	True
Reference Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design		Antelope 11-20 Pad - Antelope 11-20 (vert) - V - Plan #3											Offset Site Error: 0.0 ft	
Survey Program: 0-MWD		Offset Well Error: 0.0 ft												
Reference		Offset		Semi Major Axis			Distance						Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
							+N/-S (ft)	+E/-W (ft)						
0.0	0.0	2.0	2.0	0.0	0.0	-170.14	-80.1	-13.9	81.4					
100.0	100.0	102.0	102.0	0.2	0.2	-170.14	-80.1	-13.9	81.4	81.4	0.00	N/A		
200.0	200.0	202.0	202.0	0.3	0.3	-170.14	-80.1	-13.9	81.4	81.4	0.00	N/A		
300.0	300.0	302.0	302.0	0.5	0.5	-170.14	-80.1	-13.9	81.4	81.4	0.00	N/A		
400.0	400.0	402.0	402.0	0.7	0.7	-170.14	-80.1	-13.9	81.4	81.4	0.00	N/A		
500.0	500.0	502.0	502.0	0.9	0.9	-170.14	-80.1	-13.9	81.4	81.4	0.00	N/A		
600.0	600.0	602.0	602.0	1.0	1.0	-170.14	-80.1	-13.9	81.4	81.4	0.00	N/A	CC, ES	
700.0	700.0	702.0	702.0	1.2	1.2	-115.62	-80.1	-13.9	82.4	82.4	0.00	N/A		
800.0	799.6	801.6	801.6	1.4	1.4	-120.23	-80.1	-13.9	86.1	86.1	0.00	N/A		
900.0	898.8	900.8	900.8	1.6	1.6	-126.95	-80.1	-13.9	93.4	93.4	0.00	N/A		
1,000.0	997.6	999.6	999.6	1.9	1.7	-133.57	-80.1	-13.9	103.1	103.1	0.00	N/A		
1,100.0	1,096.5	1,098.5	1,098.5	2.2	1.9	-139.00	-80.1	-13.9	114.0	114.0	0.00	N/A		
1,200.0	1,195.4	1,197.4	1,197.4	2.5	2.1	-143.46	-80.1	-13.9	125.7	125.7	0.00	N/A		
1,300.0	1,294.3	1,296.3	1,296.3	2.8	2.2	-147.14	-80.1	-13.9	138.1	138.1	0.00	N/A		
1,400.0	1,393.1	1,395.1	1,395.1	3.1	2.4	-150.22	-80.1	-13.9	150.9	150.9	0.00	N/A		
1,500.0	1,492.0	1,494.0	1,494.0	3.4	2.6	-152.81	-80.1	-13.9	164.1	164.1	0.00	N/A		
1,600.0	1,590.9	1,592.9	1,592.9	3.7	2.8	-155.01	-80.1	-13.9	177.6	177.6	0.00	N/A		
1,700.0	1,689.8	1,691.8	1,691.8	4.0	2.9	-156.90	-80.1	-13.9	191.2	191.2	0.00	N/A		
1,800.0	1,788.6	1,790.6	1,790.6	4.3	3.1	-158.54	-80.1	-13.9	205.1	205.1	0.00	N/A		
1,900.0	1,887.5	1,889.5	1,889.5	4.6	3.3	-159.97	-80.1	-13.9	219.1	219.1	0.00	N/A		
2,000.0	1,986.4	1,988.4	1,988.4	4.9	3.5	-161.22	-80.1	-13.9	233.2	233.2	0.00	N/A		
2,100.0	2,085.3	2,087.3	2,087.3	5.2	3.6	-162.34	-80.1	-13.9	247.5	247.5	0.00	N/A		
2,200.0	2,184.1	2,186.1	2,186.1	5.5	3.8	-163.33	-80.1	-13.9	261.8	261.8	0.00	N/A		
2,300.0	2,283.0	2,285.0	2,285.0	5.8	4.0	-164.22	-80.1	-13.9	276.2	276.2	0.00	N/A		
2,400.0	2,381.9	2,383.9	2,383.9	6.1	4.1	-165.02	-80.1	-13.9	290.6	290.6	0.00	N/A		
2,500.0	2,480.8	2,482.8	2,482.8	6.4	4.3	-165.75	-80.1	-13.9	305.1	305.1	0.00	N/A		
2,600.0	2,579.6	2,581.6	2,581.6	6.7	4.5	-166.41	-80.1	-13.9	319.6	319.6	0.00	N/A		
2,700.0	2,678.5	2,680.5	2,680.5	7.1	4.7	-167.01	-80.1	-13.9	334.2	334.2	0.00	N/A		
2,800.0	2,777.4	2,779.4	2,779.4	7.4	4.8	-167.56	-80.1	-13.9	348.8	348.8	0.00	N/A		
2,900.0	2,876.3	2,878.3	2,878.3	7.7	5.0	-168.07	-80.1	-13.9	363.4	363.4	0.00	N/A		
3,000.0	2,975.1	2,977.1	2,977.1	8.0	5.2	-168.54	-80.1	-13.9	378.1	378.1	0.00	N/A		
3,100.0	3,074.0	3,076.0	3,076.0	8.3	5.4	-168.97	-80.1	-13.9	392.7	392.7	0.00	N/A		
3,200.0	3,172.9	3,174.9	3,174.9	8.6	5.5	-169.37	-80.1	-13.9	407.4	407.4	0.00	N/A		
3,300.0	3,271.8	3,273.8	3,273.8	8.9	5.7	-169.75	-80.1	-13.9	422.1	422.1	0.00	N/A		
3,400.0	3,370.6	3,372.6	3,372.6	9.3	5.9	-170.10	-80.1	-13.9	436.9	436.9	0.00	N/A		
3,500.0	3,469.5	3,471.5	3,471.5	9.6	6.0	-170.42	-80.1	-13.9	451.6	451.6	0.00	N/A		
3,600.0	3,568.4	3,570.4	3,570.4	9.9	6.2	-170.73	-80.1	-13.9	466.4	466.4	0.00	N/A		
3,700.0	3,667.3	3,669.3	3,669.3	10.2	6.4	-171.01	-80.1	-13.9	481.2	481.2	0.00	N/A		
3,800.0	3,766.1	3,768.1	3,768.1	10.5	6.6	-171.28	-80.1	-13.9	495.9	495.9	0.00	N/A		

Cathedral Energy Services

Anticollision Report

Company:	Bonanza Creek Energy Operating Company, LLC	Local Co-ordinate Reference:	Well Antelope A-20
Project:	Weld County	TVD Reference:	KBE @ 4660.0ft (Original Well Elev)
Reference Site:	Antelope 11-20 Pad	MD Reference:	KBE @ 4660.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Antelope 11-20 Pad - Antelope 12-20 - DD - DD													Offset Site Error:	0.0 ft
Survey Program: 493-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	1.0	1.0	0.0	0.0	-174.37	-112.9	-11.1	113.5					
100.0	100.0	100.9	100.9	0.2	0.2	-174.31	-113.0	-11.2	113.5	113.5	0.00	N/A		
200.0	200.0	200.8	200.8	0.3	0.3	-174.16	-113.1	-11.6	113.6	113.6	0.00	N/A		
300.0	300.0	300.7	300.7	0.5	0.5	-173.92	-113.2	-12.1	113.8	113.8	0.00	N/A		
400.0	400.0	400.6	400.6	0.7	0.7	-173.57	-113.4	-12.8	114.1	114.1	0.00	N/A		
500.0	500.0	500.1	500.1	0.9	0.9	-173.12	-113.7	-13.7	114.5	114.5	0.00	N/A		
600.0	600.0	594.2	594.1	1.0	1.0	-172.34	-116.6	-15.7	117.8	117.8	0.00	N/A		
700.0	700.0	687.9	687.4	1.2	1.2	-115.73	-123.9	-19.3	127.2	127.2	0.00	N/A		
800.0	799.6	780.3	779.1	1.4	1.5	-116.91	-135.3	-23.5	143.5	143.5	0.00	N/A		
900.0	898.8	869.0	866.3	1.6	1.8	-119.00	-150.7	-28.2	167.4	167.4	0.00	N/A		
1,000.0	997.6	953.9	948.8	1.9	2.1	-121.61	-169.9	-32.0	197.7	197.7	0.00	N/A		
1,100.0	1,096.5	1,039.5	1,031.2	2.2	2.5	-124.10	-193.0	-33.9	232.6	232.6	0.00	N/A		
1,200.0	1,195.4	1,121.4	1,109.3	2.5	2.9	-126.21	-217.8	-34.3	271.2	271.2	0.00	N/A		
1,300.0	1,294.3	1,210.1	1,193.0	2.8	3.4	-128.12	-247.2	-33.5	312.9	312.9	0.00	N/A		
1,400.0	1,393.1	1,305.8	1,283.6	3.1	3.9	-129.73	-277.9	-32.6	353.9	353.9	0.00	N/A		
1,500.0	1,492.0	1,401.1	1,374.3	3.4	4.4	-131.10	-307.2	-31.2	393.9	393.9	0.00	N/A		
1,600.0	1,590.9	1,490.2	1,459.1	3.7	4.9	-132.07	-334.3	-30.5	433.6	433.6	0.00	N/A		
1,700.0	1,689.8	1,584.7	1,548.9	4.0	5.4	-132.60	-364.1	-32.1	474.0	474.0	0.00	N/A		

Cathedral Energy Services

Anticollision Report

Company:	Bonanza Creek Energy Operating Company, LLC	Local Co-ordinate Reference:	Well Antelope A-20
Project:	Weld County	TVD Reference:	KBE @ 4660.0ft (Original Well Elev)
Reference Site:	Antelope 11-20 Pad	MD Reference:	KBE @ 4660.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Antelope 11-20 Pad - Antelope 21-20 - DD - DD													Offset Site Error:	0.0 ft
Survey Program: 530-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	1.0	1.0	0.0	0.0	-164.73	-51.0	-13.9	52.9					
100.0	100.0	101.0	101.0	0.2	0.2	-164.60	-51.0	-14.0	52.9	52.9	0.00	N/A		
200.0	200.0	201.0	201.0	0.3	0.3	-164.23	-50.8	-14.3	52.8	52.8	0.00	N/A		
300.0	300.0	301.1	301.1	0.5	0.5	-163.61	-50.6	-14.9	52.7	52.7	0.00	N/A		
400.0	400.0	401.1	401.1	0.7	0.7	-162.74	-50.2	-15.6	52.6	52.6	0.00	N/A		
500.0	500.0	501.1	501.1	0.9	0.9	-161.61	-49.8	-16.5	52.4	52.4	0.00	N/A		
590.6	590.6	591.6	591.6	1.0	1.0	-161.55	-49.7	-16.6	52.3	52.3	0.00	N/A CC, ES		
600.0	600.0	601.0	601.0	1.0	1.0	-161.80	-49.7	-16.4	52.3	52.3	0.00	N/A		
700.0	700.0	701.1	700.9	1.2	1.2	-114.00	-51.0	-11.3	53.3	53.3	0.00	N/A		
800.0	799.6	799.7	799.0	1.4	1.4	-131.18	-52.3	-0.9	58.7	58.7	0.00	N/A		
900.0	898.8	892.6	890.7	1.6	1.7	-148.74	-54.9	13.2	75.9	75.9	0.00	N/A		
1,000.0	997.6	986.0	982.3	1.9	2.0	-161.32	-59.0	31.1	103.5	103.5	0.00	N/A		
1,100.0	1,096.5	1,077.4	1,071.0	2.2	2.3	-170.74	-60.3	53.1	135.3	135.3	0.00	N/A		
1,200.0	1,195.4	1,163.6	1,153.8	2.5	2.7	-177.37	-60.5	77.2	171.7	171.7	0.00	N/A		
1,300.0	1,294.3	1,253.2	1,239.2	2.8	3.2	177.97	-61.7	104.3	212.0	212.0	0.00	N/A		
1,400.0	1,393.1	1,343.9	1,325.7	3.1	3.7	174.74	-62.7	131.5	252.8	252.8	0.00	N/A		
1,500.0	1,492.0	1,436.2	1,413.8	3.4	4.2	172.36	-63.8	159.0	293.9	293.9	0.00	N/A		
1,600.0	1,590.9	1,529.4	1,502.9	3.7	4.7	170.53	-64.3	186.2	334.6	334.6	0.00	N/A		
1,700.0	1,689.8	1,615.5	1,585.3	4.0	5.1	169.16	-64.6	211.4	375.5	375.5	0.00	N/A		
1,800.0	1,788.6	1,704.9	1,670.2	4.3	5.6	167.91	-64.8	239.1	418.2	418.2	0.00	N/A		
1,900.0	1,887.5	1,797.1	1,758.1	4.6	6.2	166.81	-64.4	267.0	459.9	459.9	0.00	N/A		

Cathedral Energy Services

Anticollision Report

Company:	Bonanza Creek Energy Operating Company, LLC	Local Co-ordinate Reference:	Well Antelope A-20
Project:	Weld County	TVD Reference:	KBE @ 4660.0ft (Original Well Elev)
Reference Site:	Antelope 11-20 Pad	MD Reference:	KBE @ 4660.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Antelope 11-20 Pad - Antelope 22-20 - DD - DD													Offset Site Error: 0.0 ft
Survey Program: 530-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	1.0	1.0	0.0	0.0	-168.01	-65.6	-13.9	67.0				
100.0	100.0	101.2	101.2	0.2	0.2	-168.05	-65.4	-13.8	66.9	66.9	0.00	N/A	
200.0	200.0	201.4	201.4	0.3	0.4	-168.16	-65.0	-13.6	66.4	66.4	0.00	N/A	
300.0	300.0	301.6	301.6	0.5	0.5	-168.36	-64.2	-13.2	65.6	65.6	0.00	N/A	
400.0	400.0	401.8	401.8	0.7	0.7	-168.64	-63.2	-12.7	64.5	64.5	0.00	N/A	
500.0	500.0	502.0	502.0	0.9	0.9	-169.02	-61.9	-12.0	63.1	63.1	0.00	N/A	
577.6	577.6	578.6	578.6	1.0	1.0	-169.44	-61.1	-11.4	62.2	62.2	0.00	N/A CC, ES	
600.0	600.0	600.6	600.5	1.0	1.0	-169.63	-61.3	-11.2	62.3	62.3	0.00	N/A	
700.0	700.0	698.7	698.6	1.2	1.2	-116.80	-63.6	-10.1	65.6	65.6	0.00	N/A	
800.0	799.6	796.1	795.8	1.4	1.4	-124.36	-68.6	-7.4	74.6	74.6	0.00	N/A	
900.0	898.8	890.5	889.8	1.6	1.6	-133.85	-76.2	-2.1	91.4	91.4	0.00	N/A	
1,000.0	997.6	981.7	980.1	1.9	1.8	-141.58	-86.8	5.2	115.9	115.9	0.00	N/A	
1,100.0	1,096.5	1,071.2	1,068.0	2.2	2.1	-147.03	-100.5	14.8	146.1	146.1	0.00	N/A	
1,200.0	1,195.4	1,157.4	1,151.8	2.5	2.4	-151.32	-115.6	27.7	180.9	180.9	0.00	N/A	
1,300.0	1,294.3	1,240.2	1,231.5	2.8	2.8	-154.35	-132.7	42.2	220.4	220.4	0.00	N/A	
1,400.0	1,393.1	1,319.9	1,307.3	3.1	3.2	-156.45	-152.0	58.0	264.1	264.1	0.00	N/A	
1,500.0	1,492.0	1,397.3	1,379.9	3.4	3.7	-157.69	-173.6	73.8	311.4	311.4	0.00	N/A	
1,600.0	1,590.9	1,469.0	1,446.2	3.7	4.1	-158.70	-195.1	90.3	361.9	361.9	0.00	N/A	
1,700.0	1,689.8	1,544.1	1,514.8	4.0	4.7	-159.70	-218.8	109.9	415.2	415.2	0.00	N/A	
1,800.0	1,788.6	1,631.6	1,594.0	4.3	5.3	-160.69	-247.2	133.9	470.1	470.1	0.00	N/A	

Cathedral Energy Services

Anticollision Report

Company:	Bonanza Creek Energy Operating Company, LLC	Local Co-ordinate Reference:	Well Antelope A-20
Project:	Weld County	TVD Reference:	KBE @ 4660.0ft (Original Well Elev)
Reference Site:	Antelope 11-20 Pad	MD Reference:	KBE @ 4660.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Antelope 11-20 Pad - Antelope B-20 - 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	-14.6	0.0	15.4				
100.0	100.0	95.0	95.0	0.2	0.1	-180.00	-14.6	0.0	14.6	14.6	0.00	N/A	
200.0	200.0	195.0	195.0	0.3	0.3	-180.00	-14.6	0.0	14.6	14.6	0.00	N/A	
300.0	300.0	295.0	295.0	0.5	0.5	-180.00	-14.6	0.0	14.6	14.6	0.00	N/A	
400.0	400.0	395.0	395.0	0.7	0.7	-180.00	-14.6	0.0	14.6	14.6	0.00	N/A	
500.0	500.0	495.0	495.0	0.9	0.8	-180.00	-14.6	0.0	14.6	14.6	0.00	N/A	
600.0	600.0	595.0	595.0	1.0	1.0	-180.00	-14.6	0.0	14.6	14.6	0.00	N/A CC, ES	
700.0	700.0	694.4	694.3	1.2	1.2	-125.70	-16.3	-1.6	17.8	17.8	0.00	N/A	
800.0	799.6	793.0	792.7	1.4	1.4	-127.83	-21.8	-6.5	27.8	27.8	0.00	N/A	
900.0	898.8	890.4	889.3	1.6	1.6	-128.98	-30.9	-14.8	44.5	44.5	0.00	N/A	
1,000.0	997.6	986.6	983.9	1.9	1.9	-127.76	-43.5	-26.1	65.7	65.7	0.00	N/A	
1,100.0	1,096.5	1,084.0	1,079.5	2.2	2.2	-126.29	-57.4	-38.7	88.2	88.2	0.00	N/A	
1,200.0	1,195.4	1,181.4	1,175.1	2.5	2.5	-125.42	-71.4	-51.3	110.7	110.7	0.00	N/A	
1,300.0	1,294.3	1,278.8	1,270.7	2.8	2.9	-124.85	-85.4	-63.9	133.2	133.2	0.00	N/A	
1,400.0	1,393.1	1,376.3	1,366.3	3.1	3.2	-124.44	-99.3	-76.5	155.7	155.7	0.00	N/A	
1,500.0	1,492.0	1,473.7	1,461.9	3.4	3.6	-124.13	-113.3	-89.1	178.2	178.2	0.00	N/A	
1,600.0	1,590.9	1,571.1	1,557.5	3.7	3.9	-123.89	-127.2	-101.7	200.7	200.7	0.00	N/A	
1,700.0	1,689.8	1,668.6	1,653.1	4.0	4.3	-123.70	-141.2	-114.3	223.2	223.2	0.00	N/A	
1,800.0	1,788.6	1,766.0	1,748.7	4.3	4.6	-123.55	-155.2	-126.9	245.8	245.8	0.00	N/A	
1,900.0	1,887.5	1,863.4	1,844.3	4.6	5.0	-123.42	-169.1	-139.5	268.3	268.3	0.00	N/A	
2,000.0	1,986.4	1,960.8	1,939.9	4.9	5.4	-123.31	-183.1	-152.1	290.8	290.8	0.00	N/A	
2,100.0	2,085.3	2,058.3	2,035.5	5.2	5.7	-123.22	-197.1	-164.7	313.4	313.4	0.00	N/A	
2,200.0	2,184.1	2,155.7	2,131.1	5.5	6.1	-123.14	-211.0	-177.3	335.9	335.9	0.00	N/A	
2,300.0	2,283.0	2,253.1	2,226.7	5.8	6.5	-123.07	-225.0	-189.9	358.4	358.4	0.00	N/A	
2,400.0	2,381.9	2,350.6	2,322.3	6.1	6.8	-123.00	-238.9	-202.5	381.0	381.0	0.00	N/A	
2,500.0	2,480.8	2,448.0	2,417.9	6.4	7.2	-122.95	-252.9	-215.1	403.5	403.5	0.00	N/A	
2,600.0	2,579.6	2,545.4	2,513.5	6.7	7.6	-122.90	-266.9	-227.7	426.0	426.0	0.00	N/A	
2,700.0	2,678.5	2,642.8	2,609.0	7.1	7.9	-122.86	-280.8	-240.3	448.6	448.6	0.00	N/A	
2,800.0	2,777.4	2,740.3	2,704.6	7.4	8.3	-122.82	-294.8	-253.0	471.1	471.1	0.00	N/A	
2,900.0	2,876.3	2,837.7	2,800.2	7.7	8.7	-122.78	-308.8	-265.6	493.6	493.6	0.00	N/A	

Cathedral Energy Services

Anticollision Report

Company:	Bonanza Creek Energy Operating Company, LLC	Local Co-ordinate Reference:	Well Antelope A-20
Project:	Weld County	TVD Reference:	KBE @ 4660.0ft (Original Well Elev)
Reference Site:	Antelope 11-20 Pad	MD Reference:	KBE @ 4660.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Antelope 11-20 Pad - Antelope F-20 - 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		
0.0	0.0	5.0	5.0	0.0	0.0	174.54	-29.1	2.8	29.3						
100.0	100.0	105.0	105.0	0.2	0.2	174.54	-29.1	2.8	29.3	29.3	0.00	N/A			
200.0	200.0	205.0	205.0	0.3	0.3	174.54	-29.1	2.8	29.3	29.3	0.00	N/A			
300.0	300.0	305.0	305.0	0.5	0.5	174.54	-29.1	2.8	29.3	29.3	0.00	N/A			
400.0	400.0	405.0	405.0	0.7	0.7	174.54	-29.1	2.8	29.3	29.3	0.00	N/A			
500.0	500.0	505.0	505.0	0.9	0.9	174.54	-29.1	2.8	29.3	29.3	0.00	N/A			
600.0	600.0	605.0	605.0	1.0	1.0	174.53	-29.1	2.8	29.3	29.3	0.00	N/A			
633.4	633.4	638.8	638.8	1.1	1.1	-130.39	-28.9	3.1	29.2	29.2	0.00	N/A CC, ES			
700.0	700.0	705.7	705.7	1.2	1.2	-137.91	-27.2	5.0	29.6	29.6	0.00	N/A			
800.0	799.6	805.3	805.0	1.4	1.4	-159.30	-22.0	11.2	34.2	34.2	0.00	N/A			
900.0	898.8	903.2	902.0	1.6	1.6	179.97	-13.8	20.7	48.4	48.4	0.00	N/A			
1,000.0	997.6	1,000.6	998.5	1.9	1.9	168.94	-5.2	30.8	68.3	68.3	0.00	N/A			
1,100.0	1,096.5	1,098.0	1,095.0	2.2	2.1	162.96	3.4	40.9	89.4	89.4	0.00	N/A			
1,200.0	1,195.4	1,195.4	1,191.5	2.5	2.4	159.28	12.0	51.0	111.2	111.2	0.00	N/A			
1,300.0	1,294.3	1,292.8	1,287.9	2.8	2.7	156.81	20.6	61.1	133.3	133.3	0.00	N/A			
1,400.0	1,393.1	1,390.2	1,384.4	3.1	2.9	155.05	29.3	71.2	155.5	155.5	0.00	N/A			
1,500.0	1,492.0	1,487.6	1,480.9	3.4	3.2	153.72	37.9	81.3	177.8	177.8	0.00	N/A			
1,600.0	1,590.9	1,585.0	1,577.4	3.7	3.5	152.69	46.5	91.4	200.2	200.2	0.00	N/A			
1,700.0	1,689.8	1,682.4	1,673.9	4.0	3.8	151.87	55.1	101.5	222.7	222.7	0.00	N/A			
1,800.0	1,788.6	1,779.8	1,770.4	4.3	4.0	151.20	63.8	111.6	245.2	245.2	0.00	N/A			
1,900.0	1,887.5	1,877.2	1,866.9	4.6	4.3	150.64	72.4	121.6	267.7	267.7	0.00	N/A			
2,000.0	1,986.4	1,974.6	1,963.4	4.9	4.6	150.17	81.0	131.7	290.2	290.2	0.00	N/A			
2,100.0	2,085.3	2,072.0	2,059.9	5.2	4.9	149.76	89.6	141.8	312.8	312.8	0.00	N/A			
2,200.0	2,184.1	2,169.4	2,156.4	5.5	5.2	149.41	98.2	151.9	335.3	335.3	0.00	N/A			
2,300.0	2,283.0	2,266.8	2,252.9	5.8	5.5	149.11	106.9	162.0	357.9	357.9	0.00	N/A			
2,400.0	2,381.9	2,364.2	2,349.4	6.1	5.7	148.84	115.5	172.1	380.5	380.5	0.00	N/A			
2,500.0	2,480.8	2,461.6	2,445.9	6.4	6.0	148.60	124.1	182.2	403.1	403.1	0.00	N/A			
2,600.0	2,579.6	2,559.0	2,542.4	6.7	6.3	148.39	132.7	192.3	425.7	425.7	0.00	N/A			
2,700.0	2,678.5	2,656.4	2,638.9	7.1	6.6	148.19	141.4	202.4	448.3	448.3	0.00	N/A			
2,800.0	2,777.4	2,753.8	2,735.3	7.4	6.9	148.02	150.0	212.5	470.9	470.9	0.00	N/A			
2,900.0	2,876.3	2,851.2	2,831.8	7.7	7.2	147.86	158.6	222.6	493.5	493.5	0.00	N/A			

Cathedral Energy Services

Anticollision Report

Company:	Bonanza Creek Energy Operating Company, LLC	Local Co-ordinate Reference:	Well Antelope A-20
Project:	Weld County	TVD Reference:	KBE @ 4660.0ft (Original Well Elev)
Reference Site:	Antelope 11-20 Pad	MD Reference:	KBE @ 4660.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Antelope A-20	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KBE @ 4660.0ft (Original Well Elev)

Offset Depths are relative to Offset Datum

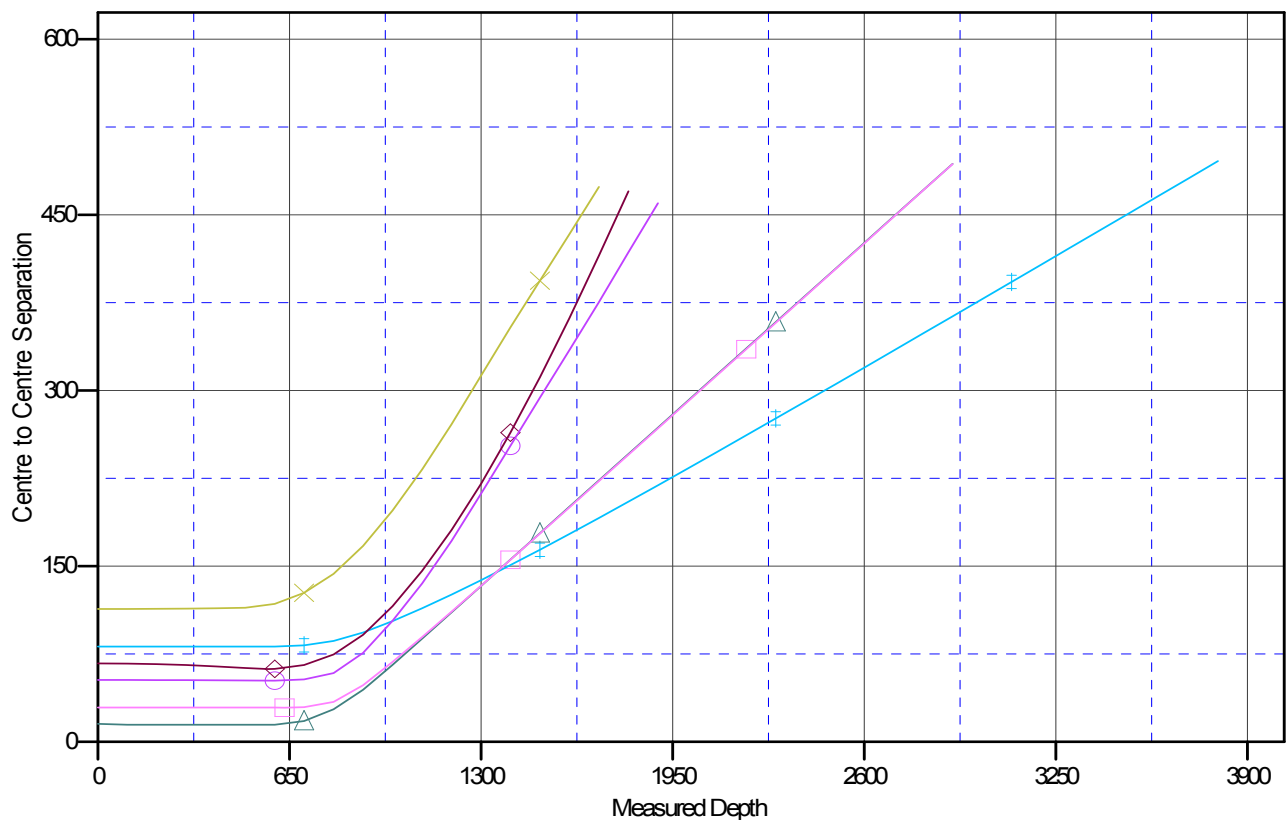
Central Meridian is -105.500000 °

Coordinates are relative to: Antelope A-20

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.74°

Ladder Plot



LEGEND

- Antelope 11-20 (vert), V, Plan #3 V0
- Antelope 12-20, DD, DD V0
- Antelope 21-20, DD, DD V0
- Antelope 22-20, DD, DD V0
- Antelope B-20, OH, Plan #1 V0
- Antelope F-20, OH, Plan #1 V0