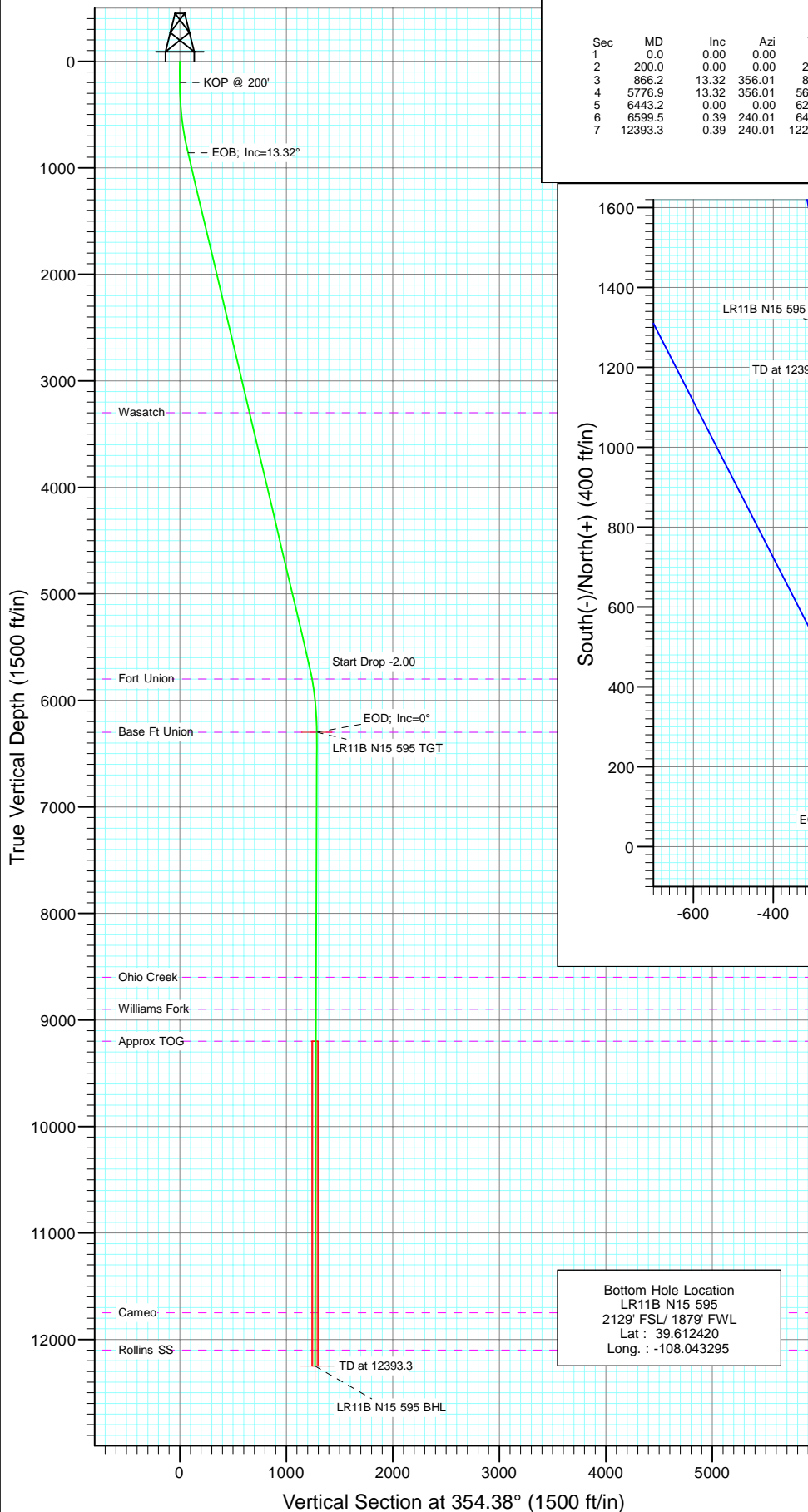
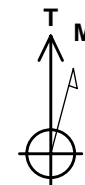
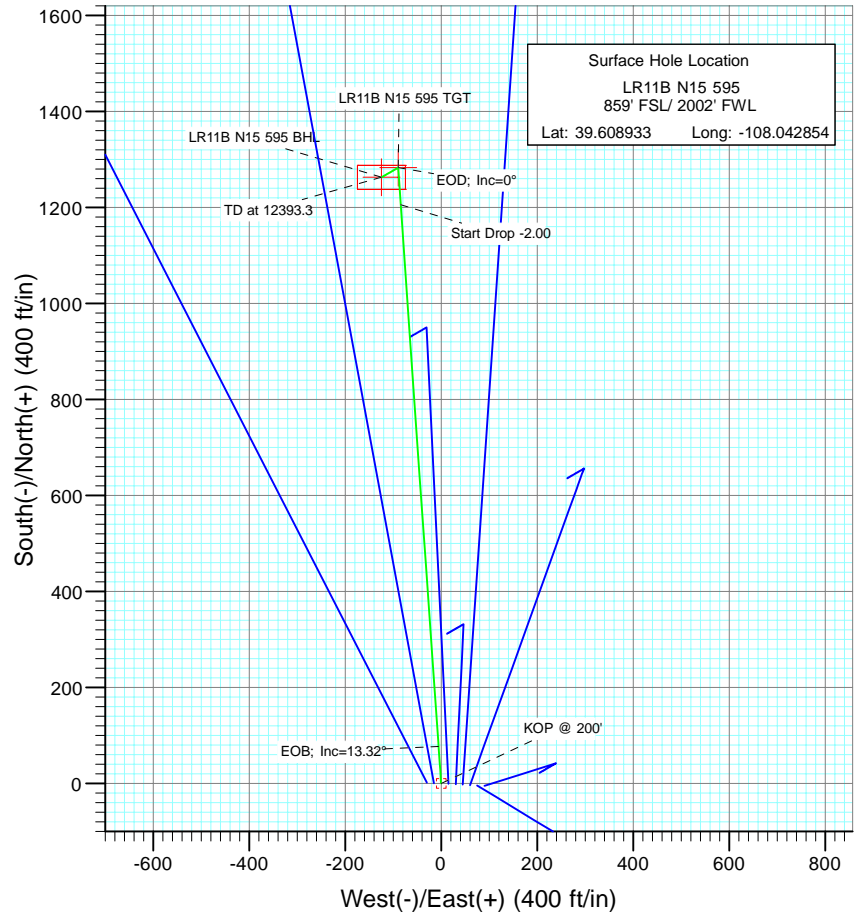




Project: Garfield County  
Site: N15 595 Pad  
Well: LR11B N15 595  
Wellbore: DD  
Design: Plan #1



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	866.2	13.32	356.01	860.3	76.9	-5.4	2.00	356.01	77.1	
4	5776.9	13.32	356.01	5638.7	1206.0	-84.2	0.00	0.00	1208.4	
5	6443.2	0.00	0.00	6299.0	1282.9	-89.5	2.00	180.00	1285.5	LR11B N15 595 TGT
6	6599.5	0.39	240.01	6455.4	1282.6	-90.0	0.25	240.01	1285.3	
7	12393.3	0.39	240.01	12249.0	1262.9	-124.2	0.00	0.00	1269.0	LR11B N15 595 BHL



Azimuths to True North  
Magnetic North: 10.47°

Magnetic Field  
Strength: 52402.1nT  
Dip Angle: 65.86°  
Date: 8/9/2010  
Model: IGRF200510

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3299.0	3372.5	Wasatch
5799.0	5940.6	Fort Union
6299.0	6443.2	Base Ft Union
8599.0	8743.2	Ohio Creek
8899.0	9043.2	Williams Fork
9199.0	9343.2	Approx TOG
11749.0	11893.3	Cameo
12099.0	12243.3	Rollins SS

#### DESIGN DETAILS: Plan #1

105XXX; BH  
KBE @ 8391.0ft (Patterson 302)

Target	Azimuth	Origin	N/S	E/W	From TVD
LR11B N15 595 BHL	354.38	Slot	0.0	0.0	0.0



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users Db	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Project:</b>	Garfield County	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site:</b>	N15 595 Pad	<b>North Reference:</b>	True
<b>Well:</b>	LR11B N15 595	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

<b>Project</b>	Garfield 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 Central Zone		

Site		N15 595 Pad			
Site Position:		Northing:	1,656,704.15 ft	Latitude:	39.608919
From:	Lat/Long	Easting:	2,283,744.91 ft	Longitude:	-108.042534
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.60 °

Well	LR11B N15 595					
Well Position	+N/-S	0.0 ft	Northing:	1,656,711.76 ft	Latitude:	39.608933
	+E/-W	0.0 ft	Easting:	2,283,654.93 ft	Longitude:	-108.042854
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	8,376.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	8/9/2010	10.47	65.86	52,402

<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	354.38

<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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
866.2	13.32	356.01	860.3	76.9	-5.4	2.00	2.00	0.00	356.01	
5,776.9	13.32	356.01	5,638.7	1,206.0	-84.2	0.00	0.00	0.00	0.00	
6,443.2	0.00	0.00	6,299.0	1,282.9	-89.5	2.00	-2.00	0.00	180.00	LR11B N15 595 TGT
6,599.5	0.39	240.01	6,455.4	1,282.6	-90.0	0.25	0.25	-76.75	240.01	
12,393.3	0.39	240.01	12,249.0	1,262.9	-124.2	0.00	0.00	0.00	0.00	LR11B N15 595 BHL



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users Db	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Project:</b>	Garfield County	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site:</b>	N15 595 Pad	<b>North Reference:</b>	True
<b>Well:</b>	LR11B N15 595	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
30.0	0.00	0.00	30.0	0.0	0.0	0.0	0.00	0.00	
60.0	0.00	0.00	60.0	0.0	0.0	0.0	0.00	0.00	
90.0	0.00	0.00	90.0	0.0	0.0	0.0	0.00	0.00	
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	
150.0	0.00	0.00	150.0	0.0	0.0	0.0	0.00	0.00	
180.0	0.00	0.00	180.0	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	KOP @ 200'
210.0	0.20	356.01	210.0	0.0	0.0	0.0	2.00	2.00	
240.0	0.80	356.01	240.0	0.3	0.0	0.3	2.00	2.00	
270.0	1.40	356.01	270.0	0.9	-0.1	0.9	2.00	2.00	
300.0	2.00	356.01	300.0	1.7	-0.1	1.7	2.00	2.00	
330.0	2.60	356.01	330.0	2.9	-0.2	2.9	2.00	2.00	
360.0	3.20	356.01	359.9	4.5	-0.3	4.5	2.00	2.00	
390.0	3.80	356.01	389.9	6.3	-0.4	6.3	2.00	2.00	
420.0	4.40	356.01	419.8	8.4	-0.6	8.4	2.00	2.00	
450.0	5.00	356.01	449.7	10.9	-0.8	10.9	2.00	2.00	
480.0	5.60	356.01	479.6	13.6	-1.0	13.7	2.00	2.00	
510.0	6.20	356.01	509.4	16.7	-1.2	16.7	2.00	2.00	
540.0	6.80	356.01	539.2	20.1	-1.4	20.1	2.00	2.00	
570.0	7.40	356.01	569.0	23.8	-1.7	23.9	2.00	2.00	
600.0	8.00	356.01	598.7	27.8	-1.9	27.9	2.00	2.00	
630.0	8.60	356.01	628.4	32.1	-2.2	32.2	2.00	2.00	
660.0	9.20	356.01	658.0	36.8	-2.6	36.8	2.00	2.00	
690.0	9.80	356.01	687.6	41.7	-2.9	41.8	2.00	2.00	
720.0	10.40	356.01	717.1	47.0	-3.3	47.0	2.00	2.00	
750.0	11.00	356.01	746.6	52.5	-3.7	52.6	2.00	2.00	
780.0	11.60	356.01	776.0	58.4	-4.1	58.5	2.00	2.00	
810.0	12.20	356.01	805.4	64.5	-4.5	64.7	2.00	2.00	
840.0	12.80	356.01	834.7	71.0	-5.0	71.2	2.00	2.00	
866.2	13.32	356.01	860.3	76.9	-5.4	77.1	2.00	2.00	EOB; Inc=13.32°
870.0	13.32	356.01	863.9	77.8	-5.4	78.0	0.00	0.00	
900.0	13.32	356.01	893.1	84.7	-5.9	84.9	0.00	0.00	
930.0	13.32	356.01	922.3	91.6	-6.4	91.8	0.00	0.00	
960.0	13.32	356.01	951.5	98.5	-6.9	98.7	0.00	0.00	
990.0	13.32	356.01	980.7	105.4	-7.4	105.6	0.00	0.00	
1,020.0	13.32	356.01	1,009.9	112.3	-7.8	112.5	0.00	0.00	
1,050.0	13.32	356.01	1,039.1	119.2	-8.3	119.4	0.00	0.00	
1,080.0	13.32	356.01	1,068.3	126.1	-8.8	126.3	0.00	0.00	
1,110.0	13.32	356.01	1,097.4	133.0	-9.3	133.2	0.00	0.00	
1,140.0	13.32	356.01	1,126.6	139.9	-9.8	140.2	0.00	0.00	
1,170.0	13.32	356.01	1,155.8	146.8	-10.2	147.1	0.00	0.00	
1,200.0	13.32	356.01	1,185.0	153.7	-10.7	154.0	0.00	0.00	
1,230.0	13.32	356.01	1,214.2	160.6	-11.2	160.9	0.00	0.00	
1,260.0	13.32	356.01	1,243.4	167.5	-11.7	167.8	0.00	0.00	
1,290.0	13.32	356.01	1,272.6	174.4	-12.2	174.7	0.00	0.00	
1,320.0	13.32	356.01	1,301.8	181.3	-12.7	181.6	0.00	0.00	
1,350.0	13.32	356.01	1,331.0	188.2	-13.1	188.5	0.00	0.00	
1,380.0	13.32	356.01	1,360.2	195.1	-13.6	195.5	0.00	0.00	
1,410.0	13.32	356.01	1,389.4	202.0	-14.1	202.4	0.00	0.00	
1,440.0	13.32	356.01	1,418.6	208.8	-14.6	209.3	0.00	0.00	
1,470.0	13.32	356.01	1,447.8	215.7	-15.1	216.2	0.00	0.00	



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users Db	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Project:</b>	Garfield County	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site:</b>	N15 595 Pad	<b>North Reference:</b>	True
<b>Well:</b>	LR11B N15 595	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<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
1,500.0	13.32	356.01	1,476.9	222.6	-15.5	223.1	0.00	0.00	
1,530.0	13.32	356.01	1,506.1	229.5	-16.0	230.0	0.00	0.00	
1,560.0	13.32	356.01	1,535.3	236.4	-16.5	236.9	0.00	0.00	
1,590.0	13.32	356.01	1,564.5	243.3	-17.0	243.8	0.00	0.00	
1,620.0	13.32	356.01	1,593.7	250.2	-17.5	250.7	0.00	0.00	
1,650.0	13.32	356.01	1,622.9	257.1	-17.9	257.7	0.00	0.00	
1,680.0	13.32	356.01	1,652.1	264.0	-18.4	264.6	0.00	0.00	
1,710.0	13.32	356.01	1,681.3	270.9	-18.9	271.5	0.00	0.00	
1,740.0	13.32	356.01	1,710.5	277.8	-19.4	278.4	0.00	0.00	
1,770.0	13.32	356.01	1,739.7	284.7	-19.9	285.3	0.00	0.00	
1,800.0	13.32	356.01	1,768.9	291.6	-20.4	292.2	0.00	0.00	
1,830.0	13.32	356.01	1,798.1	298.5	-20.8	299.1	0.00	0.00	
1,860.0	13.32	356.01	1,827.3	305.4	-21.3	306.0	0.00	0.00	
1,890.0	13.32	356.01	1,856.5	312.3	-21.8	312.9	0.00	0.00	
1,920.0	13.32	356.01	1,885.6	319.2	-22.3	319.9	0.00	0.00	
1,950.0	13.32	356.01	1,914.8	326.1	-22.8	326.8	0.00	0.00	
1,980.0	13.32	356.01	1,944.0	333.0	-23.2	333.7	0.00	0.00	
2,010.0	13.32	356.01	1,973.2	339.9	-23.7	340.6	0.00	0.00	
2,040.0	13.32	356.01	2,002.4	346.8	-24.2	347.5	0.00	0.00	
2,070.0	13.32	356.01	2,031.6	353.7	-24.7	354.4	0.00	0.00	
2,100.0	13.32	356.01	2,060.8	360.6	-25.2	361.3	0.00	0.00	
2,130.0	13.32	356.01	2,090.0	367.5	-25.7	368.2	0.00	0.00	
2,160.0	13.32	356.01	2,119.2	374.4	-26.1	375.1	0.00	0.00	
2,190.0	13.32	356.01	2,148.4	381.3	-26.6	382.1	0.00	0.00	
2,220.0	13.32	356.01	2,177.6	388.2	-27.1	389.0	0.00	0.00	
2,250.0	13.32	356.01	2,206.8	395.1	-27.6	395.9	0.00	0.00	
2,280.0	13.32	356.01	2,236.0	402.0	-28.1	402.8	0.00	0.00	
2,310.0	13.32	356.01	2,265.1	408.9	-28.5	409.7	0.00	0.00	
2,340.0	13.32	356.01	2,294.3	415.8	-29.0	416.6	0.00	0.00	
2,370.0	13.32	356.01	2,323.5	422.7	-29.5	423.5	0.00	0.00	
2,400.0	13.32	356.01	2,352.7	429.6	-30.0	430.4	0.00	0.00	
2,430.0	13.32	356.01	2,381.9	436.5	-30.5	437.3	0.00	0.00	
2,460.0	13.32	356.01	2,411.1	443.4	-30.9	444.3	0.00	0.00	
2,490.0	13.32	356.01	2,440.3	450.3	-31.4	451.2	0.00	0.00	

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
LR11B N15 595 BHL	0.00	0.00	12,249.0	1,262.9	-124.2	1,657,977.62	2,283,566.08	39.612400	-108.043295
- hit/miss target									
- Shape									
- plan misses target center by 9842.7ft at 2490.0ft MD (2440.3 TVD, 450.3 N, -31.4 E)									
- Rectangle (sides W50.0 H100.0 D0.0)									
LR11B N15 595 TGT	0.00	0.00	6,299.0	1,282.9	-89.5	1,657,996.67	2,283,601.32	39.612455	-108.043172
- plan misses target center by 3947.9ft at 2490.0ft MD (2440.3 TVD, 450.3 N, -31.4 E)									
- Point									



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users Db	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Project:</b>	Garfield County	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site:</b>	N15 595 Pad	<b>North Reference:</b>	True
<b>Well:</b>	LR11B N15 595	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<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
2,500.0	13.32	356.01	2,450.0	452.6	-31.6	453.5	0.00	0.00	
2,600.0	13.32	356.01	2,547.3	475.5	-33.2	476.5	0.00	0.00	
2,700.0	13.32	356.01	2,644.6	498.5	-34.8	499.6	0.00	0.00	
2,800.0	13.32	356.01	2,742.0	521.5	-36.4	522.6	0.00	0.00	
2,900.0	13.32	356.01	2,839.3	544.5	-38.0	545.6	0.00	0.00	
3,000.0	13.32	356.01	2,936.6	567.5	-39.6	568.7	0.00	0.00	
3,100.0	13.32	356.01	3,033.9	590.5	-41.2	591.7	0.00	0.00	
3,200.0	13.32	356.01	3,131.2	613.5	-42.8	614.7	0.00	0.00	
3,300.0	13.32	356.01	3,228.5	636.5	-44.4	637.8	0.00	0.00	
3,372.5	13.32	356.01	3,299.0	653.1	-45.6	654.5	0.00	0.00	Wasatch
3,400.0	13.32	356.01	3,325.8	659.5	-46.0	660.8	0.00	0.00	
3,500.0	13.32	356.01	3,423.1	682.5	-47.6	683.9	0.00	0.00	
3,600.0	13.32	356.01	3,520.4	705.5	-49.2	706.9	0.00	0.00	
3,700.0	13.32	356.01	3,617.7	728.5	-50.8	729.9	0.00	0.00	
3,800.0	13.32	356.01	3,715.0	751.4	-52.5	753.0	0.00	0.00	
3,900.0	13.32	356.01	3,812.3	774.4	-54.1	776.0	0.00	0.00	
4,000.0	13.32	356.01	3,909.6	797.4	-55.7	799.0	0.00	0.00	
4,100.0	13.32	356.01	4,007.0	820.4	-57.3	822.1	0.00	0.00	
4,200.0	13.32	356.01	4,104.3	843.4	-58.9	845.1	0.00	0.00	
4,300.0	13.32	356.01	4,201.6	866.4	-60.5	868.2	0.00	0.00	
4,400.0	13.32	356.01	4,298.9	889.4	-62.1	891.2	0.00	0.00	
4,500.0	13.32	356.01	4,396.2	912.4	-63.7	914.2	0.00	0.00	
4,600.0	13.32	356.01	4,493.5	935.4	-65.3	937.3	0.00	0.00	
4,700.0	13.32	356.01	4,590.8	958.4	-66.9	960.3	0.00	0.00	
4,800.0	13.32	356.01	4,688.1	981.4	-68.5	983.3	0.00	0.00	
4,900.0	13.32	356.01	4,785.4	1,004.3	-70.1	1,006.4	0.00	0.00	
5,000.0	13.32	356.01	4,882.7	1,027.3	-71.7	1,029.4	0.00	0.00	
5,100.0	13.32	356.01	4,980.0	1,050.3	-73.3	1,052.5	0.00	0.00	
5,200.0	13.32	356.01	5,077.3	1,073.3	-74.9	1,075.5	0.00	0.00	
5,300.0	13.32	356.01	5,174.6	1,096.3	-76.5	1,098.5	0.00	0.00	
5,400.0	13.32	356.01	5,272.0	1,119.3	-78.1	1,121.6	0.00	0.00	
5,500.0	13.32	356.01	5,369.3	1,142.3	-79.7	1,144.6	0.00	0.00	
5,600.0	13.32	356.01	5,466.6	1,165.3	-81.3	1,167.6	0.00	0.00	
5,700.0	13.32	356.01	5,563.9	1,188.3	-82.9	1,190.7	0.00	0.00	
5,776.9	13.32	356.01	5,638.7	1,206.0	-84.2	1,208.4	0.00	0.00	Start Drop -2.00
5,800.0	12.86	356.01	5,661.2	1,211.2	-84.5	1,213.6	2.00	-2.00	
5,900.0	10.86	356.01	5,759.1	1,231.7	-86.0	1,234.2	2.00	-2.00	
5,940.6	10.05	356.01	5,799.0	1,239.0	-86.5	1,241.6	2.00	-2.00	Fort Union
6,000.0	8.86	356.01	5,857.6	1,248.8	-87.2	1,251.3	2.00	-2.00	
6,100.0	6.86	356.01	5,956.6	1,262.4	-88.1	1,265.0	2.00	-2.00	
6,200.0	4.86	356.01	6,056.1	1,272.6	-88.8	1,275.2	2.00	-2.00	
6,300.0	2.86	356.01	6,155.9	1,279.3	-89.3	1,281.9	2.00	-2.00	
6,400.0	0.86	356.01	6,255.8	1,282.6	-89.5	1,285.2	2.00	-2.00	
6,443.2	0.00	0.00	6,299.0	1,282.9	-89.5	1,285.5	2.00	-2.00	EOD; Inc=0° - Base Ft Union - LR11B N15 595
6,500.0	0.14	240.01	6,355.8	1,282.9	-89.6	1,285.5	0.25	0.25	
6,599.5	0.39	240.01	6,455.4	1,282.6	-90.0	1,285.3	0.25	0.25	
6,600.0	0.39	240.01	6,455.8	1,282.6	-90.0	1,285.3	0.00	0.00	
6,700.0	0.39	240.01	6,555.8	1,282.3	-90.6	1,285.0	0.00	0.00	
6,800.0	0.39	240.01	6,655.8	1,281.9	-91.2	1,284.7	0.00	0.00	
6,900.0	0.39	240.01	6,755.8	1,281.6	-91.8	1,284.4	0.00	0.00	
7,000.0	0.39	240.01	6,855.8	1,281.3	-92.4	1,284.2	0.00	0.00	
7,100.0	0.39	240.01	6,955.8	1,280.9	-93.0	1,283.9	0.00	0.00	



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users Db	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Project:</b>	Garfield County	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site:</b>	N15 595 Pad	<b>North Reference:</b>	True
<b>Well:</b>	LR11B N15 595	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<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
7,200.0	0.39	240.01	7,055.8	1,280.6	-93.6	1,283.6	0.00	0.00	
7,300.0	0.39	240.01	7,155.8	1,280.2	-94.2	1,283.3	0.00	0.00	
7,400.0	0.39	240.01	7,255.8	1,279.9	-94.7	1,283.0	0.00	0.00	
7,500.0	0.39	240.01	7,355.8	1,279.6	-95.3	1,282.7	0.00	0.00	
7,600.0	0.39	240.01	7,455.8	1,279.2	-95.9	1,282.5	0.00	0.00	
7,700.0	0.39	240.01	7,555.8	1,278.9	-96.5	1,282.2	0.00	0.00	
7,800.0	0.39	240.01	7,655.8	1,278.5	-97.1	1,281.9	0.00	0.00	
7,900.0	0.39	240.01	7,755.8	1,278.2	-97.7	1,281.6	0.00	0.00	
8,000.0	0.39	240.01	7,855.8	1,277.9	-98.3	1,281.3	0.00	0.00	
8,100.0	0.39	240.01	7,955.8	1,277.5	-98.9	1,281.1	0.00	0.00	
8,200.0	0.39	240.01	8,055.8	1,277.2	-99.5	1,280.8	0.00	0.00	
8,300.0	0.39	240.01	8,155.8	1,276.8	-100.1	1,280.5	0.00	0.00	
8,400.0	0.39	240.01	8,255.8	1,276.5	-100.7	1,280.2	0.00	0.00	
8,500.0	0.39	240.01	8,355.8	1,276.2	-101.2	1,279.9	0.00	0.00	
8,600.0	0.39	240.01	8,455.8	1,275.8	-101.8	1,279.7	0.00	0.00	
8,700.0	0.39	240.01	8,555.8	1,275.5	-102.4	1,279.4	0.00	0.00	
8,743.2	0.39	240.01	8,599.0	1,275.3	-102.7	1,279.2	0.00	0.00	Ohio Creek
8,800.0	0.39	240.01	8,655.8	1,275.1	-103.0	1,279.1	0.00	0.00	
8,900.0	0.39	240.01	8,755.8	1,274.8	-103.6	1,278.8	0.00	0.00	
9,000.0	0.39	240.01	8,855.8	1,274.4	-104.2	1,278.5	0.00	0.00	
9,043.2	0.39	240.01	8,899.0	1,274.3	-104.5	1,278.4	0.00	0.00	Williams Fork
9,100.0	0.39	240.01	8,955.8	1,274.1	-104.8	1,278.2	0.00	0.00	
9,200.0	0.39	240.01	9,055.8	1,273.8	-105.4	1,278.0	0.00	0.00	
9,300.0	0.39	240.01	9,155.8	1,273.4	-106.0	1,277.7	0.00	0.00	
9,343.2	0.39	240.01	9,199.0	1,273.3	-106.2	1,277.6	0.00	0.00	Approx TOG
9,400.0	0.39	240.01	9,255.8	1,273.1	-106.6	1,277.4	0.00	0.00	
9,500.0	0.39	240.01	9,355.8	1,272.7	-107.1	1,277.1	0.00	0.00	
9,600.0	0.39	240.01	9,455.7	1,272.4	-107.7	1,276.8	0.00	0.00	
9,700.0	0.39	240.01	9,555.7	1,272.1	-108.3	1,276.6	0.00	0.00	
9,800.0	0.39	240.01	9,655.7	1,271.7	-108.9	1,276.3	0.00	0.00	
9,900.0	0.39	240.01	9,755.7	1,271.4	-109.5	1,276.0	0.00	0.00	
10,000.0	0.39	240.01	9,855.7	1,271.0	-110.1	1,275.7	0.00	0.00	
10,100.0	0.39	240.01	9,955.7	1,270.7	-110.7	1,275.4	0.00	0.00	
10,200.0	0.39	240.01	10,055.7	1,270.4	-111.3	1,275.1	0.00	0.00	
10,300.0	0.39	240.01	10,155.7	1,270.0	-111.9	1,274.9	0.00	0.00	
10,400.0	0.39	240.01	10,255.7	1,269.7	-112.5	1,274.6	0.00	0.00	
10,500.0	0.39	240.01	10,355.7	1,269.3	-113.1	1,274.3	0.00	0.00	
10,600.0	0.39	240.01	10,455.7	1,269.0	-113.6	1,274.0	0.00	0.00	
10,700.0	0.39	240.01	10,555.7	1,268.7	-114.2	1,273.7	0.00	0.00	
10,800.0	0.39	240.01	10,655.7	1,268.3	-114.8	1,273.5	0.00	0.00	
10,900.0	0.39	240.01	10,755.7	1,268.0	-115.4	1,273.2	0.00	0.00	
11,000.0	0.39	240.01	10,855.7	1,267.6	-116.0	1,272.9	0.00	0.00	
11,100.0	0.39	240.01	10,955.7	1,267.3	-116.6	1,272.6	0.00	0.00	
11,200.0	0.39	240.01	11,055.7	1,266.9	-117.2	1,272.3	0.00	0.00	
11,300.0	0.39	240.01	11,155.7	1,266.6	-117.8	1,272.1	0.00	0.00	
11,400.0	0.39	240.01	11,255.7	1,266.3	-118.4	1,271.8	0.00	0.00	
11,500.0	0.39	240.01	11,355.7	1,265.9	-119.0	1,271.5	0.00	0.00	
11,600.0	0.39	240.01	11,455.7	1,265.6	-119.6	1,271.2	0.00	0.00	
11,700.0	0.39	240.01	11,555.7	1,265.2	-120.1	1,270.9	0.00	0.00	
11,800.0	0.39	240.01	11,655.7	1,264.9	-120.7	1,270.6	0.00	0.00	
11,893.3	0.39	240.01	11,749.0	1,264.6	-121.3	1,270.4	0.00	0.00	Cameo
11,900.0	0.39	240.01	11,755.7	1,264.6	-121.3	1,270.4	0.00	0.00	



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users Db	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Project:</b>	Garfield County	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site:</b>	N15 595 Pad	<b>North Reference:</b>	True
<b>Well:</b>	LR11B N15 595	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<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
12,000.0	0.39	240.01	11,855.7	1,264.2	-121.9	1,270.1	0.00	0.00	
12,100.0	0.39	240.01	11,955.7	1,263.9	-122.5	1,269.8	0.00	0.00	
12,200.0	0.39	240.01	12,055.7	1,263.5	-123.1	1,269.5	0.00	0.00	
12,243.3	0.39	240.01	12,099.0	1,263.4	-123.4	1,269.4	0.00	0.00	Rollins SS
12,300.0	0.39	240.01	12,155.7	1,263.2	-123.7	1,269.2	0.00	0.00	
12,393.3	0.39	240.01	12,249.0	1,262.9	-124.2	1,269.0	0.00	0.00	TD at 12393.3 - LR11B N15 595 BHL

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting		
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	Latitude	Longitude
LR11B N15 595 BHL	0.00	0.00	12,249.0	1,262.9	-124.2	1,657,977.62	2,283,566.08	39.612400	-108.043295
- plan hits target center									
- Rectangle (sides W50.0 H100.0 D0.0)									
LR11B N15 595 TGT	0.00	0.00	6,299.0	1,282.9	-89.5	1,657,996.67	2,283,601.32	39.612455	-108.043172
- plan hits target center									
- Point									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,372.5	3,299.0	Wasatch		0.00		
5,940.6	5,799.0	Fort Union		0.00		
6,443.2	6,299.0	Base Ft Union		0.00		
8,743.2	8,599.0	Ohio Creek		0.00		
9,043.2	8,899.0	Williams Fork		0.00		
9,343.2	9,199.0	Approx TOG		0.00		
11,893.3	11,749.0	Cameo		0.00		
12,243.3	12,099.0	Rollins SS		0.00		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP @ 200'
866.2	860.3	76.9	-5.4	EOB; Inc=13.32°
5,776.9	5,638.7	1,206.0	-84.2	Start Drop -2.00
6,443.2	6,299.0	1,282.9	-89.5	EOD; Inc=0°
12,393.3	12,249.0	1,262.9	-124.2	TD at 12393.3

# **Berry Petroleum Company (NAD 83)**

**Garfield County**

**N15 595 Pad**

**LR11B N15 595**

**DD**

**Plan #1**

## **Anticollision Report**

**10 August, 2010**



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Project:</b>	Garfield County	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Reference Site:</b>	N15 595 Pad	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LR11B N15 595	<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>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

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

Survey Tool Program		Date	8/10/2010		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,393.3	Plan #1 (DD)	MWD	Geolink MWD	

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						
N15 595 Pad						
LR05D N15 595 - DD - Plan #1	200.0	200.0	29.9	29.3	46.333	CC, ES
LR05D N15 595 - DD - Plan #1	1,200.0	1,192.5	93.7	86.7	13.343	SF
LR06B N15 595 - DD - Plan #1	200.0	200.0	15.0	14.3	23.151	CC
LR06B N15 595 - DD - Plan #1	300.0	299.9	15.1	14.1	15.117	ES
LR06B N15 595 - DD - Plan #1	1,100.0	1,098.7	31.3	25.1	5.070	SF
LR11A N15 595 - DD - Plan #1	200.0	200.0	45.1	44.5	69.889	CC
LR11A N15 595 - DD - Plan #1	300.0	300.0	45.4	44.4	45.274	ES
LR11A N15 595 - DD - Plan #1	1,900.0	1,898.4	96.4	85.0	8.416	SF
LR11C N15 595 - DD - Plan #1	200.0	200.0	15.2	14.6	23.587	CC
LR11C N15 595 - DD - Plan #1	300.0	300.0	15.5	14.5	15.560	ES
LR11C N15 595 - DD - Plan #1	400.0	399.8	17.5	16.1	12.840	SF
LR11D N15 595 - DD - Plan #1	200.0	200.0	60.1	59.5	93.070	CC
LR11D N15 595 - DD - Plan #1	300.0	300.0	60.3	59.3	60.438	ES
LR11D N15 595 - DD - Plan #1	900.0	899.0	97.6	94.0	27.099	SF
LR14A N15 595 - DD - Plan #1	200.0	200.0	30.5	29.8	47.174	CC
LR14A N15 595 - DD - Plan #1	300.0	300.0	30.7	29.7	30.767	ES
LR14A N15 595 - DD - Plan #1	500.0	499.5	35.9	34.1	20.552	SF
LR14B N15 595 - DD - Plan #1	200.0	200.0	90.3	89.7	139.838	CC
LR14B N15 595 - DD - Plan #1	300.0	300.0	90.5	89.5	90.682	ES
LR14B N15 595 - DD - Plan #1	600.0	598.7	97.8	95.6	44.849	SF
LR15C N15 595 - DD - Plan #1	200.0	200.0	75.1	74.4	116.221	CC, ES
LR15C N15 595 - DD - Plan #1	500.0	490.8	93.2	91.5	53.337	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Project:</b>	Garfield County	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Reference Site:</b>	N15 595 Pad	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LR11B N15 595	<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>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design N15 595 Pad - LR05D N15 595 - DD - Plan #1													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 +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	-86.51	1.8	-29.9	29.9					
100.0	100.0	100.0	100.0	0.1	0.1	-86.51	1.8	-29.9	29.9	29.6	0.30	100.843		
200.0	200.0	200.0	200.0	0.3	0.3	-86.51	1.8	-29.9	29.9	29.3	0.65	46.333 CC, ES		
300.0	300.0	299.5	299.4	0.5	0.5	-82.94	3.4	-30.7	30.6	29.6	1.00	30.568		
400.0	399.8	398.9	398.7	0.7	0.7	-84.12	8.0	-33.0	32.6	31.2	1.38	23.513		
500.0	499.5	498.3	497.7	0.9	0.9	-85.78	15.6	-36.9	35.9	34.1	1.82	19.669		
600.0	598.7	597.6	596.3	1.2	1.2	-87.64	26.3	-42.4	40.6	38.2	2.34	17.328		
700.0	697.5	696.8	694.3	1.5	1.5	-89.46	40.1	-49.4	46.6	43.7	2.95	15.800		
800.0	795.6	795.8	791.5	1.9	1.9	-91.10	56.8	-58.0	54.1	50.4	3.67	14.754		
866.2	860.3	861.3	855.5	2.1	2.1	-92.06	69.5	-64.5	59.8	55.6	4.20	14.238		
900.0	893.1	894.7	887.9	2.3	2.3	-92.40	76.4	-68.1	62.9	58.4	4.47	14.063		
1,000.0	990.4	993.6	983.5	2.7	2.7	-91.59	98.9	-79.6	72.9	67.6	5.32	13.717		
1,100.0	1,087.7	1,093.0	1,079.4	3.1	3.2	-90.35	122.4	-91.6	83.3	77.2	6.17	13.507		
1,200.0	1,185.0	1,192.5	1,175.3	3.5	3.7	-89.39	145.9	-103.6	93.7	86.7	7.03	13.343 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Project:</b>	Garfield County	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Reference Site:</b>	N15 595 Pad	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LR11B N15 595	<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>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design N15 595 Pad - LR06B N15 595 - DD - 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	-87.21	0.7	-14.9	15.0					
100.0	100.0	100.0	100.0	0.1	0.1	-87.21	0.7	-14.9	15.0	14.7	0.30	50.388		
200.0	200.0	200.0	200.0	0.3	0.3	-87.21	0.7	-14.9	15.0	14.3	0.65	23.151 CC		
300.0	300.0	299.9	299.9	0.5	0.5	-83.35	2.4	-15.2	15.1	14.1	1.00	15.117 ES		
400.0	399.8	399.8	399.6	0.7	0.7	-83.73	7.6	-16.2	15.7	14.3	1.39	11.309		
500.0	499.5	499.6	499.1	0.9	0.9	-84.31	16.1	-17.8	16.7	14.9	1.84	9.082		
600.0	598.7	599.5	598.2	1.2	1.2	-85.01	28.1	-20.0	18.1	15.7	2.37	7.628		
700.0	697.5	699.4	696.8	1.5	1.5	-85.76	43.4	-22.8	19.8	16.8	2.99	6.620		
800.0	795.6	799.2	794.8	1.9	1.9	-86.51	62.1	-26.3	22.0	18.2	3.72	5.895		
866.2	860.3	865.3	859.4	2.1	2.1	-86.99	76.4	-28.9	23.6	19.3	4.27	5.523		
900.0	893.1	899.0	892.1	2.3	2.3	-86.78	84.2	-30.4	24.5	19.9	4.55	5.383		
1,000.0	990.4	998.8	988.6	2.7	2.8	-81.77	109.4	-35.1	27.7	22.3	5.38	5.137		
1,100.0	1,087.7	1,098.7	1,084.9	3.1	3.2	-76.26	135.5	-39.9	31.3	25.1	6.17	5.070 SF		
1,200.0	1,185.0	1,198.6	1,181.2	3.5	3.7	-71.93	161.6	-44.7	35.1	28.2	6.92	5.075		
1,300.0	1,282.3	1,298.5	1,277.5	4.0	4.2	-68.46	187.7	-49.6	39.1	31.5	7.64	5.118		
1,400.0	1,379.6	1,398.4	1,373.8	4.4	4.7	-65.65	213.8	-54.4	43.2	34.9	8.35	5.179		
1,500.0	1,476.9	1,498.3	1,470.1	4.8	5.2	-63.33	239.9	-59.2	47.5	38.4	9.04	5.249		
1,600.0	1,574.3	1,598.2	1,566.4	5.3	5.7	-61.39	266.0	-64.0	51.7	42.0	9.72	5.322		
1,700.0	1,671.6	1,698.1	1,662.7	5.7	6.1	-59.75	292.1	-68.9	56.1	45.7	10.39	5.394		
1,800.0	1,768.9	1,798.0	1,759.0	6.1	6.6	-58.35	318.2	-73.7	60.4	49.4	11.06	5.464		
1,900.0	1,866.2	1,897.9	1,855.3	6.6	7.1	-57.13	344.3	-78.5	64.8	53.1	11.72	5.531		
2,000.0	1,963.5	1,997.8	1,951.6	7.0	7.6	-56.07	370.4	-83.4	69.2	56.9	12.37	5.596		
2,100.0	2,060.8	2,097.7	2,047.9	7.5	8.1	-55.14	396.5	-88.2	73.7	60.6	13.02	5.656		
2,200.0	2,158.1	2,197.6	2,144.2	7.9	8.6	-54.31	422.6	-93.0	78.1	64.5	13.67	5.713		
2,300.0	2,255.4	2,297.5	2,240.5	8.3	9.1	-53.57	448.7	-97.9	82.6	68.3	14.32	5.767		
2,400.0	2,352.7	2,397.4	2,336.8	8.8	9.6	-52.91	474.8	-102.7	87.1	72.1	14.97	5.818		
2,500.0	2,450.0	2,497.3	2,433.1	9.2	10.1	-52.31	500.9	-107.5	91.6	76.0	15.61	5.866		
2,600.0	2,547.3	2,597.2	2,529.4	9.6	10.6	-51.77	527.0	-112.4	96.1	79.8	16.26	5.911		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Project:</b>	Garfield County	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Reference Site:</b>	N15 595 Pad	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LR11B N15 595	<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>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design N15 595 Pad - LR11A N15 595 - DD - 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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	92.78	-2.2	45.1	45.1				
100.0	100.0	100.0	100.0	0.1	0.1	92.78	-2.2	45.1	45.1	44.8	0.30	152.112	
200.0	200.0	200.0	200.0	0.3	0.3	92.78	-2.2	45.1	45.1	44.5	0.65	69.889 CC	
300.0	300.0	300.0	299.9	0.5	0.5	96.75	-0.4	45.2	45.4	44.4	1.00	45.274 ES	
400.0	399.8	399.9	399.8	0.7	0.7	96.69	4.8	45.6	46.1	44.7	1.39	33.105	
500.0	499.5	499.9	499.3	0.9	0.9	96.60	13.5	46.1	47.3	45.4	1.84	25.663	
600.0	598.7	599.8	598.5	1.2	1.2	96.48	25.6	47.0	49.0	46.6	2.37	20.620	
700.0	697.5	699.8	697.2	1.5	1.5	96.34	41.2	48.0	51.1	48.1	3.00	17.022	
800.0	795.6	799.7	795.4	1.9	1.9	96.56	59.9	49.3	53.7	50.0	3.72	14.452	
866.2	860.3	865.9	860.4	2.1	2.1	98.30	72.6	50.1	55.7	51.5	4.22	13.206	
900.0	893.1	899.6	893.5	2.3	2.2	99.54	79.0	50.6	56.8	52.3	4.47	12.699	
1,000.0	990.4	999.5	991.5	2.7	2.6	102.96	98.2	51.9	60.2	54.9	5.22	11.517	
1,100.0	1,087.7	1,099.4	1,089.5	3.1	2.9	106.00	117.4	53.2	63.7	57.8	5.97	10.681	
1,200.0	1,185.0	1,199.3	1,187.5	3.5	3.3	108.72	136.5	54.5	67.5	60.8	6.70	10.073	
1,300.0	1,282.3	1,299.2	1,285.5	4.0	3.7	111.14	155.7	55.8	71.3	63.9	7.41	9.621	
1,400.0	1,379.6	1,399.0	1,383.6	4.4	4.1	113.32	174.9	57.1	75.3	67.2	8.12	9.278	
1,500.0	1,476.9	1,498.9	1,481.6	4.8	4.4	115.27	194.0	58.4	79.4	70.6	8.81	9.014	
1,600.0	1,574.3	1,598.8	1,579.6	5.3	4.8	117.03	213.2	59.7	83.6	74.1	9.49	8.808	
1,700.0	1,671.6	1,698.7	1,677.6	5.7	5.2	118.62	232.3	61.0	87.8	77.6	10.15	8.647	
1,800.0	1,768.9	1,798.6	1,775.6	6.1	5.6	120.06	251.5	62.3	92.1	81.3	10.81	8.518	
1,900.0	1,866.2	1,898.4	1,873.6	6.6	5.9	121.38	270.7	63.6	96.4	85.0	11.46	8.416 SF	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Project:</b>	Garfield County	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Reference Site:</b>	N15 595 Pad	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LR11B N15 595	<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>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design N15 595 Pad - LR11C N15 595 - DD - Plan #1													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 +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	92.74	-0.7	15.2	15.2					
100.0	100.0	100.0	100.0	0.1	0.1	92.74	-0.7	15.2	15.2	14.9	0.30	51.336		
200.0	200.0	200.0	200.0	0.3	0.3	92.74	-0.7	15.2	15.2	14.6	0.65	23.587 CC		
300.0	300.0	300.0	300.0	0.5	0.5	103.13	-0.7	15.2	15.5	14.5	1.00	15.560 ES		
400.0	399.8	399.8	399.8	0.7	0.7	120.03	-0.7	15.2	17.5	16.1	1.36	12.840 SF		
500.0	499.5	499.5	499.5	0.9	0.8	138.97	-0.7	15.2	23.1	21.4	1.72	13.419		
600.0	598.7	599.7	599.7	1.2	1.0	151.38	1.0	15.1	31.8	29.7	2.08	15.320		
700.0	697.5	700.3	700.1	1.5	1.2	158.19	6.3	14.9	41.3	38.9	2.43	17.027		
800.0	795.6	801.3	800.7	1.9	1.4	162.32	15.1	14.5	51.2	48.4	2.78	18.427		
866.2	860.3	868.4	867.4	2.1	1.6	164.23	22.9	14.1	57.9	54.9	3.01	19.203		
900.0	893.1	902.6	901.3	2.3	1.7	165.00	27.5	13.9	61.1	58.0	3.14	19.478		
1,000.0	990.4	1,004.6	1,002.0	2.7	2.0	166.35	43.5	13.1	68.4	64.9	3.51	19.496		
1,100.0	1,087.7	1,104.6	1,100.4	3.1	2.3	167.06	61.2	12.3	73.8	69.9	3.88	19.031		
1,200.0	1,185.0	1,204.4	1,198.6	3.5	2.6	167.67	78.9	11.4	79.2	75.0	4.25	18.656		
1,300.0	1,282.3	1,304.3	1,296.9	4.0	2.9	168.21	96.5	10.6	84.6	80.0	4.61	18.350		
1,400.0	1,379.6	1,404.1	1,395.2	4.4	3.3	168.68	114.1	9.7	90.1	85.1	4.98	18.095		
1,500.0	1,476.9	1,504.0	1,493.5	4.8	3.6	169.09	131.8	8.9	95.5	90.2	5.34	17.880		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Project:</b>	Garfield County	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Reference Site:</b>	N15 595 Pad	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LR11B N15 595	<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>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> N15 595 Pad - LR11D N15 595 - DD - 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	93.13	-3.3	60.0	60.1					
100.0	100.0	100.0	100.0	0.1	0.1	93.13	-3.3	60.0	60.1	59.8	0.30	202.563		
200.0	200.0	200.0	200.0	0.3	0.3	93.13	-3.3	60.0	60.1	59.5	0.65	93.070 CC		
300.0	300.0	300.0	300.0	0.5	0.5	98.76	-3.3	60.0	60.3	59.3	1.00	60.438 ES		
400.0	399.8	399.8	399.8	0.7	0.7	103.57	-3.3	60.0	61.4	60.0	1.37	44.899		
500.0	499.5	499.5	499.5	0.9	0.8	111.10	-3.3	60.0	64.0	62.2	1.76	36.401		
600.0	598.7	598.9	598.9	1.2	1.0	119.02	-1.7	60.6	69.1	67.0	2.17	31.860		
700.0	697.5	698.7	698.6	1.5	1.2	125.29	3.2	62.3	76.8	74.2	2.61	29.421		
800.0	795.6	798.7	798.2	1.9	1.4	129.91	11.4	65.3	86.4	83.3	3.08	28.017		
866.2	860.3	865.1	864.1	2.1	1.6	132.16	18.6	67.9	93.7	90.3	3.43	27.367		
900.0	893.1	899.0	897.7	2.3	1.7	133.08	22.8	69.4	97.6	94.0	3.60	27.099 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Project:</b>	Garfield County	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Reference Site:</b>	N15 595 Pad	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LR11B N15 595	<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>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> N15 595 Pad - LR14A N15 595 - DD - Plan #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	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	0.0	0.0	0.0	0.0	92.74	-1.5	30.4	30.5				
100.0	100.0	100.0	100.0	0.1	0.1	92.74	-1.5	30.4	30.5	30.2	0.30	102.673	
200.0	200.0	200.0	200.0	0.3	0.3	92.74	-1.5	30.4	30.5	29.8	0.65	47.174 CC	
300.0	300.0	300.0	300.0	0.5	0.5	99.96	-1.5	30.4	30.7	29.7	1.00	30.767 ES	
400.0	399.8	399.8	399.8	0.7	0.7	109.18	-1.5	30.4	32.0	30.7	1.37	23.469	
500.0	499.5	499.5	499.5	0.9	0.8	122.35	-1.5	30.4	35.9	34.1	1.75	20.552 SF	
600.0	598.7	598.7	598.7	1.2	1.0	135.83	-1.5	30.4	43.6	41.5	2.12	20.591	
700.0	697.5	697.5	697.5	1.5	1.2	146.88	-1.5	30.4	56.0	53.5	2.47	22.619	
800.0	795.6	795.6	795.6	1.9	1.4	154.95	-1.5	30.4	72.8	69.9	2.81	25.864	
866.2	860.3	860.3	860.3	2.1	1.5	158.93	-1.5	30.4	86.2	83.1	3.03	28.437	
900.0	893.1	893.1	893.1	2.3	1.5	160.64	-1.5	30.4	93.5	90.4	3.14	29.752	

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Project:</b>	Garfield County	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Reference Site:</b>	N15 595 Pad	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LR11B N15 595	<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>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													N15 595 Pad - LR14B N15 595 - DD - 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	93.24	-5.1	90.2	90.3								
100.0	100.0	100.0	100.0	0.1	0.1	93.24	-5.1	90.2	90.3	90.0	0.30	304.353					
200.0	200.0	200.0	200.0	0.3	0.3	93.24	-5.1	90.2	90.3	89.7	0.65	139.838 CC					
300.0	300.0	300.0	300.0	0.5	0.5	98.32	-5.1	90.2	90.5	89.5	1.00	90.682 ES					
400.0	399.8	399.8	399.8	0.7	0.7	101.54	-5.1	90.2	91.4	90.1	1.37	66.895					
500.0	499.5	499.5	499.5	0.9	0.8	106.72	-5.1	90.2	93.6	91.8	1.76	53.141					
600.0	598.7	598.7	598.7	1.2	1.0	113.45	-5.1	90.2	97.8	95.6	2.18	44.849 SF					



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Project:</b>	Garfield County	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Reference Site:</b>	N15 595 Pad	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LR11B N15 595	<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>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													N15 595 Pad - LR15C N15 595 - DD - 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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty	Separation Factor					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	Axis						
0.0	0.0	0.0	0.0	0.0	0.0	93.06	-4.0	74.9	75.1								
100.0	100.0	100.0	100.0	0.1	0.1	93.06	-4.0	74.9	75.1	74.8	0.30	252.951					
200.0	200.0	200.0	200.0	0.3	0.3	93.06	-4.0	74.9	75.1	74.4	0.65	116.221 CC, ES					
300.0	300.0	297.7	297.6	0.5	0.5	98.87	-4.9	76.4	76.8	75.8	1.00	77.188					
400.0	399.8	394.8	394.6	0.7	0.7	103.79	-7.4	80.6	82.5	81.2	1.36	60.639					
500.0	499.5	490.8	490.3	0.9	0.9	110.47	-11.7	87.5	93.2	91.5	1.75	53.337 SF					

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR11B N15 595
<b>Project:</b>	Garfield County	<b>TVD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Reference Site:</b>	N15 595 Pad	<b>MD Reference:</b>	KBE @ 8391.0ft (Patterson 302)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	LR11B N15 595	<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>	DD	<b>Database:</b>	EDM 5000.1 US Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KBE @ 8391.0ft (Patterson 302)  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000 °

Coordinates are relative to: LR11B N15 595  
 Coordinate System is US State Plane 1983, Colorado Central Zone  
 Grid Convergence at Surface is: -1.60°

