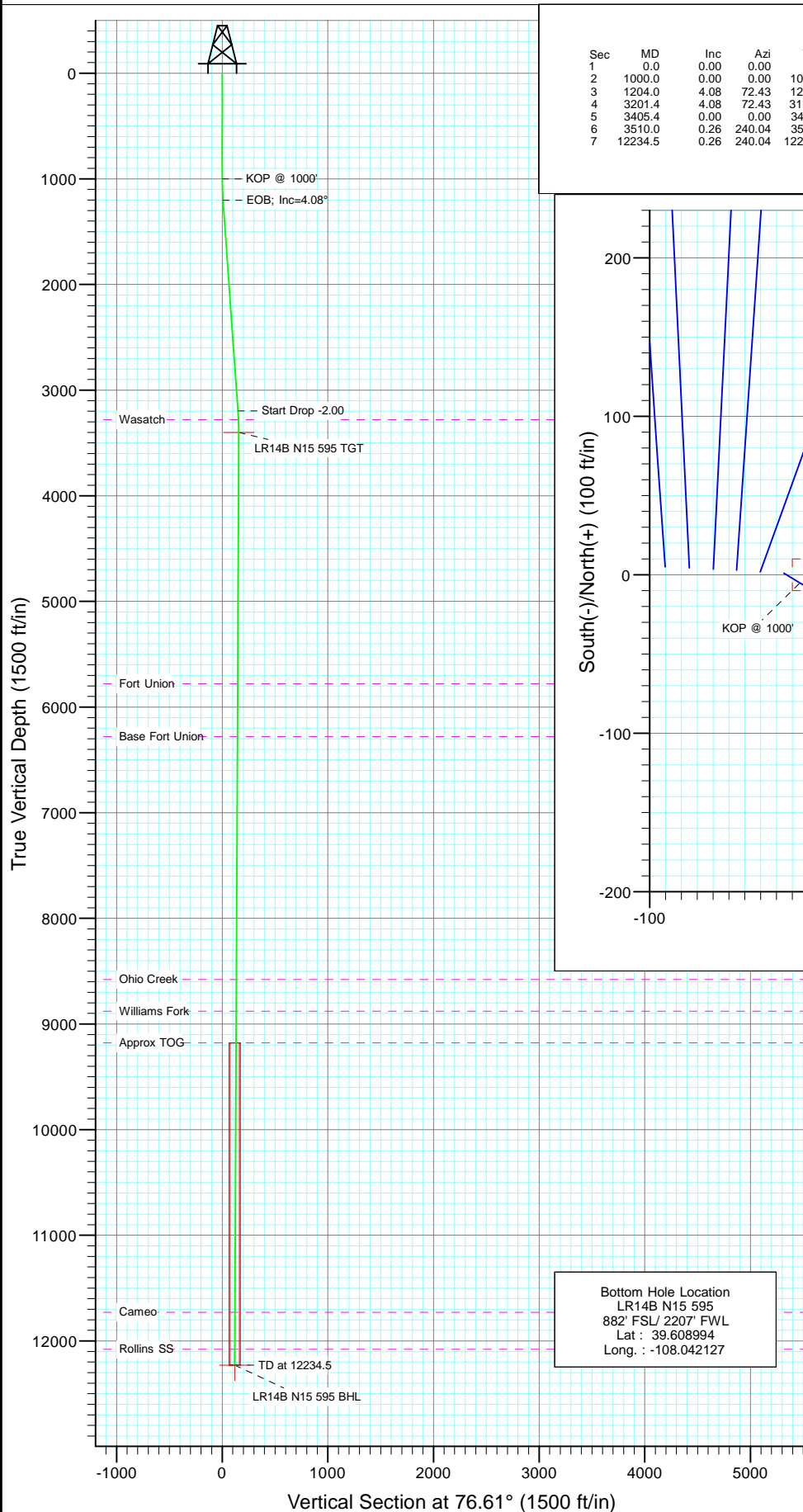
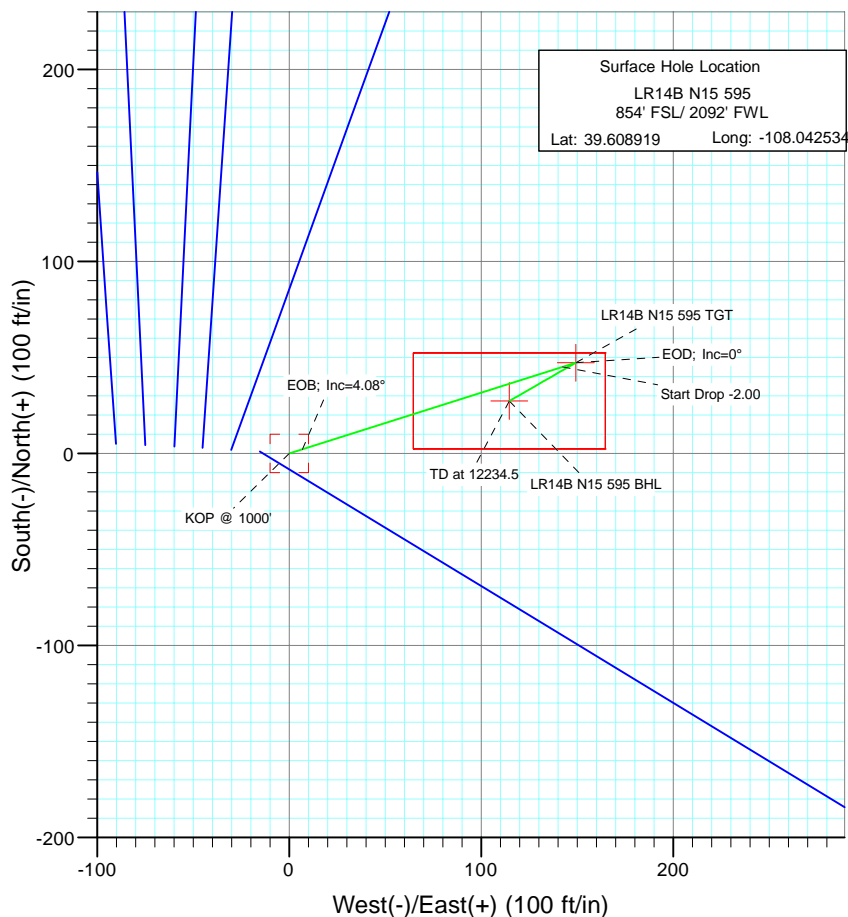




Project: Garfield County  
Site: N15 595 Pad  
Well: LR14B N15 595  
Wellbore: DD  
Design: Plan #1



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	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1204.0	4.08	72.43	1203.9	2.2	6.9	2.00	72.43	7.2	
4	3201.4	4.08	72.43	3196.1	45.1	142.4	0.00	0.00	149.0	
5	3405.4	0.00	0.00	3400.0	47.3	149.3	2.00	180.00	156.2	LR14B N15 595 TGT
6	3510.0	0.26	240.04	3504.6	47.2	149.1	0.25	240.04	156.0	
7	12234.5	0.26	240.04	12229.0	27.3	114.7	0.00	0.00	117.9	LR14B N15 595 BHL



Azimuths to True North  
Magnetic North: 10.47°

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

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3279.0	3284.4	Wasatch
5779.0	5784.4	Fort Union
6279.0	6284.4	Base Fort Union
8579.0	8584.5	Ohio Creek
8879.0	8884.5	Williams Fork
9179.0	9184.5	Approx TOG
11729.0	11734.5	Cameo
12079.0	12084.5	Rollins SS

#### DESIGN DETAILS: Plan #1

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

Target	Azimuth	Origin	N/S	E/W	From TVD
LR14B N15 595 BHL	76.61	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 LR14B 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>	LR14B 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	LR14B N15 595					
Well Position	+N/-S	0.0 ft	Northing:	1,656,704.14 ft	Latitude:	39.608919
	+E/-W	0.0 ft	Easting:	2,283,744.91 ft	Longitude:	-108.042534
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	76.61

<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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,204.0	4.08	72.43	1,203.9	2.2	6.9	2.00	2.00	0.00	72.43	
3,201.4	4.08	72.43	3,196.1	45.1	142.4	0.00	0.00	0.00	0.00	
3,405.4	0.00	0.00	3,400.0	47.3	149.3	2.00	-2.00	0.00	180.00	LR14B N15 595 TGT
3,510.0	0.26	240.04	3,504.6	47.2	149.1	0.25	0.25	-114.70	240.04	
12,234.5	0.26	240.04	12,229.0	27.3	114.7	0.00	0.00	0.00	0.00	LR14B 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 LR14B 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>	LR14B 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	
210.0	0.00	0.00	210.0	0.0	0.0	0.0	0.00	0.00	
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	
270.0	0.00	0.00	270.0	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	
330.0	0.00	0.00	330.0	0.0	0.0	0.0	0.00	0.00	
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	
390.0	0.00	0.00	390.0	0.0	0.0	0.0	0.00	0.00	
420.0	0.00	0.00	420.0	0.0	0.0	0.0	0.00	0.00	
450.0	0.00	0.00	450.0	0.0	0.0	0.0	0.00	0.00	
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	
510.0	0.00	0.00	510.0	0.0	0.0	0.0	0.00	0.00	
540.0	0.00	0.00	540.0	0.0	0.0	0.0	0.00	0.00	
570.0	0.00	0.00	570.0	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	
630.0	0.00	0.00	630.0	0.0	0.0	0.0	0.00	0.00	
660.0	0.00	0.00	660.0	0.0	0.0	0.0	0.00	0.00	
690.0	0.00	0.00	690.0	0.0	0.0	0.0	0.00	0.00	
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	
750.0	0.00	0.00	750.0	0.0	0.0	0.0	0.00	0.00	
780.0	0.00	0.00	780.0	0.0	0.0	0.0	0.00	0.00	
810.0	0.00	0.00	810.0	0.0	0.0	0.0	0.00	0.00	
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	
870.0	0.00	0.00	870.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
930.0	0.00	0.00	930.0	0.0	0.0	0.0	0.00	0.00	
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	
990.0	0.00	0.00	990.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 1000'
1,020.0	0.40	72.43	1,020.0	0.0	0.1	0.1	2.00	2.00	
1,050.0	1.00	72.43	1,050.0	0.1	0.4	0.4	2.00	2.00	
1,080.0	1.60	72.43	1,080.0	0.3	1.1	1.1	2.00	2.00	
1,110.0	2.20	72.43	1,110.0	0.6	2.0	2.1	2.00	2.00	
1,140.0	2.80	72.43	1,139.9	1.0	3.3	3.4	2.00	2.00	
1,170.0	3.40	72.43	1,169.9	1.5	4.8	5.0	2.00	2.00	
1,200.0	4.00	72.43	1,199.8	2.1	6.7	7.0	2.00	2.00	
1,204.0	4.08	72.43	1,203.9	2.2	6.9	7.2	2.00	2.00	EOB; Inc=4.08°
1,230.0	4.08	72.43	1,229.8	2.8	8.7	9.1	0.00	0.00	
1,260.0	4.08	72.43	1,259.7	3.4	10.7	11.2	0.00	0.00	
1,290.0	4.08	72.43	1,289.6	4.0	12.8	13.3	0.00	0.00	
1,320.0	4.08	72.43	1,319.5	4.7	14.8	15.5	0.00	0.00	
1,350.0	4.08	72.43	1,349.5	5.3	16.8	17.6	0.00	0.00	
1,380.0	4.08	72.43	1,379.4	6.0	18.9	19.7	0.00	0.00	
1,410.0	4.08	72.43	1,409.3	6.6	20.9	21.9	0.00	0.00	
1,440.0	4.08	72.43	1,439.2	7.3	22.9	24.0	0.00	0.00	
1,470.0	4.08	72.43	1,469.2	7.9	25.0	26.1	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 LR14B 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>	LR14B 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	4.08	72.43	1,499.1	8.6	27.0	28.2	0.00	0.00	
1,530.0	4.08	72.43	1,529.0	9.2	29.0	30.4	0.00	0.00	
1,560.0	4.08	72.43	1,558.9	9.8	31.1	32.5	0.00	0.00	
1,590.0	4.08	72.43	1,588.8	10.5	33.1	34.6	0.00	0.00	
1,620.0	4.08	72.43	1,618.8	11.1	35.1	36.8	0.00	0.00	
1,650.0	4.08	72.43	1,648.7	11.8	37.2	38.9	0.00	0.00	
1,680.0	4.08	72.43	1,678.6	12.4	39.2	41.0	0.00	0.00	
1,710.0	4.08	72.43	1,708.5	13.1	41.2	43.2	0.00	0.00	
1,740.0	4.08	72.43	1,738.5	13.7	43.3	45.3	0.00	0.00	
1,770.0	4.08	72.43	1,768.4	14.4	45.3	47.4	0.00	0.00	
1,800.0	4.08	72.43	1,798.3	15.0	47.4	49.5	0.00	0.00	
1,830.0	4.08	72.43	1,828.2	15.6	49.4	51.7	0.00	0.00	
1,860.0	4.08	72.43	1,858.2	16.3	51.4	53.8	0.00	0.00	
1,890.0	4.08	72.43	1,888.1	16.9	53.5	55.9	0.00	0.00	
1,920.0	4.08	72.43	1,918.0	17.6	55.5	58.1	0.00	0.00	
1,950.0	4.08	72.43	1,947.9	18.2	57.5	60.2	0.00	0.00	
1,980.0	4.08	72.43	1,977.9	18.9	59.6	62.3	0.00	0.00	
2,010.0	4.08	72.43	2,007.8	19.5	61.6	64.4	0.00	0.00	
2,040.0	4.08	72.43	2,037.7	20.2	63.6	66.6	0.00	0.00	
2,070.0	4.08	72.43	2,067.6	20.8	65.7	68.7	0.00	0.00	
2,100.0	4.08	72.43	2,097.6	21.4	67.7	70.8	0.00	0.00	
2,130.0	4.08	72.43	2,127.5	22.1	69.7	73.0	0.00	0.00	
2,160.0	4.08	72.43	2,157.4	22.7	71.8	75.1	0.00	0.00	
2,190.0	4.08	72.43	2,187.3	23.4	73.8	77.2	0.00	0.00	
2,220.0	4.08	72.43	2,217.3	24.0	75.8	79.3	0.00	0.00	
2,250.0	4.08	72.43	2,247.2	24.7	77.9	81.5	0.00	0.00	
2,280.0	4.08	72.43	2,277.1	25.3	79.9	83.6	0.00	0.00	
2,310.0	4.08	72.43	2,307.0	26.0	82.0	85.7	0.00	0.00	
2,340.0	4.08	72.43	2,336.9	26.6	84.0	87.9	0.00	0.00	
2,370.0	4.08	72.43	2,366.9	27.2	86.0	90.0	0.00	0.00	
2,400.0	4.08	72.43	2,396.8	27.9	88.1	92.1	0.00	0.00	
2,430.0	4.08	72.43	2,426.7	28.5	90.1	94.3	0.00	0.00	
2,460.0	4.08	72.43	2,456.6	29.2	92.1	96.4	0.00	0.00	
2,490.0	4.08	72.43	2,486.6	29.8	94.2	98.5	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
LR14B N15 595 TGT	0.00	0.00	3,400.0	47.3	149.3	1,656,747.24	2,283,895.53	39.609049	-108.042004
- hit/miss target									
- Shape									
- plan misses target center by 915.3ft at 2490.0ft MD (2486.6 TVD, 29.8 N, 94.2 E)									
- Point									
LR14B N15 595 BHL	0.00	0.00	12,229.0	27.3	114.7	1,656,728.22	2,283,860.28	39.608994	-108.042127
- plan misses target center by 9742.5ft at 2490.0ft MD (2486.6 TVD, 29.8 N, 94.2 E)									
- Rectangle (sides W50.0 H100.0 D0.0)									



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	EDM 5000.1 US Multi Users Db	<b>Local Co-ordinate Reference:</b>	Well LR14B 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>	LR14B 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	4.08	72.43	2,496.5	30.0	94.8	99.2	0.00	0.00	
2,600.0	4.08	72.43	2,596.3	32.2	101.6	106.3	0.00	0.00	
2,700.0	4.08	72.43	2,696.0	34.3	108.4	113.4	0.00	0.00	
2,800.0	4.08	72.43	2,795.8	36.5	115.2	120.5	0.00	0.00	
2,900.0	4.08	72.43	2,895.5	38.6	122.0	127.6	0.00	0.00	
3,000.0	4.08	72.43	2,995.3	40.8	128.8	134.7	0.00	0.00	
3,100.0	4.08	72.43	3,095.0	42.9	135.5	141.8	0.00	0.00	
3,200.0	4.08	72.43	3,194.8	45.1	142.3	148.9	0.00	0.00	
3,201.4	4.08	72.43	3,196.1	45.1	142.4	149.0	0.00	0.00	Start Drop -2.00
3,284.4	2.42	72.43	3,279.0	46.5	146.9	153.7	2.00	-2.00	Wasatch
3,300.0	2.11	72.43	3,294.6	46.7	147.5	154.3	2.00	-2.00	
3,400.0	0.11	72.43	3,394.6	47.3	149.3	156.2	2.00	-2.00	
3,405.4	0.00	0.00	3,400.0	47.3	149.4	156.2	2.00	-2.00	EOD; Inc=0° - LR14B N15 595 TGT
3,500.0	0.24	240.04	3,494.6	47.2	149.2	156.1	0.25	0.25	
3,510.0	0.26	240.04	3,504.6	47.2	149.1	156.0	0.25	0.25	
3,600.0	0.26	240.04	3,594.6	47.0	148.8	155.6	0.00	0.00	
3,700.0	0.26	240.04	3,694.6	46.7	148.4	155.2	0.00	0.00	
3,800.0	0.26	240.04	3,794.6	46.5	148.0	154.7	0.00	0.00	
3,900.0	0.26	240.04	3,894.6	46.3	147.6	154.3	0.00	0.00	
4,000.0	0.26	240.04	3,994.6	46.1	147.2	153.9	0.00	0.00	
4,100.0	0.26	240.04	4,094.6	45.8	146.8	153.4	0.00	0.00	
4,200.0	0.26	240.04	4,194.6	45.6	146.4	153.0	0.00	0.00	
4,300.0	0.26	240.04	4,294.6	45.4	146.0	152.6	0.00	0.00	
4,400.0	0.26	240.04	4,394.6	45.2	145.6	152.1	0.00	0.00	
4,500.0	0.26	240.04	4,494.6	44.9	145.2	151.7	0.00	0.00	
4,600.0	0.26	240.04	4,594.6	44.7	144.8	151.2	0.00	0.00	
4,700.0	0.26	240.04	4,694.6	44.5	144.4	150.8	0.00	0.00	
4,800.0	0.26	240.04	4,794.6	44.2	144.0	150.4	0.00	0.00	
4,900.0	0.26	240.04	4,894.6	44.0	143.6	149.9	0.00	0.00	
5,000.0	0.26	240.04	4,994.6	43.8	143.3	149.5	0.00	0.00	
5,100.0	0.26	240.04	5,094.6	43.6	142.9	149.1	0.00	0.00	
5,200.0	0.26	240.04	5,194.6	43.3	142.5	148.6	0.00	0.00	
5,300.0	0.26	240.04	5,294.6	43.1	142.1	148.2	0.00	0.00	
5,400.0	0.26	240.04	5,394.6	42.9	141.7	147.7	0.00	0.00	
5,500.0	0.26	240.04	5,494.6	42.6	141.3	147.3	0.00	0.00	
5,600.0	0.26	240.04	5,594.6	42.4	140.9	146.9	0.00	0.00	
5,700.0	0.26	240.04	5,694.6	42.2	140.5	146.4	0.00	0.00	
5,784.4	0.26	240.04	5,779.0	42.0	140.2	146.1	0.00	0.00	Fort Union
5,800.0	0.26	240.04	5,794.6	42.0	140.1	146.0	0.00	0.00	
5,900.0	0.26	240.04	5,894.6	41.7	139.7	145.6	0.00	0.00	
6,000.0	0.26	240.04	5,994.6	41.5	139.3	145.1	0.00	0.00	
6,100.0	0.26	240.04	6,094.6	41.3	138.9	144.7	0.00	0.00	
6,200.0	0.26	240.04	6,194.6	41.1	138.5	144.2	0.00	0.00	
6,284.4	0.26	240.04	6,279.0	40.9	138.2	143.9	0.00	0.00	Base Fort Union
6,300.0	0.26	240.04	6,294.6	40.8	138.1	143.8	0.00	0.00	
6,400.0	0.26	240.04	6,394.6	40.6	137.7	143.4	0.00	0.00	
6,500.0	0.26	240.04	6,494.6	40.4	137.3	142.9	0.00	0.00	
6,600.0	0.26	240.04	6,594.6	40.1	136.9	142.5	0.00	0.00	
6,700.0	0.26	240.04	6,694.6	39.9	136.5	142.1	0.00	0.00	
6,800.0	0.26	240.04	6,794.6	39.7	136.1	141.6	0.00	0.00	
6,900.0	0.26	240.04	6,894.6	39.5	135.7	141.2	0.00	0.00	
7,000.0	0.26	240.04	6,994.6	39.2	135.3	140.8	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 LR14B 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>	LR14B 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
7,100.0	0.26	240.04	7,094.6	39.0	134.9	140.3	0.00	0.00	
7,200.0	0.26	240.04	7,194.6	38.8	134.6	139.9	0.00	0.00	
7,300.0	0.26	240.04	7,294.6	38.5	134.2	139.4	0.00	0.00	
7,400.0	0.26	240.04	7,394.6	38.3	133.8	139.0	0.00	0.00	
7,500.0	0.26	240.04	7,494.5	38.1	133.4	138.6	0.00	0.00	
7,600.0	0.26	240.04	7,594.5	37.9	133.0	138.1	0.00	0.00	
7,700.0	0.26	240.04	7,694.5	37.6	132.6	137.7	0.00	0.00	
7,800.0	0.26	240.04	7,794.5	37.4	132.2	137.3	0.00	0.00	
7,900.0	0.26	240.04	7,894.5	37.2	131.8	136.8	0.00	0.00	
8,000.0	0.26	240.04	7,994.5	36.9	131.4	136.4	0.00	0.00	
8,100.0	0.26	240.04	8,094.5	36.7	131.0	135.9	0.00	0.00	
8,200.0	0.26	240.04	8,194.5	36.5	130.6	135.5	0.00	0.00	
8,300.0	0.26	240.04	8,294.5	36.3	130.2	135.1	0.00	0.00	
8,400.0	0.26	240.04	8,394.5	36.0	129.8	134.6	0.00	0.00	
8,500.0	0.26	240.04	8,494.5	35.8	129.4	134.2	0.00	0.00	
8,584.5	0.26	240.04	8,579.0	35.6	129.1	133.8	0.00	0.00	Ohio Creek
8,600.0	0.26	240.04	8,594.5	35.6	129.0	133.8	0.00	0.00	
8,700.0	0.26	240.04	8,694.5	35.4	128.6	133.3	0.00	0.00	
8,800.0	0.26	240.04	8,794.5	35.1	128.2	132.9	0.00	0.00	
8,884.5	0.26	240.04	8,879.0	34.9	127.9	132.5	0.00	0.00	Williams Fork
8,900.0	0.26	240.04	8,894.5	34.9	127.8	132.4	0.00	0.00	
9,000.0	0.26	240.04	8,994.5	34.7	127.4	132.0	0.00	0.00	
9,100.0	0.26	240.04	9,094.5	34.4	127.0	131.6	0.00	0.00	
9,184.5	0.26	240.04	9,179.0	34.3	126.7	131.2	0.00	0.00	Approx TOG
9,200.0	0.26	240.04	9,194.5	34.2	126.6	131.1	0.00	0.00	
9,300.0	0.26	240.04	9,294.5	34.0	126.3	130.7	0.00	0.00	
9,400.0	0.26	240.04	9,394.5	33.8	125.9	130.3	0.00	0.00	
9,500.0	0.26	240.04	9,494.5	33.5	125.5	129.8	0.00	0.00	
9,600.0	0.26	240.04	9,594.5	33.3	125.1	129.4	0.00	0.00	
9,700.0	0.26	240.04	9,694.5	33.1	124.7	128.9	0.00	0.00	
9,800.0	0.26	240.04	9,794.5	32.8	124.3	128.5	0.00	0.00	
9,900.0	0.26	240.04	9,894.5	32.6	123.9	128.1	0.00	0.00	
10,000.0	0.26	240.04	9,994.5	32.4	123.5	127.6	0.00	0.00	
10,100.0	0.26	240.04	10,094.5	32.2	123.1	127.2	0.00	0.00	
10,200.0	0.26	240.04	10,194.5	31.9	122.7	126.8	0.00	0.00	
10,300.0	0.26	240.04	10,294.5	31.7	122.3	126.3	0.00	0.00	
10,400.0	0.26	240.04	10,394.5	31.5	121.9	125.9	0.00	0.00	
10,500.0	0.26	240.04	10,494.5	31.3	121.5	125.4	0.00	0.00	
10,600.0	0.26	240.04	10,594.5	31.0	121.1	125.0	0.00	0.00	
10,700.0	0.26	240.04	10,694.5	30.8	120.7	124.6	0.00	0.00	
10,800.0	0.26	240.04	10,794.5	30.6	120.3	124.1	0.00	0.00	
10,900.0	0.26	240.04	10,894.5	30.3	119.9	123.7	0.00	0.00	
11,000.0	0.26	240.04	10,994.5	30.1	119.5	123.3	0.00	0.00	
11,100.0	0.26	240.04	11,094.5	29.9	119.1	122.8	0.00	0.00	
11,200.0	0.26	240.04	11,194.5	29.7	118.7	122.4	0.00	0.00	
11,300.0	0.26	240.04	11,294.5	29.4	118.3	121.9	0.00	0.00	
11,400.0	0.26	240.04	11,394.5	29.2	117.9	121.5	0.00	0.00	
11,500.0	0.26	240.04	11,494.5	29.0	117.6	121.1	0.00	0.00	
11,600.0	0.26	240.04	11,594.5	28.7	117.2	120.6	0.00	0.00	
11,700.0	0.26	240.04	11,694.5	28.5	116.8	120.2	0.00	0.00	
11,734.5	0.26	240.04	11,729.0	28.4	116.6	120.0	0.00	0.00	Cameo
11,800.0	0.26	240.04	11,794.5	28.3	116.4	119.8	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 LR14B 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>	LR14B 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
11,900.0	0.26	240.04	11,894.5	28.1	116.0	119.3	0.00	0.00	
12,000.0	0.26	240.04	11,994.5	27.8	115.6	118.9	0.00	0.00	
12,084.5	0.26	240.04	12,079.0	27.6	115.2	118.5	0.00	0.00	Rollins SS
12,100.0	0.26	240.04	12,094.5	27.6	115.2	118.4	0.00	0.00	
12,200.0	0.26	240.04	12,194.5	27.4	114.8	118.0	0.00	0.00	
12,234.5	0.26	240.04	12,229.0	27.3	114.7	117.9	0.00	0.00	LR14B N15 595 BHL

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
LR14B N15 595 TGT - hit/miss target - Shape - Point	0.00	0.00	3,400.0	47.3	149.3	1,656,747.24	2,283,895.53	39.609049	-108.042004
LR14B N15 595 BHL - plan hits target center - Rectangle (sides W50.0 H100.0 D0.0)	0.00	0.00	12,229.0	27.3	114.7	1,656,728.22	2,283,860.28	39.608994	-108.042127

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,284.4	3,279.0	Wasatch		0.00	
5,784.4	5,779.0	Fort Union		0.00	
6,284.4	6,279.0	Base Fort Union		0.00	
8,584.5	8,579.0	Ohio Creek		0.00	
8,884.5	8,879.0	Williams Fork		0.00	
9,184.5	9,179.0	Approx TOG		0.00	
11,734.5	11,729.0	Cameo		0.00	
12,084.5	12,079.0	Rollins SS		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP @ 1000'
1,204.0	1,203.9	2.2	6.9	EOB; Inc=4.08°
3,201.4	3,196.1	45.1	142.4	Start Drop -2.00
3,405.4	3,400.0	47.3	149.4	EOD; Inc=0°
12,234.5	12,229.0	27.3	114.6	TD at 12234.5

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

**Garfield County**

**N15 595 Pad**

**LR14B 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 LR14B 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>	LR14B 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	12,234.5	Plan #1 (DD)	MWD	Geolink MWD	

Summary						
Site Name Offset Well - Wellbore - Design	Reference	Offset	Distance		Separation	Warning
	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
N15 595 Pad						
LR05D N15 595 - DD - Plan #1						Out of range
LR06B N15 595 - DD - Plan #1						Out of range
LR11A N15 595 - DD - Plan #1	233.0	233.0	45.2	44.4	59.351	CC
LR11A N15 595 - DD - Plan #1	300.0	300.0	45.2	44.2	45.420	ES
LR11A N15 595 - DD - Plan #1	700.0	695.0	62.5	59.9	23.873	SF
LR11B N15 595 - DD - Plan #1	200.0	200.0	90.3	89.7	139.838	CC
LR11B N15 595 - DD - Plan #1	300.0	299.6	90.5	89.5	91.012	ES
LR11B N15 595 - DD - Plan #1	600.0	595.9	97.7	95.6	46.360	SF
LR11C N15 595 - DD - Plan #1	500.0	500.0	75.1	73.4	44.344	CC
LR11C N15 595 - DD - Plan #1	600.0	599.7	75.3	73.2	36.867	ES
LR11C N15 595 - DD - Plan #1	1,000.0	993.7	90.5	86.9	25.365	SF
LR11D N15 595 - DD - Plan #1	720.6	720.8	29.0	26.5	11.753	CC, ES
LR11D N15 595 - DD - Plan #1	800.0	799.8	29.9	27.1	10.847	SF
LR14A N15 595 - DD - Plan #1	1,000.0	1,000.0	59.8	56.4	17.404	CC, ES
LR14A N15 595 - DD - Plan #1	1,204.0	1,203.7	66.9	62.7	16.094	SF
LR15C N15 595 - DD - Plan #1	478.5	478.9	7.0	5.3	4.290	CC, ES, SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR14B 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>	LR14B 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 - 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 (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	-86.30	2.9	-45.1	45.2					
100.0	100.0	100.0	100.0	0.1	0.1	-86.30	2.9	-45.1	45.2	44.9	0.30	152.251		
200.0	200.0	200.0	200.0	0.3	0.3	-86.30	2.9	-45.1	45.2	44.5	0.65	69.953		
233.0	233.0	233.0	233.0	0.4	0.4	-86.06	3.1	-45.1	45.2	44.4	0.76	59.351 CC		
300.0	300.0	300.0	299.9	0.5	0.5	-84.09	4.7	-45.0	45.2	44.2	1.00	45.420 ES		
400.0	400.0	399.7	399.5	0.7	0.7	-77.54	9.9	-44.6	45.7	44.3	1.35	33.889		
500.0	500.0	498.9	498.4	0.8	0.9	-67.25	18.5	-44.0	47.8	46.0	1.72	27.800		
600.0	600.0	597.4	596.2	1.0	1.2	-54.90	30.4	-43.2	53.0	50.8	2.13	24.821		
700.0	700.0	695.0	692.6	1.2	1.5	-42.86	45.5	-42.2	62.5	59.9	2.62	23.873 SF		
800.0	800.0	792.3	788.1	1.4	1.8	-32.82	63.5	-41.0	76.5	73.4	3.15	24.289		
900.0	900.0	890.4	884.4	1.5	2.2	-25.73	82.4	-39.7	92.8	89.1	3.70	25.086		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR14B 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>	LR14B 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 - LR11B 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					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	-86.76	5.1	-90.2	90.3					
100.0	100.0	100.0	100.0	0.1	0.1	-86.76	5.1	-90.2	90.3	90.0	0.30	304.353		
200.0	200.0	200.0	200.0	0.3	0.3	-86.76	5.1	-90.2	90.3	89.7	0.65	139.838 CC		
300.0	300.0	299.6	299.5	0.5	0.5	-85.68	6.8	-90.3	90.5	89.5	0.99	91.012 ES		
400.0	400.0	398.9	398.7	0.7	0.7	-82.47	12.0	-90.6	91.4	90.1	1.35	67.843		
500.0	500.0	497.7	497.2	0.8	0.9	-77.32	20.5	-91.2	93.6	91.8	1.71	54.609		
600.0	600.0	595.9	594.6	1.0	1.2	-70.64	32.3	-92.1	97.7	95.6	2.11	46.360 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR14B 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>	LR14B 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 - LR11C 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						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	-86.66	4.4	-74.9	75.1					
100.0	100.0	100.0	100.0	0.1	0.1	-86.66	4.4	-74.9	75.1	74.8	0.30	253.019		
200.0	200.0	200.0	200.0	0.3	0.3	-86.66	4.4	-74.9	75.1	74.4	0.65	116.252		
300.0	300.0	300.0	300.0	0.5	0.5	-86.66	4.4	-74.9	75.1	74.1	0.99	75.462		
400.0	400.0	400.0	400.0	0.7	0.7	-86.66	4.4	-74.9	75.1	73.7	1.34	55.861		
500.0	500.0	500.0	500.0	0.8	0.8	-86.66	4.4	-74.9	75.1	73.4	1.69	44.344 CC		
600.0	600.0	599.7	599.7	1.0	1.0	-85.35	6.1	-75.0	75.3	73.2	2.04	36.867 ES		
700.0	700.0	699.1	699.0	1.2	1.2	-81.48	11.3	-75.3	76.1	73.7	2.39	31.813		
800.0	800.0	798.1	797.6	1.4	1.4	-75.30	19.8	-75.7	78.3	75.5	2.75	28.440		
900.0	900.0	896.3	895.1	1.5	1.7	-67.42	31.7	-76.2	82.7	79.6	3.14	26.379		
1,000.0	1,000.0	993.7	991.2	1.7	1.9	-58.72	46.8	-77.0	90.5	86.9	3.57	25.365 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR14B 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>	LR14B 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 - 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		Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
							+N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	-86.54	1.8	-30.1	30.2					
100.0	100.0	100.0	100.0	0.1	0.1	-86.54	1.8	-30.1	30.2	29.9	0.30	101.791		
200.0	200.0	200.0	200.0	0.3	0.3	-86.54	1.8	-30.1	30.2	29.6	0.65	46.769		
300.0	300.0	300.0	300.0	0.5	0.5	-86.54	1.8	-30.1	30.2	29.2	0.99	30.359		
400.0	400.0	400.0	400.0	0.7	0.7	-86.54	1.8	-30.1	30.2	28.9	1.34	22.473		
500.0	500.0	500.0	500.0	0.8	0.8	-86.54	1.8	-30.1	30.2	28.5	1.69	17.840		
600.0	600.0	600.3	600.2	1.0	1.0	-83.30	3.5	-29.6	29.8	27.7	2.04	14.569		
700.0	700.0	700.3	700.1	1.2	1.2	-73.17	8.4	-27.8	29.0	26.6	2.39	12.129		
720.6	720.6	720.8	720.6	1.2	1.3	-70.19	9.8	-27.3	29.0	26.5	2.47	11.753 CC, ES		
800.0	800.0	799.8	799.2	1.4	1.4	-56.30	16.6	-24.8	29.9	27.1	2.75	10.847 SF		
900.0	900.0	898.6	897.3	1.5	1.7	-36.69	27.9	-20.8	34.9	31.7	3.16	11.040		
1,000.0	1,000.0	996.5	994.0	1.7	1.9	-20.29	42.2	-15.6	45.4	41.8	3.62	12.523		
1,100.0	1,100.0	1,094.9	1,090.8	1.9	2.2	-83.20	58.6	-9.7	59.9	56.0	3.88	15.441		
1,204.0	1,203.9	1,197.7	1,192.0	2.1	2.6	-79.89	75.7	-3.5	75.2	71.0	4.26	17.646		
1,300.0	1,299.6	1,292.6	1,285.5	2.3	2.9	-79.14	91.6	2.2	89.2	84.5	4.64	19.234		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR14B 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>	LR14B 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													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	3.6	-59.7	59.8					
100.0	100.0	100.0	100.0	0.1	0.1	-86.51	3.6	-59.7	59.8	59.5	0.30	201.686		
200.0	200.0	200.0	200.0	0.3	0.3	-86.51	3.6	-59.7	59.8	59.2	0.65	92.667		
300.0	300.0	300.0	300.0	0.5	0.5	-86.51	3.6	-59.7	59.8	58.8	0.99	60.152		
400.0	400.0	400.0	400.0	0.7	0.7	-86.51	3.6	-59.7	59.8	58.5	1.34	44.528		
500.0	500.0	500.0	500.0	0.8	0.8	-86.51	3.6	-59.7	59.8	58.1	1.69	35.347		
600.0	600.0	600.0	600.0	1.0	1.0	-86.51	3.6	-59.7	59.8	57.8	2.04	29.305		
700.0	700.0	700.0	700.0	1.2	1.2	-86.51	3.6	-59.7	59.8	57.5	2.39	25.027		
800.0	800.0	800.0	800.0	1.4	1.4	-86.51	3.6	-59.7	59.8	57.1	2.74	21.839		
900.0	900.0	900.0	900.0	1.5	1.5	-86.51	3.6	-59.7	59.8	56.8	3.09	19.371		
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	-86.51	3.6	-59.7	59.8	56.4	3.44	17.404 CC, ES		
1,100.0	1,100.0	1,099.9	1,099.9	1.9	1.9	-157.88	5.4	-59.6	61.5	57.7	3.79	16.240		
1,204.0	1,203.9	1,203.7	1,203.5	2.1	2.1	-154.91	10.9	-59.4	66.9	62.7	4.15	16.094 SF		
1,300.0	1,299.6	1,298.9	1,298.4	2.3	2.3	-150.66	19.2	-59.0	73.9	69.4	4.51	16.387		
1,400.0	1,399.3	1,397.7	1,396.4	2.5	2.5	-144.79	31.2	-58.4	82.5	77.6	4.91	16.802		
1,500.0	1,499.1	1,496.0	1,493.6	2.7	2.7	-138.17	46.3	-57.6	92.8	87.5	5.33	17.433		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR14B 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>	LR14B 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					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	-85.89	1.1	-15.2	15.3					
100.0	100.0	100.0	100.0	0.1	0.1	-85.89	1.1	-15.2	15.3	15.0	0.30	51.410		
200.0	200.0	200.0	200.0	0.3	0.3	-85.89	1.1	-15.2	15.3	14.6	0.65	23.621		
300.0	300.0	300.4	300.4	0.5	0.5	-89.26	0.2	-13.7	13.7	12.7	1.00	13.729		
400.0	400.0	400.6	400.5	0.7	0.7	-105.51	-2.6	-9.2	9.6	8.2	1.36	7.020		
478.5	478.5	478.9	478.5	0.8	0.9	-148.68	-6.0	-3.6	7.0	5.3	1.63	4.290 CC, ES, SF		
500.0	500.0	500.3	499.8	0.8	0.9	-165.91	-7.1	-1.8	7.3	5.6	1.69	4.313		
600.0	600.0	599.3	598.0	1.0	1.2	147.44	-13.3	8.5	16.0	13.8	2.13	7.487		
700.0	700.0	697.3	694.8	1.2	1.5	134.61	-21.3	21.6	30.7	28.1	2.62	11.739		
800.0	800.0	794.2	789.9	1.4	1.9	129.61	-30.8	37.2	49.4	46.2	3.14	15.712		
900.0	900.0	890.9	884.3	1.5	2.2	127.09	-41.8	55.3	71.0	67.3	3.69	19.238		
1,000.0	1,000.0	988.4	979.4	1.7	2.6	125.72	-53.0	73.7	93.1	88.9	4.25	21.899		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Berry Petroleum Company (NAD 83)	<b>Local Co-ordinate Reference:</b>	Well LR14B 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>	LR14B 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: LR14B N15 595

Coordinate System is US State Plane 1983, Colorado Central Zone

Grid Convergence at Surface is: -1.60°

