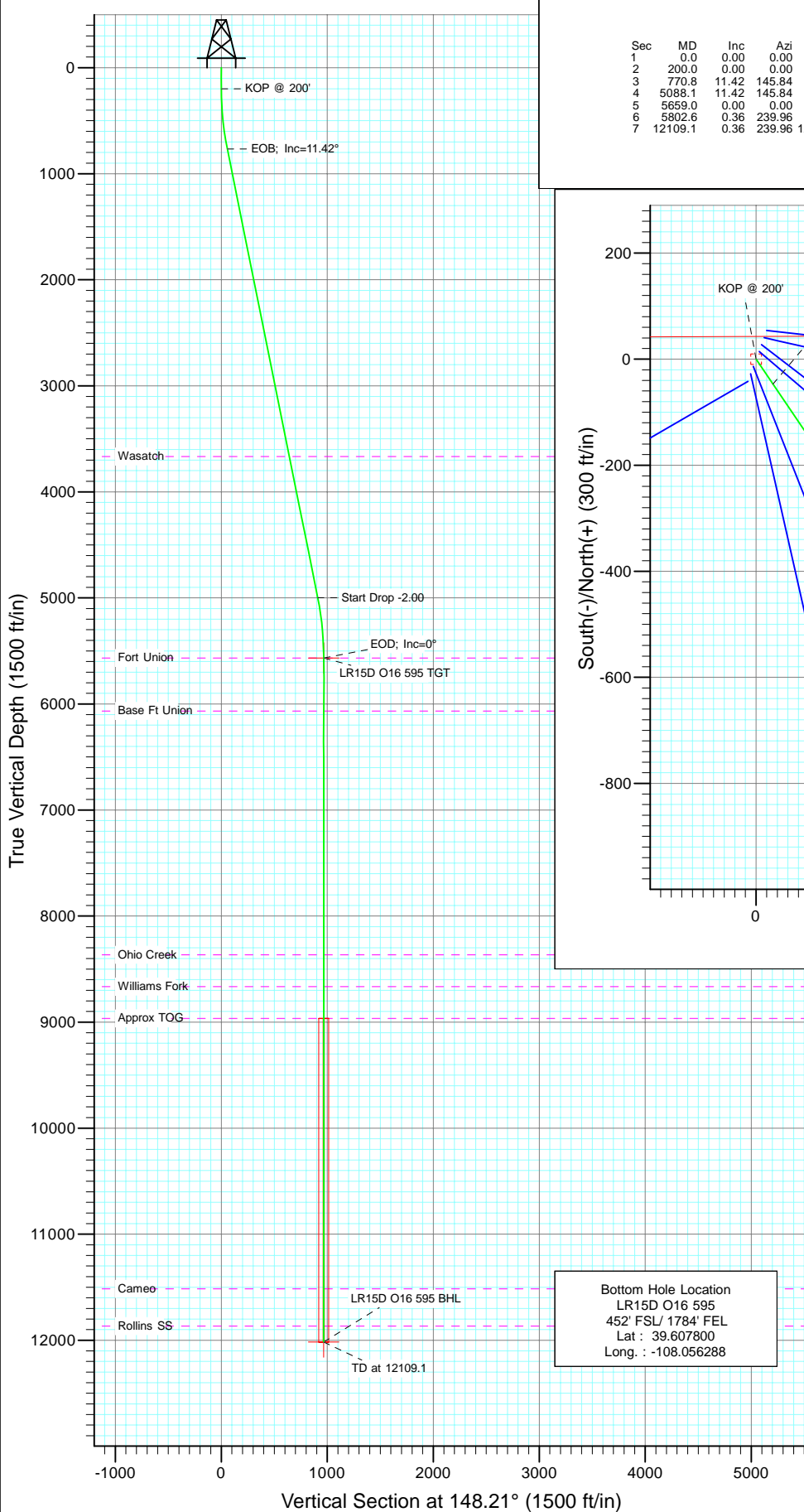
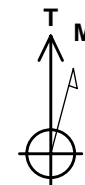
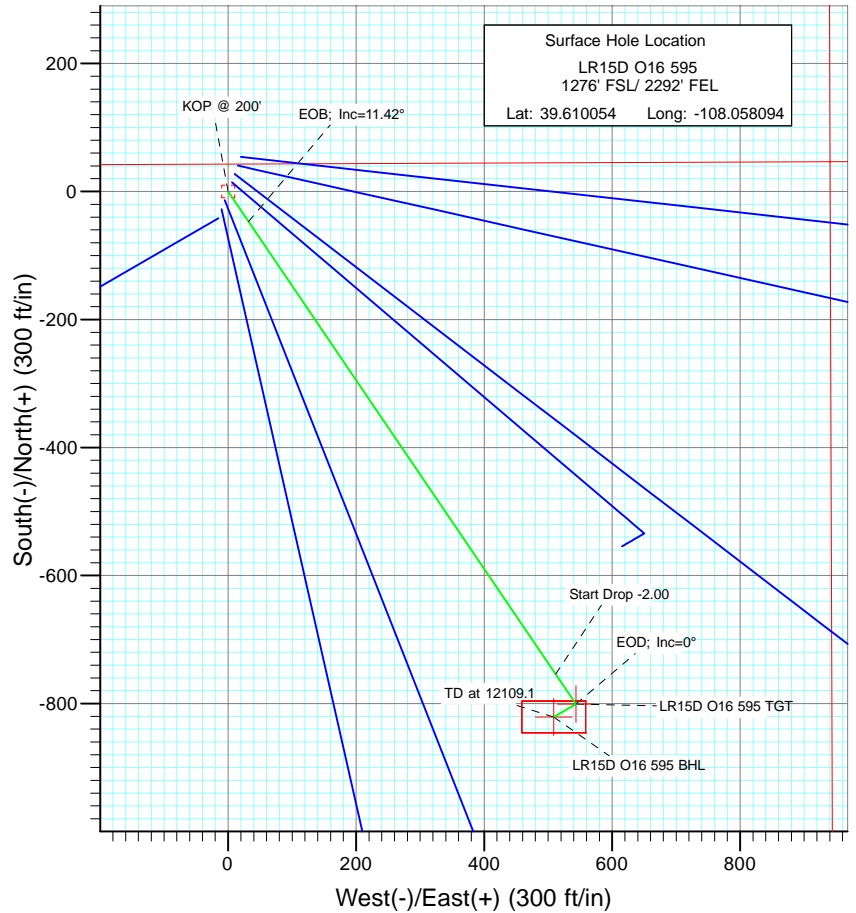




Project: Garfield County
 Site: O16 595 Pad
 Well: LR15D O16 595
 Wellbore: DD
 Design: Plan #1



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	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	770.8	11.42	145.84	767.1	-46.9	31.8	2.00	145.84	56.6	
4	5088.1	11.42	145.84	4998.9	-754.1	511.6	0.00	0.00	910.5	
5	5659.0	0.00	0.00	5566.0	-801.0	543.4	2.00	180.00	967.1	LR15D O16 595 TGT
6	5802.6	0.36	239.96	5709.6	-801.2	543.1	0.25	239.96	967.1	
7	12109.1	0.36	239.96	12016.0	-821.0	508.8	0.00	0.00	965.9	LR15D O16 595 BHL



Azimuths to True North
 Magnetic North: 10.46°

Magnetic Field
 Strength: 52388.2snT
 Dip Angle: 65.85°
 Date: 9/27/2010
 Model: IGRF200510

FORMATION TOP DETAILS

TVDPPath	MDPath	Formation
3666.0	3728.3	Wasatch
5566.0	5659.0	Fort Union
6066.0	6159.0	Base Ft Union
8366.0	8459.0	Ohio Creek
8666.0	8759.0	Williams Fork
8966.0	9059.0	Approx TOG
11516.0	11609.1	Cameo
11866.0	11959.1	Rollins SS

DESIGN DETAILS: Plan #1

105XXX; BH
 KBE @ 8318.0ft (Patterson 302)

Target	Azimuth	Origin	N/S	E/W	From TVD
LR15D O16 595 BHL	148.21	Slot	0.0	0.0	0.0

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well LR15D O16 595
Company:	Berry Petroleum Company (NAD 83)	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Project:	Garfield County	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site:	Long Ridge O16 595 Pad	North Reference:	True
Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

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

Site		Long Ridge O16 595 Pad			
Site Position:		Northing:	1,657,293.80 ft	Latitude:	39.610202
From:	Lat/Long	Easting:	2,279,395.79 ft	Longitude:	-108.058023
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.61 °

Well	LR15D O16 595					
Well Position	+N/-S	0.0 ft	Northing:	1,657,240.46 ft	Latitude:	39.610054
	+E/-W	0.0 ft	Easting:	2,279,374.28 ft	Longitude:	-108.058094
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	8,303.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	9/27/2010	10.46	65.85	52,388

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	148.21

Plan Sections										
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	
770.8	11.42	145.84	767.1	-46.9	31.8	2.00	2.00	0.00	145.84	
5,088.1	11.42	145.84	4,998.9	-754.1	511.6	0.00	0.00	0.00	0.00	
5,659.0	0.00	0.00	5,566.0	-801.0	543.4	2.00	-2.00	0.00	180.00	LR15D O16 595 TGT
5,802.6	0.36	239.96	5,709.6	-801.2	543.1	0.25	0.25	-83.57	239.96	
12,109.1	0.36	239.96	12,016.0	-821.0	508.8	0.00	0.00	0.00	0.00	LR15D O16 595 BHL

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well LR15D O16 595
Company:	Berry Petroleum Company (NAD 83)	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Project:	Garfield County	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site:	Long Ridge O16 595 Pad	North Reference:	True
Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
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	
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	145.84	210.0	0.0	0.0	0.0	2.00	2.00	
240.0	0.80	145.84	240.0	-0.2	0.2	0.3	2.00	2.00	
270.0	1.40	145.84	270.0	-0.7	0.5	0.9	2.00	2.00	
300.0	2.00	145.84	300.0	-1.4	1.0	1.7	2.00	2.00	
330.0	2.60	145.84	330.0	-2.4	1.7	2.9	2.00	2.00	
360.0	3.20	145.84	359.9	-3.7	2.5	4.5	2.00	2.00	
390.0	3.80	145.84	389.9	-5.2	3.5	6.3	2.00	2.00	
420.0	4.40	145.84	419.8	-7.0	4.7	8.4	2.00	2.00	
450.0	5.00	145.84	449.7	-9.0	6.1	10.9	2.00	2.00	
480.0	5.60	145.84	479.6	-11.3	7.7	13.7	2.00	2.00	
510.0	6.20	145.84	509.4	-13.9	9.4	16.7	2.00	2.00	
540.0	6.80	145.84	539.2	-16.7	11.3	20.1	2.00	2.00	
570.0	7.40	145.84	569.0	-19.7	13.4	23.8	2.00	2.00	
600.0	8.00	145.84	598.7	-23.1	15.7	27.9	2.00	2.00	
630.0	8.60	145.84	628.4	-26.7	18.1	32.2	2.00	2.00	
660.0	9.20	145.84	658.0	-30.5	20.7	36.8	2.00	2.00	
690.0	9.80	145.84	687.6	-34.6	23.5	41.8	2.00	2.00	
720.0	10.40	145.84	717.1	-38.9	26.4	47.0	2.00	2.00	
750.0	11.00	145.84	746.6	-43.6	29.6	52.6	2.00	2.00	
770.8	11.42	145.84	767.1	-46.9	31.8	56.6	2.00	2.00	EOB; Inc=11.42°
780.0	11.42	145.84	776.0	-48.4	32.8	58.4	0.00	0.00	
810.0	11.42	145.84	805.5	-53.3	36.2	64.4	0.00	0.00	
840.0	11.42	145.84	834.9	-58.2	39.5	70.3	0.00	0.00	
870.0	11.42	145.84	864.3	-63.2	42.8	76.2	0.00	0.00	
900.0	11.42	145.84	893.7	-68.1	46.2	82.2	0.00	0.00	
930.0	11.42	145.84	923.1	-73.0	49.5	88.1	0.00	0.00	
960.0	11.42	145.84	952.5	-77.9	52.8	94.0	0.00	0.00	
990.0	11.42	145.84	981.9	-82.8	56.2	100.0	0.00	0.00	
1,020.0	11.42	145.84	1,011.3	-87.7	59.5	105.9	0.00	0.00	
1,050.0	11.42	145.84	1,040.7	-92.6	62.8	111.8	0.00	0.00	
1,080.0	11.42	145.84	1,070.1	-97.5	66.2	117.8	0.00	0.00	
1,110.0	11.42	145.84	1,099.5	-102.5	69.5	123.7	0.00	0.00	
1,140.0	11.42	145.84	1,128.9	-107.4	72.9	129.6	0.00	0.00	
1,170.0	11.42	145.84	1,158.3	-112.3	76.2	135.6	0.00	0.00	
1,200.0	11.42	145.84	1,187.7	-117.2	79.5	141.5	0.00	0.00	
1,230.0	11.42	145.84	1,217.1	-122.1	82.9	147.4	0.00	0.00	
1,260.0	11.42	145.84	1,246.6	-127.0	86.2	153.4	0.00	0.00	
1,290.0	11.42	145.84	1,276.0	-131.9	89.5	159.3	0.00	0.00	
1,320.0	11.42	145.84	1,305.4	-136.9	92.9	165.2	0.00	0.00	
1,350.0	11.42	145.84	1,334.8	-141.8	96.2	171.2	0.00	0.00	
1,380.0	11.42	145.84	1,364.2	-146.7	99.5	177.1	0.00	0.00	
1,410.0	11.42	145.84	1,393.6	-151.6	102.9	183.0	0.00	0.00	
1,440.0	11.42	145.84	1,423.0	-156.5	106.2	189.0	0.00	0.00	
1,470.0	11.42	145.84	1,452.4	-161.4	109.5	194.9	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well LR15D O16 595
Company:	Berry Petroleum Company (NAD 83)	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Project:	Garfield County	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site:	Long Ridge O16 595 Pad	North Reference:	True
Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
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
1,500.0	11.42	145.84	1,481.8	-166.3	112.9	200.8	0.00	0.00	
1,530.0	11.42	145.84	1,511.2	-171.3	116.2	206.8	0.00	0.00	
1,560.0	11.42	145.84	1,540.6	-176.2	119.5	212.7	0.00	0.00	
1,590.0	11.42	145.84	1,570.0	-181.1	122.9	218.6	0.00	0.00	
1,620.0	11.42	145.84	1,599.4	-186.0	126.2	224.6	0.00	0.00	
1,650.0	11.42	145.84	1,628.8	-190.9	129.5	230.5	0.00	0.00	
1,680.0	11.42	145.84	1,658.2	-195.8	132.9	236.4	0.00	0.00	
1,710.0	11.42	145.84	1,687.6	-200.7	136.2	242.4	0.00	0.00	
1,740.0	11.42	145.84	1,717.1	-205.7	139.5	248.3	0.00	0.00	
1,770.0	11.42	145.84	1,746.5	-210.6	142.9	254.2	0.00	0.00	
1,800.0	11.42	145.84	1,775.9	-215.5	146.2	260.2	0.00	0.00	
1,830.0	11.42	145.84	1,805.3	-220.4	149.5	266.1	0.00	0.00	
1,860.0	11.42	145.84	1,834.7	-225.3	152.9	272.0	0.00	0.00	
1,890.0	11.42	145.84	1,864.1	-230.2	156.2	278.0	0.00	0.00	
1,920.0	11.42	145.84	1,893.5	-235.1	159.5	283.9	0.00	0.00	
1,950.0	11.42	145.84	1,922.9	-240.1	162.9	289.8	0.00	0.00	
1,980.0	11.42	145.84	1,952.3	-245.0	166.2	295.8	0.00	0.00	
2,010.0	11.42	145.84	1,981.7	-249.9	169.5	301.7	0.00	0.00	
2,040.0	11.42	145.84	2,011.1	-254.8	172.9	307.6	0.00	0.00	
2,070.0	11.42	145.84	2,040.5	-259.7	176.2	313.6	0.00	0.00	
2,100.0	11.42	145.84	2,069.9	-264.6	179.5	319.5	0.00	0.00	
2,130.0	11.42	145.84	2,099.3	-269.5	182.9	325.4	0.00	0.00	
2,160.0	11.42	145.84	2,128.7	-274.5	186.2	331.4	0.00	0.00	
2,190.0	11.42	145.84	2,158.1	-279.4	189.5	337.3	0.00	0.00	
2,220.0	11.42	145.84	2,187.6	-284.3	192.9	343.2	0.00	0.00	
2,250.0	11.42	145.84	2,217.0	-289.2	196.2	349.2	0.00	0.00	
2,280.0	11.42	145.84	2,246.4	-294.1	199.5	355.1	0.00	0.00	
2,310.0	11.42	145.84	2,275.8	-299.0	202.9	361.0	0.00	0.00	
2,340.0	11.42	145.84	2,305.2	-303.9	206.2	367.0	0.00	0.00	
2,370.0	11.42	145.84	2,334.6	-308.9	209.5	372.9	0.00	0.00	
2,400.0	11.42	145.84	2,364.0	-313.8	212.9	378.8	0.00	0.00	
2,430.0	11.42	145.84	2,393.4	-318.7	216.2	384.8	0.00	0.00	
2,460.0	11.42	145.84	2,422.8	-323.6	219.5	390.7	0.00	0.00	
2,490.0	11.42	145.84	2,452.2	-328.5	222.9	396.6	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
LR15D O16 595 TGT	0.00	0.00	5,566.0	-801.0	543.4	1,656,424.48	2,279,894.96	39.607855	-108.056165
- hit/miss target									
- Shape									
- plan misses target center by 3165.7ft at 2490.0ft MD (2452.2 TVD, -328.5 N, 222.9 E)									
- Point									
LR15D O16 595 BHL	0.00	0.00	12,016.0	-821.0	508.8	1,656,405.45	2,279,859.80	39.607800	-108.056288
- plan misses target center by 9580.7ft at 2490.0ft MD (2452.2 TVD, -328.5 N, 222.9 E)									
- Rectangle (sides W50.0 H100.0 D0.0)									

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well LR15D O16 595
Company:	Berry Petroleum Company (NAD 83)	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Project:	Garfield County	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site:	Long Ridge O16 595 Pad	North Reference:	True
Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
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
2,500.0	11.42	145.84	2,462.0	-330.1	224.0	398.6	0.00	0.00	
2,600.0	11.42	145.84	2,560.0	-346.5	235.1	418.4	0.00	0.00	
2,700.0	11.42	145.84	2,658.1	-362.9	246.2	438.2	0.00	0.00	
2,800.0	11.42	145.84	2,756.1	-379.3	257.3	458.0	0.00	0.00	
2,900.0	11.42	145.84	2,854.1	-395.7	268.4	477.7	0.00	0.00	
3,000.0	11.42	145.84	2,952.1	-412.1	279.6	497.5	0.00	0.00	
3,100.0	11.42	145.84	3,050.1	-428.4	290.7	517.3	0.00	0.00	
3,200.0	11.42	145.84	3,148.2	-444.8	301.8	537.1	0.00	0.00	
3,300.0	11.42	145.84	3,246.2	-461.2	312.9	556.8	0.00	0.00	
3,400.0	11.42	145.84	3,344.2	-477.6	324.0	576.6	0.00	0.00	
3,500.0	11.42	145.84	3,442.2	-494.0	335.1	596.4	0.00	0.00	
3,600.0	11.42	145.84	3,540.2	-510.3	346.2	616.2	0.00	0.00	
3,700.0	11.42	145.84	3,638.3	-526.7	357.4	636.0	0.00	0.00	
3,728.3	11.42	145.84	3,666.0	-531.3	360.5	641.6	0.00	0.00	Wasatch
3,800.0	11.42	145.84	3,736.3	-543.1	368.5	655.7	0.00	0.00	
3,900.0	11.42	145.84	3,834.3	-559.5	379.6	675.5	0.00	0.00	
4,000.0	11.42	145.84	3,932.3	-575.9	390.7	695.3	0.00	0.00	
4,100.0	11.42	145.84	4,030.4	-592.2	401.8	715.1	0.00	0.00	
4,200.0	11.42	145.84	4,128.4	-608.6	412.9	734.8	0.00	0.00	
4,300.0	11.42	145.84	4,226.4	-625.0	424.0	754.6	0.00	0.00	
4,400.0	11.42	145.84	4,324.4	-641.4	435.2	774.4	0.00	0.00	
4,500.0	11.42	145.84	4,422.4	-657.8	446.3	794.2	0.00	0.00	
4,600.0	11.42	145.84	4,520.5	-674.1	457.4	814.0	0.00	0.00	
4,700.0	11.42	145.84	4,618.5	-690.5	468.5	833.7	0.00	0.00	
4,800.0	11.42	145.84	4,716.5	-706.9	479.6	853.5	0.00	0.00	
4,900.0	11.42	145.84	4,814.5	-723.3	490.7	873.3	0.00	0.00	
5,000.0	11.42	145.84	4,912.5	-739.7	501.8	893.1	0.00	0.00	
5,088.1	11.42	145.84	4,998.9	-754.1	511.6	910.5	0.00	0.00	Start Drop -2.00
5,100.0	11.18	145.84	5,010.6	-756.0	512.9	912.8	2.00	-2.00	
5,200.0	9.18	145.84	5,109.0	-770.6	522.9	930.5	2.00	-2.00	
5,300.0	7.18	145.84	5,208.0	-782.4	530.8	944.7	2.00	-2.00	
5,400.0	5.18	145.84	5,307.4	-791.3	536.9	955.4	2.00	-2.00	
5,500.0	3.18	145.84	5,407.1	-797.4	541.0	962.7	2.00	-2.00	
5,600.0	1.18	145.84	5,507.0	-800.5	543.1	966.5	2.00	-2.00	
5,659.0	0.00	0.00	5,566.0	-801.0	543.4	967.1	2.00	-2.00	EOD; Inc=0° - Fort Union - LR15D O16 595 TG
5,700.0	0.10	239.96	5,607.0	-801.0	543.4	967.1	0.25	0.25	
5,800.0	0.35	239.96	5,707.0	-801.2	543.1	967.1	0.25	0.25	
5,802.6	0.36	239.96	5,709.6	-801.2	543.1	967.1	0.25	0.25	
5,900.0	0.36	239.96	5,807.0	-801.5	542.5	967.1	0.00	0.00	
6,000.0	0.36	239.96	5,907.0	-801.8	542.0	967.1	0.00	0.00	
6,100.0	0.36	239.96	6,007.0	-802.2	541.4	967.1	0.00	0.00	
6,159.0	0.36	239.96	6,066.0	-802.3	541.1	967.0	0.00	0.00	Base Ft Union
6,200.0	0.36	239.96	6,107.0	-802.5	540.9	967.0	0.00	0.00	
6,300.0	0.36	239.96	6,207.0	-802.8	540.4	967.0	0.00	0.00	
6,400.0	0.36	239.96	6,307.0	-803.1	539.8	967.0	0.00	0.00	
6,500.0	0.36	239.96	6,407.0	-803.4	539.3	967.0	0.00	0.00	
6,600.0	0.36	239.96	6,507.0	-803.7	538.7	967.0	0.00	0.00	
6,700.0	0.36	239.96	6,607.0	-804.0	538.2	966.9	0.00	0.00	
6,800.0	0.36	239.96	6,707.0	-804.4	537.6	966.9	0.00	0.00	
6,900.0	0.36	239.96	6,807.0	-804.7	537.1	966.9	0.00	0.00	
7,000.0	0.36	239.96	6,907.0	-805.0	536.6	966.9	0.00	0.00	
7,100.0	0.36	239.96	7,007.0	-805.3	536.0	966.9	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well LR15D O16 595
Company:	Berry Petroleum Company (NAD 83)	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Project:	Garfield County	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site:	Long Ridge O16 595 Pad	North Reference:	True
Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
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
7,200.0	0.36	239.96	7,107.0	-805.6	535.5	966.9	0.00	0.00	
7,300.0	0.36	239.96	7,207.0	-805.9	534.9	966.8	0.00	0.00	
7,400.0	0.36	239.96	7,307.0	-806.2	534.4	966.8	0.00	0.00	
7,500.0	0.36	239.96	7,407.0	-806.6	533.9	966.8	0.00	0.00	
7,600.0	0.36	239.96	7,507.0	-806.9	533.3	966.8	0.00	0.00	
7,700.0	0.36	239.96	7,607.0	-807.2	532.8	966.8	0.00	0.00	
7,800.0	0.36	239.96	7,707.0	-807.5	532.2	966.7	0.00	0.00	
7,900.0	0.36	239.96	7,807.0	-807.8	531.7	966.7	0.00	0.00	
8,000.0	0.36	239.96	7,907.0	-808.1	531.1	966.7	0.00	0.00	
8,100.0	0.36	239.96	8,007.0	-808.4	530.6	966.7	0.00	0.00	
8,200.0	0.36	239.96	8,107.0	-808.7	530.1	966.7	0.00	0.00	
8,300.0	0.36	239.96	8,207.0	-809.1	529.5	966.6	0.00	0.00	
8,400.0	0.36	239.96	8,307.0	-809.4	529.0	966.6	0.00	0.00	
8,459.0	0.36	239.96	8,366.0	-809.6	528.6	966.6	0.00	0.00	Ohio Creek
8,500.0	0.36	239.96	8,407.0	-809.7	528.4	966.6	0.00	0.00	
8,600.0	0.36	239.96	8,507.0	-810.0	527.9	966.6	0.00	0.00	
8,700.0	0.36	239.96	8,607.0	-810.3	527.3	966.6	0.00	0.00	
8,759.0	0.36	239.96	8,666.0	-810.5	527.0	966.6	0.00	0.00	Williams Fork
8,800.0	0.36	239.96	8,707.0	-810.6	526.8	966.5	0.00	0.00	
8,900.0	0.36	239.96	8,807.0	-810.9	526.3	966.5	0.00	0.00	
9,000.0	0.36	239.96	8,907.0	-811.3	525.7	966.5	0.00	0.00	
9,059.0	0.36	239.96	8,966.0	-811.4	525.4	966.5	0.00	0.00	Approx TOG
9,100.0	0.36	239.96	9,007.0	-811.6	525.2	966.5	0.00	0.00	
9,200.0	0.36	239.96	9,107.0	-811.9	524.6	966.5	0.00	0.00	
9,300.0	0.36	239.96	9,207.0	-812.2	524.1	966.4	0.00	0.00	
9,400.0	0.36	239.96	9,307.0	-812.5	523.5	966.4	0.00	0.00	
9,500.0	0.36	239.96	9,407.0	-812.8	523.0	966.4	0.00	0.00	
9,600.0	0.36	239.96	9,507.0	-813.1	522.5	966.4	0.00	0.00	
9,700.0	0.36	239.96	9,607.0	-813.5	521.9	966.4	0.00	0.00	
9,800.0	0.36	239.96	9,707.0	-813.8	521.4	966.4	0.00	0.00	
9,900.0	0.36	239.96	9,807.0	-814.1	520.8	966.3	0.00	0.00	
10,000.0	0.36	239.96	9,907.0	-814.4	520.3	966.3	0.00	0.00	
10,100.0	0.36	239.96	10,006.9	-814.7	519.7	966.3	0.00	0.00	
10,200.0	0.36	239.96	10,106.9	-815.0	519.2	966.3	0.00	0.00	
10,300.0	0.36	239.96	10,206.9	-815.3	518.7	966.3	0.00	0.00	
10,400.0	0.36	239.96	10,306.9	-815.7	518.1	966.2	0.00	0.00	
10,500.0	0.36	239.96	10,406.9	-816.0	517.6	966.2	0.00	0.00	
10,600.0	0.36	239.96	10,506.9	-816.3	517.0	966.2	0.00	0.00	
10,700.0	0.36	239.96	10,606.9	-816.6	516.5	966.2	0.00	0.00	
10,800.0	0.36	239.96	10,706.9	-816.9	515.9	966.2	0.00	0.00	
10,900.0	0.36	239.96	10,806.9	-817.2	515.4	966.1	0.00	0.00	
11,000.0	0.36	239.96	10,906.9	-817.5	514.9	966.1	0.00	0.00	
11,100.0	0.36	239.96	11,006.9	-817.8	514.3	966.1	0.00	0.00	
11,200.0	0.36	239.96	11,106.9	-818.2	513.8	966.1	0.00	0.00	
11,300.0	0.36	239.96	11,206.9	-818.5	513.2	966.1	0.00	0.00	
11,400.0	0.36	239.96	11,306.9	-818.8	512.7	966.0	0.00	0.00	
11,500.0	0.36	239.96	11,406.9	-819.1	512.2	966.0	0.00	0.00	
11,600.0	0.36	239.96	11,506.9	-819.4	511.6	966.0	0.00	0.00	
11,609.1	0.36	239.96	11,516.0	-819.4	511.6	966.0	0.00	0.00	Cameo
11,700.0	0.36	239.96	11,606.9	-819.7	511.1	966.0	0.00	0.00	
11,800.0	0.36	239.96	11,706.9	-820.0	510.5	966.0	0.00	0.00	
11,900.0	0.36	239.96	11,806.9	-820.4	510.0	966.0	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well LR15D O16 595
Company:	Berry Petroleum Company (NAD 83)	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Project:	Garfield County	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site:	Long Ridge O16 595 Pad	North Reference:	True
Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
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
11,959.1	0.36	239.96	11,866.0	-820.5	509.7	965.9	0.00	0.00	Rollins SS
12,000.0	0.36	239.96	11,906.9	-820.7	509.4	965.9	0.00	0.00	
12,100.0	0.36	239.96	12,006.9	-821.0	508.9	965.9	0.00	0.00	
12,109.1	0.36	239.96	12,016.0	-821.0	508.8	965.9	0.00	0.00	LR15D O16 595 BHL

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
LR15D O16 595 TGT - hit/miss target - Shape	0.00	0.00	5,566.0	-801.0	543.4	1,656,424.48	2,279,894.96	39.607855	-108.056165
LR15D O16 595 BHL - plan hits target center - Rectangle (sides W50.0 H100.0 D0.0)	0.00	0.00	12,016.0	-821.0	508.8	1,656,405.45	2,279,859.80	39.607800	-108.056288

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,728.3	3,666.0	Wasatch		0.00		
5,659.0	5,566.0	Fort Union		0.00		
6,159.0	6,066.0	Base Ft Union		0.00		
8,459.0	8,366.0	Ohio Creek		0.00		
8,759.0	8,666.0	Williams Fork		0.00		
9,059.0	8,966.0	Approx TOG		0.00		
11,609.1	11,516.0	Cameo		0.00		
11,959.1	11,866.0	Rollins SS		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.0	200.0	0.0	0.0	KOP @ 200'	
770.8	767.1	-46.9	31.8	EOB; Inc=11.42°	
5,088.1	4,998.9	-754.1	511.6	Start Drop -2.00	
5,659.0	5,566.0	-801.0	543.4	EOD; Inc=0°	
12,109.1	12,016.0	-821.0	508.8	TD at 12109.1	

Berry Petroleum Company (NAD 83)

**Garfield County
Long Ridge O16 595 Pad
LR15D O16 595
DD
Plan #1**

Anticollision Report

28 September, 2010

Cathedral Energy Services

Anticollision Report

Company:	Berry Petroleum Company (NAD 83)	Local Co-ordinate Reference:	Well LR15D O16 595
Project:	Garfield County	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Reference Site:	Long Ridge O16 595 Pad	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US 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:	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	9/28/2010		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,109.1	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						
Long Ridge O16 595 Pad						
LR02A O16 595 - DD - Plan #1	200.0	200.0	14.7	14.1	22.828	CC
LR02A O16 595 - DD - Plan #1	300.0	299.6	15.0	14.0	15.050	ES
LR02A O16 595 - DD - Plan #1	2,300.0	2,295.5	99.9	85.2	6.788	SF
LR14A O16 595 - DD - Plan #1	200.0	200.0	44.6	43.9	69.013	CC, ES
LR14A O16 595 - DD - Plan #1	600.0	591.3	63.4	61.2	28.896	SF
LR15A O16 595 - DD - Plan #1	200.0	200.0	15.7	15.1	24.352	CC, ES
LR15A O16 595 - DD - Plan #1	1,600.0	1,604.4	98.3	91.3	13.959	SF
LR15C O16 595 - DD - Plan #1	200.0	200.0	29.5	28.8	45.655	CC, ES
LR15C O16 595 - DD - Plan #1	1,300.0	1,291.3	91.4	84.2	12.763	SF
LR16A O16 595 - DD - Plan #1	200.0	200.0	43.2	42.6	66.896	CC, ES
LR16A O16 595 - DD - Plan #1	800.0	795.3	88.5	84.9	24.647	SF
LR16B O16 595 - DD - Plan #1	200.0	200.0	57.5	56.8	89.030	CC, ES
LR16B O16 595 - DD - Plan #1	700.0	695.0	93.4	90.5	32.378	SF
LR16C O16 595 - DD - Plan #1	200.0	200.0	29.1	28.5	45.126	CC, ES
LR16C O16 595 - DD - Plan #1	1,600.0	1,599.2	99.6	89.6	9.976	SF

Cathedral Energy Services

Anticollision Report

Company:	Berry Petroleum Company (NAD 83)	Local Co-ordinate Reference:	Well LR15D O16 595
Project:	Garfield County	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Reference Site:	Long Ridge O16 595 Pad	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Long Ridge O16 595 Pad - LR02A O16 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	-159.88	-13.8	-5.1	14.7					
100.0	100.0	100.0	100.0	0.1	0.1	-159.88	-13.8	-5.1	14.7	14.4	0.30	49.684		
200.0	200.0	200.0	200.0	0.3	0.3	-159.88	-13.8	-5.1	14.7	14.1	0.65	22.828 CC		
300.0	300.0	299.6	299.6	0.5	0.5	55.27	-15.5	-4.4	15.0	14.0	1.00	15.050 ES		
400.0	399.8	399.2	399.1	0.7	0.7	58.03	-20.3	-2.5	15.9	14.5	1.37	11.586		
500.0	499.5	498.8	498.3	0.9	0.9	61.99	-28.3	0.6	17.4	15.6	1.79	9.716		
600.0	598.7	598.4	597.1	1.2	1.2	66.46	-39.6	5.1	19.7	17.4	2.29	8.584		
700.0	697.5	697.9	695.4	1.5	1.5	70.85	-54.0	10.7	22.7	19.8	2.89	7.846		
770.8	767.1	768.4	764.7	1.8	1.8	73.72	-66.1	15.5	25.3	21.9	3.39	7.474		
800.0	795.7	797.4	793.1	1.9	1.9	74.53	-71.6	17.7	26.6	23.0	3.60	7.388		
900.0	893.7	897.2	890.5	2.2	2.3	74.76	-91.5	25.5	31.4	27.1	4.31	7.294		
1,000.0	991.7	997.1	988.1	2.6	2.6	74.79	-111.5	33.4	36.3	31.3	5.03	7.219		
1,100.0	1,089.7	1,096.9	1,085.6	3.0	3.1	74.80	-131.5	41.3	41.2	35.4	5.76	7.153		
1,200.0	1,187.7	1,196.8	1,183.1	3.4	3.5	74.81	-151.6	49.1	46.1	39.6	6.50	7.095		
1,300.0	1,285.8	1,296.7	1,280.7	3.7	3.9	74.82	-171.6	57.0	51.0	43.8	7.24	7.046		
1,400.0	1,383.8	1,396.6	1,378.2	4.1	4.3	74.83	-191.6	64.9	55.9	47.9	7.98	7.003		
1,500.0	1,481.8	1,496.5	1,475.7	4.5	4.7	74.84	-211.6	72.8	60.8	52.0	8.72	6.966		
1,600.0	1,579.8	1,596.3	1,573.3	4.9	5.1	74.85	-231.7	80.7	65.7	56.2	9.47	6.933		
1,700.0	1,677.8	1,696.2	1,670.8	5.3	5.5	74.85	-251.7	88.5	70.6	60.3	10.22	6.905		
1,800.0	1,775.9	1,796.1	1,768.3	5.7	5.9	74.86	-271.7	96.4	75.5	64.5	10.97	6.880		
1,900.0	1,873.9	1,896.0	1,865.9	6.1	6.3	74.86	-291.7	104.3	80.3	68.6	11.72	6.857		
2,000.0	1,971.9	1,995.9	1,963.4	6.4	6.7	74.86	-311.7	112.2	85.2	72.8	12.47	6.837		
2,100.0	2,069.9	2,095.7	2,061.0	6.8	7.2	74.87	-331.8	120.1	90.1	76.9	13.22	6.819		
2,200.0	2,168.0	2,195.6	2,158.5	7.2	7.6	74.87	-351.8	128.0	95.0	81.1	13.97	6.803		
2,300.0	2,266.0	2,295.5	2,256.0	7.6	8.0	74.87	-371.8	135.8	99.9	85.2	14.72	6.788 SF		

Cathedral Energy Services

Anticollision Report

Company:	Berry Petroleum Company (NAD 83)	Local Co-ordinate Reference:	Well LR15D O16 595
Project:	Garfield County	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Reference Site:	Long Ridge O16 595 Pad	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Long Ridge O16 595 Pad - LR14A O16 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	-160.04	-41.9	-15.2	44.6					
100.0	100.0	100.0	100.0	0.1	0.1	-160.04	-41.9	-15.2	44.6	44.3	0.30	150.204		
200.0	200.0	200.0	200.0	0.3	0.3	-160.04	-41.9	-15.2	44.6	43.9	0.65	69.013 CC, ES		
300.0	300.0	298.8	298.7	0.5	0.5	57.29	-42.7	-16.7	44.9	43.9	1.00	45.090		
400.0	399.8	397.1	397.0	0.7	0.7	66.31	-45.3	-21.1	46.8	45.5	1.36	34.326		
500.0	499.5	494.8	494.2	0.9	0.9	79.13	-49.5	-28.3	52.3	50.6	1.76	29.695		
600.0	598.7	591.3	590.1	1.2	1.2	92.22	-55.3	-38.3	63.4	61.2	2.19	28.896 SF		
700.0	697.5	686.4	684.0	1.5	1.5	102.92	-62.5	-50.9	80.9	78.3	2.67	30.348		
770.8	767.1	752.6	749.2	1.8	1.7	108.69	-68.5	-61.2	97.2	94.1	3.03	32.094		

Cathedral Energy Services

Anticollision Report

Company:	Berry Petroleum Company (NAD 83)	Local Co-ordinate Reference:	Well LR15D O16 595
Project:	Garfield County	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Reference Site:	Long Ridge O16 595 Pad	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Long Ridge O16 595 Pad - LR15A O16 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		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	0.0	0.0	0.0	0.0	22.10	14.6	5.9	15.7					
100.0	100.0	100.0	100.0	0.1	0.1	22.10	14.6	5.9	15.7	15.4	0.30	53.001		
200.0	200.0	200.0	200.0	0.3	0.3	22.10	14.6	5.9	15.7	15.1	0.65	24.352 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	-128.69	14.6	5.9	16.8	15.8	1.00	16.810		
400.0	399.8	399.8	399.8	0.7	0.7	-140.17	14.6	5.9	20.4	19.1	1.35	15.112		
500.0	499.5	499.5	499.5	0.9	0.8	-151.71	14.6	5.9	27.7	26.0	1.71	16.242		
600.0	598.7	599.8	599.7	1.2	1.0	-158.71	13.4	7.2	37.5	35.4	2.06	18.216		
700.0	697.5	700.4	700.3	1.5	1.2	-161.75	10.0	11.3	48.0	45.6	2.42	19.858		
770.8	767.1	771.9	771.5	1.8	1.4	-162.65	6.2	15.7	55.7	53.0	2.68	20.797		
800.0	795.7	801.4	800.9	1.9	1.4	-162.80	4.3	18.0	58.8	56.0	2.79	21.080		
900.0	893.7	902.9	901.6	2.2	1.7	-162.17	-3.8	27.5	67.4	64.2	3.19	21.139		
1,000.0	991.7	1,004.8	1,002.2	2.6	2.0	-160.11	-14.2	39.7	73.2	69.5	3.64	20.124		
1,100.0	1,089.7	1,105.1	1,100.8	3.0	2.3	-157.30	-26.0	53.6	77.1	72.9	4.13	18.655		
1,200.0	1,187.7	1,205.0	1,199.0	3.4	2.6	-154.74	-37.8	67.4	81.1	76.4	4.66	17.394		
1,300.0	1,285.8	1,304.8	1,297.2	3.7	2.9	-152.42	-49.7	81.3	85.2	80.0	5.22	16.321		
1,400.0	1,383.8	1,404.7	1,395.4	4.1	3.3	-150.32	-61.5	95.2	89.5	83.7	5.81	15.407		
1,500.0	1,481.8	1,504.5	1,493.5	4.5	3.6	-148.42	-73.3	109.1	93.9	87.4	6.42	14.627		
1,600.0	1,579.8	1,604.4	1,591.7	4.9	4.0	-146.68	-85.1	123.0	98.3	91.3	7.04	13.959 SF		

Cathedral Energy Services

Anticollision Report

Company:	Berry Petroleum Company (NAD 83)	Local Co-ordinate Reference:	Well LR15D O16 595
Project:	Garfield County	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Reference Site:	Long Ridge O16 595 Pad	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Long Ridge O16 595 Pad - LR15C O16 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							
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	-159.88	-27.7	-10.1	29.5				
100.0	100.0	100.0	100.0	0.1	0.1	-159.88	-27.7	-10.1	29.5	29.2	0.30	99.367	
200.0	200.0	200.0	200.0	0.3	0.3	-159.88	-27.7	-10.1	29.5	28.8	0.65	45.655 CC, ES	
300.0	300.0	299.1	299.1	0.5	0.5	55.18	-29.4	-9.8	29.9	28.9	1.00	30.014	
400.0	399.8	398.3	398.1	0.7	0.7	57.72	-34.4	-8.6	31.3	29.9	1.37	22.887	
500.0	499.5	497.3	496.8	0.9	0.9	61.49	-42.7	-6.7	33.7	31.9	1.78	18.930	
600.0	598.7	596.3	595.1	1.2	1.2	65.90	-54.4	-4.1	37.2	34.9	2.26	16.457	
700.0	697.5	695.2	692.8	1.5	1.5	70.43	-69.3	-0.7	42.0	39.2	2.84	14.791	
770.8	767.1	765.2	761.6	1.8	1.7	73.48	-81.9	2.1	46.2	42.9	3.32	13.928	
800.0	795.7	794.0	789.8	1.9	1.8	74.55	-87.5	3.4	48.2	44.7	3.52	13.686	
900.0	893.7	892.8	886.1	2.2	2.3	75.78	-108.9	8.2	56.3	52.1	4.23	13.294	
1,000.0	991.7	992.4	983.0	2.6	2.7	75.87	-131.6	13.4	65.1	60.1	4.95	13.132	
1,100.0	1,089.7	1,092.1	1,079.8	3.0	3.1	75.94	-154.3	18.5	73.8	68.1	5.68	12.990	
1,200.0	1,187.7	1,191.7	1,176.7	3.4	3.5	76.00	-177.0	23.6	82.6	76.2	6.42	12.868	
1,300.0	1,285.8	1,291.3	1,273.6	3.7	4.0	76.04	-199.7	28.7	91.4	84.2	7.16	12.763 SF	

Cathedral Energy Services

Anticollision Report

Company:	Berry Petroleum Company (NAD 83)	Local Co-ordinate Reference:	Well LR15D O16 595
Project:	Garfield County	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Reference Site:	Long Ridge O16 595 Pad	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													Long Ridge O16 595 Pad - LR16A O16 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										
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty	Separation	Warning				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	Axis	Factor					
0.0	0.0	0.0	0.0	0.0	0.0	20.62	40.4	15.2	43.2								
100.0	100.0	100.0	100.0	0.1	0.1	20.62	40.4	15.2	43.2	42.9	0.30	145.598					
200.0	200.0	200.0	200.0	0.3	0.3	20.62	40.4	15.2	43.2	42.6	0.65	66.896	CC, ES				
300.0	300.0	299.8	299.8	0.5	0.5	-124.82	40.1	16.9	44.5	43.4	1.00	44.430					
400.0	399.8	399.4	399.3	0.7	0.7	-123.73	38.9	22.0	48.2	46.8	1.38	34.859					
500.0	499.5	498.9	498.4	0.9	0.9	-122.24	37.0	30.4	54.5	52.7	1.82	29.997					
600.0	598.7	598.1	596.8	1.2	1.2	-120.63	34.4	42.2	63.3	61.0	2.32	27.276					
700.0	697.5	696.9	694.4	1.5	1.5	-119.10	31.1	57.2	74.7	71.8	2.91	25.650					
770.8	767.1	766.6	762.9	1.8	1.8	-118.11	28.2	69.7	84.3	80.9	3.39	24.855					
800.0	795.7	795.3	791.0	1.9	1.9	-117.72	27.0	75.3	88.5	84.9	3.59	24.647	SF				

Cathedral Energy Services

Anticollision Report

Company:	Berry Petroleum Company (NAD 83)	Local Co-ordinate Reference:	Well LR15D O16 595
Project:	Garfield County	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Reference Site:	Long Ridge O16 595 Pad	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Long Ridge O16 595 Pad - LR16B O16 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	20.36	53.9	20.0	57.5					
100.0	100.0	100.0	100.0	0.1	0.1	20.36	53.9	20.0	57.5	57.2	0.30	193.771		
200.0	200.0	200.0	200.0	0.3	0.3	20.36	53.9	20.0	57.5	56.8	0.65	89.030 CC, ES		
300.0	300.0	299.5	299.5	0.5	0.5	-125.21	53.7	21.7	58.9	57.9	1.00	58.940		
400.0	399.8	398.9	398.7	0.7	0.7	-124.44	53.1	26.9	63.2	61.9	1.38	45.802		
500.0	499.5	498.0	497.4	0.9	0.9	-123.37	52.2	35.4	70.4	68.6	1.81	38.901		
600.0	598.7	596.7	595.5	1.2	1.2	-122.17	50.9	47.3	80.5	78.2	2.31	34.884		
700.0	697.5	695.0	692.5	1.5	1.5	-120.98	49.2	62.4	93.4	90.5	2.89	32.378 SF		

Cathedral Energy Services

Anticollision Report

Company:	Berry Petroleum Company (NAD 83)	Local Co-ordinate Reference:	Well LR15D O16 595
Project:	Garfield County	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Reference Site:	Long Ridge O16 595 Pad	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Long Ridge O16 595 Pad - LR16C O16 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		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	0.0	0.0	0.0	0.0	20.37	27.3	10.1	29.1					
100.0	100.0	100.0	100.0	0.1	0.1	20.37	27.3	10.1	29.1	28.8	0.30	98.215		
200.0	200.0	200.0	200.0	0.3	0.3	20.37	27.3	10.1	29.1	28.5	0.65	45.126 CC, ES		
300.0	300.0	300.3	300.3	0.5	0.5	-124.98	26.3	11.5	29.6	28.6	1.00	29.604		
400.0	399.8	400.6	400.4	0.7	0.7	-123.59	23.0	15.7	31.1	29.8	1.38	22.498		
500.0	499.5	500.8	500.3	0.9	0.9	-121.54	17.7	22.7	33.7	31.9	1.82	18.501		
600.0	598.7	601.0	599.7	1.2	1.2	-119.15	10.3	32.4	37.3	35.0	2.34	15.974		
700.0	697.5	701.1	698.6	1.5	1.5	-116.68	0.7	44.8	42.0	39.1	2.95	14.259		
770.8	767.1	772.0	768.2	1.8	1.8	-114.99	-7.3	55.3	46.1	42.6	3.45	13.353		
800.0	795.7	801.1	796.7	1.9	1.9	-114.19	-10.9	60.0	47.8	44.2	3.66	13.060		
900.0	893.7	900.9	894.1	2.2	2.3	-110.26	-24.1	77.3	53.8	49.4	4.43	12.136		
1,000.0	991.7	1,000.7	991.4	2.6	2.7	-106.93	-37.5	94.7	60.0	54.8	5.22	11.491		
1,100.0	1,089.7	1,100.4	1,088.7	3.0	3.1	-104.23	-50.9	112.1	66.4	60.4	6.02	11.034		
1,200.0	1,187.7	1,200.2	1,186.1	3.4	3.5	-102.01	-64.2	129.5	72.9	66.1	6.81	10.698		
1,300.0	1,285.8	1,299.9	1,283.4	3.7	3.9	-100.15	-77.6	147.0	79.5	71.9	7.61	10.446		
1,400.0	1,383.8	1,399.7	1,380.7	4.1	4.4	-98.58	-90.9	164.4	86.1	77.7	8.40	10.251		
1,500.0	1,481.8	1,499.5	1,478.0	4.5	4.8	-97.24	-104.3	181.8	92.8	83.7	9.19	10.098		
1,600.0	1,579.8	1,599.2	1,575.3	4.9	5.2	-96.07	-117.6	199.2	99.6	89.6	9.98	9.976 SF		

Cathedral Energy Services

Anticollision Report

Company:	Berry Petroleum Company (NAD 83)	Local Co-ordinate Reference:	Well LR15D O16 595
Project:	Garfield County	TVD Reference:	KBE @ 8318.0ft (Patterson 302)
Reference Site:	Long Ridge O16 595 Pad	MD Reference:	KBE @ 8318.0ft (Patterson 302)
Site Error:	0.0ft	North Reference:	True
Reference Well:	LR15D O16 595	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KBE @ 8318.0ft (Patterson 302)
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °

Coordinates are relative to: LR15D O16 595
 Coordinate System is US State Plane 1983, Colorado Central Zone
 Grid Convergence at Surface is: -1.61°

