

Cirque Resources LP

Well Name: **Spyglass East 25-24-16-1CH**

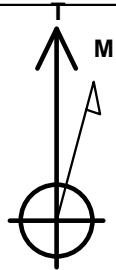
Surface Location: Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 6160.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1597865.90	3215844.42	40.971890	-104.718400	
Original Well Elev WELL @ 6185.0ft (Original Well Elev)						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
330' Setback BHL	1.0	9975.9	-1080.1	Polygon
Sectionline	1.0	-235.0	-1118.7	Polygon
SHL 235'FSL & 1070'FEL, Sec.25	1.0	0.0	0.0	Point
BHL 330'FNL & 660'FEL, Sec.24	9127.0	9975.9	491.3	Point
Landing Pt. 1024'FSL & 660'FEL, Sec.25	9127.0	791.1	417.0	Point



Azimuths to True North
Magnetic North: 8.46°

Magnetic Field
Strength: 53089.2snT
Dip Angle: 67.41°
Date: 8/11/2014
Model: IGRF2010

Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W

Spyglass East 25-24-16-1CH

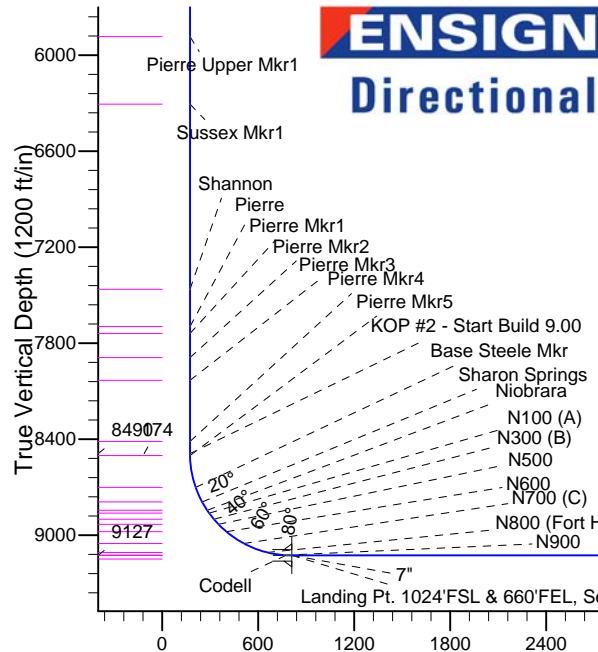
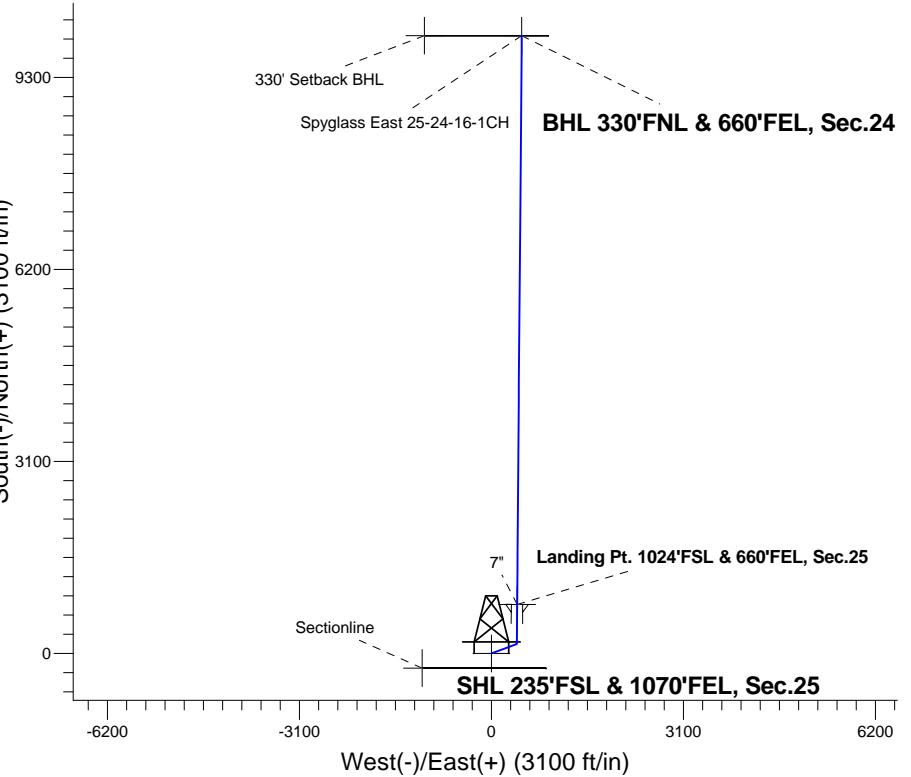
Plan #1 (8-11-14)

10:00, August 11 2014

ANNOTATIONS

TVD	MD	Annotation
1200.0	1200.0	KOP - Start Build 2.00
4636.1	4662.2	Start Drop -2.00
8490.4	8517.4	KOP #2 - Start Build 9.00
9127.0	18703.1	TD at 18703.1

South(-)/North(+) (3100 ft/in)



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	1564.9	7.30	69.50	1563.9	8.1	21.7	2.00	69.50	9.2	
4	4662.2	7.30	69.50	4636.1	145.9	390.3	0.00	0.00	164.9	
5	5027.1	0.00	0.00	5000.0	154.0	412.0	2.00	180.00	174.1	
6	8517.4	0.00	0.00	8490.4	154.0	412.0	0.00	0.00	174.1	
7	9517.4	90.00	0.45	9127.0	790.6	417.0	9.00	0.45	810.2	
8	9517.9	90.00	0.45	9127.0	791.1	417.0	0.00	0.00	810.7	Landing Pt. 1024'FSL & 660'FEL, Sec.25
9	9519.5	90.00	0.46	9127.0	792.7	417.0	1.00	90.00	812.3	
10	18703.1	90.00	0.46	9127.0	9975.9	491.3	0.00	0.00	9988.0	BHL 330'FNL & 660'FEL, Sec.24

BHL 330'FNL & 660'FEL, Sec.24

Vertical Section at 2.82° (1200 ft/in)



Cirque Resources LP

SEC.25-T12N-R66W

Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W

Spyglass East 25-24-16-1CH

Wellbore #1

Plan: Plan #1 (8-11-14)

Standard Planning Report

11 August, 2014

Database:	Landmark	Local Co-ordinate Reference:	Well Spyglass East 25-24-16-1CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 6185.0ft (Original Well Elev)
Project:	SEC.25-T12N-R66W	MD Reference:	WELL @ 6185.0ft (Original Well Elev)
Site:	Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W	North Reference:	True
Well:	Spyglass East 25-24-16-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-11-14)		

Project	SEC.25-T12N-R66W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W		
Site Position:		Northing:	1,597,865.90 ft
From:	Lat/Long	Easting:	3,215,844.42 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.971890
		Longitude:	-104.718400
		Grid Convergence:	0.51 °

Well	Spyglass East 25-24-16-1CH		
Well Position	+N/-S	0.0 ft	Northing: 1,597,865.90 ft
	+E/-W	0.0 ft	Easting: 3,215,844.42 ft
Position Uncertainty		0.0 ft	Wellhead Elevation: ft
			Latitude: 40.971890
			Longitude: -104.718400
			Ground Level: 6,160.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/11/2014	8.46	67.41	53,089

Design	Plan #1 (8-11-14)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	2.82

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	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,564.9	7.30	69.50	1,563.9	8.1	21.7	2.00	2.00	0.00	69.50	
4,662.2	7.30	69.50	4,636.1	145.9	390.3	0.00	0.00	0.00	0.00	
5,027.1	0.00	0.00	5,000.0	154.0	412.0	2.00	-2.00	0.00	180.00	
8,517.4	0.00	0.00	8,490.4	154.0	412.0	0.00	0.00	0.00	0.00	
9,517.4	90.00	0.45	9,127.0	790.6	417.0	9.00	9.00	0.00	0.45	
9,517.9	90.00	0.45	9,127.0	791.1	417.0	0.00	0.00	0.00	0.00	Landing Pt. 1024'F
9,519.5	90.00	0.46	9,127.0	792.7	417.0	1.00	0.00	1.00	90.00	
18,703.1	90.00	0.46	9,127.0	9,975.9	491.3	0.00	0.00	0.00	0.00	BHL 330'FNL & 66C

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Site:	Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W	North Reference:	True
Well:	Spyglass East 25-24-16-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-11-14)		

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)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 2.00									
1,300.0	2.00	69.50	1,300.0	0.6	1.6	0.7	2.00	2.00	0.00
1,400.0	4.00	69.50	1,399.8	2.4	6.5	2.8	2.00	2.00	0.00
1,500.0	6.00	69.50	1,499.5	5.5	14.7	6.2	2.00	2.00	0.00
1,564.9	7.30	69.50	1,563.9	8.1	21.7	9.2	2.00	2.00	0.00
1,600.0	7.30	69.50	1,598.7	9.7	25.9	10.9	0.00	0.00	0.00
1,700.0	7.30	69.50	1,697.9	14.1	37.8	16.0	0.00	0.00	0.00
1,800.0	7.30	69.50	1,797.1	18.6	49.7	21.0	0.00	0.00	0.00
1,900.0	7.30	69.50	1,896.3	23.0	61.6	26.0	0.00	0.00	0.00
2,000.0	7.30	69.50	1,995.5	27.5	73.5	31.1	0.00	0.00	0.00
2,061.0	7.30	69.50	2,056.0	30.2	80.8	34.1	0.00	0.00	0.00
Fox Hills									
2,100.0	7.30	69.50	2,094.7	31.9	85.4	36.1	0.00	0.00	0.00
2,200.0	7.30	69.50	2,193.9	36.4	97.3	41.1	0.00	0.00	0.00
2,300.0	7.30	69.50	2,293.1	40.8	109.2	46.1	0.00	0.00	0.00
2,400.0	7.30	69.50	2,392.2	45.3	121.1	51.2	0.00	0.00	0.00
2,500.0	7.30	69.50	2,491.4	49.7	133.0	56.2	0.00	0.00	0.00
2,600.0	7.30	69.50	2,590.6	54.2	144.9	61.2	0.00	0.00	0.00
2,700.0	7.30	69.50	2,689.8	58.6	156.8	66.3	0.00	0.00	0.00
2,800.0	7.30	69.50	2,789.0	63.1	168.7	71.3	0.00	0.00	0.00
2,900.0	7.30	69.50	2,888.2	67.5	180.6	76.3	0.00	0.00	0.00
2,926.0	7.30	69.50	2,914.0	68.7	183.7	77.6	0.00	0.00	0.00
Fox Hills Mkr 1									
3,000.0	7.30	69.50	2,987.4	72.0	192.5	81.3	0.00	0.00	0.00
3,100.0	7.30	69.50	3,086.6	76.4	204.4	86.4	0.00	0.00	0.00
3,200.0	7.30	69.50	3,185.8	80.8	216.3	91.4	0.00	0.00	0.00
3,300.0	7.30	69.50	3,285.0	85.3	228.2	96.4	0.00	0.00	0.00
3,400.0	7.30	69.50	3,384.1	89.7	240.1	101.4	0.00	0.00	0.00
3,500.0	7.30	69.50	3,483.3	94.2	252.0	106.5	0.00	0.00	0.00
3,600.0	7.30	69.50	3,582.5	98.6	263.9	111.5	0.00	0.00	0.00
3,700.0	7.30	69.50	3,681.7	103.1	275.8	116.5	0.00	0.00	0.00
3,800.0	7.30	69.50	3,780.9	107.5	287.7	121.6	0.00	0.00	0.00
3,900.0	7.30	69.50	3,880.1	112.0	299.6	126.6	0.00	0.00	0.00
4,000.0	7.30	69.50	3,979.3	116.4	311.5	131.6	0.00	0.00	0.00
4,100.0	7.30	69.50	4,078.5	120.9	323.4	136.6	0.00	0.00	0.00
4,200.0	7.30	69.50	4,177.7	125.3	335.3	141.7	0.00	0.00	0.00
4,300.0	7.30	69.50	4,276.9	129.8	347.2	146.7	0.00	0.00	0.00
4,400.0	7.30	69.50	4,376.0	134.2	359.1	151.7	0.00	0.00	0.00
4,500.0	7.30	69.50	4,475.2	138.7	371.0	156.7	0.00	0.00	0.00
4,549.2	7.30	69.50	4,524.0	140.8	376.8	159.2	0.00	0.00	0.00

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Site:	Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W	North Reference:	True
Well:	Spyglass East 25-24-16-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-11-14)		

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)	Turn Rate (°/100ft)
Teapot									
4,600.0	7.30	69.50	4,574.4	143.1	382.9	161.8	0.00	0.00	0.00
4,662.2	7.30	69.50	4,636.1	145.9	390.3	164.9	0.00	0.00	0.00
Start Drop -2.00									
4,700.0	6.54	69.50	4,673.6	147.5	394.5	166.7	2.00	-2.00	0.00
4,800.0	4.54	69.50	4,773.2	150.9	403.6	170.5	2.00	-2.00	0.00
4,900.0	2.54	69.50	4,873.0	153.0	409.4	173.0	2.00	-2.00	0.00
5,000.0	0.54	69.50	4,972.9	154.0	411.9	174.0	2.00	-2.00	0.00
5,027.1	0.00	0.00	5,000.0	154.0	412.0	174.1	2.00	-2.00	0.00
5,100.0	0.00	0.00	5,072.9	154.0	412.0	174.1	0.00	0.00	0.00
5,200.0	0.00	0.00	5,172.9	154.0	412.0	174.1	0.00	0.00	0.00
5,300.0	0.00	0.00	5,272.9	154.0	412.0	174.1	0.00	0.00	0.00
5,400.0	0.00	0.00	5,372.9	154.0	412.0	174.1	0.00	0.00	0.00
5,500.0	0.00	0.00	5,472.9	154.0	412.0	174.1	0.00	0.00	0.00
5,506.1	0.00	0.00	5,479.0	154.0	412.0	174.1	0.00	0.00	0.00
Parkman									
5,600.0	0.00	0.00	5,572.9	154.0	412.0	174.1	0.00	0.00	0.00
5,644.1	0.00	0.00	5,617.0	154.0	412.0	174.1	0.00	0.00	0.00
Sussex									
5,700.0	0.00	0.00	5,672.9	154.0	412.0	174.1	0.00	0.00	0.00
5,800.0	0.00	0.00	5,772.9	154.0	412.0	174.1	0.00	0.00	0.00
5,900.0	0.00	0.00	5,872.9	154.0	412.0	174.1	0.00	0.00	0.00
5,911.1	0.00	0.00	5,884.0	154.0	412.0	174.1	0.00	0.00	0.00
Pierre Upper Mkr1									
6,000.0	0.00	0.00	5,972.9	154.0	412.0	174.1	0.00	0.00	0.00
6,100.0	0.00	0.00	6,072.9	154.0	412.0	174.1	0.00	0.00	0.00
6,200.0	0.00	0.00	6,172.9	154.0	412.0	174.1	0.00	0.00	0.00
6,300.0	0.00	0.00	6,272.9	154.0	412.0	174.1	0.00	0.00	0.00
6,333.1	0.00	0.00	6,306.0	154.0	412.0	174.1	0.00	0.00	0.00
Sussex Mkr1									
6,400.0	0.00	0.00	6,372.9	154.0	412.0	174.1	0.00	0.00	0.00
6,500.0	0.00	0.00	6,472.9	154.0	412.0	174.1	0.00	0.00	0.00
6,600.0	0.00	0.00	6,572.9	154.0	412.0	174.1	0.00	0.00	0.00
6,700.0	0.00	0.00	6,672.9	154.0	412.0	174.1	0.00	0.00	0.00
6,800.0	0.00	0.00	6,772.9	154.0	412.0	174.1	0.00	0.00	0.00
6,900.0	0.00	0.00	6,872.9	154.0	412.0	174.1	0.00	0.00	0.00
7,000.0	0.00	0.00	6,972.9	154.0	412.0	174.1	0.00	0.00	0.00
7,100.0	0.00	0.00	7,072.9	154.0	412.0	174.1	0.00	0.00	0.00
7,200.0	0.00	0.00	7,172.9	154.0	412.0	174.1	0.00	0.00	0.00
7,300.0	0.00	0.00	7,272.9	154.0	412.0	174.1	0.00	0.00	0.00
7,400.0	0.00	0.00	7,372.9	154.0	412.0	174.1	0.00	0.00	0.00
7,490.1	0.00	0.00	7,463.0	154.0	412.0	174.1	0.00	0.00	0.00
Shannon									
7,500.0	0.00	0.00	7,472.9	154.0	412.0	174.1	0.00	0.00	0.00
7,600.0	0.00	0.00	7,572.9	154.0	412.0	174.1	0.00	0.00	0.00
7,700.0	0.00	0.00	7,672.9	154.0	412.0	174.1	0.00	0.00	0.00
7,723.1	0.00	0.00	7,696.0	154.0	412.0	174.1	0.00	0.00	0.00
Pierre									
7,766.1	0.00	0.00	7,739.0	154.0	412.0	174.1	0.00	0.00	0.00
Pierre Mkr1									
7,800.0	0.00	0.00	7,772.9	154.0	412.0	174.1	0.00	0.00	0.00
7,900.0	0.00	0.00	7,872.9	154.0	412.0	174.1	0.00	0.00	0.00

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Site:	Spyglass East 25-24-16-1CH Pad	North Reference:	True
Well:	Sec.25-T12N-R66W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Spyglass East 25-24-16-1CH		
Design:	Wellbore #1		
	Plan #1 (8-11-14)		

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)	Turn Rate (°/100ft)
7,918.1	0.00	0.00	7,891.0	154.0	412.0	174.1	0.00	0.00	0.00
Pierre Mkr2									
8,000.0	0.00	0.00	7,972.9	154.0	412.0	174.1	0.00	0.00	0.00
8,059.1	0.00	0.00	8,032.0	154.0	412.0	174.1	0.00	0.00	0.00
Pierre Mkr3									
8,100.0	0.00	0.00	8,072.9	154.0	412.0	174.1	0.00	0.00	0.00
8,200.0	0.00	0.00	8,172.9	154.0	412.0	174.1	0.00	0.00	0.00
8,300.0	0.00	0.00	8,272.9	154.0	412.0	174.1	0.00	0.00	0.00
8,400.0	0.00	0.00	8,372.9	154.0	412.0	174.1	0.00	0.00	0.00
8,442.1	0.00	0.00	8,415.0	154.0	412.0	174.1	0.00	0.00	0.00
Pierre Mkr4									
8,500.0	0.00	0.00	8,472.9	154.0	412.0	174.1	0.00	0.00	0.00
8,517.4	0.00	0.00	8,490.3	154.0	412.0	174.1	0.00	0.00	0.00
KOP #2 - Start Build 9.00									
8,530.1	1.14	0.45	8,503.0	154.1	412.0	174.2	8.97	8.97	0.00
Pierre Mkr5									
8,600.0	7.43	0.45	8,572.7	159.3	412.0	179.4	9.00	9.00	0.00
8,700.0	16.43	0.45	8,670.4	180.0	412.2	200.1	9.00	9.00	0.00
8,733.2	19.42	0.45	8,702.0	190.2	412.3	210.3	9.00	9.00	0.00
Base Steele Mkr									
8,800.0	25.43	0.45	8,763.8	215.7	412.5	235.7	9.00	9.00	0.00
8,832.8	28.38	0.45	8,793.0	230.5	412.6	250.5	9.00	9.00	0.00
Sharon Springs									
8,893.6	33.85	0.45	8,845.0	261.9	412.8	281.9	9.00	9.00	0.00
Niobrara									
8,900.0	34.43	0.45	8,850.3	265.5	412.9	285.5	9.00	9.00	0.00
8,914.3	35.71	0.45	8,862.0	273.7	412.9	293.7	9.00	9.00	0.00
N100 (A)									
8,963.7	40.17	0.45	8,901.0	304.1	413.2	324.1	9.00	9.00	0.00
N300 (B)									
9,000.0	43.43	0.45	8,928.0	328.3	413.4	348.2	9.00	9.00	0.00
9,005.5	43.92	0.45	8,932.0	332.1	413.4	352.0	9.00	9.00	0.00
N500									
9,074.5	50.13	0.45	8,979.0	382.5	413.8	402.4	9.00	9.00	0.00
N600									
9,100.0	52.43	0.45	8,995.0	402.4	413.9	422.3	9.00	9.00	0.00
9,200.0	61.43	0.45	9,049.5	486.2	414.6	506.0	9.00	9.00	0.00
9,205.3	61.91	0.45	9,052.0	490.8	414.6	510.6	9.00	9.00	0.00
N700 (C)									
9,300.0	70.43	0.45	9,090.2	577.4	415.3	597.1	9.00	9.00	0.00
9,361.5	75.97	0.45	9,108.0	636.2	415.8	655.9	9.00	9.00	0.00
N800 (Fort Hayes)									
9,400.0	79.43	0.45	9,116.2	673.8	416.1	693.5	9.00	9.00	0.00
9,467.0	85.46	0.45	9,125.0	740.2	416.6	759.8	9.00	9.00	0.00
N900									
9,481.8	86.79	0.45	9,126.0	754.9	416.7	774.5	9.00	9.00	0.00
Codell									
9,500.0	88.43	0.45	9,126.8	773.2	416.8	792.7	9.00	9.00	0.00
9,517.4	90.00	0.45	9,127.0	790.6	417.0	810.2	9.00	9.00	0.00
9,517.9	90.00	0.45	9,127.0	791.1	417.0	810.6	0.00	0.00	0.00
7"									

Database:	Landmark	Local Co-ordinate Reference:	Well Spyglass East 25-24-16-1CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 6185.0ft (Original Well Elev)
Project:	SEC.25-T12N-R66W	MD Reference:	WELL @ 6185.0ft (Original Well Elev)
Site:	Spyglass East 25-24-16-1CH Pad	North Reference:	True
	Sec.25-T12N-R66W		
Well:	Spyglass East 25-24-16-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-11-14)		

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)	Turn Rate (°/100ft)
9,519.5	90.00	0.46	9,127.0	792.7	417.0	812.3	0.98	0.00	0.98
9,600.0	90.00	0.46	9,127.0	873.2	417.6	892.6	0.00	0.00	0.00
9,700.0	90.00	0.46	9,127.0	973.2	418.5	992.6	0.00	0.00	0.00
9,800.0	90.00	0.46	9,127.0	1,073.2	419.3	1,092.5	0.00	0.00	0.00
9,900.0	90.00	0.46	9,127.0	1,173.1	420.1	1,192.4	0.00	0.00	0.00
10,000.0	90.00	0.46	9,127.0	1,273.1	420.9	1,292.3	0.00	0.00	0.00
10,100.0	90.00	0.46	9,127.0	1,373.1	421.7	1,392.2	0.00	0.00	0.00
10,200.0	90.00	0.46	9,127.0	1,473.1	422.5	1,492.1	0.00	0.00	0.00
10,300.0	90.00	0.46	9,127.0	1,573.1	423.3	1,592.1	0.00	0.00	0.00
10,400.0	90.00	0.46	9,127.0	1,673.1	424.1	1,692.0	0.00	0.00	0.00
10,500.0	90.00	0.46	9,127.0	1,773.1	424.9	1,791.9	0.00	0.00	0.00
10,600.0	90.00	0.46	9,127.0	1,873.1	425.7	1,891.8	0.00	0.00	0.00
10,700.0	90.00	0.46	9,127.0	1,973.1	426.6	1,991.7	0.00	0.00	0.00
10,800.0	90.00	0.46	9,127.0	2,073.1	427.4	2,091.6	0.00	0.00	0.00
10,900.0	90.00	0.46	9,127.0	2,173.1	428.2	2,191.5	0.00	0.00	0.00
11,000.0	90.00	0.46	9,127.0	2,273.1	429.0	2,291.5	0.00	0.00	0.00
11,100.0	90.00	0.46	9,127.0	2,373.1	429.8	2,391.4	0.00	0.00	0.00
11,200.0	90.00	0.46	9,127.0	2,473.1	430.6	2,491.3	0.00	0.00	0.00
11,300.0	90.00	0.46	9,127.0	2,573.1	431.4	2,591.2	0.00	0.00	0.00
11,400.0	90.00	0.46	9,127.0	2,673.1	432.2	2,691.1	0.00	0.00	0.00
11,500.0	90.00	0.46	9,127.0	2,773.1	433.0	2,791.0	0.00	0.00	0.00
11,600.0	90.00	0.46	9,127.0	2,873.1	433.8	2,891.0	0.00	0.00	0.00
11,700.0	90.00	0.46	9,127.0	2,973.1	434.6	2,990.9	0.00	0.00	0.00
11,800.0	90.00	0.46	9,127.0	3,073.1	435.5	3,090.8	0.00	0.00	0.00
11,900.0	90.00	0.46	9,127.0	3,173.1	436.3	3,190.7	0.00	0.00	0.00
12,000.0	90.00	0.46	9,127.0	3,273.1	437.1	3,290.6	0.00	0.00	0.00
12,100.0	90.00	0.46	9,127.0	3,373.1	437.9	3,390.5	0.00	0.00	0.00
12,200.0	90.00	0.46	9,127.0	3,473.1	438.7	3,490.4	0.00	0.00	0.00
12,300.0	90.00	0.46	9,127.0	3,573.1	439.5	3,590.4	0.00	0.00	0.00
12,400.0	90.00	0.46	9,127.0	3,673.1	440.3	3,690.3	0.00	0.00	0.00
12,500.0	90.00	0.46	9,127.0	3,773.1	441.1	3,790.2	0.00	0.00	0.00
12,600.0	90.00	0.46	9,127.0	3,873.1	441.9	3,890.1	0.00	0.00	0.00
12,700.0	90.00	0.46	9,127.0	3,973.1	442.7	3,990.0	0.00	0.00	0.00
12,800.0	90.00	0.46	9,127.0	4,073.1	443.6	4,089.9	0.00	0.00	0.00
12,900.0	90.00	0.46	9,127.0	4,173.0	444.4	4,189.9	0.00	0.00	0.00
13,000.0	90.00	0.46	9,127.0	4,273.0	445.2	4,289.8	0.00	0.00	0.00
13,100.0	90.00	0.46	9,127.0	4,373.0	446.0	4,389.7	0.00	0.00	0.00
13,200.0	90.00	0.46	9,127.0	4,473.0	446.8	4,489.6	0.00	0.00	0.00
13,300.0	90.00	0.46	9,127.0	4,573.0	447.6	4,589.5	0.00	0.00	0.00
13,400.0	90.00	0.46	9,127.0	4,673.0	448.4	4,689.4	0.00	0.00	0.00
13,500.0	90.00	0.46	9,127.0	4,773.0	449.2	4,789.3	0.00	0.00	0.00
13,600.0	90.00	0.46	9,127.0	4,873.0	450.0	4,889.3	0.00	0.00	0.00
13,700.0	90.00	0.46	9,127.0	4,973.0	450.8	4,989.2	0.00	0.00	0.00
13,800.0	90.00	0.46	9,127.0	5,073.0	451.7	5,089.1	0.00	0.00	0.00
13,900.0	90.00	0.46	9,127.0	5,173.0	452.5	5,189.0	0.00	0.00	0.00
14,000.0	90.00	0.46	9,127.0	5,273.0	453.3	5,288.9	0.00	0.00	0.00
14,100.0	90.00	0.46	9,127.0	5,373.0	454.1	5,388.8	0.00	0.00	0.00
14,200.0	90.00	0.46	9,127.0	5,473.0	454.9	5,488.8	0.00	0.00	0.00
14,300.0	90.00	0.46	9,127.0	5,573.0	455.7	5,588.7	0.00	0.00	0.00
14,400.0	90.00	0.46	9,127.0	5,673.0	456.5	5,688.6	0.00	0.00	0.00
14,500.0	90.00	0.46	9,127.0	5,773.0	457.3	5,788.5	0.00	0.00	0.00
14,600.0	90.00	0.46	9,127.0	5,873.0	458.1	5,888.4	0.00	0.00	0.00
14,700.0	90.00	0.46	9,127.0	5,973.0	458.9	5,988.3	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Spyglass East 25-24-16-1CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 6185.0ft (Original Well Elev)
Project:	SEC.25-T12N-R66W	MD Reference:	WELL @ 6185.0ft (Original Well Elev)
Site:	Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W	North Reference:	True
Well:	Spyglass East 25-24-16-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-11-14)		

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)	Turn Rate (°/100ft)
14,800.0	90.00	0.46	9,127.0	6,073.0	459.7	6,088.3	0.00	0.00	0.00
14,900.0	90.00	0.46	9,127.0	6,173.0	460.6	6,188.2	0.00	0.00	0.00
15,000.0	90.00	0.46	9,127.0	6,273.0	461.4	6,288.1	0.00	0.00	0.00
15,100.0	90.00	0.46	9,127.0	6,373.0	462.2	6,388.0	0.00	0.00	0.00
15,200.0	90.00	0.46	9,127.0	6,473.0	463.0	6,487.9	0.00	0.00	0.00
15,300.0	90.00	0.46	9,127.0	6,573.0	463.8	6,587.8	0.00	0.00	0.00
15,400.0	90.00	0.46	9,127.0	6,673.0	464.6	6,687.7	0.00	0.00	0.00
15,500.0	90.00	0.46	9,127.0	6,773.0	465.4	6,787.7	0.00	0.00	0.00
15,600.0	90.00	0.46	9,127.0	6,873.0	466.2	6,887.6	0.00	0.00	0.00
15,700.0	90.00	0.46	9,127.0	6,973.0	467.0	6,987.5	0.00	0.00	0.00
15,800.0	90.00	0.46	9,127.0	7,073.0	467.8	7,087.4	0.00	0.00	0.00
15,900.0	90.00	0.46	9,127.0	7,173.0	468.7	7,187.3	0.00	0.00	0.00
16,000.0	90.00	0.46	9,127.0	7,272.9	469.5	7,287.2	0.00	0.00	0.00
16,100.0	90.00	0.46	9,127.0	7,372.9	470.3	7,387.2	0.00	0.00	0.00
16,200.0	90.00	0.46	9,127.0	7,472.9	471.1	7,487.1	0.00	0.00	0.00
16,300.0	90.00	0.46	9,127.0	7,572.9	471.9	7,587.0	0.00	0.00	0.00
16,400.0	90.00	0.46	9,127.0	7,672.9	472.7	7,686.9	0.00	0.00	0.00
16,500.0	90.00	0.46	9,127.0	7,772.9	473.5	7,786.8	0.00	0.00	0.00
16,600.0	90.00	0.46	9,127.0	7,872.9	474.3	7,886.7	0.00	0.00	0.00
16,700.0	90.00	0.46	9,127.0	7,972.9	475.1	7,986.6	0.00	0.00	0.00
16,800.0	90.00	0.46	9,127.0	8,072.9	475.9	8,086.6	0.00	0.00	0.00
16,900.0	90.00	0.46	9,127.0	8,172.9	476.8	8,186.5	0.00	0.00	0.00
17,000.0	90.00	0.46	9,127.0	8,272.9	477.6	8,286.4	0.00	0.00	0.00
17,100.0	90.00	0.46	9,127.0	8,372.9	478.4	8,386.3	0.00	0.00	0.00
17,200.0	90.00	0.46	9,127.0	8,472.9	479.2	8,486.2	0.00	0.00	0.00
17,300.0	90.00	0.46	9,127.0	8,572.9	480.0	8,586.1	0.00	0.00	0.00
17,400.0	90.00	0.46	9,127.0	8,672.9	480.8	8,686.1	0.00	0.00	0.00
17,500.0	90.00	0.46	9,127.0	8,772.9	481.6	8,786.0	0.00	0.00	0.00
17,600.0	90.00	0.46	9,127.0	8,872.9	482.4	8,885.9	0.00	0.00	0.00
17,700.0	90.00	0.46	9,127.0	8,972.9	483.2	8,985.8	0.00	0.00	0.00
17,800.0	90.00	0.46	9,127.0	9,072.9	484.0	9,085.7	0.00	0.00	0.00
17,900.0	90.00	0.46	9,127.0	9,172.9	484.8	9,185.6	0.00	0.00	0.00
18,000.0	90.00	0.46	9,127.0	9,272.9	485.7	9,285.5	0.00	0.00	0.00
18,100.0	90.00	0.46	9,127.0	9,372.9	486.5	9,385.5	0.00	0.00	0.00
18,200.0	90.00	0.46	9,127.0	9,472.9	487.3	9,485.4	0.00	0.00	0.00
18,300.0	90.00	0.46	9,127.0	9,572.9	488.1	9,585.3	0.00	0.00	0.00
18,400.0	90.00	0.46	9,127.0	9,672.9	488.9	9,685.2	0.00	0.00	0.00
18,500.0	90.00	0.46	9,127.0	9,772.9	489.7	9,785.1	0.00	0.00	0.00
18,600.0	90.00	0.46	9,127.0	9,872.9	490.5	9,885.0	0.00	0.00	0.00
18,700.0	90.00	0.46	9,127.0	9,972.9	491.3	9,985.0	0.00	0.00	0.00
18,703.1	90.00	0.46	9,127.0	9,975.9	491.3	9,988.0	0.00	0.00	0.00

Casing Points					
	Measured Depth (ft)	Vertical Depth (ft)		Casing Diameter (")	Hole Diameter (")
	9,517.9	9,127.0	7"	7	7-1/2

Database:	Landmark	Local Co-ordinate Reference:	Well Spyglass East 25-24-16-1CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 6185.0ft (Original Well Elev)
Project:	SEC.25-T12N-R66W	MD Reference:	WELL @ 6185.0ft (Original Well Elev)
Site:	Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W	North Reference:	True
Well:	Spyglass East 25-24-16-1CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (8-11-14)		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,061.0	2,056.0	Fox Hills			
2,926.0	2,914.0	Fox Hills Mkr 1			
4,549.2	4,524.0	Teapot			
5,506.1	5,479.0	Parkman			
5,644.1	5,617.0	Sussex			
5,911.1	5,884.0	Pierre Upper Mkr1			
6,333.1	6,306.0	Sussex Mkr1			
7,490.1	7,463.0	Shannon			
7,723.1	7,696.0	Pierre			
7,766.1	7,739.0	Pierre Mkr1			
7,918.1	7,891.0	Pierre Mkr2			
8,059.1	8,032.0	Pierre Mkr3			
8,442.1	8,415.0	Pierre Mkr4			
8,530.1	8,503.0	Pierre Mkr5			
8,733.2	8,702.0	Base Steele Mkr			
8,832.8	8,793.0	Sharon Springs			
8,893.6	8,845.0	Niobrara			
8,914.3	8,862.0	N100 (A)			
8,963.7	8,901.0	N300 (B)			
9,005.5	8,932.0	N500			
9,074.5	8,979.0	N600			
9,205.3	9,052.0	N700 (C)			
9,361.5	9,108.0	N800 (Fort Hayes)			
9,467.0	9,125.0	N900			
9,481.8	9,126.0	Codell			
	9,149.0	Carlile			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,200.0	1,200.0	0.0	0.0	KOP - Start Build 2.00
4,662.2	4,636.1	8.1	21.7	Start Drop -2.00
8,517.4	8,490.4	145.9	390.3	KOP #2 - Start Build 9.00
18,703.1	9,127.0	154.0	412.0	TD at 18703.1



Cirque Resources LP

SEC.25-T12N-R66W

Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W

Spyglass East 25-24-16-1CH

Wellbore #1

Plan #1 (8-11-14)

Anticollision Report

11 August, 2014

Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Spyglass East 25-24-16-1CH
Project:	SEC.25-T12N-R66W	TVD Reference:	WELL @ 6185.0ft (Original Well Elev)
Reference Site:	Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W	MD Reference:	WELL @ 6185.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Spyglass East 25-24-16-1CH	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (8-11-14)	Offset TVD Reference:	Offset Datum

Offset Design Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W - Spyglass East 25-24-163CH - Wellbore #1 - P												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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
2,100.0	2,094.7	2,064.8	2,062.7	4.8	4.5	-166.31	6.4	-117.2	206.6	197.7	8.99	22.986	
2,200.0	2,193.9	2,159.3	2,155.9	5.1	4.8	-165.86	9.1	-132.8	234.8	225.4	9.43	24.911	
2,300.0	2,293.1	2,255.2	2,250.4	5.4	5.1	-165.50	11.9	-148.7	263.0	253.1	9.86	26.671	
2,400.0	2,392.2	2,351.1	2,345.0	5.7	5.3	-165.21	14.6	-164.6	291.2	280.9	10.30	28.268	
2,500.0	2,491.4	2,447.0	2,439.5	6.0	5.6	-164.96	17.4	-180.6	319.5	308.7	10.75	29.721	
2,600.0	2,590.6	2,543.0	2,534.1	6.3	6.0	-164.76	20.1	-196.5	347.7	336.5	11.20	31.051	
2,700.0	2,689.8	2,638.9	2,628.6	6.6	6.3	-164.59	22.9	-212.4	376.0	364.3	11.65	32.269	
2,800.0	2,789.0	2,734.8	2,723.2	7.0	6.6	-164.44	25.6	-228.4	404.2	392.1	12.11	33.387	
2,900.0	2,888.2	2,830.7	2,817.7	7.3	6.9	-164.32	28.4	-244.3	432.5	419.9	12.57	34.418	
3,000.0	2,987.4	2,926.6	2,912.3	7.6	7.3	-164.20	31.2	-260.2	460.7	447.7	13.03	35.369	
3,100.0	3,086.6	3,022.6	3,006.8	7.9	7.6	-164.11	33.9	-276.2	489.0	475.5	13.49	36.250	
3,200.0	3,185.8	3,118.5	3,101.4	8.2	7.9	-164.02	36.7	-292.1	517.2	503.3	13.95	37.067	
3,300.0	3,285.0	3,214.4	3,195.9	8.5	8.3	-163.94	39.4	-308.0	545.5	531.1	14.42	37.827	
3,400.0	3,384.1	3,310.3	3,290.5	8.8	8.6	-163.87	42.2	-324.0	573.8	558.9	14.89	38.535	

Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Spyglass East 25-24-16-1CH
Project:	SEC.25-T12N-R66W	TVD Reference:	WELL @ 6185.0ft (Original Well Elev)
Reference Site:	Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W	MD Reference:	WELL @ 6185.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Spyglass East 25-24-16-1CH	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (8-11-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	-90.00	0.0	-38.7	38.7				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	-90.00	0.0	-38.7	38.7	38.4	0.22	172.006	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	-90.00	0.0	-38.7	38.7	38.0	0.67	57.335	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	-90.00	0.0	-38.7	38.7	37.5	1.12	34.401	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	-90.00	0.0	-38.7	38.7	37.1	1.57	24.572	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	-90.00	0.0	-38.7	38.7	36.6	2.02	19.112	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	-90.00	0.0	-38.7	38.7	36.2	2.47	15.637	
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	-90.00	0.0	-38.7	38.7	35.7	2.92	13.231	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	-90.00	0.0	-38.7	38.7	35.3	3.37	11.467	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	-90.00	0.0	-38.7	38.7	34.8	3.82	10.118	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	-90.00	0.0	-38.7	38.7	34.4	4.27	9.053	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-90.00	-90.00	0.0	-38.7	38.7	33.9	4.72	8.191	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-90.00	-90.00	0.0	-38.7	38.7	33.5	5.17	7.479 CC, ES	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-160.36	-160.36	0.0	-38.7	40.3	34.7	5.61	7.186	
1,400.0	1,399.8	1,399.8	1,399.8	3.0	3.0	-162.56	-162.56	0.0	-38.7	45.3	39.2	6.04	7.500	
1,500.0	1,499.5	1,501.3	1,501.3	3.2	3.3	-165.33	-165.33	0.2	-36.9	51.9	45.4	6.45	8.048	
1,600.0	1,598.7	1,603.0	1,602.9	3.5	3.5	-168.26	-168.26	0.9	-31.5	58.3	51.4	6.85	8.503	
1,700.0	1,697.9	1,705.1	1,704.5	3.7	3.7	-170.98	-170.98	1.9	-22.6	61.9	54.7	7.28	8.512	
1,800.0	1,797.1	1,806.3	1,805.0	4.0	3.9	-173.73	-173.73	3.4	-10.4	62.5	54.8	7.71	8.106	
1,900.0	1,896.3	1,906.3	1,904.1	4.3	4.2	-176.50	-176.50	4.9	2.2	62.6	54.4	8.15	7.679	
2,000.0	1,995.5	2,006.2	2,003.3	4.6	4.4	-179.25	-179.25	6.4	14.9	62.8	54.2	8.60	7.305	
2,100.0	2,094.7	2,106.2	2,102.4	4.8	4.7	178.03	178.03	8.0	27.5	63.2	54.1	9.05	6.977	
2,200.0	2,193.9	2,206.1	2,201.6	5.1	5.0	175.34	175.34	9.5	40.1	63.7	54.2	9.52	6.687	
2,300.0	2,293.1	2,306.1	2,300.7	5.4	5.3	172.70	172.70	11.0	52.7	64.3	54.3	10.00	6.432	
2,400.0	2,392.2	2,406.0	2,399.8	5.7	5.5	170.12	170.12	12.5	65.4	65.1	54.6	10.49	6.204	
2,500.0	2,491.4	2,506.0	2,499.0	6.0	5.8	167.61	167.61	14.0	78.0	66.0	55.0	11.00	6.002	
2,600.0	2,590.6	2,606.0	2,598.1	6.3	6.1	165.17	165.17	15.5	90.6	67.1	55.5	11.52	5.822	
2,700.0	2,689.8	2,705.9	2,697.3	6.6	6.4	162.80	162.80	17.1	103.2	68.2	56.2	12.05	5.661	
2,800.0	2,789.0	2,805.9	2,796.4	7.0	6.7	160.52	160.52	18.6	115.9	69.5	56.9	12.59	5.517	
2,900.0	2,888.2	2,905.8	2,895.6	7.3	7.0	158.33	158.33	20.1	128.5	70.8	57.7	13.15	5.387	
3,000.0	2,987.4	3,005.8	2,994.7	7.6	7.3	156.22	156.22	21.6	141.1	72.3	58.6	13.72	5.271	
3,100.0	3,086.6	3,105.7	3,093.8	7.9	7.7	154.19	154.19	23.1	153.7	73.9	59.6	14.30	5.167	
3,200.0	3,185.8	3,205.7	3,193.0	8.2	8.0	152.26	152.26	24.6	166.3	75.5	60.6	14.89	5.073	
3,300.0	3,285.0	3,305.6	3,292.1	8.5	8.3	150.40	150.40	26.2	179.0	77.3	61.8	15.49	4.988	
3,400.0	3,384.1	3,405.6	3,391.3	8.8	8.6	148.63	148.63	27.7	191.6	79.1	63.0	16.10	4.912	
3,500.0	3,483.3	3,505.5	3,490.4	9.2	8.9	146.95	146.95	29.2	204.2	81.0	64.2	16.72	4.844	
3,600.0	3,582.5	3,605.5	3,589.6	9.5	9.2	145.34	145.34	30.7	216.8	82.9	65.6	17.34	4.782	
3,700.0	3,681.7	3,705.5	3,688.7	9.8	9.5	143.80	143.80	32.2	229.5	84.9	67.0	17.97	4.726	
3,800.0	3,780.9	3,805.4	3,787.8	10.1	9.9	142.34	142.34	33.8	242.1	87.0	68.4	18.61	4.676	
3,900.0	3,880.1	3,905.4	3,887.0	10.4	10.2	140.95	140.95	35.3	254.7	89.1	69.9	19.25	4.631	
4,000.0	3,979.3	4,005.3	3,986.1	10.8	10.5	139.62	139.62	36.8	267.3	91.3	71.4	19.89	4.590	
4,100.0	4,078.5	4,105.3	4,085.3	11.1	10.8	138.35	138.35	38.3	280.0	93.5	73.0	20.54	4.554	
4,200.0	4,177.7	4,205.2	4,184.4	11.4	11.1	137.15	137.15	39.8	292.6	95.8	74.6	21.19	4.521	
4,300.0	4,276.9	4,305.2	4,283.6	11.7	11.4	136.00	136.00	41.3	305.2	98.1	76.3	21.85	4.491	
4,400.0	4,376.0	4,405.1	4,382.7	12.0	11.8	134.90	134.90	42.9	317.8	100.5	77.9	22.50	4.464	
4,500.0	4,475.2	4,505.1	4,481.8	12.4	12.1	133.85	133.85	44.4	330.5	102.8	79.7	23.16	4.440	
4,600.0	4,574.4	4,605.0	4,581.0	12.7	12.4	132.85	132.85	45.9	343.1	105.2	81.4	23.82	4.418	
4,700.0	4,673.6	4,705.0	4,680.1	13.0	12.7	131.81	131.81	47.4	355.7	107.5	83.0	24.48	4.393	
4,800.0	4,773.2	4,804.9	4,779.2	13.2	13.1	129.68	129.68	48.9	368.3	108.0	82.9	25.14	4.297	
4,900.0	4,873.0	4,904.7	4,878.2	13.4	13.4	126.06	126.06	50.4	380.9	106.6	80.7	25.86	4.121	
5,000.0	4,972.9	5,003.7	4,976.4	13.6	13.7	120.92	120.92	51.9	393.1	103.8	77.2	26.60	3.902	

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

Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Spyglass East 25-24-16-1CH
Project:	SEC.25-T12N-R66W	TVD Reference:	WELL @ 6185.0ft (Original Well Elev)
Reference Site:	Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W	MD Reference:	WELL @ 6185.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Spyglass East 25-24-16-1CH	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (8-11-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Reference	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,072.9	5,102.4	5,074.6	13.7	13.9	-174.64		53.0	402.5	101.4	74.2	27.24	3.724	
5,200.0	5,172.9	5,201.5	5,173.6	13.9	14.1	-178.04		53.8	408.6	100.3	72.6	27.73	3.616	
5,300.0	5,272.9	5,301.0	5,273.1	14.1	14.3	-179.55		54.1	411.2	99.9	71.8	28.13	3.552	
5,345.6	5,318.6	5,346.5	5,318.6	14.2	14.3	-179.62		54.1	411.3	99.9	71.6	28.28	3.532	
5,400.0	5,372.9	5,400.9	5,372.9	14.3	14.4	-179.62		54.1	411.3	99.9	71.4	28.47	3.509	
5,500.0	5,472.9	5,500.9	5,472.9	14.4	14.6	-179.62		54.1	411.3	99.9	71.1	28.83	3.466	
5,600.0	5,572.9	5,600.9	5,572.9	14.6	14.8	-179.62		54.1	411.3	99.9	70.7	29.19	3.423	
5,700.0	5,672.9	5,700.9	5,672.9	14.8	14.9	-179.62		54.1	411.3	99.9	70.4	29.55	3.381	
5,800.0	5,772.9	5,800.9	5,772.9	15.0	15.1	-179.62		54.1	411.3	99.9	70.0	29.91	3.340	
5,900.0	5,872.9	5,900.9	5,872.9	15.2	15.3	-179.62		54.1	411.3	99.9	69.6	30.28	3.299	
6,000.0	5,972.9	6,000.9	5,972.9	15.4	15.5	-179.62		54.1	411.3	99.9	69.3	30.65	3.259	
6,100.0	6,072.9	6,100.9	6,072.9	15.5	15.7	-179.62		54.1	411.3	99.9	68.9	31.02	3.220	
6,200.0	6,172.9	6,200.9	6,172.9	15.7	15.9	-179.62		54.1	411.3	99.9	68.5	31.39	3.182	
6,300.0	6,272.9	6,300.9	6,272.9	15.9	16.0	-179.62		54.1	411.3	99.9	68.1	31.77	3.145	
6,400.0	6,372.9	6,400.9	6,372.9	16.1	16.2	-179.62		54.1	411.3	99.9	67.8	32.15	3.108	
6,500.0	6,472.9	6,500.9	6,472.9	16.3	16.4	-179.62		54.1	411.3	99.9	67.4	32.53	3.071	
6,600.0	6,572.9	6,600.9	6,572.9	16.5	16.6	-179.62		54.1	411.3	99.9	67.0	32.91	3.036	
6,700.0	6,672.9	6,700.9	6,672.9	16.7	16.8	-179.62		54.1	411.3	99.9	66.6	33.29	3.001	
6,800.0	6,772.9	6,800.9	6,772.9	16.9	17.0	-179.62		54.1	411.3	99.9	66.2	33.67	2.967	
6,900.0	6,872.9	6,900.9	6,872.9	17.1	17.2	-179.62		54.1	411.3	99.9	65.8	34.06	2.933	
7,000.0	6,972.9	7,000.9	6,972.9	17.3	17.4	-179.62		54.1	411.3	99.9	65.5	34.45	2.900	
7,100.0	7,072.9	7,100.9	7,072.9	17.5	17.5	-179.62		54.1	411.3	99.9	65.1	34.84	2.868	
7,200.0	7,172.9	7,200.9	7,172.9	17.7	17.7	-179.62		54.1	411.3	99.9	64.7	35.23	2.836	
7,300.0	7,272.9	7,300.9	7,272.9	17.8	17.9	-179.62		54.1	411.3	99.9	64.3	35.62	2.805	
7,400.0	7,372.9	7,400.9	7,372.9	18.0	18.1	-179.62		54.1	411.3	99.9	63.9	36.01	2.774	
7,500.0	7,472.9	7,500.9	7,472.9	18.2	18.3	-179.62		54.1	411.3	99.9	63.5	36.41	2.744	
7,600.0	7,572.9	7,600.9	7,572.9	18.4	18.5	-179.62		54.1	411.3	99.9	63.1	36.80	2.715	
7,700.0	7,672.9	7,700.9	7,672.9	18.6	18.7	-179.62		54.1	411.3	99.9	62.7	37.20	2.686	
7,800.0	7,772.9	7,800.9	7,772.9	18.8	18.9	-179.62		54.1	411.3	99.9	62.3	37.60	2.657	
7,900.0	7,872.9	7,900.9	7,872.9	19.0	19.1	-179.62		54.1	411.3	99.9	61.9	38.00	2.629	
8,000.0	7,972.9	8,000.9	7,972.9	19.2	19.3	-179.62		54.1	411.3	99.9	61.5	38.40	2.602	
8,100.0	8,072.9	8,100.9	8,072.9	19.4	19.5	-179.62		54.1	411.3	99.9	61.1	38.80	2.575	
8,200.0	8,172.9	8,200.9	8,172.9	19.6	19.7	-179.62		54.1	411.3	99.9	60.7	39.20	2.548	
8,300.0	8,272.9	8,300.9	8,272.9	19.8	19.9	-179.62		54.1	411.3	99.9	60.3	39.60	2.522	
8,400.0	8,372.9	8,400.9	8,372.9	20.0	20.1	-179.62		54.1	411.3	99.9	59.9	40.01	2.497	
8,500.0	8,472.9	8,500.9	8,472.9	20.3	20.3	-179.62		54.1	411.3	99.9	59.5	40.41	2.472 SF	
8,600.0	8,572.7	8,586.8	8,558.7	20.5	20.5	179.93		49.0	411.3	111.2	70.6	40.58	2.741	
8,700.0	8,670.4	8,663.4	8,633.9	20.7	20.6	179.92		34.8	411.3	149.7	109.7	40.06	3.737	
8,800.0	8,763.8	8,724.9	8,692.7	21.0	20.7	179.90		16.9	411.2	211.1	172.2	38.85	5.433	
8,900.0	8,850.3	8,769.5	8,734.1	21.3	20.7	179.88		0.5	411.1	289.4	252.4	37.02	7.819	
9,000.0	8,928.0	8,800.0	8,761.7	21.7	20.8	179.84		-12.4	411.1	379.2	344.5	34.69	10.930	
9,100.0	8,995.0	8,813.8	8,774.1	22.2	20.8	179.73		-18.7	411.0	475.6	443.6	32.04	14.845	
9,200.0	9,049.5	8,818.8	8,778.4	22.8	20.8	174.97		-21.0	411.0	575.1	545.7	29.38	19.572	

Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W - Spyglass East 25-36-1-16-4CH - Wellbore #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	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-118.7	118.7					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-118.7	118.7	118.5	0.22	528.305		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-118.7	118.7	118.1	0.67	176.102		
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-118.7	118.7	117.6	1.12	105.661		
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-118.7	118.7	117.2	1.57	75.472		
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-118.7	118.7	116.7	2.02	58.701		
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-118.7	118.7	116.3	2.47	48.028		
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	0.0	-118.7	118.7	115.8	2.92	40.639		
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-118.7	118.7	115.4	3.37	35.220		
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-118.7	118.7	114.9	3.82	31.077		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-118.7	118.7	114.5	4.27	27.806 CC, ES		
1,100.0	1,100.0	1,096.0	1,096.0	2.4	2.3	-89.96	0.1	-120.4	120.4	115.7	4.70	25.624		
1,200.0	1,200.0	1,191.8	1,191.6	2.6	2.5	-89.84	0.3	-125.2	125.4	120.3	5.12	24.485		
1,300.0	1,300.0	1,286.9	1,286.5	2.8	2.7	-159.35	0.8	-133.1	135.4	129.9	5.54	24.446 SF		
1,400.0	1,399.8	1,380.9	1,379.7	3.0	3.0	-159.68	1.4	-144.0	151.9	145.9	5.95	25.525		
1,500.0	1,499.5	1,473.0	1,470.8	3.2	3.2	-160.19	2.1	-157.6	174.7	168.4	6.36	27.478		
1,600.0	1,598.7	1,567.3	1,563.7	3.5	3.5	-160.86	3.0	-173.8	202.9	196.1	6.78	29.944		
1,700.0	1,697.9	1,663.0	1,658.0	3.7	3.8	-161.53	3.9	-190.4	231.9	224.7	7.20	32.215		
1,800.0	1,797.1	1,758.6	1,752.2	4.0	4.1	-162.05	4.8	-206.9	260.9	253.3	7.63	34.204		
1,900.0	1,896.3	1,854.3	1,846.4	4.3	4.5	-162.46	5.7	-223.5	289.9	281.9	8.06	35.953		
2,000.0	1,995.5	1,950.0	1,940.7	4.6	4.8	-162.80	6.6	-240.0	319.0	310.4	8.51	37.499		
2,100.0	2,094.7	2,045.7	2,034.9	4.8	5.1	-163.09	7.5	-256.5	348.0	339.0	8.95	38.877		
2,200.0	2,193.9	2,141.3	2,129.1	5.1	5.5	-163.33	8.4	-273.1	377.0	367.6	9.40	40.107		
2,300.0	2,293.1	2,237.0	2,223.3	5.4	5.8	-163.53	9.3	-289.6	406.1	396.2	9.85	41.212		
2,400.0	2,392.2	2,332.7	2,317.6	5.7	6.2	-163.71	10.2	-306.2	435.2	424.9	10.31	42.207		
2,500.0	2,491.4	2,428.4	2,411.8	6.0	6.6	-163.87	11.1	-322.7	464.2	453.5	10.77	43.108		
2,600.0	2,590.6	2,524.0	2,506.0	6.3	6.9	-164.01	12.0	-339.3	493.3	482.1	11.23	43.927		
2,700.0	2,689.8	2,619.7	2,600.3	6.6	7.3	-164.13	12.9	-355.8	522.4	510.7	11.69	44.674		
2,800.0	2,789.0	2,715.4	2,694.5	7.0	7.7	-164.24	13.8	-372.3	551.4	539.3	12.16	45.358		
2,900.0	2,888.2	2,811.1	2,788.7	7.3	8.0	-164.34	14.7	-388.9	580.5	567.9	12.62	45.985		

Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Spyglass East 25-24-16-1CH
Project:	SEC.25-T12N-R66W	TVD Reference:	WELL @ 6185.0ft (Original Well Elev)
Reference Site:	Spyglass East 25-24-16-1CH Pad Sec.25-T12N-R66W	MD Reference:	WELL @ 6185.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Spyglass East 25-24-16-1CH	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (8-11-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 6185.0ft (Original Well Elev) Coordinates are relative to: Spyglass East 25-24-16-1CH
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.51°



Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Spyglass East 25-24-16-1CH
Project:	SEC.25-T12N-R66W	TVD Reference:	WELL @ 6185.0ft (Original Well Elev)
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