

Cirque Resources LP

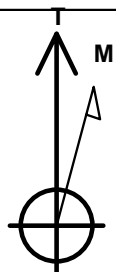
Well Name: **Motu East 28-33-4-16-2CH**

Surface Location: Motu East Pad Sec.28-T12N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 5973.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1597940.36	3232342.29	40.971680	-104.658660	
RKB - 25' WELL @ 5998.0ft (RKB - 25')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Sectionline	0.0	-246.4	319.9	Polygon
SHL 250'FSL & 388'FEL	1.0	0.0	0.0	Point
BHL 330'FSL & 660'FEL	8798.0	-10300.1	-342.6	Point
Landing Pt. 330'FNL & 660'FEL	8798.0	-575.7	-273.4	Point



Azimuths to True North
Magnetic North: 8.42°

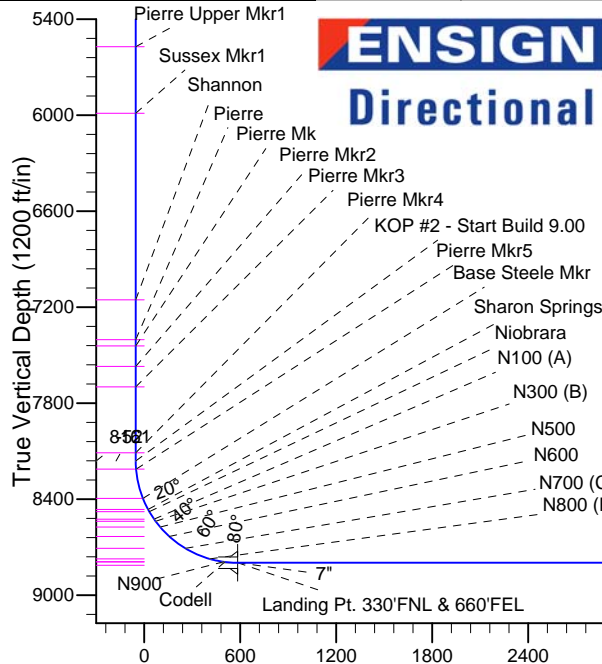
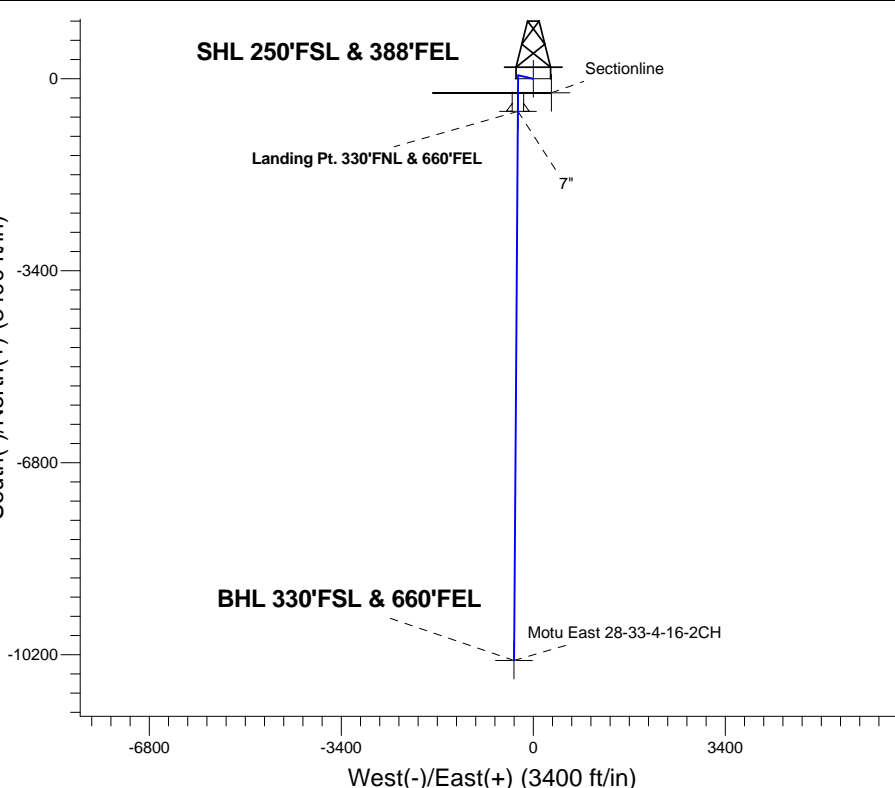
Magnetic Field
Strength: 53087.7snT
Dip Angle: 67.41°
Date: 9/11/2014
Model: IGRF2010

Motu East Pad Sec.28-T12N-R65W
Motu East 28-33-4-16-2CH
Plan #2 (9-12-14)
12:58, September 12 2014

ANNOTATIONS

TVD	MD	Annotation
1600.0	1600.0	KOP - Start Build 2.00
3610.2	3626.6	Start Drop -2.00
8161.4	8179.0	KOP #2 - Start Build 9.00
8798.0	18903.7	TD at 18903.7

South(-)/North(+) (3400 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	1600.0	0.00	0.00	1600.0	0.0	0.0	0.00	0.00	0.0	
3	1991.0	7.82	282.78	1989.8	5.9	-26.0	2.00	282.78	-5.0	
4	3626.6	7.82	282.78	3610.2	55.1	-243.0	0.00	0.00	-47.0	
5	4017.6	0.00	0.00	4000.0	61.0	-269.0	2.00	180.00	-52.0	
6	8179.0	0.00	0.00	8161.4	61.0	-269.0	0.00	0.00	-52.0	
7	9179.0	90.00	180.40	8798.0	-575.6	-273.4	9.00	180.40	584.4	
8	9179.1	90.00	180.40	8798.0	-575.7	-273.4	0.00	0.00	584.4	Landing Pt. 330'FNL & 660'FEL
9	9180.3	90.00	180.41	8798.0	-576.8	-273.4	1.00	90.00	585.6	
10	18903.7	90.00	180.41	8798.0	-10300.1	-342.6	0.00	0.00	10305.8	BHL 330'FSL & 660'FEL

BHL 330'FSL & 660'FEL

TD at 18903.7

Vertical Section at 181.90° (1200 ft/in)



Cirque Resources LP

Sec.28-T12N-R65W

Motu East Pad Sec.28-T12N-R65W

Motu East 28-33-4-16-2CH

Wellbore #1

Plan: Plan #2 (9-12-14)

Standard Planning Report

12 September, 2014

Database:	Landmark	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Project:	Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site:	Motu East Pad Sec.28-T12N-R65W	North Reference:	True
Well:	Motu East 28-33-4-16-2CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (9-12-14)		

Project	Sec.28-T12N-R65W, 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						Motu East Pad Sec.28-T12N-R65W											
Site Position:						Northing:			1,597,943.25 ft			Latitude:			40.971690		
From:			Lat/Long			Easting:			3,232,262.18 ft			Longitude:			-104.658950		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.54 °		

Well	Motu East 28-33-4-16-2CH					
Well Position	+N-S	-3.7 ft	Northing:	1,597,940.36 ft	Latitude:	40.971680
	+E-W	80.1 ft	Easting:	3,232,342.29 ft	Longitude:	-104.658660
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,973.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/11/2014	8.42	67.41	53,088

Design	Plan #2 (9-12-14)			
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	181.90

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	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,991.0	7.82	282.78	1,989.8	5.9	-26.0	2.00	2.00	0.00	282.78	
3,626.6	7.82	282.78	3,610.2	55.1	-243.0	0.00	0.00	0.00	0.00	
4,017.6	0.00	0.00	4,000.0	61.0	-269.0	2.00	-2.00	0.00	180.00	
8,179.0	0.00	0.00	8,161.4	61.0	-269.0	0.00	0.00	0.00	0.00	
9,179.0	90.00	180.40	8,798.0	-575.6	-273.4	9.00	9.00	0.00	180.40	
9,179.1	90.00	180.40	8,798.0	-575.7	-273.4	0.00	0.00	0.00	0.00	Landing Pt. 330'FN
9,180.3	90.00	180.41	8,798.0	-576.8	-273.4	1.00	0.00	1.00	90.00	
18,903.7	90.00	180.41	8,798.0	-10,300.1	-342.6	0.00	0.00	0.00	0.00	BHL 330'FSL & 66C

Database:	Landmark	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Project:	Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site:	Motu East Pad Sec.28-T12N-R65W	North Reference:	True
Well:	Motu East 28-33-4-16-2CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (9-12-14)		

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
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 2.00									
1,700.0	2.00	282.78	1,700.0	0.4	-1.7	-0.3	2.00	2.00	0.00
1,799.2	3.98	282.78	1,799.0	1.5	-6.7	-1.3	2.00	2.00	0.00
Fox Hills									
1,800.0	4.00	282.78	1,799.8	1.5	-6.8	-1.3	2.00	2.00	0.00
1,900.0	6.00	282.78	1,899.5	3.5	-15.3	-3.0	2.00	2.00	0.00
1,991.0	7.82	282.78	1,989.8	5.9	-26.0	-5.0	2.00	2.00	0.00
2,000.0	7.82	282.78	1,998.7	6.2	-27.2	-5.3	0.00	0.00	0.00
2,100.0	7.82	282.78	2,097.8	9.2	-40.4	-7.8	0.00	0.00	0.00
2,200.0	7.82	282.78	2,196.8	12.2	-53.7	-10.4	0.00	0.00	0.00
2,300.0	7.82	282.78	2,295.9	15.2	-67.0	-13.0	0.00	0.00	0.00
2,400.0	7.82	282.78	2,395.0	18.2	-80.3	-15.5	0.00	0.00	0.00
2,474.7	7.82	282.78	2,469.0	20.4	-90.2	-17.4	0.00	0.00	0.00
Fox Hills Mkr 1									
2,500.0	7.82	282.78	2,494.1	21.2	-93.5	-18.1	0.00	0.00	0.00
2,600.0	7.82	282.78	2,593.1	24.2	-106.8	-20.7	0.00	0.00	0.00
2,700.0	7.82	282.78	2,692.2	27.2	-120.1	-23.2	0.00	0.00	0.00
2,800.0	7.82	282.78	2,791.3	30.2	-133.3	-25.8	0.00	0.00	0.00
2,900.0	7.82	282.78	2,890.3	33.2	-146.6	-28.4	0.00	0.00	0.00
3,000.0	7.82	282.78	2,989.4	36.3	-159.9	-30.9	0.00	0.00	0.00
3,100.0	7.82	282.78	3,088.5	39.3	-173.1	-33.5	0.00	0.00	0.00
3,200.0	7.82	282.78	3,187.5	42.3	-186.4	-36.1	0.00	0.00	0.00
3,300.0	7.82	282.78	3,286.6	45.3	-199.7	-38.6	0.00	0.00	0.00
3,400.0	7.82	282.78	3,385.7	48.3	-212.9	-41.2	0.00	0.00	0.00
3,500.0	7.82	282.78	3,484.8	51.3	-226.2	-43.7	0.00	0.00	0.00
3,600.0	7.82	282.78	3,583.8	54.3	-239.5	-46.3	0.00	0.00	0.00
3,626.6	7.82	282.78	3,610.2	55.1	-243.0	-47.0	0.00	0.00	0.00
Start Drop -2.00									
3,700.0	6.35	282.78	3,683.0	57.1	-251.8	-48.7	2.00	-2.00	0.00
3,800.0	4.35	282.78	3,782.6	59.2	-260.9	-50.5	2.00	-2.00	0.00
3,900.0	2.35	282.78	3,882.4	60.5	-266.6	-51.6	2.00	-2.00	0.00
4,000.0	0.35	282.78	3,982.4	61.0	-268.9	-52.0	2.00	-2.00	0.00
4,017.6	0.00	0.00	4,000.0	61.0	-269.0	-52.0	2.00	-2.00	0.00
4,100.0	0.00	0.00	4,082.4	61.0	-269.0	-52.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,182.4	61.0	-269.0	-52.0	0.00	0.00	0.00
4,284.6	0.00	0.00	4,267.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Teapot									

Database:	Landmark	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Project:	Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site:	Motu East Pad Sec.28-T12N-R65W	North Reference:	True
Well:	Motu East 28-33-4-16-2CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (9-12-14)		

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)
4,300.0	0.00	0.00	4,282.4	61.0	-269.0	-52.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,382.4	61.0	-269.0	-52.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,482.4	61.0	-269.0	-52.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,582.4	61.0	-269.0	-52.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,682.4	61.0	-269.0	-52.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,782.4	61.0	-269.0	-52.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,882.4	61.0	-269.0	-52.0	0.00	0.00	0.00
5,000.0	0.00	0.00	4,982.4	61.0	-269.0	-52.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,082.4	61.0	-269.0	-52.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,182.4	61.0	-269.0	-52.0	0.00	0.00	0.00
5,220.6	0.00	0.00	5,203.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Parkman									
5,252.6	0.00	0.00	5,235.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Sussex									
5,300.0	0.00	0.00	5,282.4	61.0	-269.0	-52.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,382.4	61.0	-269.0	-52.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,482.4	61.0	-269.0	-52.0	0.00	0.00	0.00
5,589.6	0.00	0.00	5,572.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Pierre Upper Mkr1									
5,600.0	0.00	0.00	5,582.4	61.0	-269.0	-52.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,682.4	61.0	-269.0	-52.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,782.4	61.0	-269.0	-52.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,882.4	61.0	-269.0	-52.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,982.4	61.0	-269.0	-52.0	0.00	0.00	0.00
6,005.6	0.00	0.00	5,988.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Sussex Mkr1									
6,100.0	0.00	0.00	6,082.4	61.0	-269.0	-52.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,182.4	61.0	-269.0	-52.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,282.4	61.0	-269.0	-52.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,382.4	61.0	-269.0	-52.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,482.4	61.0	-269.0	-52.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,582.4	61.0	-269.0	-52.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,682.4	61.0	-269.0	-52.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,782.4	61.0	-269.0	-52.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,882.4	61.0	-269.0	-52.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,982.4	61.0	-269.0	-52.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,082.4	61.0	-269.0	-52.0	0.00	0.00	0.00
7,172.6	0.00	0.00	7,155.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Shannon									
7,200.0	0.00	0.00	7,182.4	61.0	-269.0	-52.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,282.4	61.0	-269.0	-52.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,382.4	61.0	-269.0	-52.0	0.00	0.00	0.00
7,420.6	0.00	0.00	7,403.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Pierre									
7,460.6	0.00	0.00	7,443.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Pierre Mkr1									
7,500.0	0.00	0.00	7,482.4	61.0	-269.0	-52.0	0.00	0.00	0.00
7,587.6	0.00	0.00	7,570.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Pierre Mkr2									
7,600.0	0.00	0.00	7,582.4	61.0	-269.0	-52.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,682.4	61.0	-269.0	-52.0	0.00	0.00	0.00
7,715.6	0.00	0.00	7,698.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Pierre Mkr3									

Database:	Landmark	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Project:	Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site:	Motu East Pad Sec.28-T12N-R65W	North Reference:	True
Well:	Motu East 28-33-4-16-2CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (9-12-14)		

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)
7,800.0	0.00	0.00	7,782.4	61.0	-269.0	-52.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,882.4	61.0	-269.0	-52.0	0.00	0.00	0.00
8,000.0	0.00	0.00	7,982.4	61.0	-269.0	-52.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,082.4	61.0	-269.0	-52.0	0.00	0.00	0.00
8,127.6	0.00	0.00	8,110.0	61.0	-269.0	-52.0	0.00	0.00	0.00
Pierre Mkr4									
8,179.0	0.00	0.00	8,161.4	61.0	-269.0	-52.0	0.00	0.00	0.00
KOP #2 - Start Build 9.00									
8,200.0	1.89	180.40	8,182.4	60.7	-269.0	-51.7	8.99	8.99	0.00
8,229.7	4.56	180.40	8,212.0	59.0	-269.0	-50.0	9.00	9.00	0.00
Pierre Mkr5									
8,300.0	10.89	180.40	8,281.6	49.5	-269.1	-40.6	9.00	9.00	0.00
8,400.0	19.89	180.40	8,378.0	23.0	-269.3	-14.1	9.00	9.00	0.00
8,419.3	21.63	180.40	8,396.0	16.2	-269.3	-7.2	9.00	9.00	0.00
Base Steele Mkr									
8,494.4	28.38	180.40	8,464.0	-15.5	-269.5	24.5	9.00	9.00	0.00
Sharon Springs									
8,500.0	28.89	180.40	8,468.9	-18.2	-269.5	27.2	9.00	9.00	0.00
8,511.6	29.93	180.40	8,479.0	-23.9	-269.6	32.8	9.00	9.00	0.00
Niobrara									
8,566.0	34.83	180.40	8,525.0	-53.1	-269.8	62.0	9.00	9.00	0.00
N100 (A)									
8,583.3	36.38	180.40	8,539.0	-63.1	-269.9	72.0	9.00	9.00	0.00
N300 (B)									
8,600.0	37.89	180.40	8,552.3	-73.2	-269.9	82.1	9.00	9.00	0.00
8,629.2	40.52	180.40	8,575.0	-91.7	-270.1	100.6	9.00	9.00	0.00
N500									
8,700.0	46.89	180.40	8,626.1	-140.5	-270.4	149.4	9.00	9.00	0.00
8,710.1	47.80	180.40	8,633.0	-148.0	-270.4	156.9	9.00	9.00	0.00
N600									
8,800.0	55.89	180.40	8,688.5	-218.6	-270.9	227.5	9.00	9.00	0.00
8,836.4	59.16	180.40	8,708.0	-249.3	-271.1	258.2	9.00	9.00	0.00
N700 (C)									
8,900.0	64.89	180.40	8,737.8	-305.4	-271.5	314.3	9.00	9.00	0.00
9,000.0	73.89	180.40	8,773.0	-398.9	-272.2	407.8	9.00	9.00	0.00
9,003.7	74.22	180.40	8,774.0	-402.5	-272.2	411.3	9.00	9.00	0.00
N800 (Fort Hayes)									
9,091.5	82.13	180.40	8,792.0	-488.4	-272.8	497.2	9.00	9.00	0.00
N900									
9,099.2	82.81	180.40	8,793.0	-496.0	-272.8	504.8	9.00	9.00	0.00
Codell									
9,100.0	82.89	180.40	8,793.1	-496.8	-272.9	505.6	9.00	9.00	0.00
9,179.0	90.00	180.40	8,798.0	-575.6	-273.4	584.4	9.00	9.00	0.00
9,179.1	90.00	180.40	8,798.0	-575.7	-273.4	584.5	0.00	0.00	0.00
7"									
9,180.3	90.00	180.41	8,798.0	-576.8	-273.4	585.6	1.02	0.00	1.02
9,200.0	90.00	180.41	8,798.0	-596.6	-273.5	605.4	0.00	0.00	0.00
9,300.0	90.00	180.41	8,798.0	-696.6	-274.3	705.3	0.00	0.00	0.00
9,400.0	90.00	180.41	8,798.0	-796.6	-275.0	805.3	0.00	0.00	0.00
9,500.0	90.00	180.41	8,798.0	-896.6	-275.7	905.2	0.00	0.00	0.00
9,600.0	90.00	180.41	8,798.0	-996.6	-276.4	1,005.2	0.00	0.00	0.00
9,700.0	90.00	180.41	8,798.0	-1,096.6	-277.1	1,105.2	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Project:	Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site:	Motu East Pad Sec.28-T12N-R65W	North Reference:	True
Well:	Motu East 28-33-4-16-2CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (9-12-14)		

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)
9,800.0	90.00	180.41	8,798.0	-1,196.6	-277.8	1,205.1	0.00	0.00	0.00
9,900.0	90.00	180.41	8,798.0	-1,296.6	-278.5	1,305.1	0.00	0.00	0.00
10,000.0	90.00	180.41	8,798.0	-1,396.6	-279.2	1,405.1	0.00	0.00	0.00
10,100.0	90.00	180.41	8,798.0	-1,496.6	-279.9	1,505.0	0.00	0.00	0.00
10,200.0	90.00	180.41	8,798.0	-1,596.6	-280.7	1,605.0	0.00	0.00	0.00
10,300.0	90.00	180.41	8,798.0	-1,696.6	-281.4	1,705.0	0.00	0.00	0.00
10,400.0	90.00	180.41	8,798.0	-1,796.6	-282.1	1,804.9	0.00	0.00	0.00
10,500.0	90.00	180.41	8,798.0	-1,896.6	-282.8	1,904.9	0.00	0.00	0.00
10,600.0	90.00	180.41	8,798.0	-1,996.6	-283.5	2,004.9	0.00	0.00	0.00
10,700.0	90.00	180.41	8,798.0	-2,096.6	-284.2	2,104.8	0.00	0.00	0.00
10,800.0	90.00	180.41	8,798.0	-2,196.5	-284.9	2,204.8	0.00	0.00	0.00
10,900.0	90.00	180.41	8,798.0	-2,296.5	-285.6	2,304.8	0.00	0.00	0.00
11,000.0	90.00	180.41	8,798.0	-2,396.5	-286.4	2,404.7	0.00	0.00	0.00
11,100.0	90.00	180.41	8,798.0	-2,496.5	-287.1	2,504.7	0.00	0.00	0.00
11,200.0	90.00	180.41	8,798.0	-2,596.5	-287.8	2,604.7	0.00	0.00	0.00
11,300.0	90.00	180.41	8,798.0	-2,696.5	-288.5	2,704.6	0.00	0.00	0.00
11,400.0	90.00	180.41	8,798.0	-2,796.5	-289.2	2,804.6	0.00	0.00	0.00
11,500.0	90.00	180.41	8,798.0	-2,896.5	-289.9	2,904.6	0.00	0.00	0.00
11,600.0	90.00	180.41	8,798.0	-2,996.5	-290.6	3,004.5	0.00	0.00	0.00
11,700.0	90.00	180.41	8,798.0	-3,096.5	-291.3	3,104.5	0.00	0.00	0.00
11,800.0	90.00	180.41	8,798.0	-3,196.5	-292.0	3,204.5	0.00	0.00	0.00
11,900.0	90.00	180.41	8,798.0	-3,296.5	-292.8	3,304.4	0.00	0.00	0.00
12,000.0	90.00	180.41	8,798.0	-3,396.5	-293.5	3,404.4	0.00	0.00	0.00
12,100.0	90.00	180.41	8,798.0	-3,496.5	-294.2	3,504.4	0.00	0.00	0.00
12,200.0	90.00	180.41	8,798.0	-3,596.5	-294.9	3,604.3	0.00	0.00	0.00
12,300.0	90.00	180.41	8,798.0	-3,696.5	-295.6	3,704.3	0.00	0.00	0.00
12,400.0	90.00	180.41	8,798.0	-3,796.5	-296.3	3,804.3	0.00	0.00	0.00
12,500.0	90.00	180.41	8,798.0	-3,896.5	-297.0	3,904.2	0.00	0.00	0.00
12,600.0	90.00	180.41	8,798.0	-3,996.5	-297.7	4,004.2	0.00	0.00	0.00
12,700.0	90.00	180.41	8,798.0	-4,096.5	-298.4	4,104.2	0.00	0.00	0.00
12,800.0	90.00	180.41	8,798.0	-4,196.5	-299.2	4,204.1	0.00	0.00	0.00
12,900.0	90.00	180.41	8,798.0	-4,296.5	-299.9	4,304.1	0.00	0.00	0.00
13,000.0	90.00	180.41	8,798.0	-4,396.5	-300.6	4,404.1	0.00	0.00	0.00
13,100.0	90.00	180.41	8,798.0	-4,496.5	-301.3	4,504.0	0.00	0.00	0.00
13,200.0	90.00	180.41	8,798.0	-4,596.5	-302.0	4,604.0	0.00	0.00	0.00
13,300.0	90.00	180.41	8,798.0	-4,696.5	-302.7	4,704.0	0.00	0.00	0.00
13,400.0	90.00	180.41	8,798.0	-4,796.5	-303.4	4,803.9	0.00	0.00	0.00
13,500.0	90.00	180.41	8,798.0	-4,896.5	-304.1	4,903.9	0.00	0.00	0.00
13,600.0	90.00	180.41	8,798.0	-4,996.5	-304.8	5,003.8	0.00	0.00	0.00
13,700.0	90.00	180.41	8,798.0	-5,096.5	-305.6	5,103.8	0.00	0.00	0.00
13,800.0	90.00	180.41	8,798.0	-5,196.5	-306.3	5,203.8	0.00	0.00	0.00
13,900.0	90.00	180.41	8,798.0	-5,296.5	-307.0	5,303.7	0.00	0.00	0.00
14,000.0	90.00	180.41	8,798.0	-5,396.5	-307.7	5,403.7	0.00	0.00	0.00
14,100.0	90.00	180.41	8,798.0	-5,496.5	-308.4	5,503.7	0.00	0.00	0.00
14,200.0	90.00	180.41	8,798.0	-5,596.5	-309.1	5,603.6	0.00	0.00	0.00
14,300.0	90.00	180.41	8,798.0	-5,696.5	-309.8	5,703.6	0.00	0.00	0.00
14,400.0	90.00	180.41	8,798.0	-5,796.5	-310.5	5,803.6	0.00	0.00	0.00
14,500.0	90.00	180.41	8,798.0	-5,896.5	-311.2	5,903.5	0.00	0.00	0.00
14,600.0	90.00	180.41	8,798.0	-5,996.5	-312.0	6,003.5	0.00	0.00	0.00
14,700.0	90.00	180.41	8,798.0	-6,096.4	-312.7	6,103.5	0.00	0.00	0.00
14,800.0	90.00	180.41	8,798.0	-6,196.4	-313.4	6,203.4	0.00	0.00	0.00
14,900.0	90.00	180.41	8,798.0	-6,296.4	-314.1	6,303.4	0.00	0.00	0.00
15,000.0	90.00	180.41	8,798.0	-6,396.4	-314.8	6,403.4	0.00	0.00	0.00
15,100.0	90.00	180.41	8,798.0	-6,496.4	-315.5	6,503.3	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Project:	Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site:	Motu East Pad Sec.28-T12N-R65W	North Reference:	True
Well:	Motu East 28-33-4-16-2CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (9-12-14)		

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)
15,200.0	90.00	180.41	8,798.0	-6,596.4	-316.2	6,603.3	0.00	0.00	0.00
15,300.0	90.00	180.41	8,798.0	-6,696.4	-316.9	6,703.3	0.00	0.00	0.00
15,400.0	90.00	180.41	8,798.0	-6,796.4	-317.6	6,803.2	0.00	0.00	0.00
15,500.0	90.00	180.41	8,798.0	-6,896.4	-318.4	6,903.2	0.00	0.00	0.00
15,600.0	90.00	180.41	8,798.0	-6,996.4	-319.1	7,003.2	0.00	0.00	0.00
15,700.0	90.00	180.41	8,798.0	-7,096.4	-319.8	7,103.1	0.00	0.00	0.00
15,800.0	90.00	180.41	8,798.0	-7,196.4	-320.5	7,203.1	0.00	0.00	0.00
15,900.0	90.00	180.41	8,798.0	-7,296.4	-321.2	7,303.1	0.00	0.00	0.00
16,000.0	90.00	180.41	8,798.0	-7,396.4	-321.9	7,403.0	0.00	0.00	0.00
16,100.0	90.00	180.41	8,798.0	-7,496.4	-322.6	7,503.0	0.00	0.00	0.00
16,200.0	90.00	180.41	8,798.0	-7,596.4	-323.3	7,603.0	0.00	0.00	0.00
16,300.0	90.00	180.41	8,798.0	-7,696.4	-324.1	7,702.9	0.00	0.00	0.00
16,400.0	90.00	180.41	8,798.0	-7,796.4	-324.8	7,802.9	0.00	0.00	0.00
16,500.0	90.00	180.41	8,798.0	-7,896.4	-325.5	7,902.9	0.00	0.00	0.00
16,600.0	90.00	180.41	8,798.0	-7,996.4	-326.2	8,002.8	0.00	0.00	0.00
16,700.0	90.00	180.41	8,798.0	-8,096.4	-326.9	8,102.8	0.00	0.00	0.00
16,800.0	90.00	180.41	8,798.0	-8,196.4	-327.6	8,202.8	0.00	0.00	0.00
16,900.0	90.00	180.41	8,798.0	-8,296.4	-328.3	8,302.7	0.00	0.00	0.00
17,000.0	90.00	180.41	8,798.0	-8,396.4	-329.0	8,402.7	0.00	0.00	0.00
17,100.0	90.00	180.41	8,798.0	-8,496.4	-329.7	8,502.7	0.00	0.00	0.00
17,200.0	90.00	180.41	8,798.0	-8,596.4	-330.5	8,602.6	0.00	0.00	0.00
17,300.0	90.00	180.41	8,798.0	-8,696.4	-331.2	8,702.6	0.00	0.00	0.00
17,400.0	90.00	180.41	8,798.0	-8,796.4	-331.9	8,802.6	0.00	0.00	0.00
17,500.0	90.00	180.41	8,798.0	-8,896.4	-332.6	8,902.5	0.00	0.00	0.00
17,600.0	90.00	180.41	8,798.0	-8,996.4	-333.3	9,002.5	0.00	0.00	0.00
17,700.0	90.00	180.41	8,798.0	-9,096.4	-334.0	9,102.4	0.00	0.00	0.00
17,800.0	90.00	180.41	8,798.0	-9,196.4	-334.7	9,202.4	0.00	0.00	0.00
17,900.0	90.00	180.41	8,798.0	-9,296.4	-335.4	9,302.4	0.00	0.00	0.00
18,000.0	90.00	180.41	8,798.0	-9,396.4	-336.1	9,402.3	0.00	0.00	0.00
18,100.0	90.00	180.41	8,798.0	-9,496.4	-336.9	9,502.3	0.00	0.00	0.00
18,200.0	90.00	180.41	8,798.0	-9,596.4	-337.6	9,602.3	0.00	0.00	0.00
18,300.0	90.00	180.41	8,798.0	-9,696.4	-338.3	9,702.2	0.00	0.00	0.00
18,400.0	90.00	180.41	8,798.0	-9,796.4	-339.0	9,802.2	0.00	0.00	0.00
18,500.0	90.00	180.41	8,798.0	-9,896.4	-339.7	9,902.2	0.00	0.00	0.00
18,600.0	90.00	180.41	8,798.0	-9,996.4	-340.4	10,002.1	0.00	0.00	0.00
18,700.0	90.00	180.41	8,798.0	-10,096.3	-341.1	10,102.1	0.00	0.00	0.00
18,800.0	90.00	180.41	8,798.0	-10,196.3	-341.8	10,202.1	0.00	0.00	0.00
18,900.0	90.00	180.41	8,798.0	-10,296.3	-342.5	10,302.0	0.00	0.00	0.00
18,903.7	90.00	180.41	8,798.0	-10,300.0	-342.6	10,305.7	0.00	0.00	0.00
TD at 18903.7									

Database:	Landmark	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Project:	Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site:	Motu East Pad Sec.28-T12N-R65W	North Reference:	True
Well:	Motu East 28-33-4-16-2CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (9-12-14)		

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Landing Pt. 330'FNL & 388'F - plan hits target center - Point	0.00	0.00	8,798.0	-575.7	-273.4	1,597,362.11	3,232,074.36	40.970100	-104.659650
SHL 250'FSL & 388'F - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,597,940.36	3,232,342.29	40.971680	-104.658660
Sectionline - plan misses target center by 403.8ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E) - Polygon	0.00	0.00	0.0	-246.4	319.9	1,597,697.04	3,232,664.54	40.971004	-104.657502
Point 1			0.0	0.0	0.0	1,597,697.04	3,232,664.54		
Point 2			0.0	0.0	-2,100.0	1,597,677.11	3,230,564.57		
Point 3			0.0	0.0	0.0	1,597,697.04	3,232,664.54		
BHL 330'FSL & 660'F - plan hits target center - Point	0.00	0.00	8,798.0	-10,300.1	-342.6	1,587,637.16	3,232,097.45	40.943410	-104.659900

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
9,179.1	8,798.0	7"	7	7-1/2	

Database:	Landmark	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Company:	Cirque Resources LP	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Project:	Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site:	Motu East Pad Sec.28-T12N-R65W	North Reference:	True
Well:	Motu East 28-33-4-16-2CH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (9-12-14)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,799.2	1,799.0	Fox Hills				
2,474.7	2,469.0	Fox Hills Mkr 1				
4,284.6	4,267.0	Teapot				
5,220.6	5,203.0	Parkman				
5,252.6	5,235.0	Sussex				
5,589.6	5,572.0	Pierre Upper Mkr1				
6,005.6	5,988.0	Sussex Mkr1				
7,172.6	7,155.0	Shannon				
7,420.6	7,403.0	Pierre				
7,460.6	7,443.0	Pierre Mkr1				
7,587.6	7,570.0	Pierre Mkr2				
7,715.6	7,698.0	Pierre Mkr3				
8,127.6	8,110.0	Pierre Mkr4				
8,229.7	8,212.0	Pierre Mkr5				
8,419.3	8,396.0	Base Steele Mkr				
8,494.4	8,464.0	Sharon Springs				
8,511.6	8,479.0	Niobrara				
8,566.0	8,525.0	N100 (A)				
8,583.3	8,539.0	N300 (B)				
8,629.2	8,575.0	N500				
8,710.1	8,633.0	N600				
8,836.4	8,708.0	N700 (C)				
9,003.7	8,774.0	N800 (Fort Hayes)				
9,091.5	8,792.0	N900				
9,099.2	8,793.0	Codell				
	8,813.0	Carlile				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,600.0	1,600.0	0.0	0.0	KOP - Start Build 2.00
3,626.6	3,610.2	55.1	-243.0	Start Drop -2.00
8,179.0	8,161.4	61.0	-269.0	KOP #2 - Start Build 9.00
18,903.7	8,798.0	-10,300.0	-342.6	TD at 18903.7



Cirque Resources LP

Sec.28-T12N-R65W

Motu East Pad Sec.28-T12N-R65W

Motu East 28-33-4-16-2CH

Wellbore #1

Plan #2 (9-12-14)

Anticollision Report

12 September, 2014

Offset Design				Motu East Pad Sec.28-T12N-R65W - Motu East 28-21-16-1CH - Wellbore #1 - Plan #2 (9-12-14)									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)				
2,100.0	2,097.8	2,100.3	2,100.3	4.6	4.6	173.32	0.8	37.1	78.1	69.0	9.07	8.605			
2,200.0	2,196.8	2,202.7	2,202.5	4.9	4.8	173.03	3.4	32.4	86.7	77.2	9.50	9.129			
2,300.0	2,295.9	2,305.5	2,304.9	5.1	5.1	171.90	7.8	24.4	92.1	82.2	9.93	9.271			
2,400.0	2,395.0	2,405.6	2,404.4	5.4	5.3	170.40	13.0	14.8	95.7	85.3	10.37	9.223			
2,500.0	2,494.1	2,505.5	2,503.7	5.7	5.5	169.02	18.2	5.2	99.3	88.4	10.82	9.178			
2,600.0	2,593.1	2,605.4	2,603.0	6.0	5.8	167.73	23.4	-4.3	102.9	91.7	11.27	9.136			
2,700.0	2,692.2	2,705.3	2,702.3	6.3	6.0	166.54	28.6	-13.9	106.6	94.9	11.72	9.097			
2,800.0	2,791.3	2,805.2	2,801.7	6.6	6.3	165.42	33.8	-23.5	110.4	98.2	12.19	9.059			
2,900.0	2,890.3	2,905.1	2,901.0	6.9	6.5	164.38	39.0	-33.0	114.2	101.5	12.66	9.024			
3,000.0	2,989.4	3,005.0	3,000.3	7.2	6.8	163.40	44.2	-42.6	118.0	104.9	13.13	8.989			
3,100.0	3,088.5	3,104.9	3,099.6	7.5	7.1	162.49	49.4	-52.2	121.9	108.3	13.61	8.957			
3,200.0	3,187.5	3,204.8	3,198.9	7.9	7.3	161.63	54.6	-61.7	125.8	111.7	14.09	8.925			
3,300.0	3,286.6	3,304.8	3,298.2	8.2	7.6	160.82	59.8	-71.3	129.7	115.1	14.58	8.894			
3,400.0	3,385.7	3,404.7	3,397.5	8.5	7.9	160.06	65.0	-80.9	133.6	118.6	15.08	8.864			
3,500.0	3,484.8	3,504.6	3,496.8	8.8	8.1	159.35	70.2	-90.5	137.6	122.0	15.57	8.836			
3,600.0	3,583.8	3,604.5	3,596.2	9.1	8.4	158.68	75.4	-100.0	141.6	125.5	16.08	8.808			
3,700.0	3,683.0	3,704.4	3,695.5	9.4	8.7	157.91	80.6	-109.6	144.7	128.1	16.59	8.723			
3,800.0	3,782.6	3,804.3	3,794.8	9.6	9.0	156.65	85.8	-119.2	144.8	127.7	17.09	8.473			
3,900.0	3,882.4	3,904.2	3,894.1	9.8	9.3	154.78	91.1	-128.7	141.8	124.2	17.59	8.061			
4,000.0	3,982.4	4,003.8	3,993.1	10.0	9.6	152.14	96.2	-138.3	135.8	117.7	18.09	7.506			
4,100.0	4,082.4	4,103.2	4,091.9	10.2	9.8	71.56	101.4	-147.8	128.1	109.5	18.65	6.870			
4,200.0	4,182.4	4,202.6	4,190.7	10.4	10.1	67.79	106.6	-157.3	120.9	101.7	19.25	6.283			
4,300.0	4,282.4	4,302.0	4,289.5	10.6	10.4	63.58	111.8	-166.8	114.3	94.5	19.87	5.754			
4,400.0	4,382.4	4,401.4	4,388.4	10.8	10.7	58.88	117.0	-176.3	108.4	87.9	20.51	5.285			
4,500.0	4,482.4	4,500.8	4,487.2	11.0	11.0	53.68	122.1	-185.9	103.3	82.1	21.18	4.878			
4,600.0	4,582.4	4,600.2	4,586.0	11.2	11.3	47.99	127.3	-195.4	99.2	77.3	21.86	4.537			
4,700.0	4,682.4	4,699.6	4,684.8	11.4	11.6	41.88	132.5	-204.9	96.1	73.5	22.53	4.264			
4,800.0	4,782.4	4,799.0	4,783.6	11.5	11.9	35.45	137.7	-214.4	94.1	70.9	23.18	4.061			
4,900.0	4,882.4	4,898.4	4,882.4	11.7	12.1	28.84	142.8	-223.9	93.4	69.6	23.79	3.928			
4,904.4	4,886.8	4,902.9	4,886.8	11.8	12.2	28.55	143.1	-224.4	93.4	69.6	23.81	3.924			
5,000.0	4,982.4	4,997.9	4,981.2	11.9	12.4	22.22	148.0	-233.5	94.0	69.7	24.34	3.863			
5,100.0	5,082.4	5,097.3	5,080.0	12.1	12.7	15.77	153.2	-243.0	95.8	71.0	24.83	3.859			
5,200.0	5,182.4	5,196.7	5,178.9	12.3	13.0	9.62	158.4	-252.5	98.8	73.6	25.27	3.911			
5,300.0	5,282.4	5,297.4	5,279.2	12.6	13.3	4.57	162.9	-260.8	102.3	76.7	25.63	3.991			
5,400.0	5,382.4	5,398.8	5,380.4	12.8	13.5	1.56	165.8	-266.1	104.9	78.9	25.96	4.039			
5,500.0	5,482.4	5,500.5	5,482.1	13.0	13.6	0.38	167.0	-268.3	106.0	79.7	26.31	4.028			
5,600.0	5,582.4	5,600.8	5,582.4	13.2	13.8	0.36	167.0	-268.3	106.0	79.3	26.69	3.972			
5,700.0	5,682.4	5,700.8	5,682.4	13.4	14.0	0.36	167.0	-268.3	106.0	78.9	27.09	3.913			
5,800.0	5,782.4	5,800.8	5,782.4	13.6	14.2	0.36	167.0	-268.3	106.0	78.5	27.50	3.855			
5,900.0	5,882.4	5,900.8	5,882.4	13.8	14.4	0.36	167.0	-268.3	106.0	78.1	27.91	3.799			
6,000.0	5,982.4	6,000.8	5,982.4	14.0	14.6	0.36	167.0	-268.3	106.0	77.7	28.31	3.744			
6,100.0	6,082.4	6,100.8	6,082.4	14.2	14.8	0.36	167.0	-268.3	106.0	77.3	28.72	3.690			
6,200.0	6,182.4	6,200.8	6,182.4	14.4	15.0	0.36	167.0	-268.3	106.0	76.9	29.13	3.638			
6,300.0	6,282.4	6,300.8	6,282.4	14.6	15.2	0.36	167.0	-268.3	106.0	76.5	29.55	3.588			
6,400.0	6,382.4	6,400.8	6,382.4	14.8	15.4	0.36	167.0	-268.3	106.0	76.0	29.96	3.538			
6,500.0	6,482.4	6,500.8	6,482.4	15.0	15.6	0.36	167.0	-268.3	106.0	75.6	30.37	3.490			
6,600.0	6,582.4	6,600.8	6,582.4	15.2	15.8	0.36	167.0	-268.3	106.0	75.2	30.79	3.443			
6,700.0	6,682.4	6,700.8	6,682.4	15.4	16.0	0.36	167.0	-268.3	106.0	74.8	31.20	3.397			
6,800.0	6,782.4	6,800.8	6,782.4	15.7	16.2	0.36	167.0	-268.3	106.0	74.4	31.62	3.352			
6,900.0	6,882.4	6,900.8	6,882.4	15.9	16.4	0.36	167.0	-268.3	106.0	74.0	32.04	3.309			
7,000.0	6,982.4	7,000.8	6,982.4	16.1	16.6	0.36	167.0	-268.3	106.0	73.5	32.46	3.266			
7,100.0	7,082.4	7,100.8	7,082.4	16.3	16.8	0.36	167.0	-268.3	106.0	73.1	32.88	3.224			

Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Project:	Sec.28-T12N-R65W	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Reference Site:	Motu East Pad Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Motu East 28-33-4-16-2CH	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 #2 (9-12-14)	Offset TVD Reference:	Offset Datum

Offset Design Motu East Pad Sec.28-T12N-R65W - Motu East 28-21-16-1CH - Wellbore #1 - Plan #2 (9-12-14)												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)	Minimum Separation (ft)	Separation Factor	Warning
7,200.0	7,182.4	7,200.8	7,182.4	16.5	17.0	0.36	167.0	-268.3	106.0	72.7	33.30	3.184	
7,300.0	7,282.4	7,300.8	7,282.4	16.7	17.2	0.36	167.0	-268.3	106.0	72.3	33.72	3.144	
7,400.0	7,382.4	7,400.8	7,382.4	16.9	17.4	0.36	167.0	-268.3	106.0	71.9	34.14	3.105	
7,500.0	7,482.4	7,500.8	7,482.4	17.1	17.6	0.36	167.0	-268.3	106.0	71.4	34.56	3.067	
7,600.0	7,582.4	7,600.8	7,582.4	17.4	17.9	0.36	167.0	-268.3	106.0	71.0	34.99	3.030	
7,700.0	7,682.4	7,700.8	7,682.4	17.6	18.1	0.36	167.0	-268.3	106.0	70.6	35.41	2.994	
7,800.0	7,782.4	7,800.8	7,782.4	17.8	18.3	0.36	167.0	-268.3	106.0	70.2	35.83	2.958	
7,900.0	7,882.4	7,900.8	7,882.4	18.0	18.5	0.36	167.0	-268.3	106.0	69.7	36.26	2.924	
8,000.0	7,982.4	8,000.8	7,982.4	18.2	18.7	0.36	167.0	-268.3	106.0	69.3	36.68	2.890	
8,100.0	8,082.4	8,100.8	8,082.4	18.4	18.9	0.36	167.0	-268.3	106.0	68.9	37.11	2.856	
8,152.3	8,134.6	8,153.1	8,134.6	18.5	19.0	179.96	167.0	-268.3	106.5	69.1	37.33	2.852	
8,200.0	8,182.4	8,197.8	8,179.3	18.6	19.1	179.96	167.3	-268.3	106.6	69.1	37.50	2.844 SF	
8,300.0	8,281.6	8,280.5	8,261.6	18.8	19.3	179.96	174.9	-268.3	127.0	89.7	37.31	3.403	
8,400.0	8,378.0	8,350.0	8,329.5	18.9	19.5	179.95	189.6	-268.2	173.5	137.0	36.46	4.758	
8,500.0	8,468.9	8,407.8	8,384.5	19.1	19.6	179.95	207.4	-268.1	240.9	205.9	34.99	6.884	
8,600.0	8,552.3	8,450.0	8,423.5	19.3	19.8	179.94	223.5	-268.1	323.4	290.4	33.00	9.801	
8,700.0	8,626.1	8,471.1	8,442.5	19.5	19.8	179.91	232.4	-268.0	415.7	385.1	30.62	13.577	
8,800.0	8,688.5	8,482.9	8,453.1	19.7	19.9	179.81	237.8	-268.0	513.5	485.4	28.08	18.285	
8,900.0	8,737.8	8,485.0	8,455.0	20.2	19.9	0.46	238.7	-268.0	613.3	587.6	25.68	23.882	
9,000.0	8,773.0	8,479.4	8,450.0	20.7	19.9	0.08	236.2	-268.0	712.6	688.8	23.71	30.058	
9,100.0	8,793.1	8,467.7	8,439.6	21.5	19.8	0.04	231.0	-268.0	809.1	786.6	22.55	35.876	
9,200.0	8,798.0	8,450.0	8,423.5	22.4	19.8	0.05	223.5	-268.1	901.5	879.1	22.44	40.172	
9,300.0	8,798.0	8,450.0	8,423.5	23.4	19.8	0.05	223.5	-268.1	993.4	970.7	22.71	43.734	

Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Project:	Sec.28-T12N-R65W	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Reference Site:	Motu East Pad Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Motu East 28-33-4-16-2CH	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 #2 (9-12-14)	Offset TVD Reference:	Offset Datum

Offset Design													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)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-41.4	41.4					
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-41.4	41.4	41.2	0.22	184.293		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-41.4	41.4	40.7	0.67	61.431		
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-41.4	41.4	40.3	1.12	36.859		
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-41.4	41.4	39.8	1.57	26.328		
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-41.4	41.4	39.4	2.02	20.477		
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-41.4	41.4	39.0	2.47	16.754		
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	0.0	-41.4	41.4	38.5	2.92	14.176		
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-41.4	41.4	38.1	3.37	12.286		
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-41.4	41.4	37.6	3.82	10.841		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-41.4	41.4	37.2	4.27	9.700 CC, ES		
1,100.0	1,100.0	1,098.5	1,098.5	2.4	2.3	-89.75	0.2	-43.1	43.1	38.4	4.71	9.166 SF		
1,200.0	1,200.0	1,196.9	1,196.7	2.6	2.6	-89.10	0.8	-48.1	48.3	43.1	5.14	9.396		
1,300.0	1,300.0	1,294.7	1,294.2	2.8	2.8	-88.27	1.7	-56.5	56.8	51.2	5.58	10.182		
1,400.0	1,400.0	1,391.9	1,390.7	3.0	3.0	-87.47	3.0	-68.0	68.7	62.7	6.04	11.381		
1,500.0	1,500.0	1,488.1	1,485.8	3.3	3.3	-86.77	4.7	-82.6	84.0	77.5	6.52	12.875		
1,600.0	1,600.0	1,583.3	1,579.3	3.5	3.6	-86.21	6.6	-100.2	102.6	95.5	7.04	14.565		
1,700.0	1,700.0	1,677.6	1,671.3	3.7	3.9	-85.59	9.0	-120.7	122.7	115.4	7.31	16.790		
1,800.0	1,799.8	1,775.0	1,765.9	3.9	4.3	-84.66	11.6	-143.9	141.6	133.8	7.73	18.313		
1,900.0	1,899.5	1,873.8	1,861.8	4.1	4.7	-83.55	14.2	-167.4	157.1	148.9	8.15	19.262		
2,000.0	1,998.7	1,973.1	1,958.1	4.4	5.2	-82.81	16.9	-191.1	169.2	160.6	8.58	19.715		
2,100.0	2,097.8	2,072.5	2,054.7	4.6	5.6	-9.13	19.6	-214.8	179.9	170.9	9.05	19.886		
2,200.0	2,196.8	2,171.9	2,151.2	4.9	6.1	-9.42	22.3	-238.5	190.6	181.1	9.52	20.031		
2,300.0	2,295.9	2,271.3	2,247.7	5.1	6.5	-9.68	25.0	-262.2	201.3	191.3	9.99	20.151		
2,400.0	2,395.0	2,370.7	2,344.2	5.4	7.0	-9.91	27.6	-285.9	212.0	201.6	10.47	20.250		
2,500.0	2,494.1	2,470.2	2,440.7	5.7	7.5	-10.12	30.3	-309.6	222.8	211.8	10.96	20.333		
2,600.0	2,593.1	2,569.6	2,537.2	6.0	8.0	-10.31	33.0	-333.3	233.5	222.0	11.44	20.401		
2,700.0	2,692.2	2,669.0	2,633.8	6.3	8.5	-10.48	35.7	-357.0	244.2	232.3	11.94	20.458		
2,800.0	2,791.3	2,768.4	2,730.3	6.6	9.0	-10.64	38.4	-380.7	254.9	242.5	12.43	20.506		
2,900.0	2,890.3	2,867.9	2,826.8	6.9	9.5	-10.78	41.0	-404.4	265.7	252.7	12.93	20.546		
3,000.0	2,889.4	2,867.3	2,823.3	7.2	10.0	-10.92	43.7	-428.2	276.4	263.0	13.43	20.579		
3,100.0	3,088.5	3,066.7	3,019.8	7.5	10.5	-11.04	46.4	-451.9	287.1	273.2	13.93	20.606		
3,200.0	3,187.5	3,166.1	3,116.3	7.9	11.0	-11.16	49.1	-475.6	297.9	283.4	14.44	20.628		
3,300.0	3,286.6	3,265.5	3,212.8	8.2	11.5	-11.26	51.8	-499.3	308.6	293.7	14.95	20.647		
3,400.0	3,385.7	3,365.0	3,309.4	8.5	12.0	-11.36	54.4	-523.0	319.3	303.9	15.46	20.662		
3,500.0	3,484.8	3,464.4	3,405.9	8.8	12.5	-11.46	57.1	-546.7	330.1	314.1	15.97	20.674		
3,600.0	3,583.8	3,563.8	3,502.4	9.1	13.0	-11.55	59.8	-570.4	340.8	324.3	16.48	20.684		
3,700.0	3,683.0	3,663.1	3,598.8	9.4	13.6	-11.63	62.5	-594.1	352.5	335.5	16.98	20.763		
3,800.0	3,782.6	3,762.0	3,694.8	9.6	14.1	-11.63	65.1	-617.6	367.4	350.0	17.43	21.080		
3,900.0	3,882.4	3,860.3	3,790.2	9.8	14.6	-11.55	67.8	-641.1	385.7	367.8	17.85	21.604		
4,000.0	3,982.4	3,957.9	3,885.0	10.0	15.1	-11.39	70.4	-664.4	407.3	389.1	18.25	22.324		
4,100.0	4,082.4	4,055.0	3,979.2	10.2	15.6	-88.35	73.0	-687.5	431.2	412.5	18.70	23.064		
4,200.0	4,182.4	4,152.1	4,073.5	10.4	16.1	-88.10	75.7	-710.7	455.1	436.0	19.16	23.749		
4,300.0	4,282.4	4,249.1	4,167.7	10.6	16.6	-87.87	78.3	-733.8	479.0	459.4	19.63	24.400		
4,400.0	4,382.4	4,346.2	4,262.0	10.8	17.1	-87.67	80.9	-757.0	503.0	482.9	20.10	25.019		
4,500.0	4,482.4	4,443.3	4,356.2	11.0	17.6	-87.48	83.5	-780.1	526.9	506.3	20.58	25.608		
4,600.0	4,582.4	4,540.4	4,450.4	11.2	18.1	-87.31	86.1	-803.3	550.9	529.8	21.05	26.169		
4,700.0	4,682.4	4,637.5	4,544.7	11.4	18.6	-87.15	88.7	-826.4	574.8	553.3	21.52	26.705		
4,800.0	4,782.4	4,734.5	4,638.9	11.5	19.1	-87.01	91.4	-849.5	598.8	576.8	22.00	27.217		
4,900.0	4,882.4	4,831.6	4,733.2	11.7	19.6	-86.87	94.0	-872.7	622.7	600.3	22.48	27.705		
5,000.0	4,982.4	4,928.7	4,827.4	11.9	20.1	-86.75	96.6	-895.8	646.7	623.7	22.95	28.173		
5,100.0	5,082.4	5,025.8	4,921.7	12.1	20.6	-86.64	99.2	-919.0	670.7	647.2	23.43	28.621		

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 Motu East 28-33-4-16-2CH
Project:	Sec.28-T12N-R65W	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Reference Site:	Motu East Pad Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Motu East 28-33-4-16-2CH	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 #2 (9-12-14)	Offset TVD Reference:	Offset Datum

Offset Design Motu East Pad Sec.28-T12N-R65W - Motu East 28-21-16-3CH - Wellbore #1 - Plan #2 (9-12-14)												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)	Minimum Separation (ft)	Separation Factor	Warning
5,200.0	5,182.4	5,122.8	5,015.9	12.3	21.1	-86.53	101.8	-942.1	694.6	670.7	23.91	29.050	
5,300.0	5,282.4	5,219.9	5,110.1	12.6	21.6	-86.43	104.4	-965.3	718.6	694.2	24.39	29.462	
5,400.0	5,382.4	5,317.0	5,204.4	12.8	22.1	-86.34	107.1	-988.4	742.6	717.7	24.87	29.857	
5,500.0	5,482.4	5,414.1	5,298.6	13.0	22.6	-86.25	109.7	-1,011.6	766.5	741.2	25.35	30.236	
5,600.0	5,582.4	5,511.2	5,392.9	13.2	23.2	-86.17	112.3	-1,034.7	790.5	764.7	25.83	30.601	
5,700.0	5,682.4	5,608.2	5,487.1	13.4	23.7	-86.09	114.9	-1,057.9	814.5	788.2	26.31	30.952	
5,800.0	5,782.4	5,705.3	5,581.3	13.6	24.2	-86.02	117.5	-1,081.0	838.4	811.6	26.80	31.290	
5,900.0	5,882.4	5,802.4	5,675.6	13.8	24.7	-85.95	120.1	-1,104.2	862.4	835.1	27.28	31.615	
6,000.0	5,982.4	5,899.5	5,769.8	14.0	25.2	-85.88	122.8	-1,127.3	886.4	858.6	27.76	31.928	
6,100.0	6,082.4	5,996.5	5,864.1	14.2	25.7	-85.82	125.4	-1,150.5	910.4	882.1	28.25	32.231	
6,200.0	6,182.4	6,093.6	5,958.3	14.4	26.2	-85.76	128.0	-1,173.6	934.4	905.6	28.73	32.523	
6,300.0	6,282.4	6,190.7	6,052.6	14.6	26.7	-85.71	130.6	-1,196.8	958.3	929.1	29.21	32.804	
6,400.0	6,382.4	6,287.8	6,146.8	14.8	27.2	-85.66	133.2	-1,219.9	982.3	952.6	29.70	33.076	

Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Project:	Sec.28-T12N-R65W	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Reference Site:	Motu East Pad Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Motu East 28-33-4-16-2CH	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 #2 (9-12-14)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum		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)	Minimum Separation (ft)	Separation Factor	
0.0	0.0	1.0	1.0	0.0	0.0	-87.39	3.6	-80.1	80.2	80.2	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-87.39	3.6	-80.1	80.2	79.9	0.23	353.137	
166.3	166.3	167.3	167.3	0.3	0.3	-87.39	3.6	-80.1	80.2	79.6	0.53	152.644 CC	
200.0	200.0	200.0	200.0	0.3	0.3	-87.39	3.6	-80.1	80.2	79.5	0.67	118.899 ES	
300.0	300.0	298.2	298.2	0.6	0.5	-87.39	3.7	-81.8	81.9	80.8	1.11	73.741	
400.0	400.0	395.2	395.1	0.8	0.8	-87.39	3.9	-86.7	87.0	85.5	1.55	56.040	
500.0	500.0	491.8	491.3	1.0	1.0	-87.39	4.3	-94.9	95.5	93.5	2.02	47.283	
600.0	600.0	587.7	586.5	1.2	1.3	-87.39	4.8	-106.3	107.3	104.8	2.52	42.616	
700.0	700.0	682.7	680.5	1.5	1.6	-87.39	5.5	-120.6	122.5	119.4	3.06	40.084	
800.0	800.0	776.7	772.8	1.7	2.0	-87.39	6.3	-137.9	140.9	137.2	3.63	38.757	
900.0	900.0	871.2	865.1	1.9	2.4	-87.39	7.2	-158.1	162.3	158.0	4.26	38.105	
1,000.0	1,000.0	968.7	960.2	2.1	2.8	-87.39	8.2	-179.6	184.4	179.5	4.92	37.465	
1,100.0	1,100.0	1,066.2	1,055.3	2.4	3.3	-87.39	9.2	-201.2	206.5	200.9	5.59	36.919	
1,200.0	1,200.0	1,163.7	1,150.4	2.6	3.7	-87.39	10.2	-222.8	228.7	222.4	6.27	36.455	
1,300.0	1,300.0	1,261.3	1,245.5	2.8	4.2	-87.39	11.2	-244.3	250.8	243.8	6.95	36.061	
1,400.0	1,400.0	1,358.8	1,340.6	3.0	4.7	-87.39	12.1	-265.9	272.9	265.3	7.64	35.723	
1,500.0	1,500.0	1,456.3	1,435.7	3.3	5.1	-87.39	13.1	-287.4	295.0	286.7	8.33	35.433	
1,600.0	1,600.0	1,553.8	1,530.8	3.5	5.6	-87.39	14.1	-309.0	317.2	308.1	9.02	35.180	
1,700.0	1,700.0	1,651.7	1,626.3	3.7	6.1	-10.14	15.1	-330.6	337.6	330.0	7.64	44.182	
1,800.0	1,799.8	1,750.2	1,722.4	3.9	6.5	-10.23	16.1	-352.4	354.7	346.6	8.11	43.735	
1,900.0	1,899.5	1,849.3	1,819.0	4.1	7.0	-10.41	17.1	-374.3	368.4	359.8	8.58	42.941	
2,000.0	1,998.7	1,948.7	1,915.9	4.4	7.5	-10.69	18.1	-396.3	378.7	369.6	9.05	41.853	
2,100.0	2,097.8	2,048.3	2,013.0	4.6	8.0	-11.03	19.1	-418.3	387.5	378.0	9.53	40.668	
2,200.0	2,196.8	2,147.9	2,110.2	4.9	8.5	-11.36	20.1	-440.3	396.5	386.4	10.02	39.582	
2,300.0	2,295.9	2,247.5	2,207.3	5.1	9.0	-11.67	21.1	-462.3	405.4	394.9	10.51	38.586	
2,400.0	2,395.0	2,347.0	2,304.4	5.4	9.4	-11.96	22.1	-484.3	414.3	403.3	11.00	37.668	
2,500.0	2,494.1	2,446.6	2,401.5	5.7	9.9	-12.24	23.1	-506.3	423.3	411.8	11.49	36.821	
2,600.0	2,593.1	2,546.2	2,498.6	6.0	10.4	-12.52	24.1	-528.3	432.2	420.2	11.99	36.036	
2,700.0	2,692.2	2,645.8	2,595.7	6.3	10.9	-12.78	25.1	-550.3	441.2	428.7	12.49	35.309	
2,800.0	2,791.3	2,745.3	2,692.8	6.6	11.4	-13.03	26.2	-572.3	450.1	437.1	13.00	34.632	
2,900.0	2,890.3	2,844.9	2,789.9	6.9	11.9	-13.27	27.2	-594.3	459.1	445.6	13.50	34.001	
3,000.0	2,989.4	2,944.5	2,887.0	7.2	12.4	-13.50	28.2	-616.3	468.1	454.1	14.01	33.412	
3,100.0	3,088.5	3,044.1	2,984.1	7.5	12.9	-13.72	29.2	-638.3	477.1	462.6	14.52	32.861	
3,200.0	3,187.5	3,143.7	3,081.3	7.9	13.3	-13.94	30.2	-660.4	486.1	471.1	15.03	32.343	
3,300.0	3,286.6	3,243.2	3,178.4	8.2	13.8	-14.14	31.2	-682.4	495.1	479.6	15.54	31.857	
3,400.0	3,385.7	3,342.8	3,275.5	8.5	14.3	-14.34	32.2	-704.4	504.1	488.1	16.05	31.400	
3,500.0	3,484.8	3,442.4	3,372.6	8.8	14.8	-14.54	33.2	-726.4	513.1	496.6	16.57	30.969	
3,600.0	3,583.8	3,542.0	3,469.7	9.1	15.3	-14.72	34.2	-748.4	522.2	505.1	17.09	30.562	
3,700.0	3,683.0	3,641.5	3,566.7	9.4	15.8	-14.91	35.2	-770.4	532.1	514.5	17.58	30.266	
3,800.0	3,782.6	3,740.6	3,663.4	9.6	16.3	-15.04	36.2	-792.3	545.3	527.2	18.03	30.247 SF	
3,900.0	3,882.4	3,839.2	3,759.6	9.8	16.7	-15.08	37.2	-814.1	561.8	543.3	18.44	30.458	
4,000.0	3,982.4	3,937.2	3,855.1	10.0	17.2	-15.06	38.2	-835.7	581.6	562.7	18.83	30.886	
4,100.0	4,082.4	4,034.7	3,950.3	10.2	17.7	-92.12	39.2	-857.3	603.6	584.3	19.28	31.306	
4,200.0	4,182.4	4,132.3	4,045.4	10.4	18.2	-91.96	40.2	-878.9	625.6	605.9	19.75	31.681	
4,300.0	4,282.4	4,229.8	4,140.5	10.6	18.7	-91.80	41.2	-900.4	647.7	627.5	20.22	32.037	
4,400.0	4,382.4	4,327.3	4,235.6	10.8	19.1	-91.65	42.1	-922.0	669.8	649.1	20.69	32.376	
4,500.0	4,482.4	4,424.8	4,330.7	11.0	19.6	-91.52	43.1	-943.5	691.8	670.7	21.16	32.698	
4,600.0	4,582.4	4,522.4	4,425.8	11.2	20.1	-91.39	44.1	-965.1	713.9	692.3	21.63	33.006	
4,700.0	4,682.4	4,619.9	4,520.9	11.4	20.6	-91.27	45.1	-986.6	736.0	713.9	22.10	33.299	
4,800.0	4,782.4	4,717.4	4,616.0	11.5	21.0	-91.16	46.1	-1,008.2	758.0	735.5	22.58	33.578	
4,900.0	4,882.4	4,814.9	4,711.1	11.7	21.5	-91.05	47.1	-1,029.7	780.1	757.1	23.05	33.846	
5,000.0	4,982.4	4,912.4	4,806.2	11.9	22.0	-90.95	48.1	-1,051.3	802.2	778.7	23.52	34.101	

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

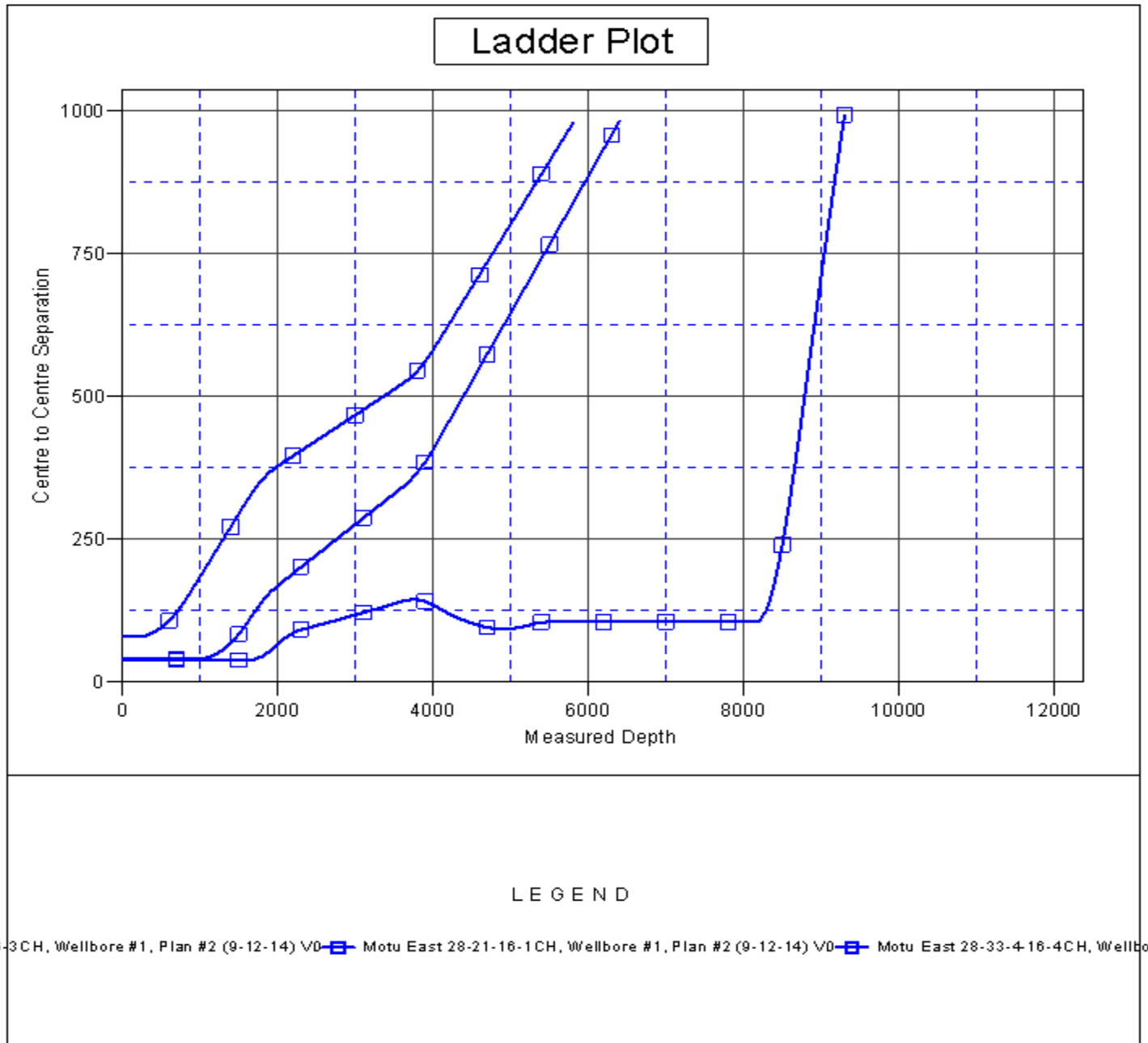
Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Project:	Sec.28-T12N-R65W	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Reference Site:	Motu East Pad Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Motu East 28-33-4-16-2CH	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 #2 (9-12-14)	Offset TVD Reference:	Offset Datum

Offset Design Motu East Pad Sec.28-T12N-R65W - Motu East 28-33-4-16-4CH - Wellbore #1 - Plan #2 (9-12-14)												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)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,082.4	5,010.0	4,901.3	12.1	22.5	-90.85	49.0	-1,072.8	824.3	800.3	24.00	34.346	
5,200.0	5,182.4	5,107.5	4,996.4	12.3	23.0	-90.76	50.0	-1,094.4	846.4	821.9	24.48	34.581	
5,300.0	5,282.4	5,205.0	5,091.5	12.6	23.4	-90.68	51.0	-1,116.0	868.5	843.5	24.95	34.806	
5,400.0	5,382.4	5,302.5	5,186.6	12.8	23.9	-90.59	52.0	-1,137.5	890.6	865.1	25.43	35.022	
5,500.0	5,482.4	5,400.0	5,281.7	13.0	24.4	-90.52	53.0	-1,159.1	912.7	886.8	25.91	35.229	
5,600.0	5,582.4	5,497.6	5,376.8	13.2	24.9	-90.44	54.0	-1,180.6	934.8	908.4	26.38	35.429	
5,700.0	5,682.4	5,595.1	5,471.9	13.4	25.3	-90.37	55.0	-1,202.2	956.8	930.0	26.86	35.621	
5,800.0	5,782.4	5,692.6	5,567.0	13.6	25.8	-90.30	55.9	-1,223.7	978.9	951.6	27.34	35.805	

Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Project:	Sec.28-T12N-R65W	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Reference Site:	Motu East Pad Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Motu East 28-33-4-16-2CH	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 #2 (9-12-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5998.0ft (RKB - 25')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Motu East 28-33-4-16-2CH
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.54°



Company:	Cirque Resources LP	Local Co-ordinate Reference:	Well Motu East 28-33-4-16-2CH
Project:	Sec.28-T12N-R65W	TVD Reference:	WELL @ 5998.0ft (RKB - 25')
Reference Site:	Motu East Pad Sec.28-T12N-R65W	MD Reference:	WELL @ 5998.0ft (RKB - 25')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Motu East 28-33-4-16-2CH	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 #2 (9-12-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5998.0ft (RKB - 25')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Motu East 28-33-4-16-2CH
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.54°

