Cirque Resources LP

Well Name: **Motu East 28-21-16-1CH**

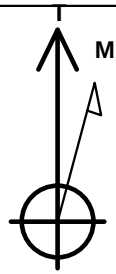
Surface Location: Motu East Pad Sec.28-T12N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 5973.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1597940.72	3232380.96	40.971680	-104.658520	

RKB - 25' WELL @ 5998.0ft (RKB - 25')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Sectionline	0.0	-246.4	281.3	Polygon
SHL 250'FSL & 348'FEL	1.0	0.0	0.0	Point
BHL 250'FSL & 660'FEL, Sec.16	8798.0	10402.2	-240.2	Point
Landing Pt. 1050'FSL & 660'FEL	8798.0	804.2	-303.8	Point



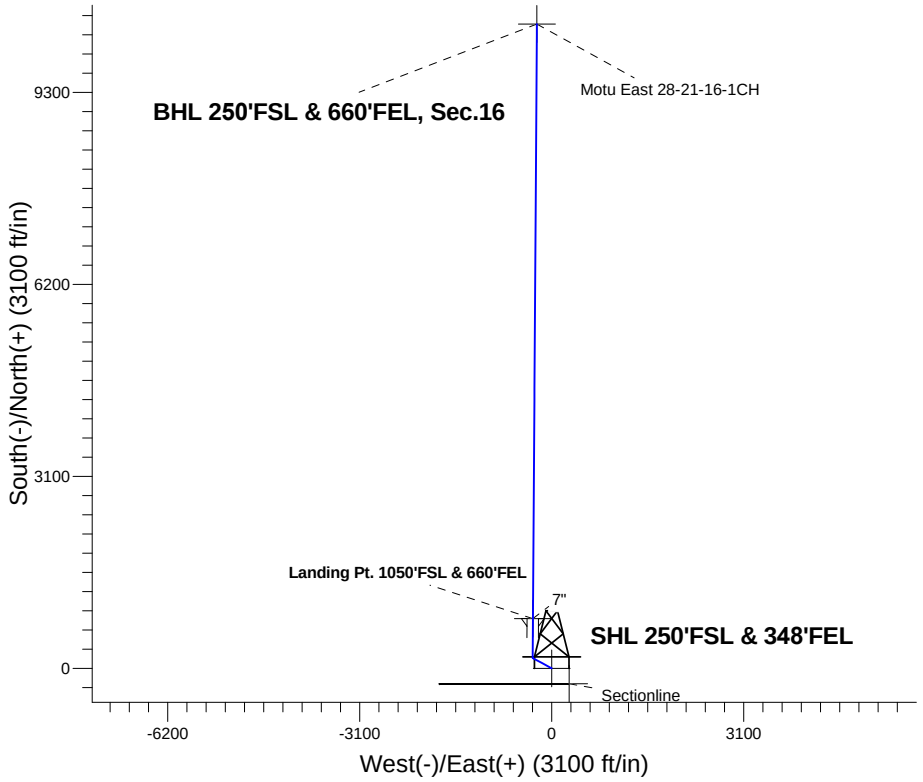
Azimuths to True North
Magnetic North: 8.42°

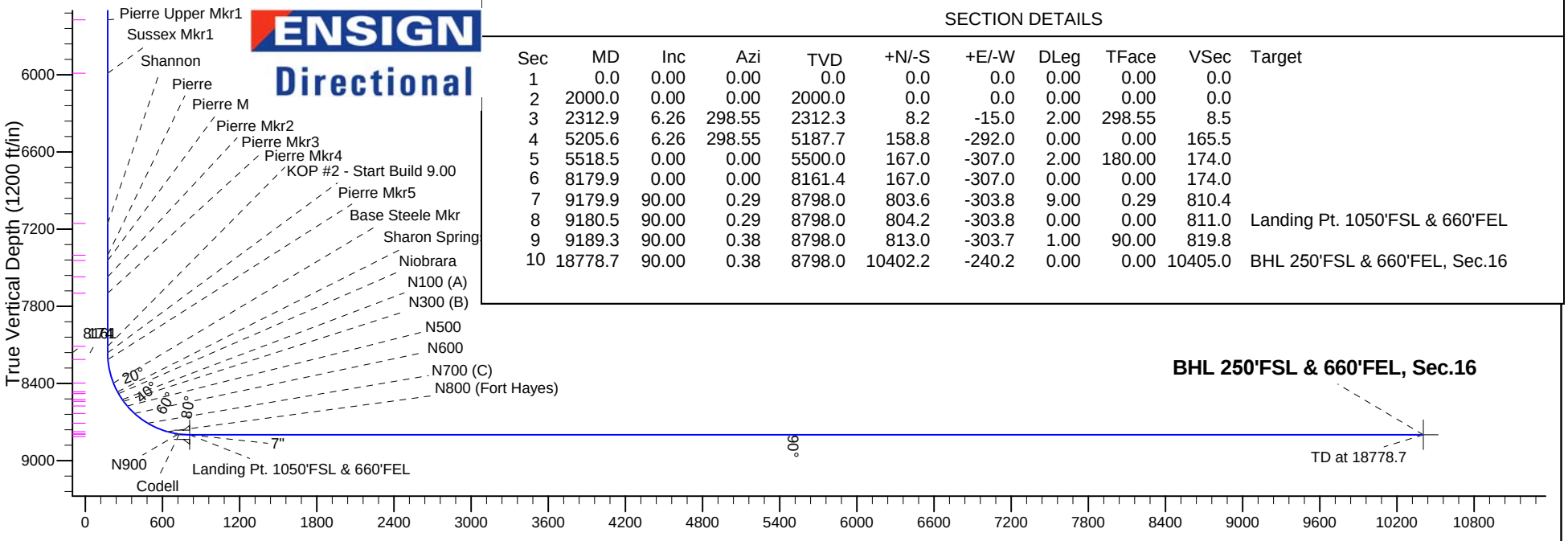
Magnetic Field
Strength: 53087.7snT
Dip Angle: 67.41°
Date: 9/11/2014
Model: IGRF2010

Motu East Pad Sec.28-T12N-R65W
Motu East 28-21-16-1CH
Plan #2 (9-12-14)
12:51, September 12 2014

ANNOTATIONS

TVD	MD	Annotation
2000.0	2000.0	KOP - Start Build 2.00
5187.7	5205.6	Start Drop -2.00
8161.4	8179.9	KOP #2 - Start Build 9.00
8798.0	18778.7	TD at 18778.7





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	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2312.9	6.26	298.55	2312.3	8.2	-15.0	2.00	298.55	8.5	
4	5205.6	6.26	298.55	5187.7	158.8	-292.0	0.00	0.00	165.5	
5	5518.5	0.00	0.00	5500.0	167.0	-307.0	2.00	180.00	174.0	
6	8179.9	0.00	0.00	8161.4	167.0	-307.0	0.00	0.00	174.0	
7	9179.9	90.00	0.29	8798.0	803.6	-303.8	9.00	0.29	810.4	
8	9180.5	90.00	0.29	8798.0	804.2	-303.8	0.00	0.00	811.0	Landing Pt. 1050'FSL & 660'FEL
9	9189.3	90.00	0.38	8798.0	813.0	-303.7	1.00	90.00	819.8	
10	18778.7	90.00	0.38	8798.0	10402.2	-240.2	0.00	0.00	10405.0	BHL 250'FSL & 660'FEL, Sec.16

Cirque Resources LP

Sec.28-T12N-R65W
Motu East Pad Sec.28-T12N-R65W
Motu East 28-21-16-1CH

Wellbore #1

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

Standard Planning Report

12 September, 2014

Database:	Landmark	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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 28-21-16-1CH

Well Position	**+N/-S**	-3.7 ft	**Northing:**	1,597,940.72 ft	**Latitude:**	40.971680
	+E/-W	118.7 ft	**Easting:**	3,232,380.96 ft	**Longitude:**	-104.658520
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	358.68

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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,312.9	6.26	298.55	2,312.3	8.2	-15.0	2.00	2.00	0.00	298.55	
5,205.6	6.26	298.55	5,187.7	158.8	-292.0	0.00	0.00	0.00	0.00	
5,518.5	0.00	0.00	5,500.0	167.0	-307.0	2.00	-2.00	0.00	180.00	
8,179.9	0.00	0.00	8,161.4	167.0	-307.0	0.00	0.00	0.00	0.00	
9,179.9	90.00	0.29	8,798.0	803.6	-303.8	9.00	9.00	0.00	0.29	
9,180.5	90.00	0.29	8,798.0	804.2	-303.8	0.00	0.00	0.00	0.00	Landing Pt. 1050'FS
9,189.3	90.00	0.38	8,798.0	813.0	-303.7	1.00	0.00	1.00	90.00	
18,778.7	90.00	0.38	8,798.0	10,402.2	-240.2	0.00	0.00	0.00	0.00	BHL 250'FSL & 66(

Database:	Landmark	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,799.0	0.00	0.00	1,799.0	0.0	0.0	0.0	0.00	0.00	0.00
Fox Hills									
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 2.00									
2,100.0	2.00	298.55	2,100.0	0.8	-1.5	0.9	2.00	2.00	0.00
2,200.0	4.00	298.55	2,199.8	3.3	-6.1	3.5	2.00	2.00	0.00
2,300.0	6.00	298.55	2,299.5	7.5	-13.8	7.8	2.00	2.00	0.00
2,312.9	6.26	298.55	2,312.3	8.2	-15.0	8.5	2.00	2.00	0.00
2,400.0	6.26	298.55	2,398.9	12.7	-23.3	13.2	0.00	0.00	0.00
2,470.6	6.26	298.55	2,469.0	16.4	-30.1	17.1	0.00	0.00	0.00
Fox Hills Mkr 1									
2,500.0	6.26	298.55	2,498.3	17.9	-32.9	18.7	0.00	0.00	0.00
2,600.0	6.26	298.55	2,597.7	23.1	-42.5	24.1	0.00	0.00	0.00
2,700.0	6.26	298.55	2,697.1	28.3	-52.1	29.5	0.00	0.00	0.00
2,800.0	6.26	298.55	2,796.5	33.5	-61.6	34.9	0.00	0.00	0.00
2,900.0	6.26	298.55	2,895.9	38.7	-71.2	40.4	0.00	0.00	0.00
3,000.0	6.26	298.55	2,995.3	43.9	-80.8	45.8	0.00	0.00	0.00
3,100.0	6.26	298.55	3,094.7	49.2	-90.4	51.2	0.00	0.00	0.00
3,200.0	6.26	298.55	3,194.1	54.4	-99.9	56.7	0.00	0.00	0.00
3,300.0	6.26	298.55	3,293.5	59.6	-109.5	62.1	0.00	0.00	0.00
3,400.0	6.26	298.55	3,392.9	64.8	-119.1	67.5	0.00	0.00	0.00
3,500.0	6.26	298.55	3,492.3	70.0	-128.7	72.9	0.00	0.00	0.00
3,600.0	6.26	298.55	3,591.7	75.2	-138.3	78.4	0.00	0.00	0.00
3,700.0	6.26	298.55	3,691.1	80.4	-147.8	83.8	0.00	0.00	0.00
3,800.0	6.26	298.55	3,790.5	85.6	-157.4	89.2	0.00	0.00	0.00
3,900.0	6.26	298.55	3,889.9	90.8	-167.0	94.7	0.00	0.00	0.00
4,000.0	6.26	298.55	3,989.3	96.0	-176.6	100.1	0.00	0.00	0.00
4,100.0	6.26	298.55	4,088.7	101.3	-186.1	105.5	0.00	0.00	0.00
4,200.0	6.26	298.55	4,188.1	106.5	-195.7	110.9	0.00	0.00	0.00
4,279.3	6.26	298.55	4,267.0	110.6	-203.3	115.3	0.00	0.00	0.00
Teapot									
4,300.0	6.26	298.55	4,287.5	111.7	-205.3	116.4	0.00	0.00	0.00
4,400.0	6.26	298.55	4,386.9	116.9	-214.9	121.8	0.00	0.00	0.00
4,500.0	6.26	298.55	4,486.3	122.1	-224.4	127.2	0.00	0.00	0.00

Database:	Landmark	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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)
4,600.0	6.26	298.55	4,585.7	127.3	-234.0	132.7	0.00	0.00	0.00
4,700.0	6.26	298.55	4,685.2	132.5	-243.6	138.1	0.00	0.00	0.00
4,800.0	6.26	298.55	4,784.6	137.7	-253.2	143.5	0.00	0.00	0.00
4,900.0	6.26	298.55	4,884.0	142.9	-262.7	149.0	0.00	0.00	0.00
5,000.0	6.26	298.55	4,983.4	148.1	-272.3	154.4	0.00	0.00	0.00
5,100.0	6.26	298.55	5,082.8	153.3	-281.9	159.8	0.00	0.00	0.00
5,200.0	6.26	298.55	5,182.2	158.6	-291.5	165.2	0.00	0.00	0.00
5,205.6	6.26	298.55	5,187.7	158.8	-292.0	165.5	0.00	0.00	0.00
Start Drop -2.00									
5,220.9	5.95	298.55	5,203.0	159.6	-293.4	166.4	2.01	-2.01	0.00
Parkman									
5,253.1	5.31	298.55	5,235.0	161.1	-296.2	167.9	2.00	-2.00	0.00
Sussex									
5,300.0	4.37	298.55	5,281.7	163.0	-299.7	169.9	2.00	-2.00	0.00
5,400.0	2.37	298.55	5,381.6	165.8	-304.8	172.8	2.00	-2.00	0.00
5,500.0	0.37	298.55	5,481.5	167.0	-306.9	174.0	2.00	-2.00	0.00
5,518.5	0.00	0.00	5,500.0	167.0	-307.0	174.0	2.00	-2.00	0.00
5,590.5	0.00	0.00	5,572.0	167.0	-307.0	174.0	0.00	0.00	0.00
Pierre Upper Mkr1									
5,600.0	0.00	0.00	5,581.5	167.0	-307.0	174.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,681.5	167.0	-307.0	174.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,781.5	167.0	-307.0	174.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,881.5	167.0	-307.0	174.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,981.5	167.0	-307.0	174.0	0.00	0.00	0.00
6,006.5	0.00	0.00	5,988.0	167.0	-307.0	174.0	0.00	0.00	0.00
Sussex Mkr1									
6,100.0	0.00	0.00	6,081.5	167.0	-307.0	174.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,181.5	167.0	-307.0	174.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,281.5	167.0	-307.0	174.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,381.5	167.0	-307.0	174.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,481.5	167.0	-307.0	174.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,581.5	167.0	-307.0	174.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,681.5	167.0	-307.0	174.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,781.5	167.0	-307.0	174.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,881.5	167.0	-307.0	174.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,981.5	167.0	-307.0	174.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,081.5	167.0	-307.0	174.0	0.00	0.00	0.00
7,173.5	0.00	0.00	7,155.0	167.0	-307.0	174.0	0.00	0.00	0.00
Shannon									
7,200.0	0.00	0.00	7,181.5	167.0	-307.0	174.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,281.5	167.0	-307.0	174.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,381.5	167.0	-307.0	174.0	0.00	0.00	0.00
7,421.5	0.00	0.00	7,403.0	167.0	-307.0	174.0	0.00	0.00	0.00
Pierre									
7,461.5	0.00	0.00	7,443.0	167.0	-307.0	174.0	0.00	0.00	0.00
Pierre Mkr1									
7,500.0	0.00	0.00	7,481.5	167.0	-307.0	174.0	0.00	0.00	0.00
7,588.5	0.00	0.00	7,570.0	167.0	-307.0	174.0	0.00	0.00	0.00
Pierre Mkr2									
7,600.0	0.00	0.00	7,581.5	167.0	-307.0	174.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,681.5	167.0	-307.0	174.0	0.00	0.00	0.00
7,716.5	0.00	0.00	7,698.0	167.0	-307.0	174.0	0.00	0.00	0.00

Database:	Landmark	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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)
Pierre Mkr3									
7,800.0	0.00	0.00	7,781.5	167.0	-307.0	174.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,881.5	167.0	-307.0	174.0	0.00	0.00	0.00
8,000.0	0.00	0.00	7,981.5	167.0	-307.0	174.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,081.5	167.0	-307.0	174.0	0.00	0.00	0.00
8,128.5	0.00	0.00	8,110.0	167.0	-307.0	174.0	0.00	0.00	0.00
Pierre Mkr4									
8,179.9	0.00	0.00	8,161.4	167.0	-307.0	174.0	0.00	0.00	0.00
KOP #2 - Start Build 9.00									
8,200.0	1.81	0.29	8,181.5	167.3	-307.0	174.4	9.02	9.02	0.00
8,230.5	4.56	0.29	8,212.0	169.0	-307.0	176.1	9.00	9.00	0.00
Pierre Mkr5									
8,300.0	10.81	0.29	8,280.8	178.3	-306.9	185.3	9.00	9.00	0.00
8,400.0	19.81	0.29	8,377.2	204.7	-306.8	211.7	9.00	9.00	0.00
8,420.1	21.63	0.29	8,396.0	211.8	-306.8	218.8	9.00	9.00	0.00
Base Steele Mkr									
8,495.2	28.38	0.29	8,464.0	243.5	-306.6	250.5	9.00	9.00	0.00
Sharon Springs									
8,500.0	28.81	0.29	8,468.2	245.8	-306.6	252.8	9.00	9.00	0.00
8,512.4	29.93	0.29	8,479.0	251.9	-306.6	258.9	9.00	9.00	0.00
Niobrara									
8,566.9	34.83	0.29	8,525.0	281.1	-306.4	288.1	9.00	9.00	0.00
N100 (A)									
8,584.1	36.38	0.29	8,539.0	291.1	-306.4	298.1	9.00	9.00	0.00
N300 (B)									
8,600.0	37.81	0.29	8,551.7	300.7	-306.3	307.7	9.00	9.00	0.00
8,630.1	40.52	0.29	8,575.0	319.7	-306.2	326.7	9.00	9.00	0.00
N500									
8,700.0	46.81	0.29	8,625.5	367.9	-306.0	374.9	9.00	9.00	0.00
8,711.0	47.80	0.29	8,633.0	376.0	-305.9	383.0	9.00	9.00	0.00
N600									
8,800.0	55.81	0.29	8,688.0	445.9	-305.6	452.8	9.00	9.00	0.00
8,837.2	59.16	0.29	8,708.0	477.3	-305.4	484.2	9.00	9.00	0.00
N700 (C)									
8,900.0	64.81	0.29	8,737.5	532.7	-305.1	539.6	9.00	9.00	0.00
9,000.0	73.81	0.29	8,772.8	626.1	-304.7	633.0	9.00	9.00	0.00
9,004.5	74.22	0.29	8,774.0	630.5	-304.6	637.3	9.00	9.00	0.00
N800 (Fort Hayes)									
9,092.4	82.13	0.29	8,792.0	716.4	-304.2	723.2	9.00	9.00	0.00
N900									
9,100.0	82.81	0.29	8,793.0	724.0	-304.2	730.8	8.97	8.97	0.00
Codell									
9,179.9	90.00	0.29	8,798.0	803.6	-303.8	810.4	9.00	9.00	0.00
9,180.5	90.00	0.29	8,798.0	804.2	-303.8	811.0	0.00	0.00	0.00
7"									
9,189.3	90.00	0.38	8,798.0	813.0	-303.7	819.8	1.01	0.00	1.01
9,200.0	90.00	0.38	8,798.0	823.7	-303.6	830.5	0.00	0.00	0.00
9,300.0	90.00	0.38	8,798.0	923.7	-303.0	930.5	0.00	0.00	0.00
9,400.0	90.00	0.38	8,798.0	1,023.7	-302.3	1,030.4	0.00	0.00	0.00
9,500.0	90.00	0.38	8,798.0	1,123.7	-301.6	1,130.4	0.00	0.00	0.00
9,600.0	90.00	0.38	8,798.0	1,223.7	-301.0	1,230.4	0.00	0.00	0.00
9,700.0	90.00	0.38	8,798.0	1,323.7	-300.3	1,330.3	0.00	0.00	0.00

Database:	Landmark	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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	0.38	8,798.0	1,423.7	-299.7	1,430.3	0.00	0.00	0.00
9,900.0	90.00	0.38	8,798.0	1,523.7	-299.0	1,530.2	0.00	0.00	0.00
10,000.0	90.00	0.38	8,798.0	1,623.7	-298.3	1,630.2	0.00	0.00	0.00
10,100.0	90.00	0.38	8,798.0	1,723.7	-297.7	1,730.1	0.00	0.00	0.00
10,200.0	90.00	0.38	8,798.0	1,823.7	-297.0	1,830.1	0.00	0.00	0.00
10,300.0	90.00	0.38	8,798.0	1,923.7	-296.3	1,930.1	0.00	0.00	0.00
10,400.0	90.00	0.38	8,798.0	2,023.7	-295.7	2,030.0	0.00	0.00	0.00
10,500.0	90.00	0.38	8,798.0	2,123.7	-295.0	2,130.0	0.00	0.00	0.00
10,600.0	90.00	0.38	8,798.0	2,223.7	-294.4	2,229.9	0.00	0.00	0.00
10,700.0	90.00	0.38	8,798.0	2,323.7	-293.7	2,329.9	0.00	0.00	0.00
10,800.0	90.00	0.38	8,798.0	2,423.7	-293.0	2,429.8	0.00	0.00	0.00
10,900.0	90.00	0.38	8,798.0	2,523.7	-292.4	2,529.8	0.00	0.00	0.00
11,000.0	90.00	0.38	8,798.0	2,623.7	-291.7	2,629.7	0.00	0.00	0.00
11,100.0	90.00	0.38	8,798.0	2,723.7	-291.0	2,729.7	0.00	0.00	0.00
11,200.0	90.00	0.38	8,798.0	2,823.7	-290.4	2,829.7	0.00	0.00	0.00
11,300.0	90.00	0.38	8,798.0	2,923.7	-289.7	2,929.6	0.00	0.00	0.00
11,400.0	90.00	0.38	8,798.0	3,023.7	-289.1	3,029.6	0.00	0.00	0.00
11,500.0	90.00	0.38	8,798.0	3,123.7	-288.4	3,129.5	0.00	0.00	0.00
11,600.0	90.00	0.38	8,798.0	3,223.7	-287.7	3,229.5	0.00	0.00	0.00
11,700.0	90.00	0.38	8,798.0	3,323.7	-287.1	3,329.4	0.00	0.00	0.00
11,800.0	90.00	0.38	8,798.0	3,423.7	-286.4	3,429.4	0.00	0.00	0.00
11,900.0	90.00	0.38	8,798.0	3,523.7	-285.7	3,529.3	0.00	0.00	0.00
12,000.0	90.00	0.38	8,798.0	3,623.7	-285.1	3,629.3	0.00	0.00	0.00
12,100.0	90.00	0.38	8,798.0	3,723.7	-284.4	3,729.3	0.00	0.00	0.00
12,200.0	90.00	0.38	8,798.0	3,823.7	-283.8	3,829.2	0.00	0.00	0.00
12,300.0	90.00	0.38	8,798.0	3,923.7	-283.1	3,929.2	0.00	0.00	0.00
12,400.0	90.00	0.38	8,798.0	4,023.7	-282.4	4,029.1	0.00	0.00	0.00
12,500.0	90.00	0.38	8,798.0	4,123.7	-281.8	4,129.1	0.00	0.00	0.00
12,600.0	90.00	0.38	8,798.0	4,223.7	-281.1	4,229.0	0.00	0.00	0.00
12,700.0	90.00	0.38	8,798.0	4,323.7	-280.4	4,329.0	0.00	0.00	0.00
12,800.0	90.00	0.38	8,798.0	4,423.7	-279.8	4,428.9	0.00	0.00	0.00
12,900.0	90.00	0.38	8,798.0	4,523.7	-279.1	4,528.9	0.00	0.00	0.00
13,000.0	90.00	0.38	8,798.0	4,623.7	-278.4	4,628.9	0.00	0.00	0.00
13,100.0	90.00	0.38	8,798.0	4,723.7	-277.8	4,728.8	0.00	0.00	0.00
13,200.0	90.00	0.38	8,798.0	4,823.7	-277.1	4,828.8	0.00	0.00	0.00
13,300.0	90.00	0.38	8,798.0	4,923.7	-276.5	4,928.7	0.00	0.00	0.00
13,400.0	90.00	0.38	8,798.0	5,023.7	-275.8	5,028.7	0.00	0.00	0.00
13,500.0	90.00	0.38	8,798.0	5,123.7	-275.1	5,128.6	0.00	0.00	0.00
13,600.0	90.00	0.38	8,798.0	5,223.7	-274.5	5,228.6	0.00	0.00	0.00
13,700.0	90.00	0.38	8,798.0	5,323.6	-273.8	5,328.6	0.00	0.00	0.00
13,800.0	90.00	0.38	8,798.0	5,423.6	-273.1	5,428.5	0.00	0.00	0.00
13,900.0	90.00	0.38	8,798.0	5,523.6	-272.5	5,528.5	0.00	0.00	0.00
14,000.0	90.00	0.38	8,798.0	5,623.6	-271.8	5,628.4	0.00	0.00	0.00
14,100.0	90.00	0.38	8,798.0	5,723.6	-271.2	5,728.4	0.00	0.00	0.00
14,200.0	90.00	0.38	8,798.0	5,823.6	-270.5	5,828.3	0.00	0.00	0.00
14,300.0	90.00	0.38	8,798.0	5,923.6	-269.8	5,928.3	0.00	0.00	0.00
14,400.0	90.00	0.38	8,798.0	6,023.6	-269.2	6,028.2	0.00	0.00	0.00
14,500.0	90.00	0.38	8,798.0	6,123.6	-268.5	6,128.2	0.00	0.00	0.00
14,600.0	90.00	0.38	8,798.0	6,223.6	-267.8	6,228.2	0.00	0.00	0.00
14,700.0	90.00	0.38	8,798.0	6,323.6	-267.2	6,328.1	0.00	0.00	0.00
14,800.0	90.00	0.38	8,798.0	6,423.6	-266.5	6,428.1	0.00	0.00	0.00
14,900.0	90.00	0.38	8,798.0	6,523.6	-265.9	6,528.0	0.00	0.00	0.00
15,000.0	90.00	0.38	8,798.0	6,623.6	-265.2	6,628.0	0.00	0.00	0.00
15,100.0	90.00	0.38	8,798.0	6,723.6	-264.5	6,727.9	0.00	0.00	0.00

Database:	Landmark	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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	0.38	8,798.0	6,823.6	-263.9	6,827.9	0.00	0.00	0.00
15,300.0	90.00	0.38	8,798.0	6,923.6	-263.2	6,927.8	0.00	0.00	0.00
15,400.0	90.00	0.38	8,798.0	7,023.6	-262.5	7,027.8	0.00	0.00	0.00
15,500.0	90.00	0.38	8,798.0	7,123.6	-261.9	7,127.8	0.00	0.00	0.00
15,600.0	90.00	0.38	8,798.0	7,223.6	-261.2	7,227.7	0.00	0.00	0.00
15,700.0	90.00	0.38	8,798.0	7,323.6	-260.6	7,327.7	0.00	0.00	0.00
15,800.0	90.00	0.38	8,798.0	7,423.6	-259.9	7,427.6	0.00	0.00	0.00
15,900.0	90.00	0.38	8,798.0	7,523.6	-259.2	7,527.6	0.00	0.00	0.00
16,000.0	90.00	0.38	8,798.0	7,623.6	-258.6	7,627.5	0.00	0.00	0.00
16,100.0	90.00	0.38	8,798.0	7,723.6	-257.9	7,727.5	0.00	0.00	0.00
16,200.0	90.00	0.38	8,798.0	7,823.6	-257.2	7,827.4	0.00	0.00	0.00
16,300.0	90.00	0.38	8,798.0	7,923.6	-256.6	7,927.4	0.00	0.00	0.00
16,400.0	90.00	0.38	8,798.0	8,023.6	-255.9	8,027.4	0.00	0.00	0.00
16,500.0	90.00	0.38	8,798.0	8,123.6	-255.3	8,127.3	0.00	0.00	0.00
16,600.0	90.00	0.38	8,798.0	8,223.6	-254.6	8,227.3	0.00	0.00	0.00
16,700.0	90.00	0.38	8,798.0	8,323.6	-253.9	8,327.2	0.00	0.00	0.00
16,800.0	90.00	0.38	8,798.0	8,423.6	-253.3	8,427.2	0.00	0.00	0.00
16,900.0	90.00	0.38	8,798.0	8,523.6	-252.6	8,527.1	0.00	0.00	0.00
17,000.0	90.00	0.38	8,798.0	8,623.6	-251.9	8,627.1	0.00	0.00	0.00
17,100.0	90.00	0.38	8,798.0	8,723.6	-251.3	8,727.1	0.00	0.00	0.00
17,200.0	90.00	0.38	8,798.0	8,823.6	-250.6	8,827.0	0.00	0.00	0.00
17,300.0	90.00	0.38	8,798.0	8,923.6	-250.0	8,927.0	0.00	0.00	0.00
17,400.0	90.00	0.38	8,798.0	9,023.6	-249.3	9,026.9	0.00	0.00	0.00
17,500.0	90.00	0.38	8,798.0	9,123.6	-248.6	9,126.9	0.00	0.00	0.00
17,600.0	90.00	0.38	8,798.0	9,223.6	-248.0	9,226.8	0.00	0.00	0.00
17,700.0	90.00	0.38	8,798.0	9,323.6	-247.3	9,326.8	0.00	0.00	0.00
17,800.0	90.00	0.38	8,798.0	9,423.6	-246.6	9,426.7	0.00	0.00	0.00
17,900.0	90.00	0.38	8,798.0	9,523.6	-246.0	9,526.7	0.00	0.00	0.00
18,000.0	90.00	0.38	8,798.0	9,623.6	-245.3	9,626.7	0.00	0.00	0.00
18,100.0	90.00	0.38	8,798.0	9,723.6	-244.6	9,726.6	0.00	0.00	0.00
18,200.0	90.00	0.38	8,798.0	9,823.6	-244.0	9,826.6	0.00	0.00	0.00
18,300.0	90.00	0.38	8,798.0	9,923.5	-243.3	9,926.5	0.00	0.00	0.00
18,400.0	90.00	0.38	8,798.0	10,023.5	-242.7	10,026.5	0.00	0.00	0.00
18,500.0	90.00	0.38	8,798.0	10,123.5	-242.0	10,126.4	0.00	0.00	0.00
18,600.0	90.00	0.38	8,798.0	10,223.5	-241.3	10,226.4	0.00	0.00	0.00
18,700.0	90.00	0.38	8,798.0	10,323.5	-240.7	10,326.3	0.00	0.00	0.00
18,778.7	90.00	0.38	8,798.0	10,402.2	-240.2	10,405.0	0.00	0.00	0.00

Database:	Landmark	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (9-12-14)		

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
SHL 250'FSL & 348'F - plan hits target center - Point	0.00	0.00	1.0	0.0	0.0	1,597,940.73	3,232,380.96	40.971680	-104.658520
BHL 250'FSL & 660'F - plan hits target center - Point	0.00	0.00	8,798.0	10,402.2	-240.2	1,608,340.54	3,232,042.09	41.000230	-104.659390
Landing Pt. 1050'FSL - plan hits target center - Point	0.00	0.00	8,798.0	804.2	-303.8	1,598,742.03	3,232,069.57	40.973887	-104.659620
Sectionline - plan misses target center by 373.9ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E) - Polygon	0.00	0.00	0.0	-246.4	281.3	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		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
9,180.5	8,798.0	7"	7	7-1/2

Database:	Landmark	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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 (°)
1,799.0	1,799.0	Fox Hills			
2,470.6	2,469.0	Fox Hills Mkr 1			
4,279.3	4,267.0	Teapot			
5,220.9	5,203.0	Parkman			
5,253.1	5,235.0	Sussex			
5,590.5	5,572.0	Pierre Upper Mkr1			
6,006.5	5,988.0	Sussex Mkr1			
7,173.5	7,155.0	Shannon			
7,421.5	7,403.0	Pierre			
7,461.5	7,443.0	Pierre Mkr1			
7,588.5	7,570.0	Pierre Mkr2			
7,716.5	7,698.0	Pierre Mkr3			
8,128.5	8,110.0	Pierre Mkr4			
8,230.5	8,212.0	Pierre Mkr5			
8,420.1	8,396.0	Base Steele Mkr			
8,495.2	8,464.0	Sharon Springs			
8,512.4	8,479.0	Niobrara			
8,566.9	8,525.0	N100 (A)			
8,584.1	8,539.0	N300 (B)			
8,630.1	8,575.0	N500			
8,711.0	8,633.0	N600			
8,837.2	8,708.0	N700 (C)			
9,004.5	8,774.0	N800 (Fort Hayes)			
9,092.4	8,792.0	N900			
9,100.0	8,793.0	Codell			
	8,813.0	Carlile			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,000.0	2,000.0	0.0	0.0	KOP - Start Build 2.00
5,205.6	5,187.7	158.8	-292.0	Start Drop -2.00
8,179.9	8,161.4	167.0	-307.0	KOP #2 - Start Build 9.00
18,778.7	8,798.0	10,402.2	-240.2	TD at 18778.7

ENSIGN
Directional

Cirque Resources LP

Sec.28-T12N-R65W
Motu East Pad Sec.28-T12N-R65W
Motu East 28-21-16-1CH

Wellbore #1
Plan #2 (9-12-14)

Anticollision Report

12 September, 2014

Company:	Cirque Resources LP	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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 #2 (9-12-14)	**Offset TVD Reference:**	Offset Datum

Reference Plan #2 (9-12-14)

Filter type: NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method: MD Interval 100.0ft
Depth Range: Unlimited
Results Limited by: Maximum center-center distance of 1,000.0ft
Error Model: ISCWSA
Scan Method: Closest Approach 3D
Error Surface: Elliptical Conic
Warning Levels Evaluated at: 2.00 **Sigma**

Survey Tool Program **Date** 9/12/2014

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	18,778.7	Plan #2 (9-12-14) (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Motu East Pad Sec.28-T12N-R65W						
Motu East 28-21-16-3CH - Wellbore #1 - Plan #2 (9-12-1	1,000.0	1,000.0	80.1	75.8	18.753	CC, ES
Motu East 28-21-16-3CH - Wellbore #1 - Plan #2 (9-12-1	1,200.0	1,194.3	86.8	81.7	16.926	SF
Motu East 28-33-4-16-2CH - Wellbore #1 - Plan #2 (9-12	1,600.0	1,600.0	38.7	31.7	5.549	CC, ES
Motu East 28-33-4-16-2CH - Wellbore #1 - Plan #2 (9-12	8,200.0	8,196.3	106.6	69.1	2.840	SF
Motu East 28-33-4-16-4CH - Wellbore #1 - Plan #2 (9-12	166.3	167.3	118.8	118.3	226.207	CC
Motu East 28-33-4-16-4CH - Wellbore #1 - Plan #2 (9-12	200.0	200.0	118.8	118.1	176.191	ES
Motu East 28-33-4-16-4CH - Wellbore #1 - Plan #2 (9-12	5,300.0	5,203.7	883.2	857.2	33.930	SF

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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-80.1	80.1				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-80.1	80.1	79.9	0.22	356.300	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-80.1	80.1	79.4	0.67	118.767	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	0.0	-80.1	80.1	79.0	1.12	71.260	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	0.0	-80.1	80.1	78.5	1.57	50.900	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	0.0	-80.1	80.1	78.1	2.02	39.589	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	0.0	-80.1	80.1	77.6	2.47	32.391	
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	0.0	-80.1	80.1	77.2	2.92	27.408	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	0.0	-80.1	80.1	76.7	3.37	23.753	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	0.0	-80.1	80.1	76.3	3.82	20.959	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	0.0	-80.1	80.1	75.8	4.27	18.753	CC, ES
1,100.0	1,100.0	1,097.3	1,097.2	2.4	2.3	-89.87	0.2	-81.7	81.8	77.1	4.70	17.388	
1,200.0	1,200.0	1,194.3	1,194.1	2.6	2.5	-89.51	0.7	-86.6	86.8	81.7	5.13	16.926	SF
1,300.0	1,300.0	1,290.9	1,290.4	2.8	2.8	-89.00	1.7	-94.7	95.2	89.7	5.57	17.109	
1,400.0	1,400.0	1,386.8	1,385.6	3.0	3.0	-88.42	2.9	-106.0	107.0	101.0	6.02	17.779	
1,500.0	1,500.0	1,481.9	1,479.6	3.3	3.3	-87.84	4.5	-120.3	122.1	115.6	6.49	18.807	
1,600.0	1,600.0	1,575.9	1,572.0	3.5	3.5	-87.30	6.5	-137.4	140.4	133.4	6.99	20.090	
1,700.0	1,700.0	1,668.7	1,662.6	3.7	3.9	-86.82	8.7	-157.3	161.9	154.4	7.51	21.544	
1,800.0	1,800.0	1,764.3	1,755.5	3.9	4.2	-86.41	11.3	-180.0	185.7	177.7	8.08	22.974	
1,900.0	1,900.0	1,861.4	1,849.7	4.2	4.7	-86.08	13.9	-203.1	209.7	201.0	8.68	24.160	
2,000.0	2,000.0	1,958.5	1,944.0	4.4	5.1	-85.82	16.5	-226.3	233.7	224.4	9.29	25.148	

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

Company:	Cirque Resources LP	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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 #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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,100.0	2,100.0	2,055.9	2,038.6	4.6	5.5	-24.13	19.2	-249.5	256.1	247.0	9.12	28.097	
2,200.0	2,199.8	2,154.0	2,133.8	4.8	6.0	-24.23	21.8	-272.9	275.4	265.9	9.56	28.800	
2,300.0	2,299.5	2,252.7	2,229.6	5.0	6.5	-24.61	24.5	-296.4	291.6	281.6	10.01	29.124	
2,400.0	2,398.9	2,351.6	2,325.6	5.3	6.9	-25.23	27.1	-320.0	305.9	295.4	10.48	29.186	
2,500.0	2,498.3	2,450.5	2,421.6	5.5	7.4	-25.82	29.8	-343.6	320.2	309.3	10.96	29.223	
2,600.0	2,597.7	2,549.4	2,517.7	5.8	7.9	-26.35	32.5	-367.2	334.5	323.1	11.44	29.244	
2,700.0	2,697.1	2,648.3	2,613.7	6.0	8.4	-26.84	35.1	-390.8	348.9	337.0	11.93	29.254	
2,800.0	2,796.5	2,747.3	2,709.7	6.3	8.9	-27.29	37.8	-414.4	363.2	350.8	12.42	29.255	
2,900.0	2,895.9	2,846.2	2,805.8	6.5	9.4	-27.70	40.5	-437.9	377.6	364.7	12.91	29.247	
3,000.0	2,995.3	2,945.1	2,901.8	6.8	9.9	-28.09	43.1	-461.5	392.0	378.6	13.41	29.232	
3,100.0	3,094.7	3,044.0	2,997.8	7.0	10.4	-28.45	45.8	-485.1	406.5	392.6	13.91	29.212	
3,200.0	3,194.1	3,143.0	3,093.9	7.3	10.9	-28.78	48.5	-508.7	420.9	406.5	14.42	29.188	
3,300.0	3,293.5	3,241.9	3,189.9	7.6	11.4	-29.09	51.1	-532.3	435.4	420.4	14.93	29.161	
3,400.0	3,392.9	3,340.8	3,285.9	7.9	11.9	-29.38	53.8	-555.9	449.8	434.4	15.44	29.130	
3,500.0	3,492.3	3,439.7	3,382.0	8.1	12.4	-29.66	56.5	-579.5	464.3	448.3	15.96	29.098	
3,600.0	3,591.7	3,538.7	3,478.0	8.4	12.9	-29.91	59.1	-603.1	478.8	462.3	16.47	29.064	
3,700.0	3,691.1	3,637.6	3,574.0	8.7	13.4	-30.15	61.8	-626.6	493.3	476.3	16.99	29.028	
3,800.0	3,790.5	3,736.5	3,670.1	9.0	13.9	-30.38	64.5	-650.2	507.8	490.3	17.51	28.992	
3,900.0	3,889.9	3,835.4	3,766.1	9.3	14.4	-30.60	67.1	-673.8	522.3	504.2	18.04	28.955	
4,000.0	3,989.3	3,934.3	3,862.1	9.5	15.0	-30.80	69.8	-697.4	536.8	518.2	18.56	28.918	
4,100.0	4,088.7	4,033.3	3,958.2	9.8	15.5	-30.99	72.5	-721.0	551.3	532.2	19.09	28.881	
4,200.0	4,188.1	4,132.2	4,054.2	10.1	16.0	-31.18	75.1	-744.6	565.9	546.2	19.62	28.843	
4,300.0	4,287.5	4,231.1	4,150.2	10.4	16.5	-31.35	77.8	-768.2	580.4	560.2	20.15	28.806	
4,400.0	4,386.9	4,330.0	4,246.3	10.7	17.0	-31.51	80.5	-791.8	594.9	574.2	20.68	28.769	
4,500.0	4,486.3	4,429.0	4,342.3	11.0	17.5	-31.67	83.1	-815.3	609.5	588.3	21.21	28.732	
4,600.0	4,585.7	4,527.9	4,438.3	11.3	18.0	-31.82	85.8	-838.9	624.0	602.3	21.75	28.696	
4,700.0	4,685.2	4,626.8	4,534.4	11.6	18.5	-31.96	88.5	-862.5	638.6	616.3	22.28	28.660	
4,800.0	4,784.6	4,725.7	4,630.4	11.9	19.1	-32.10	91.1	-886.1	653.1	630.3	22.82	28.625	
4,900.0	4,884.0	4,824.7	4,726.4	12.1	19.6	-32.23	93.8	-909.7	667.7	644.3	23.35	28.590	
5,000.0	4,983.4	4,923.6	4,822.5	12.4	20.1	-32.36	96.5	-933.3	682.2	658.3	23.89	28.555	
5,100.0	5,082.8	5,022.5	4,918.5	12.7	20.6	-32.48	99.1	-956.9	696.8	672.4	24.43	28.522	
5,200.0	5,182.2	5,121.4	5,014.5	13.0	21.1	-32.59	101.8	-980.5	711.4	686.4	24.97	28.489	
5,300.0	5,281.7	5,220.2	5,110.4	13.3	21.6	-32.80	104.4	-1,004.0	727.2	701.8	25.46	28.561	
5,400.0	5,381.6	5,318.4	5,205.7	13.5	22.1	-32.90	107.1	-1,027.4	746.0	720.1	25.89	28.812	
5,500.0	5,481.5	5,415.9	5,300.4	13.6	22.7	-32.90	109.7	-1,050.7	767.6	741.3	26.28	29.209	
5,600.0	5,581.5	5,513.0	5,394.7	13.8	23.2	-94.08	112.3	-1,073.8	791.2	764.4	26.73	29.600	
5,700.0	5,681.5	5,610.1	5,488.9	14.0	23.7	-93.77	115.0	-1,097.0	814.8	787.6	27.18	29.976	
5,800.0	5,781.5	5,707.2	5,583.2	14.2	24.2	-93.48	117.6	-1,120.1	838.4	810.8	27.64	30.338	
5,900.0	5,881.5	5,804.3	5,677.4	14.4	24.7	-93.20	120.2	-1,143.3	862.1	834.0	28.09	30.687	
6,000.0	5,981.5	5,901.3	5,771.6	14.6	25.2	-92.94	122.8	-1,166.4	885.8	857.2	28.55	31.023	
6,100.0	6,081.5	5,998.4	5,865.9	14.8	25.7	-92.70	125.4	-1,189.6	909.5	880.5	29.01	31.348	
6,200.0	6,181.5	6,095.5	5,960.1	15.0	26.2	-92.46	128.0	-1,212.7	933.2	903.7	29.47	31.661	
6,300.0	6,281.5	6,192.6	6,054.4	15.2	26.7	-92.24	130.7	-1,235.9	956.9	927.0	29.94	31.963	
6,400.0	6,381.5	6,289.7	6,148.6	15.4	27.2	-92.03	133.3	-1,259.0	980.7	950.3	30.40	32.256	

Company:	Cirque Resources LP	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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 #2 (9-12-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Motu East Pad Sec.28-T12N-R65W - Motu East 28-33-4-16-2CH - Wellbore #1 - Plan #2 (9-12-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-38.7	38.7				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-38.7	38.7	38.4	0.22	172.007	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-38.7	38.7	38.0	0.67	57.336	
300.0	300.0	300.0	300.0	0.6	0.6	-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	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	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	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	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	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	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	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	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	0.0	-38.7	38.7	33.5	5.17	7.479	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.00	0.0	-38.7	38.7	33.0	5.62	6.880	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.00	0.0	-38.7	38.7	32.6	6.07	6.371	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-90.00	0.0	-38.7	38.7	32.1	6.52	5.931	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-90.00	0.0	-38.7	38.7	31.7	6.97	5.549	CC, ES
1,700.0	1,700.0	1,698.7	1,698.6	3.7	3.7	-89.47	0.4	-40.3	40.3	32.9	7.40	5.449	
1,800.0	1,800.0	1,797.1	1,796.9	3.9	3.9	-88.10	1.5	-45.3	45.4	37.6	7.83	5.795	
1,900.0	1,900.0	1,895.1	1,894.5	4.2	4.1	-86.41	3.4	-53.5	53.8	45.6	8.27	6.510	
2,000.0	2,000.0	1,992.4	1,991.1	4.4	4.3	-84.77	5.9	-64.8	65.7	57.0	8.72	7.535	
2,100.0	2,100.0	2,091.6	2,089.5	4.6	4.6	-22.42	8.9	-78.0	77.6	68.5	9.12	8.513	
2,200.0	2,199.8	2,191.3	2,188.2	4.8	4.9	-22.62	11.9	-91.2	86.3	76.8	9.53	9.059	
2,300.0	2,299.5	2,291.1	2,287.1	5.0	5.1	-23.65	14.9	-104.5	91.8	81.9	9.94	9.240	
2,400.0	2,398.9	2,391.0	2,386.1	5.3	5.4	-25.14	17.9	-117.7	95.4	85.0	10.37	9.197	
2,500.0	2,498.3	2,490.9	2,485.0	5.5	5.7	-26.54	20.9	-131.0	99.0	88.2	10.82	9.153	
2,600.0	2,597.7	2,590.8	2,584.0	5.8	6.0	-27.83	23.9	-144.2	102.7	91.4	11.27	9.112	
2,700.0	2,697.1	2,690.7	2,683.0	6.0	6.3	-29.03	26.9	-157.5	106.4	94.6	11.72	9.074	
2,800.0	2,796.5	2,790.6	2,782.0	6.3	6.6	-30.15	30.0	-170.7	110.1	97.9	12.19	9.037	
2,900.0	2,895.9	2,890.5	2,880.9	6.5	6.9	-31.20	33.0	-184.0	113.9	101.3	12.65	9.002	
3,000.0	2,995.3	2,990.4	2,979.9	6.8	7.2	-32.18	36.0	-197.3	117.7	104.6	13.13	8.969	
3,100.0	3,094.7	3,090.3	3,078.9	7.0	7.5	-33.10	39.0	-210.5	121.6	108.0	13.61	8.937	
3,200.0	3,194.1	3,190.2	3,177.9	7.3	7.8	-33.96	42.0	-223.8	125.5	111.4	14.09	8.906	
3,300.0	3,293.5	3,290.2	3,276.9	7.6	8.1	-34.77	45.0	-237.0	129.4	114.8	14.58	8.876	
3,400.0	3,392.9	3,390.1	3,375.8	7.9	8.5	-35.53	48.0	-250.3	133.4	118.3	15.07	8.847	
3,500.0	3,492.3	3,490.0	3,474.8	8.1	8.8	-36.25	51.0	-263.5	137.3	121.7	15.57	8.819	
3,600.0	3,591.7	3,589.9	3,573.8	8.4	9.1	-36.93	54.0	-276.8	141.3	125.2	16.07	8.792	
3,700.0	3,691.1	3,692.9	3,675.9	8.7	9.4	-37.70	56.9	-289.7	144.6	128.1	16.57	8.727	
3,800.0	3,790.5	3,797.7	3,780.3	9.0	9.6	-39.00	59.1	-299.4	144.8	127.8	17.07	8.487	
3,900.0	3,889.9	3,902.4	3,884.8	9.3	9.8	-40.93	60.5	-305.4	141.8	124.2	17.57	8.070	
4,000.0	3,989.3	4,006.5	3,988.9	9.5	10.0	-43.67	61.0	-307.6	135.7	117.6	18.10	7.497	
4,100.0	4,088.7	4,106.4	4,088.7	9.8	10.2	-47.04	61.0	-307.7	128.0	109.4	18.66	6.862	
4,200.0	4,188.1	4,205.8	4,188.1	10.1	10.4	-50.81	61.0	-307.7	120.8	101.6	19.25	6.277	
4,300.0	4,287.5	4,305.2	4,287.5	10.4	10.6	-55.04	61.0	-307.7	114.2	94.4	19.87	5.749	
4,400.0	4,386.9	4,404.6	4,386.9	10.7	10.8	-59.75	61.0	-307.7	108.3	87.8	20.52	5.280	
4,500.0	4,486.3	4,504.0	4,486.3	11.0	11.0	-64.96	61.0	-307.7	103.2	82.1	21.18	4.874	
4,600.0	4,585.7	4,603.4	4,585.7	11.3	11.2	-70.65	61.0	-307.7	99.1	77.2	21.86	4.534	
4,700.0	4,685.2	4,702.8	4,685.2	11.6	11.4	-76.76	61.0	-307.7	96.0	73.5	22.53	4.262	
4,800.0	4,784.6	4,802.2	4,784.6	11.9	11.6	-83.20	61.0	-307.7	94.1	70.9	23.18	4.060	
4,900.0	4,884.0	4,901.6	4,884.0	12.1	11.8	-89.81	61.0	-307.7	93.4	69.6	23.79	3.927	
4,902.9	4,886.8	4,904.4	4,886.8	12.2	11.8	-90.00	61.0	-307.7	93.4	69.6	23.81	3.925	
5,000.0	4,983.4	5,001.0	4,983.4	12.4	11.9	-96.43	61.0	-307.7	94.0	69.7	24.34	3.862	

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

Company:	Cirque Resources LP	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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 #2 (9-12-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Motu East Pad Sec.28-T12N-R65W - Motu East 28-33-4-16-2CH - Wellbore #1 - Plan #2 (9-12-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,082.8	5,100.4	5,082.8	12.7	12.1	-102.88	61.0	-307.7	95.9	71.0	24.84	3.859	
5,200.0	5,182.2	5,199.8	5,182.2	13.0	12.3	-109.02	61.0	-307.7	98.9	73.6	25.28	3.912	
5,300.0	5,281.7	5,299.4	5,281.7	13.3	12.5	-114.01	61.0	-307.7	102.3	76.7	25.65	3.990	
5,400.0	5,381.6	5,399.2	5,381.6	13.5	12.8	-116.99	61.0	-307.7	104.9	78.9	25.98	4.037	
5,500.0	5,481.5	5,499.2	5,481.5	13.6	13.0	-118.16	61.0	-307.7	106.0	79.7	26.32	4.027	
5,600.0	5,581.5	5,599.2	5,581.5	13.8	13.2	-179.64	61.0	-307.7	106.0	79.3	26.69	3.972	
5,700.0	5,681.5	5,699.2	5,681.5	14.0	13.4	-179.64	61.0	-307.7	106.0	78.9	27.09	3.913	
5,800.0	5,781.5	5,799.2	5,781.5	14.2	13.6	-179.64	61.0	-307.7	106.0	78.5	27.50	3.855	
5,900.0	5,881.5	5,899.2	5,881.5	14.4	13.8	-179.64	61.0	-307.7	106.0	78.1	27.90	3.799	
6,000.0	5,981.5	5,999.2	5,981.5	14.6	14.0	-179.64	61.0	-307.7	106.0	77.7	28.31	3.744	
6,100.0	6,081.5	6,099.2	6,081.5	14.8	14.2	-179.64	61.0	-307.7	106.0	77.3	28.72	3.691	
6,200.0	6,181.5	6,199.2	6,181.5	15.0	14.4	-179.64	61.0	-307.7	106.0	76.9	29.13	3.639	
6,300.0	6,281.5	6,299.2	6,281.5	15.2	14.6	-179.64	61.0	-307.7	106.0	76.5	29.55	3.588	
6,400.0	6,381.5	6,399.2	6,381.5	15.4	14.8	-179.64	61.0	-307.7	106.0	76.0	29.96	3.538	
6,500.0	6,481.5	6,499.2	6,481.5	15.6	15.0	-179.64	61.0	-307.7	106.0	75.6	30.37	3.490	
6,600.0	6,581.5	6,599.2	6,581.5	15.8	15.2	-179.64	61.0	-307.7	106.0	75.2	30.79	3.443	
6,700.0	6,681.5	6,699.2	6,681.5	16.0	15.4	-179.64	61.0	-307.7	106.0	74.8	31.20	3.397	
6,800.0	6,781.5	6,799.2	6,781.5	16.2	15.7	-179.64	61.0	-307.7	106.0	74.4	31.62	3.352	
6,900.0	6,881.5	6,899.2	6,881.5	16.4	15.9	-179.64	61.0	-307.7	106.0	74.0	32.04	3.309	
7,000.0	6,981.5	6,999.2	6,981.5	16.6	16.1	-179.64	61.0	-307.7	106.0	73.5	32.46	3.266	
7,100.0	7,081.5	7,099.2	7,081.5	16.8	16.3	-179.64	61.0	-307.7	106.0	73.1	32.88	3.224	
7,200.0	7,181.5	7,199.2	7,181.5	17.0	16.5	-179.64	61.0	-307.7	106.0	72.7	33.30	3.184	
7,300.0	7,281.5	7,299.2	7,281.5	17.2	16.7	-179.64	61.0	-307.7	106.0	72.3	33.72	3.144	
7,400.0	7,381.5	7,399.2	7,381.5	17.4	16.9	-179.64	61.0	-307.7	106.0	71.9	34.14	3.105	
7,500.0	7,481.5	7,499.2	7,481.5	17.6	17.1	-179.64	61.0	-307.7	106.0	71.4	34.56	3.067	
7,600.0	7,581.5	7,599.2	7,581.5	17.9	17.4	-179.64	61.0	-307.7	106.0	71.0	34.98	3.030	
7,700.0	7,681.5	7,699.2	7,681.5	18.1	17.6	-179.64	61.0	-307.7	106.0	70.6	35.41	2.994	
7,800.0	7,781.5	7,799.2	7,781.5	18.3	17.8	-179.64	61.0	-307.7	106.0	70.2	35.83	2.958	
7,900.0	7,881.5	7,899.2	7,881.5	18.5	18.0	-179.64	61.0	-307.7	106.0	69.7	36.26	2.924	
8,000.0	7,981.5	7,999.2	7,981.5	18.7	18.2	-179.64	61.0	-307.7	106.0	69.3	36.68	2.890	
8,100.0	8,081.5	8,099.2	8,081.5	18.9	18.4	-179.64	61.0	-307.7	106.0	68.9	37.11	2.857	
8,152.7	8,134.2	8,151.9	8,134.2	19.0	18.5	-179.93	61.0	-307.7	106.4	69.1	37.34	2.850	
8,200.0	8,181.5	8,196.3	8,178.6	19.1	18.6	-179.93	60.8	-307.7	106.6	69.1	37.53	2.840	SF
8,300.0	8,280.8	8,279.0	8,261.0	19.3	18.8	-179.93	53.2	-307.7	126.7	89.2	37.50	3.379	
8,400.0	8,377.2	8,350.0	8,330.3	19.6	18.9	-179.93	38.2	-307.8	173.0	136.2	36.81	4.699	
8,500.0	8,468.2	8,400.0	8,378.0	19.9	18.9	-179.93	23.0	-307.9	240.4	204.9	35.49	6.772	
8,600.0	8,551.7	8,450.0	8,424.3	20.3	19.0	-179.92	4.2	-308.1	322.7	289.0	33.66	9.587	
8,700.0	8,625.5	8,470.1	8,442.4	20.8	19.1	-179.89	-4.4	-308.1	414.9	383.5	31.39	13.217	
8,800.0	8,688.0	8,482.0	8,453.1	21.4	19.1	-179.77	-9.8	-308.2	512.7	483.7	28.91	17.733	
8,900.0	8,737.5	8,484.2	8,455.0	22.1	19.1	-0.59	-10.8	-308.2	612.5	586.0	26.45	23.160	
9,000.0	8,772.8	8,478.6	8,450.0	22.9	19.1	-0.11	-8.2	-308.1	711.7	687.4	24.31	29.272	
9,100.0	8,793.0	8,467.0	8,439.7	23.9	19.1	-0.05	-3.0	-308.1	808.3	785.5	22.87	35.343	
9,200.0	8,798.0	8,450.0	8,424.3	25.0	19.0	0.16	4.2	-308.1	900.8	878.3	22.46	40.108	
9,300.0	8,798.0	8,434.6	8,410.2	26.2	19.0	0.15	10.4	-308.0	992.3	969.6	22.70	43.709	

Company:	Cirque Resources LP	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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 #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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-88.24	3.6	-118.7	118.8	118.8	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-88.24	3.6	-118.7	118.8	118.6	0.23	523.322	
166.3	166.3	167.3	167.3	0.3	0.3	-88.24	3.6	-118.7	118.8	118.3	0.53	226.207	CC
200.0	200.0	200.0	200.0	0.3	0.3	-88.24	3.6	-118.7	118.8	118.1	0.67	176.191	ES
300.0	300.0	296.9	296.9	0.6	0.5	-88.23	3.7	-120.4	120.5	119.4	1.11	108.753	
400.0	400.0	392.7	392.6	0.8	0.8	-88.20	3.9	-125.2	125.6	124.0	1.55	81.125	
500.0	500.0	488.0	487.6	1.0	1.0	-88.15	4.3	-133.2	133.9	131.9	2.01	66.682	
600.0	600.0	582.7	581.6	1.2	1.3	-88.09	4.8	-144.2	145.6	143.1	2.50	58.347	
700.0	700.0	676.6	674.4	1.5	1.6	-88.03	5.5	-158.3	160.6	157.6	3.01	53.274	
800.0	800.0	769.5	765.7	1.7	1.9	-87.97	6.2	-175.1	178.7	175.2	3.57	50.106	
900.0	900.0	862.6	856.8	1.9	2.3	-87.91	7.1	-194.9	200.0	195.8	4.16	48.085	
1,000.0	1,000.0	960.2	951.9	2.1	2.8	-87.85	8.1	-216.4	222.1	217.3	4.79	46.366	
1,100.0	1,100.0	1,057.7	1,047.0	2.4	3.2	-87.81	9.1	-238.0	244.2	238.8	5.43	44.977	
1,200.0	1,200.0	1,155.2	1,142.1	2.6	3.7	-87.78	10.1	-259.5	266.3	260.2	6.08	43.833	
1,300.0	1,300.0	1,252.7	1,237.2	2.8	4.1	-87.75	11.1	-281.1	288.4	281.7	6.73	42.881	
1,400.0	1,400.0	1,350.2	1,332.3	3.0	4.6	-87.72	12.1	-302.6	310.6	303.2	7.38	42.079	
1,500.0	1,500.0	1,447.8	1,427.4	3.3	5.1	-87.70	13.0	-324.2	332.7	324.7	8.04	41.397	
1,600.0	1,600.0	1,545.3	1,522.5	3.5	5.5	-87.68	14.0	-345.7	354.8	346.1	8.69	40.809	
1,700.0	1,700.0	1,642.8	1,617.6	3.7	6.0	-87.66	15.0	-367.3	376.9	367.6	9.35	40.299	
1,800.0	1,800.0	1,740.3	1,712.7	3.9	6.5	-87.64	16.0	-388.9	399.1	389.1	10.01	39.851	
1,900.0	1,900.0	1,837.9	1,807.8	4.2	7.0	-87.63	17.0	-410.4	421.2	410.5	10.68	39.456	
2,000.0	2,000.0	1,935.4	1,902.9	4.4	7.4	-87.62	18.0	-432.0	443.3	432.0	11.34	39.105	
2,100.0	2,100.0	2,033.2	1,998.3	4.6	7.9	-26.06	19.0	-453.6	463.9	454.4	9.55	48.558	
2,200.0	2,199.8	2,131.6	2,094.3	4.8	8.4	-26.17	19.9	-475.3	481.4	471.4	10.04	47.973	
2,300.0	2,299.5	2,230.5	2,190.8	5.0	8.9	-26.47	20.9	-497.2	495.9	485.4	10.51	47.161	
2,400.0	2,398.9	2,329.6	2,287.4	5.3	9.4	-26.97	22.0	-519.1	508.4	497.4	11.00	46.238	
2,500.0	2,498.3	2,428.7	2,384.1	5.5	9.8	-27.46	23.0	-541.0	521.0	509.5	11.48	45.377	
2,600.0	2,597.7	2,527.9	2,480.7	5.8	10.3	-27.93	24.0	-562.9	533.6	521.7	11.97	44.574	
2,700.0	2,697.1	2,627.0	2,577.4	6.0	10.8	-28.38	25.0	-584.8	546.3	533.8	12.47	43.824	
2,800.0	2,796.5	2,726.1	2,674.0	6.3	11.3	-28.80	26.0	-606.7	558.9	546.0	12.96	43.122	
2,900.0	2,895.9	2,825.2	2,770.7	6.5	11.8	-29.21	27.0	-628.6	571.6	558.2	13.46	42.464	
3,000.0	2,995.3	2,924.3	2,867.3	6.8	12.3	-29.60	28.0	-650.5	584.4	570.4	13.96	41.847	
3,100.0	3,094.7	3,023.4	2,964.0	7.0	12.7	-29.97	29.0	-672.4	597.1	582.7	14.47	41.265	
3,200.0	3,194.1	3,122.5	3,060.6	7.3	13.2	-30.33	30.0	-694.3	609.9	594.9	14.98	40.718	
3,300.0	3,293.5	3,221.6	3,157.3	7.6	13.7	-30.67	31.0	-716.3	622.7	607.2	15.49	40.201	
3,400.0	3,392.9	3,320.7	3,253.9	7.9	14.2	-31.00	32.0	-738.2	635.5	619.5	16.00	39.712	
3,500.0	3,492.3	3,419.8	3,350.6	8.1	14.7	-31.32	33.0	-760.1	648.4	631.9	16.52	39.250	
3,600.0	3,591.7	3,518.9	3,447.2	8.4	15.2	-31.62	34.0	-782.0	661.2	644.2	17.04	38.812	
3,700.0	3,691.1	3,618.1	3,543.9	8.7	15.7	-31.92	35.0	-803.9	674.1	656.6	17.56	38.396	
3,800.0	3,790.5	3,717.2	3,640.6	9.0	16.1	-32.20	36.0	-825.8	687.0	668.9	18.08	38.001	
3,900.0	3,889.9	3,816.3	3,737.2	9.3	16.6	-32.47	37.0	-847.7	699.9	681.3	18.60	37.625	
4,000.0	3,989.3	3,915.4	3,833.9	9.5	17.1	-32.73	38.0	-869.6	712.8	693.7	19.13	37.267	
4,100.0	4,088.7	4,014.5	3,930.5	9.8	17.6	-32.98	39.0	-891.5	725.8	706.1	19.65	36.926	
4,200.0	4,188.1	4,113.6	4,027.2	10.1	18.1	-33.22	40.0	-913.4	738.7	718.6	20.18	36.601	
4,300.0	4,287.5	4,212.7	4,123.8	10.4	18.6	-33.46	41.0	-935.3	751.7	731.0	20.71	36.290	
4,400.0	4,386.9	4,311.8	4,220.5	10.7	19.1	-33.68	42.0	-957.2	764.7	743.4	21.25	35.992	
4,500.0	4,486.3	4,410.9	4,317.1	11.0	19.5	-33.90	43.0	-979.1	777.7	755.9	21.78	35.708	
4,600.0	4,585.7	4,510.0	4,413.8	11.3	20.0	-34.12	44.0	-1,001.0	790.7	768.4	22.31	35.436	
4,700.0	4,685.2	4,609.2	4,510.4	11.6	20.5	-34.32	45.0	-1,022.9	803.7	780.8	22.85	35.174	
4,800.0	4,784.6	4,708.3	4,607.1	11.9	21.0	-34.52	46.0	-1,044.8	816.7	793.3	23.39	34.924	
4,900.0	4,884.0	4,807.4	4,703.7	12.1	21.5	-34.71	47.0	-1,066.7	829.7	805.8	23.92	34.683	
5,000.0	4,983.4	4,906.5	4,800.4	12.4	22.0	-34.90	48.0	-1,088.6	842.8	818.3	24.46	34.452	

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

Company:	Cirque Resources LP	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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 #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

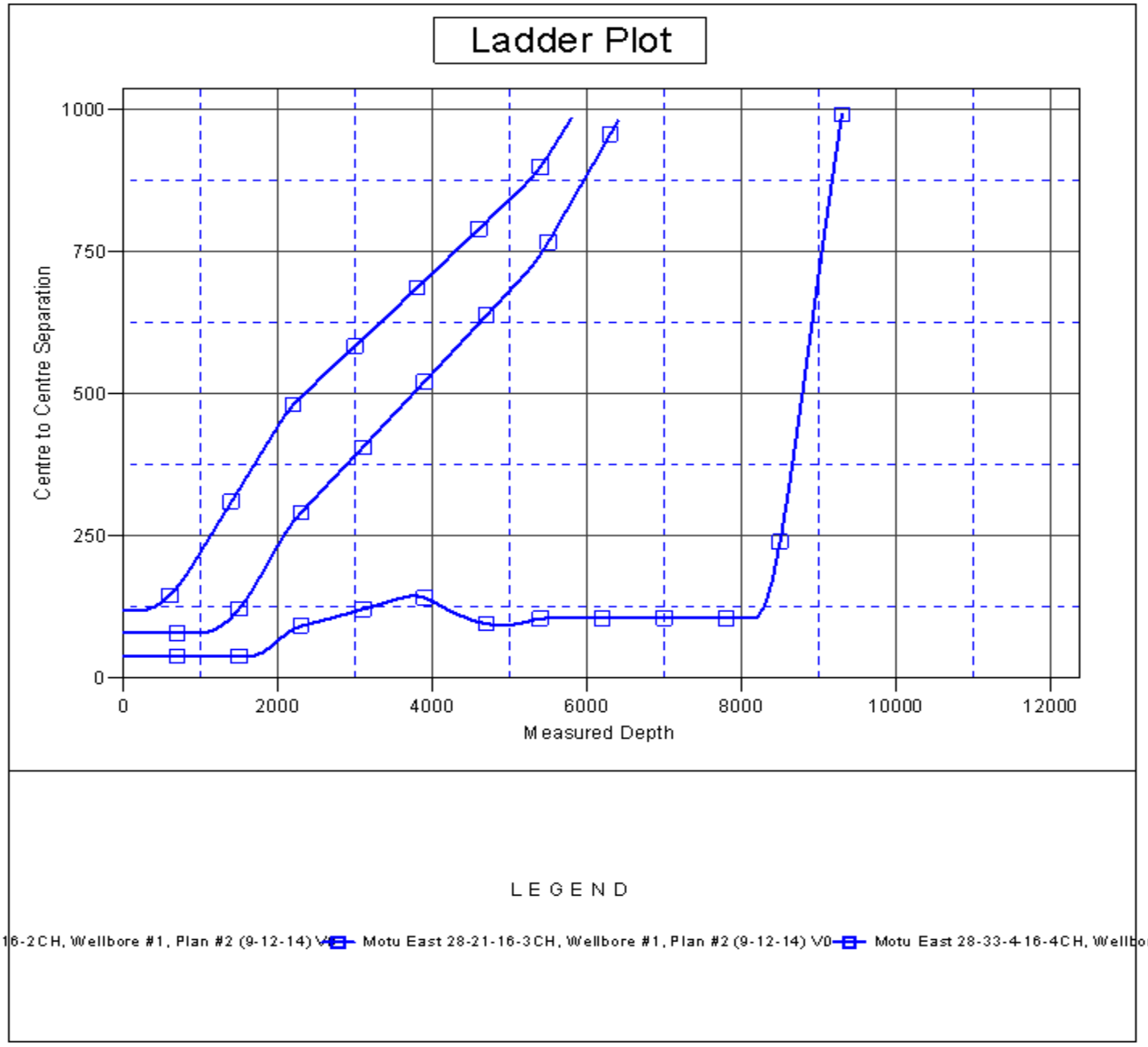
Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,082.8	5,005.6	4,897.0	12.7	22.5	-35.08	49.0	-1,110.5	855.8	830.8	25.00	34.230	
5,200.0	5,182.2	5,104.7	4,993.7	13.0	22.9	-35.25	50.0	-1,132.5	868.9	843.3	25.54	34.016	
5,300.0	5,281.7	5,203.7	5,090.2	13.3	23.4	-35.52	51.0	-1,154.3	883.2	857.2	26.03	33.930	SF
5,400.0	5,381.6	5,302.2	5,186.3	13.5	23.9	-35.70	52.0	-1,176.1	900.3	873.9	26.45	34.032	
5,500.0	5,481.5	5,400.1	5,281.8	13.6	24.4	-35.79	53.0	-1,197.7	920.2	893.4	26.84	34.284	
5,600.0	5,581.5	5,497.7	5,376.9	13.8	24.9	-97.06	54.0	-1,219.3	942.0	914.7	27.29	34.516	
5,700.0	5,681.5	5,595.2	5,472.0	14.0	25.3	-96.84	55.0	-1,240.9	963.8	936.1	27.75	34.738	
5,800.0	5,781.5	5,692.7	5,567.1	14.2	25.8	-96.63	55.9	-1,262.4	985.7	957.5	28.20	34.952	

Company:	Cirque Resources LP	**Local Co-ordinate Reference:**	Well Motu East 28-21-16-1CH
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 28-21-16-1CH	**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 #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 28-21-16-1CH
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 28-21-16-1CH
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 28-21-16-1CH	**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 #2 (9-12-14)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 5998.0ft (RKB - 25')	Coordinates are relative to: Motu East 28-21-16-1CH
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 °	Grid Convergence at Surface is: 0.54°