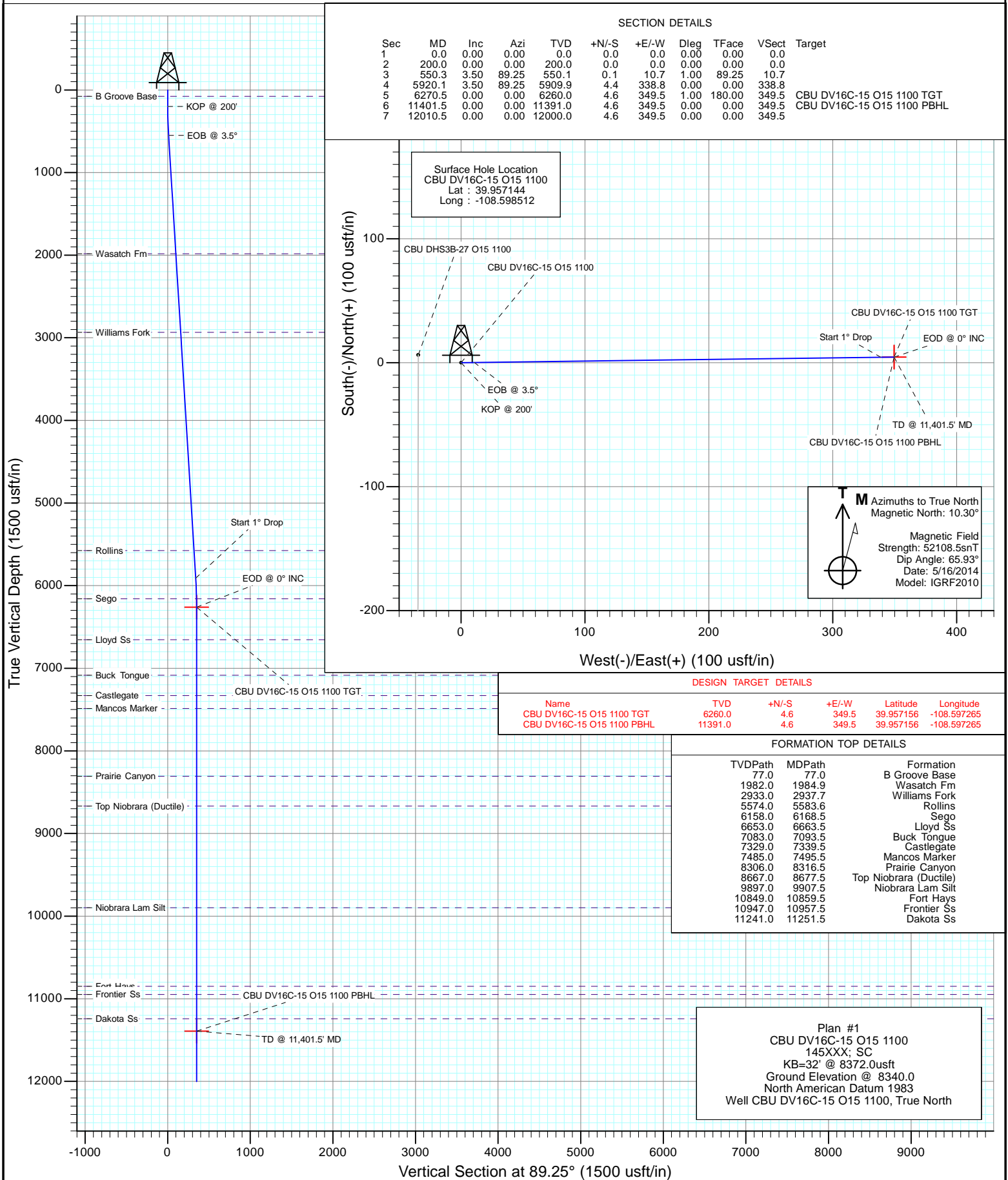




Project: Cathedral Bluffs
Site: O15 Pad (Sec 15-1S-100W)
Well: CBU DV16C-15 O15 1100
Wellbore: VH
Design: Plan #1



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well CBU DV16C-15 O15 1100
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=32' @ 8372.0usft
Project:	Cathedral Bluffs	MD Reference:	KB=32' @ 8372.0usft
Site:	O15 Pad (Sec 15-1S-100W)	North Reference:	True
Well:	CBU DV16C-15 O15 1100	Survey Calculation Method:	Minimum Curvature
Wellbore:	VH		
Design:	Plan #1		

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

Site		O15 Pad (Sec 15-1S-100W)			
Site Position:		Northing:	1,788,339.37 usft	Latitude:	39.957144
From:	Lat/Long	Easting:	2,131,496.27 usft	Longitude:	-108.598512
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-1.95 °

Well	CBU DV16C-15 O15 1100					
Well Position	+N/-S	0.0 usft	Northing:	1,788,339.37 usft	Latitude:	39.957144
	+E/-W	0.0 usft	Easting:	2,131,496.27 usft	Longitude:	-108.598512
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	8,340.0 usft

Wellbore	VH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/16/2014	10.30	65.93	52,109

Design	Plan #1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	89.25	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
550.3	3.50	89.25	550.1	0.1	10.7	1.00	1.00	0.00	89.25	
5,920.1	3.50	89.25	5,909.9	4.4	338.8	0.00	0.00	0.00	0.00	
6,270.5	0.00	0.00	6,260.0	4.6	349.5	1.00	-1.00	0.00	180.00	CBU DV16C-15 O15
11,401.5	0.00	0.00	11,391.0	4.6	349.5	0.00	0.00	0.00	0.00	CBU DV16C-15 O15
12,010.5	0.00	0.00	12,000.0	4.6	349.5	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well CBU DV16C-15 O15 1100
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=32' @ 8372.0usft
Project:	Cathedral Bluffs	MD Reference:	KB=32' @ 8372.0usft
Site:	O15 Pad (Sec 15-1S-100W)	North Reference:	True
Well:	CBU DV16C-15 O15 1100	Survey Calculation Method:	Minimum Curvature
Wellbore:	VH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
77.0	0.00	0.00	77.0	0.0	0.0	0.0	0.00	0.00	B Groove Base
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	1.00	89.25	300.0	0.0	0.9	0.9	1.00	1.00	
400.0	2.00	89.25	400.0	0.0	3.5	3.5	1.00	1.00	
500.0	3.00	89.25	499.9	0.1	7.9	7.9	1.00	1.00	
550.3	3.50	89.25	550.1	0.1	10.7	10.7	1.00	1.00	EOB @ 3.5°
600.0	3.50	89.25	599.7	0.2	13.7	13.7	0.00	0.00	
700.0	3.50	89.25	699.5	0.3	19.9	19.9	0.00	0.00	
800.0	3.50	89.25	799.3	0.3	26.0	26.0	0.00	0.00	
900.0	3.50	89.25	899.1	0.4	32.1	32.1	0.00	0.00	
1,000.0	3.50	89.25	998.9	0.5	38.2	38.2	0.00	0.00	
1,100.0	3.50	89.25	1,098.8	0.6	44.3	44.3	0.00	0.00	
1,200.0	3.50	89.25	1,198.6	0.7	50.4	50.4	0.00	0.00	
1,300.0	3.50	89.25	1,298.4	0.7	56.5	56.5	0.00	0.00	
1,400.0	3.50	89.25	1,398.2	0.8	62.6	62.6	0.00	0.00	
1,500.0	3.50	89.25	1,498.0	0.9	68.7	68.7	0.00	0.00	
1,600.0	3.50	89.25	1,597.8	1.0	74.8	74.8	0.00	0.00	
1,700.0	3.50	89.25	1,697.6	1.1	81.0	81.0	0.00	0.00	
1,800.0	3.50	89.25	1,797.4	1.1	87.1	87.1	0.00	0.00	
1,900.0	3.50	89.25	1,897.3	1.2	93.2	93.2	0.00	0.00	
1,984.9	3.50	89.25	1,982.0	1.3	98.4	98.4	0.00	0.00	Wasatch Fm
2,000.0	3.50	89.25	1,997.1	1.3	99.3	99.3	0.00	0.00	
2,100.0	3.50	89.25	2,096.9	1.4	105.4	105.4	0.00	0.00	
2,200.0	3.50	89.25	2,196.7	1.5	111.5	111.5	0.00	0.00	
2,300.0	3.50	89.25	2,296.5	1.5	117.6	117.6	0.00	0.00	
2,400.0	3.50	89.25	2,396.3	1.6	123.7	123.7	0.00	0.00	
2,500.0	3.50	89.25	2,496.1	1.7	129.8	129.8	0.00	0.00	
2,503.9	3.50	89.25	2,500.0	1.7	130.1	130.1	0.00	0.00	Surface Casing
2,600.0	3.50	89.25	2,596.0	1.8	135.9	136.0	0.00	0.00	
2,700.0	3.50	89.25	2,695.8	1.9	142.1	142.1	0.00	0.00	
2,800.0	3.50	89.25	2,795.6	1.9	148.2	148.2	0.00	0.00	
2,900.0	3.50	89.25	2,895.4	2.0	154.3	154.3	0.00	0.00	
2,937.7	3.50	89.25	2,933.0	2.1	156.6	156.6	0.00	0.00	Williams Fork
3,000.0	3.50	89.25	2,995.2	2.1	160.4	160.4	0.00	0.00	
3,100.0	3.50	89.25	3,095.0	2.2	166.5	166.5	0.00	0.00	
3,200.0	3.50	89.25	3,194.8	2.3	172.6	172.6	0.00	0.00	
3,300.0	3.50	89.25	3,294.6	2.3	178.7	178.7	0.00	0.00	
3,400.0	3.50	89.25	3,394.5	2.4	184.8	184.8	0.00	0.00	
3,500.0	3.50	89.25	3,494.3	2.5	190.9	191.0	0.00	0.00	
3,600.0	3.50	89.25	3,594.1	2.6	197.0	197.1	0.00	0.00	
3,700.0	3.50	89.25	3,693.9	2.7	203.2	203.2	0.00	0.00	
3,800.0	3.50	89.25	3,793.7	2.7	209.3	209.3	0.00	0.00	
3,900.0	3.50	89.25	3,893.5	2.8	215.4	215.4	0.00	0.00	
4,000.0	3.50	89.25	3,993.3	2.9	221.5	221.5	0.00	0.00	
4,100.0	3.50	89.25	4,093.1	3.0	227.6	227.6	0.00	0.00	
4,200.0	3.50	89.25	4,193.0	3.1	233.7	233.7	0.00	0.00	
4,300.0	3.50	89.25	4,292.8	3.1	239.8	239.8	0.00	0.00	
4,400.0	3.50	89.25	4,392.6	3.2	245.9	245.9	0.00	0.00	
4,500.0	3.50	89.25	4,492.4	3.3	252.0	252.1	0.00	0.00	
4,600.0	3.50	89.25	4,592.2	3.4	258.1	258.2	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well CBU DV16C-15 O15 1100
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=32' @ 8372.0usft
Project:	Cathedral Bluffs	MD Reference:	KB=32' @ 8372.0usft
Site:	O15 Pad (Sec 15-1S-100W)	North Reference:	True
Well:	CBU DV16C-15 O15 1100	Survey Calculation Method:	Minimum Curvature
Wellbore:	VH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
4,700.0	3.50	89.25	4,692.0	3.5	264.3	264.3	0.00	0.00	
4,800.0	3.50	89.25	4,791.8	3.5	270.4	270.4	0.00	0.00	
4,900.0	3.50	89.25	4,891.7	3.6	276.5	276.5	0.00	0.00	
5,000.0	3.50	89.25	4,991.5	3.7	282.6	282.6	0.00	0.00	
5,100.0	3.50	89.25	5,091.3	3.8	288.7	288.7	0.00	0.00	
5,200.0	3.50	89.25	5,191.1	3.9	294.8	294.8	0.00	0.00	
5,300.0	3.50	89.25	5,290.9	3.9	300.9	300.9	0.00	0.00	
5,400.0	3.50	89.25	5,390.7	4.0	307.0	307.1	0.00	0.00	
5,500.0	3.50	89.25	5,490.5	4.1	313.1	313.2	0.00	0.00	
5,583.6	3.50	89.25	5,574.0	4.2	318.3	318.3	0.00	0.00	Rollins
5,600.0	3.50	89.25	5,590.3	4.2	319.3	319.3	0.00	0.00	
5,700.0	3.50	89.25	5,690.2	4.3	325.4	325.4	0.00	0.00	
5,800.0	3.50	89.25	5,790.0	4.3	331.5	331.5	0.00	0.00	
5,900.0	3.50	89.25	5,889.8	4.4	337.6	337.6	0.00	0.00	
5,920.1	3.50	89.25	5,909.9	4.4	338.8	338.8	0.00	0.00	Start 1° Drop
6,000.0	2.70	89.25	5,989.6	4.5	343.1	343.2	1.00	-1.00	
6,100.0	1.70	89.25	6,089.6	4.5	347.0	347.0	1.00	-1.00	
6,168.5	1.02	89.25	6,158.0	4.6	348.6	348.6	1.00	-1.00	Sego
6,200.0	0.70	89.25	6,189.5	4.6	349.1	349.1	1.00	-1.00	
6,270.5	0.00	0.00	6,260.0	4.6	349.5	349.5	1.00	-1.00	EOD @ 0° INC
6,300.0	0.00	0.00	6,289.5	4.6	349.5	349.5	0.00	0.00	
6,400.0	0.00	0.00	6,389.5	4.6	349.5	349.5	0.00	0.00	
6,500.0	0.00	0.00	6,489.5	4.6	349.5	349.5	0.00	0.00	
6,600.0	0.00	0.00	6,589.5	4.6	349.5	349.5	0.00	0.00	
6,663.5	0.00	0.00	6,653.0	4.6	349.5	349.5	0.00	0.00	Lloyd Ss
6,700.0	0.00	0.00	6,689.5	4.6	349.5	349.5	0.00	0.00	
6,800.0	0.00	0.00	6,789.5	4.6	349.5	349.5	0.00	0.00	
6,900.0	0.00	0.00	6,889.5	4.6	349.5	349.5	0.00	0.00	
7,000.0	0.00	0.00	6,989.5	4.6	349.5	349.5	0.00	0.00	
7,093.5	0.00	0.00	7,083.0	4.6	349.5	349.5	0.00	0.00	Buck Tongue
7,100.0	0.00	0.00	7,089.5	4.6	349.5	349.5	0.00	0.00	
7,200.0	0.00	0.00	7,189.5	4.6	349.5	349.5	0.00	0.00	
7,300.0	0.00	0.00	7,289.5	4.6	349.5	349.5	0.00	0.00	
7,339.5	0.00	0.00	7,329.0	4.6	349.5	349.5	0.00	0.00	Castlegate
7,400.0	0.00	0.00	7,389.5	4.6	349.5	349.5	0.00	0.00	
7,495.5	0.00	0.00	7,485.0	4.6	349.5	349.5	0.00	0.00	Mancos Marker
7,500.0	0.00	0.00	7,489.5	4.6	349.5	349.5	0.00	0.00	
7,600.0	0.00	0.00	7,589.5	4.6	349.5	349.5	0.00	0.00	
7,700.0	0.00	0.00	7,689.5	4.6	349.5	349.5	0.00	0.00	
7,800.0	0.00	0.00	7,789.5	4.6	349.5	349.5	0.00	0.00	
7,900.0	0.00	0.00	7,889.5	4.6	349.5	349.5	0.00	0.00	
8,000.0	0.00	0.00	7,989.5	4.6	349.5	349.5	0.00	0.00	
8,100.0	0.00	0.00	8,089.5	4.6	349.5	349.5	0.00	0.00	
8,200.0	0.00	0.00	8,189.5	4.6	349.5	349.5	0.00	0.00	
8,300.0	0.00	0.00	8,289.5	4.6	349.5	349.5	0.00	0.00	
8,316.5	0.00	0.00	8,306.0	4.6	349.5	349.5	0.00	0.00	Prairie Canyon
8,400.0	0.00	0.00	8,389.5	4.6	349.5	349.5	0.00	0.00	
8,500.0	0.00	0.00	8,489.5	4.6	349.5	349.5	0.00	0.00	
8,600.0	0.00	0.00	8,589.5	4.6	349.5	349.5	0.00	0.00	
8,677.5	0.00	0.00	8,667.0	4.6	349.5	349.5	0.00	0.00	Top Niobrara (Ductile)
8,700.0	0.00	0.00	8,689.5	4.6	349.5	349.5	0.00	0.00	
8,800.0	0.00	0.00	8,789.5	4.6	349.5	349.5	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well CBU DV16C-15 O15 1100
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=32' @ 8372.0usft
Project:	Cathedral Bluffs	MD Reference:	KB=32' @ 8372.0usft
Site:	O15 Pad (Sec 15-1S-100W)	North Reference:	True
Well:	CBU DV16C-15 O15 1100	Survey Calculation Method:	Minimum Curvature
Wellbore:	VH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
8,900.0	0.00	0.00	8,889.5	4.6	349.5	349.5	0.00	0.00	
9,000.0	0.00	0.00	8,989.5	4.6	349.5	349.5	0.00	0.00	
9,100.0	0.00	0.00	9,089.5	4.6	349.5	349.5	0.00	0.00	
9,200.0	0.00	0.00	9,189.5	4.6	349.5	349.5	0.00	0.00	
9,300.0	0.00	0.00	9,289.5	4.6	349.5	349.5	0.00	0.00	
9,400.0	0.00	0.00	9,389.5	4.6	349.5	349.5	0.00	0.00	
9,500.0	0.00	0.00	9,489.5	4.6	349.5	349.5	0.00	0.00	
9,600.0	0.00	0.00	9,589.5	4.6	349.5	349.5	0.00	0.00	
9,700.0	0.00	0.00	9,689.5	4.6	349.5	349.5	0.00	0.00	
9,800.0	0.00	0.00	9,789.5	4.6	349.5	349.5	0.00	0.00	
9,900.0	0.00	0.00	9,889.5	4.6	349.5	349.5	0.00	0.00	
9,907.5	0.00	0.00	9,897.0	4.6	349.5	349.5	0.00	0.00	Niobrara Lam Silt
10,000.0	0.00	0.00	9,989.5	4.6	349.5	349.5	0.00	0.00	
10,100.0	0.00	0.00	10,089.5	4.6	349.5	349.5	0.00	0.00	
10,200.0	0.00	0.00	10,189.5	4.6	349.5	349.5	0.00	0.00	
10,300.0	0.00	0.00	10,289.5	4.6	349.5	349.5	0.00	0.00	
10,400.0	0.00	0.00	10,389.5	4.6	349.5	349.5	0.00	0.00	
10,500.0	0.00	0.00	10,489.5	4.6	349.5	349.5	0.00	0.00	
10,600.0	0.00	0.00	10,589.5	4.6	349.5	349.5	0.00	0.00	
10,700.0	0.00	0.00	10,689.5	4.6	349.5	349.5	0.00	0.00	
10,800.0	0.00	0.00	10,789.5	4.6	349.5	349.5	0.00	0.00	
10,859.5	0.00	0.00	10,849.0	4.6	349.5	349.5	0.00	0.00	Fort Hays
10,900.0	0.00	0.00	10,889.5	4.6	349.5	349.5	0.00	0.00	
10,957.5	0.00	0.00	10,947.0	4.6	349.5	349.5	0.00	0.00	Frontier Ss
11,000.0	0.00	0.00	10,989.5	4.6	349.5	349.5	0.00	0.00	
11,100.0	0.00	0.00	11,089.5	4.6	349.5	349.5	0.00	0.00	
11,200.0	0.00	0.00	11,189.5	4.6	349.5	349.5	0.00	0.00	
11,251.5	0.00	0.00	11,241.0	4.6	349.5	349.5	0.00	0.00	Dakota Ss
11,300.0	0.00	0.00	11,289.5	4.6	349.5	349.5	0.00	0.00	
11,401.5	0.00	0.00	11,391.0	4.6	349.5	349.5	0.00	0.00	TD @ 11,401.5' MD
11,500.0	0.00	0.00	11,489.5	4.6	349.5	349.5	0.00	0.00	
11,600.0	0.00	0.00	11,589.5	4.6	349.5	349.5	0.00	0.00	
11,700.0	0.00	0.00	11,689.5	4.6	349.5	349.5	0.00	0.00	
11,800.0	0.00	0.00	11,789.5	4.6	349.5	349.5	0.00	0.00	
11,900.0	0.00	0.00	11,889.5	4.6	349.5	349.5	0.00	0.00	
12,000.0	0.00	0.00	11,989.5	4.6	349.5	349.5	0.00	0.00	
12,010.5	0.00	0.00	12,000.0	4.6	349.5	349.5	0.00	0.00	TD @ 12,010.5' MD

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
CBU DV16C-15 O15 11C - plan hits target center - Point	0.00	0.00	11,391.0	4.6	349.5	1,788,332.03	2,131,845.74	39.957156	-108.597265
CBU DV16C-15 O15 11C - plan hits target center - Point	0.00	0.00	6,260.0	4.6	349.5	1,788,332.03	2,131,845.74	39.957156	-108.597265

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well CBU DV16C-15 O15 1100
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KB=32' @ 8372.0usft
Project:	Cathedral Bluffs	MD Reference:	KB=32' @ 8372.0usft
Site:	O15 Pad (Sec 15-1S-100W)	North Reference:	True
Well:	CBU DV16C-15 O15 1100	Survey Calculation Method:	Minimum Curvature
Wellbore:	VH		
Design:	Plan #1		

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
2,503.9	2,500.0	Surface Casing	0	0

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
77.0	77.0	B Groove Base			
1,984.9	1,982.0	Wasatch Fm			
2,937.7	2,933.0	Williams Fork			
5,583.6	5,574.0	Rollins			
6,168.5	6,158.0	Sego			
6,663.5	6,653.0	Lloyd Ss			
7,093.5	7,083.0	Buck Tongue			
7,339.5	7,329.0	Castlegate			
7,495.5	7,485.0	Mancos Marker			
8,316.5	8,306.0	Prairie Canyon			
8,677.5	8,667.0	Top Niobrara (Ductile)			
9,907.5	9,897.0	Niobrara Lam Silt			
10,859.5	10,849.0	Fort Hays			
10,957.5	10,947.0	Frontier Ss			
11,251.5	11,241.0	Dakota Ss			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
200.0	200.0	0.0	0.0	KOP @ 200'
550.3	550.1	0.1	10.7	EOB @ 3.5°
5,920.1	5,909.9	4.4	338.8	Start 1° Drop
6,270.5	6,260.0	4.6	349.5	EOD @ 0° INC
11,401.5	11,391.0	4.6	349.5	TD @ 11,401.5' MD
12,010.5	12,000.0	4.6	349.5	TD @ 12,010.5' MD