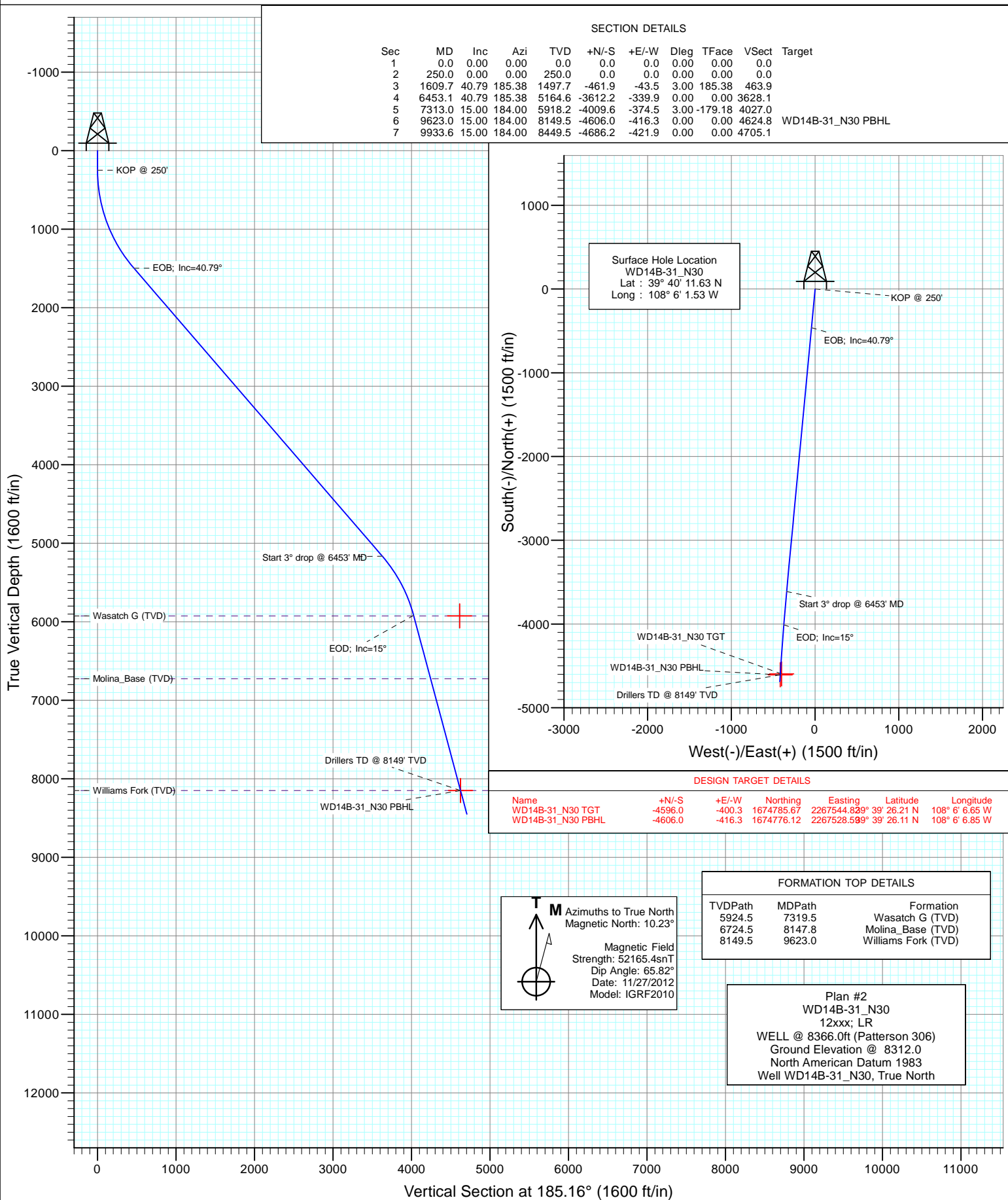




Project: Story Gulch
Site: N30 495
Well: WD14B-31_N30
Wellbore: DD
Design: Plan #2



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well WD14B-31_N30
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 8366.0ft (Patterson 306)
Project:	Story Gulch	MD Reference:	WELL @ 8366.0ft (Patterson 306)
Site:	N30 495	North Reference:	True
Well:	WD14B-31_N30	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #2		

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

Site		N30 495			
Site Position:		Northing:	1,679,450.30 ft	Latitude:	39° 40' 12.46 N
From:	Lat/Long	Easting:	2,268,163.89 ft	Longitude:	108° 6' 0.44 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.64 °

Well	WD14B-31_N30					
Well Position	+N/-S	0.0 ft	Northing:	1,679,368.33 ft	Latitude:	39° 40' 11.63 N
	+E/-W	0.0 ft	Easting:	2,268,076.49 ft	Longitude:	108° 6' 1.53 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	8,312.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/27/2012	10.23	65.82	52,165

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	185.16

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	
250.0	0.00	0.00	250.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,609.7	40.79	185.38	1,497.7	-461.9	-43.5	3.00	3.00	0.00	185.38	
6,453.1	40.79	185.38	5,164.6	-3,612.2	-339.9	0.00	0.00	0.00	0.00	
7,313.0	15.00	184.00	5,918.2	-4,009.6	-374.5	3.00	-3.00	-0.16	-179.18	
9,623.0	15.00	184.00	8,149.5	-4,606.0	-416.3	0.00	0.00	0.00	0.00	WD14B-31_N30 PBH
9,933.6	15.00	184.00	8,449.5	-4,686.2	-421.9	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 WD14B-31_N30
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 8366.0ft (Patterson 306)
Project:	Story Gulch	MD Reference:	WELL @ 8366.0ft (Patterson 306)
Site:	N30 495	North Reference:	True
Well:	WD14B-31_N30	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
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	
250.0	0.00	0.00	250.0	0.0	0.0	0.0	0.00	0.00	KOP @ 250'
300.0	1.50	185.38	300.0	-0.7	-0.1	0.7	3.00	3.00	
400.0	4.50	185.38	399.8	-5.9	-0.6	5.9	3.00	3.00	
500.0	7.50	185.38	499.3	-16.3	-1.5	16.3	3.00	3.00	
600.0	10.50	185.38	598.0	-31.8	-3.0	32.0	3.00	3.00	
700.0	13.50	185.38	695.8	-52.5	-4.9	52.8	3.00	3.00	
800.0	16.50	185.38	792.4	-78.3	-7.4	78.6	3.00	3.00	
900.0	19.50	185.38	887.5	-109.1	-10.3	109.5	3.00	3.00	
1,000.0	22.50	185.38	980.9	-144.7	-13.6	145.4	3.00	3.00	
1,100.0	25.50	185.38	1,072.2	-185.2	-17.4	186.0	3.00	3.00	
1,200.0	28.50	185.38	1,161.3	-230.4	-21.7	231.4	3.00	3.00	
1,300.0	31.50	185.38	1,247.9	-280.2	-26.4	281.4	3.00	3.00	
1,400.0	34.50	185.38	1,331.8	-334.4	-31.5	335.9	3.00	3.00	
1,500.0	37.50	185.38	1,412.6	-392.9	-37.0	394.7	3.00	3.00	
1,600.0	40.50	185.38	1,490.4	-455.6	-42.9	457.6	3.00	3.00	
1,609.7	40.79	185.38	1,497.7	-461.9	-43.5	463.9	3.00	3.00	EOB; Inc=40.79°
1,700.0	40.79	185.38	1,566.1	-520.6	-49.0	522.9	0.00	0.00	
1,800.0	40.79	185.38	1,641.8	-585.6	-55.1	588.2	0.00	0.00	
1,900.0	40.79	185.38	1,717.5	-650.7	-61.2	653.6	0.00	0.00	
2,000.0	40.79	185.38	1,793.2	-715.7	-67.3	718.9	0.00	0.00	
2,100.0	40.79	185.38	1,868.9	-780.8	-73.5	784.2	0.00	0.00	
2,200.0	40.79	185.38	1,944.6	-845.8	-79.6	849.6	0.00	0.00	
2,300.0	40.79	185.38	2,020.3	-910.9	-85.7	914.9	0.00	0.00	
2,400.0	40.79	185.38	2,096.0	-975.9	-91.8	980.2	0.00	0.00	
2,500.0	40.79	185.38	2,171.8	-1,041.0	-97.9	1,045.5	0.00	0.00	
2,600.0	40.79	185.38	2,247.5	-1,106.0	-104.1	1,110.9	0.00	0.00	
2,700.0	40.79	185.38	2,323.2	-1,171.0	-110.2	1,176.2	0.00	0.00	
2,800.0	40.79	185.38	2,398.9	-1,236.1	-116.3	1,241.5	0.00	0.00	
2,900.0	40.79	185.38	2,474.6	-1,301.1	-122.4	1,306.9	0.00	0.00	
3,000.0	40.79	185.38	2,550.3	-1,366.2	-128.5	1,372.2	0.00	0.00	
3,100.0	40.79	185.38	2,626.0	-1,431.2	-134.7	1,437.5	0.00	0.00	
3,200.0	40.79	185.38	2,701.7	-1,496.3	-140.8	1,502.9	0.00	0.00	
3,300.0	40.79	185.38	2,777.4	-1,561.3	-146.9	1,568.2	0.00	0.00	
3,400.0	40.79	185.38	2,853.1	-1,626.3	-153.0	1,633.5	0.00	0.00	
3,500.0	40.79	185.38	2,928.8	-1,691.4	-159.1	1,698.8	0.00	0.00	
3,600.0	40.79	185.38	3,004.6	-1,756.4	-165.3	1,764.2	0.00	0.00	
3,700.0	40.79	185.38	3,080.3	-1,821.5	-171.4	1,829.5	0.00	0.00	
3,800.0	40.79	185.38	3,156.0	-1,886.5	-177.5	1,894.8	0.00	0.00	
3,900.0	40.79	185.38	3,231.7	-1,951.6	-183.6	1,960.2	0.00	0.00	
4,000.0	40.79	185.38	3,307.4	-2,016.6	-189.7	2,025.5	0.00	0.00	
4,100.0	40.79	185.38	3,383.1	-2,081.6	-195.9	2,090.8	0.00	0.00	
4,200.0	40.79	185.38	3,458.8	-2,146.7	-202.0	2,156.2	0.00	0.00	
4,300.0	40.79	185.38	3,534.5	-2,211.7	-208.1	2,221.5	0.00	0.00	
4,400.0	40.79	185.38	3,610.2	-2,276.8	-214.2	2,286.8	0.00	0.00	
4,500.0	40.79	185.38	3,685.9	-2,341.8	-220.3	2,352.1	0.00	0.00	
4,600.0	40.79	185.38	3,761.6	-2,406.9	-226.5	2,417.5	0.00	0.00	
4,700.0	40.79	185.38	3,837.4	-2,471.9	-232.6	2,482.8	0.00	0.00	
4,800.0	40.79	185.38	3,913.1	-2,537.0	-238.7	2,548.1	0.00	0.00	
4,900.0	40.79	185.38	3,988.8	-2,602.0	-244.8	2,613.5	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well WD14B-31_N30
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 8366.0ft (Patterson 306)
Project:	Story Gulch	MD Reference:	WELL @ 8366.0ft (Patterson 306)
Site:	N30 495	North Reference:	True
Well:	WD14B-31_N30	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,000.0	40.79	185.38	4,064.5	-2,667.0	-250.9	2,678.8	0.00	0.00	
5,100.0	40.79	185.38	4,140.2	-2,732.1	-257.1	2,744.1	0.00	0.00	
5,200.0	40.79	185.38	4,215.9	-2,797.1	-263.2	2,809.5	0.00	0.00	
5,300.0	40.79	185.38	4,291.6	-2,862.2	-269.3	2,874.8	0.00	0.00	
5,400.0	40.79	185.38	4,367.3	-2,927.2	-275.4	2,940.1	0.00	0.00	
5,500.0	40.79	185.38	4,443.0	-2,992.3	-281.5	3,005.5	0.00	0.00	
5,600.0	40.79	185.38	4,518.7	-3,057.3	-287.7	3,070.8	0.00	0.00	
5,700.0	40.79	185.38	4,594.5	-3,122.3	-293.8	3,136.1	0.00	0.00	
5,800.0	40.79	185.38	4,670.2	-3,187.4	-299.9	3,201.4	0.00	0.00	
5,900.0	40.79	185.38	4,745.9	-3,252.4	-306.0	3,266.8	0.00	0.00	
6,000.0	40.79	185.38	4,821.6	-3,317.5	-312.1	3,332.1	0.00	0.00	
6,100.0	40.79	185.38	4,897.3	-3,382.5	-318.3	3,397.4	0.00	0.00	
6,200.0	40.79	185.38	4,973.0	-3,447.6	-324.4	3,462.8	0.00	0.00	
6,300.0	40.79	185.38	5,048.7	-3,512.6	-330.5	3,528.1	0.00	0.00	
6,400.0	40.79	185.38	5,124.4	-3,577.6	-336.6	3,593.4	0.00	0.00	
6,453.1	40.79	185.38	5,164.6	-3,612.2	-339.9	3,628.1	0.00	0.00	Start 3° drop @ 6453' MD
6,500.0	39.38	185.34	5,200.5	-3,642.3	-342.7	3,658.3	3.00	-3.00	
6,600.0	36.39	185.27	5,279.4	-3,703.4	-348.4	3,719.7	3.00	-3.00	
6,700.0	33.39	185.18	5,361.4	-3,760.3	-353.6	3,776.9	3.00	-3.00	
6,800.0	30.39	185.08	5,446.3	-3,812.9	-358.3	3,829.7	3.00	-3.00	
6,900.0	27.39	184.96	5,533.9	-3,861.1	-362.6	3,878.0	3.00	-3.00	
7,000.0	24.39	184.82	5,623.8	-3,904.6	-366.3	3,921.7	3.00	-3.00	
7,100.0	21.39	184.63	5,716.0	-3,943.3	-369.5	3,960.6	3.00	-3.00	
7,200.0	18.39	184.39	5,810.0	-3,977.2	-372.2	3,994.6	3.00	-3.00	
7,300.0	15.39	184.05	5,905.7	-4,006.2	-374.3	4,023.6	3.00	-3.00	
7,313.0	15.00	184.00	5,918.2	-4,009.6	-374.5	4,027.0	3.00	-3.00	EOD; Inc=15°
7,319.5	15.00	184.00	5,924.5	-4,011.3	-374.7	4,028.7	0.00	0.00	Wasatch G (TVD)
7,400.0	15.00	184.00	6,002.2	-4,032.1	-376.1	4,049.5	0.00	0.00	
7,471.0	15.00	184.00	6,070.8	-4,050.4	-377.4	4,067.9	0.00	0.00	WD14B-31_N30 TGT
7,500.0	15.00	184.00	6,098.8	-4,057.9	-377.9	4,075.4	0.00	0.00	
7,600.0	15.00	184.00	6,195.4	-4,083.7	-379.7	4,101.3	0.00	0.00	
7,700.0	15.00	184.00	6,292.0	-4,109.5	-381.5	4,127.2	0.00	0.00	
7,800.0	15.00	184.00	6,388.6	-4,135.3	-383.3	4,153.0	0.00	0.00	
7,900.0	15.00	184.00	6,485.2	-4,161.1	-385.1	4,178.9	0.00	0.00	
8,000.0	15.00	184.00	6,581.8	-4,187.0	-386.9	4,204.8	0.00	0.00	
8,100.0	15.00	184.00	6,678.4	-4,212.8	-388.8	4,230.7	0.00	0.00	
8,147.8	15.00	184.00	6,724.5	-4,225.1	-389.6	4,243.0	0.00	0.00	Molina_Base (TVD)
8,200.0	15.00	184.00	6,775.0	-4,238.6	-390.6	4,256.6	0.00	0.00	
8,300.0	15.00	184.00	6,871.6	-4,264.4	-392.4	4,282.4	0.00	0.00	
8,400.0	15.00	184.00	6,968.2	-4,290.2	-394.2	4,308.3	0.00	0.00	
8,500.0	15.00	184.00	7,064.8	-4,316.1	-396.0	4,334.2	0.00	0.00	
8,600.0	15.00	184.00	7,161.3	-4,341.9	-397.8	4,360.1	0.00	0.00	
8,700.0	15.00	184.00	7,257.9	-4,367.7	-399.6	4,385.9	0.00	0.00	
8,800.0	15.00	184.00	7,354.5	-4,393.5	-401.4	4,411.8	0.00	0.00	
8,900.0	15.00	184.00	7,451.1	-4,419.3	-403.2	4,437.7	0.00	0.00	
9,000.0	15.00	184.00	7,547.7	-4,445.2	-405.0	4,463.6	0.00	0.00	
9,100.0	15.00	184.00	7,644.3	-4,471.0	-406.8	4,489.4	0.00	0.00	
9,200.0	15.00	184.00	7,740.9	-4,496.8	-408.6	4,515.3	0.00	0.00	
9,300.0	15.00	184.00	7,837.5	-4,522.6	-410.4	4,541.2	0.00	0.00	
9,400.0	15.00	184.00	7,934.1	-4,548.4	-412.2	4,567.1	0.00	0.00	
9,500.0	15.00	184.00	8,030.7	-4,574.2	-414.0	4,592.9	0.00	0.00	
9,600.0	15.00	184.00	8,127.3	-4,600.1	-415.8	4,618.8	0.00	0.00	

Cathedral Energy Services

Planning Report

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 8366.0ft (Patterson 306)
Project:	Story Gulch	MD Reference:	WELL @ 8366.0ft (Patterson 306)
Site:	N30 495	North Reference:	True
Well:	WD14B-31_N30	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
9,623.0	15.00	184.00	8,149.5	-4,606.0	-416.3	4,624.8	0.00	0.00	Drillers TD @ 8149' TVD - Williams Fork (TVD)
9,700.0	15.00	184.00	8,223.9	-4,625.9	-417.6	4,644.7	0.00	0.00	
9,800.0	15.00	184.00	8,320.5	-4,651.7	-419.4	4,670.6	0.00	0.00	
9,900.0	15.00	184.00	8,417.1	-4,677.5	-421.3	4,696.5	0.00	0.00	
9,933.6	15.00	184.00	8,449.5	-4,686.2	-421.9	4,705.1	0.00	0.00	Permit TD @ 8449' TVD

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	
	- Shape								Latitude Longitude
WD14B-31_N30 PBHL	- plan hits target center - Rectangle (sides W30.0 H50.0 D0.0)	0.00	0.00	8,149.5	-4,606.0	-416.3	1,674,776.12	2,267,528.59	39° 39' 26.11 N 108° 6' 6.85 W
WD14B-31_N30 TGT	- plan misses target center by 565.4ft at 7471.0ft MD (6070.8 TVD, -4050.4 N, -377.4 E) - Point	0.00	0.00	5,924.5	-4,596.0	-400.3	1,674,785.67	2,267,544.82	39° 39' 26.21 N 108° 6' 6.65 W

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
7,319.5	5,924.5	Wasatch G (TVD)				
8,147.8	6,724.5	Molina_Base (TVD)				
9,623.0	8,149.5	Williams Fork (TVD)				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
250.0	250.0	0.0	0.0	KOP @ 250'
1,609.7	1,497.7	-461.9	-43.5	EOB; Inc=40.79°
6,453.1	5,164.6	-3,612.2	-339.9	Start 3° drop @ 6453' MD
7,313.0	5,918.2	-4,009.6	-374.5	EOD; Inc=15°
9,623.0	8,149.5	-4,606.0	-416.3	Drillers TD @ 8149' TVD
9,933.6	8,449.5	-4,686.2	-421.9	Permit TD @ 8449' TVD