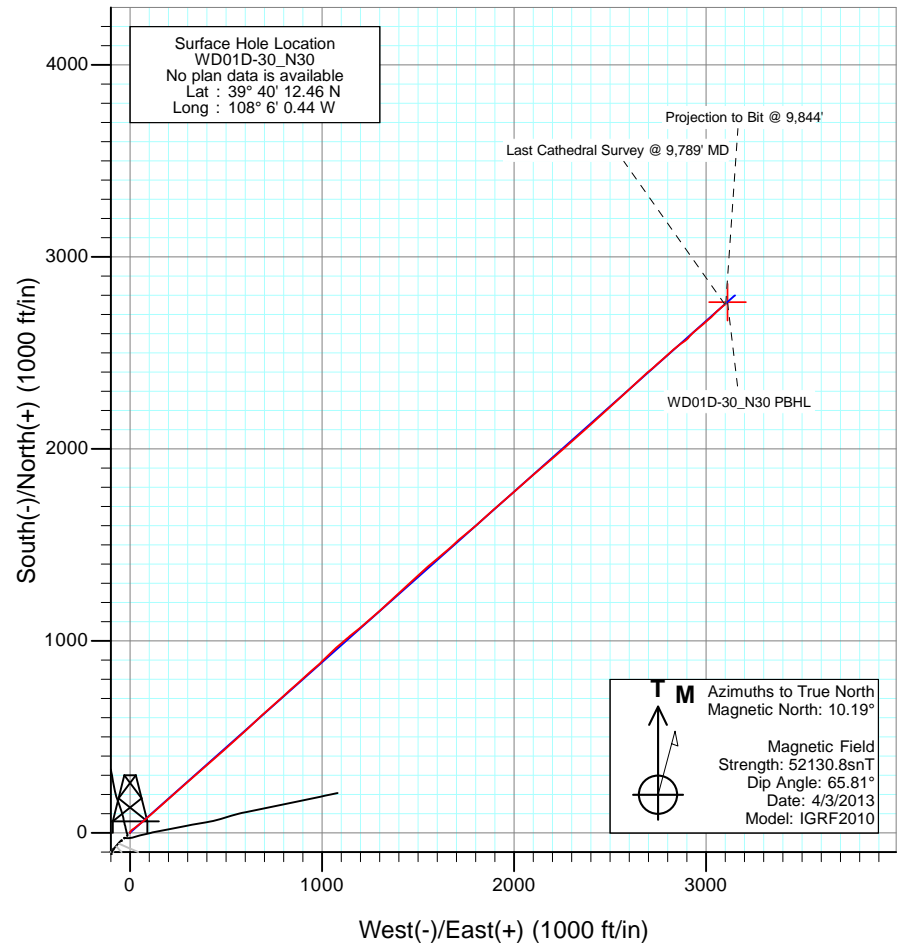
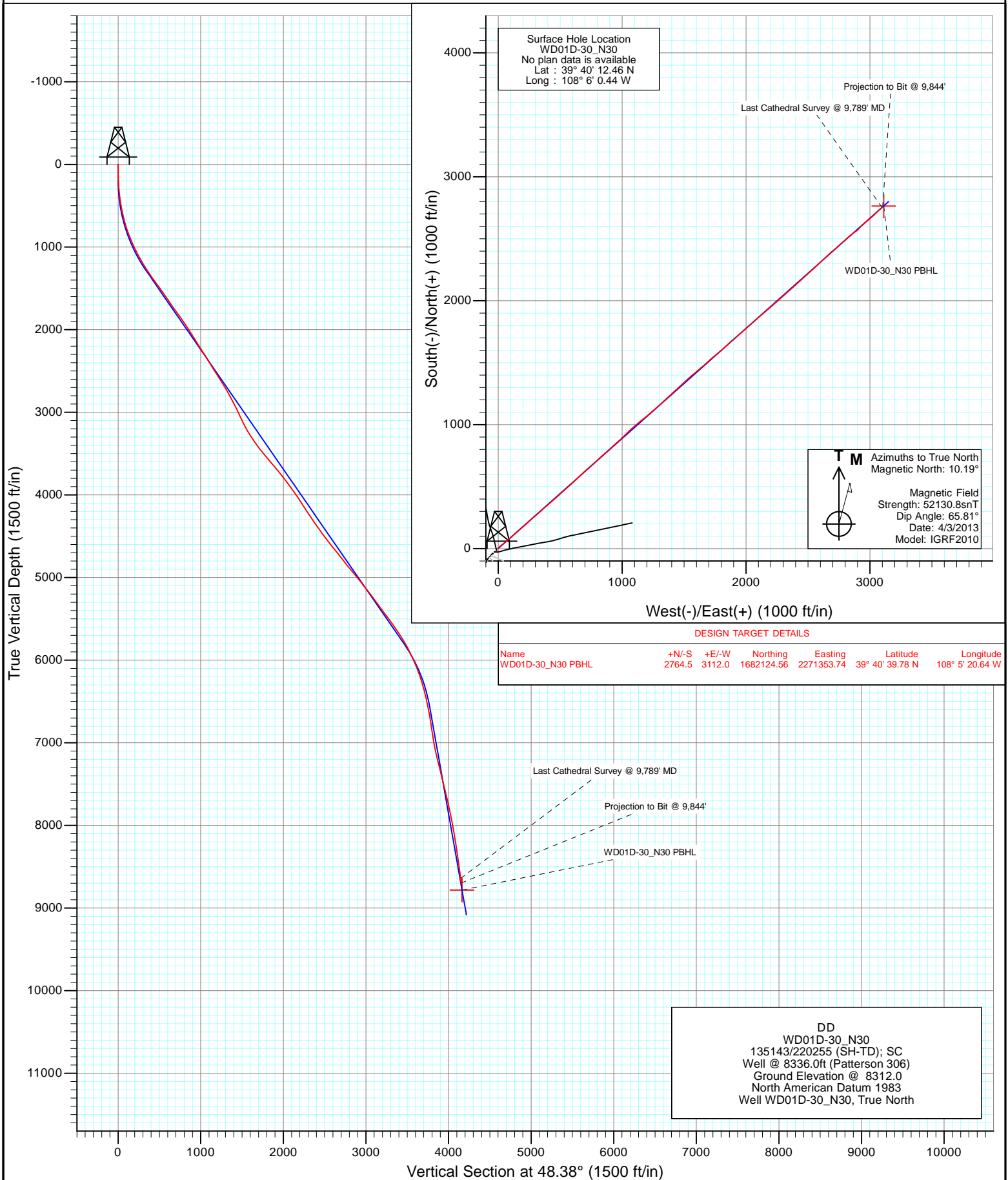




Project: Story Gulch
Site: N30 495
Well: WD01D-30_N30
Wellbore: DD
Design: FINAL



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
WD01D-30_N30 PBHL	2764.5	3112.0	1682124.56	2271353.74	39° 40' 39.78 N	108° 5' 20.64 W

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well WD01D-30_N30
Project:	Story Gulch	TVD Reference:	Well @ 8336.0ft (Patterson 306)
Site:	N30 495	MD Reference:	Well @ 8336.0ft (Patterson 306)
Well:	WD01D-30_N30	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

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	WD01D-30_N30					
Well Position	+N/-S	0.0 ft	Northing:	1,679,450.29 ft	Latitude:	39° 40' 12.46 N
	+E/-W	0.0 ft	Easting:	2,268,163.89 ft	Longitude:	108° 6' 0.44 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	4/3/2013	10.19	65.81	52,131

Design	DD				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	48.38	

Survey Program	Date	4/15/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
183.0	9,844.0	Survey #1 (DD)	MWD	Geolink MWD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
183.0	1.50	21.50	183.0	2.2	0.9	2.1	0.82	0.82		
214.0	2.70	24.90	214.0	3.3	1.3	3.2	3.89	3.87		
244.0	3.70	27.20	243.9	4.8	2.1	4.7	3.36	3.33		
273.0	4.50	28.40	272.8	6.6	3.0	6.7	2.77	2.76		
305.0	5.60	35.30	304.7	9.0	4.5	9.4	3.92	3.44		
366.0	6.70	46.60	365.4	13.9	8.8	15.8	2.67	1.80		
397.0	7.20	48.60	396.1	16.4	11.6	19.6	1.79	1.61		
427.0	8.00	54.40	425.9	18.8	14.7	23.5	3.69	2.67		
473.0	9.30	56.00	471.3	22.8	20.4	30.4	2.87	2.83		
520.0	10.50	55.50	517.6	27.3	27.1	38.4	2.56	2.55		
566.0	11.60	52.50	562.8	32.5	34.2	47.2	2.70	2.39		
615.0	12.30	50.50	610.7	38.8	42.1	57.3	1.66	1.43		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well WD01D-30_N30
Project:	Story Gulch	TVD Reference:	Well @ 8336.0ft (Patterson 306)
Site:	N30 495	MD Reference:	Well @ 8336.0ft (Patterson 306)
Well:	WD01D-30_N30	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
703.0	15.50	49.80	696.1	52.4	58.4	78.4	3.64	3.64	
795.0	18.70	49.90	784.1	69.8	79.0	105.5	3.48	3.48	
889.0	21.50	49.00	872.3	90.8	103.6	137.8	3.00	2.98	
980.0	24.20	48.80	956.2	114.1	130.2	173.1	2.97	2.97	
1,071.0	26.50	48.20	1,038.4	139.9	159.4	212.1	2.54	2.53	
1,163.0	28.10	48.40	1,120.2	168.0	190.9	254.3	1.74	1.74	
1,254.0	30.80	48.90	1,199.4	197.5	224.5	299.0	2.98	2.97	
1,344.0	33.00	48.80	1,275.8	228.8	260.3	346.5	2.45	2.44	
1,436.0	35.90	47.50	1,351.7	263.5	299.0	398.6	3.25	3.15	
1,527.0	36.20	48.70	1,425.2	299.3	338.9	452.1	0.84	0.33	
1,619.0	34.70	49.90	1,500.2	334.1	379.3	505.5	1.80	-1.63	
1,711.0	34.70	49.00	1,575.8	368.2	419.1	557.8	0.56	0.00	
1,803.0	34.60	48.80	1,651.5	402.5	458.5	610.1	0.16	-0.11	
1,894.0	35.20	48.70	1,726.1	436.9	497.7	662.2	0.66	0.66	
1,986.0	36.60	47.20	1,800.7	473.0	537.7	716.2	1.80	1.52	
2,078.0	35.40	46.40	1,875.1	510.0	577.1	770.2	1.40	-1.30	
2,170.0	33.20	46.90	1,951.1	545.6	614.8	822.0	2.41	-2.39	
2,261.0	32.70	47.20	2,027.4	579.3	651.1	871.5	0.58	-0.55	
2,353.0	31.60	48.80	2,105.3	612.1	687.4	920.5	1.51	-1.20	
2,445.0	32.50	47.90	2,183.3	644.5	723.9	969.3	1.11	0.98	
2,537.0	32.80	48.40	2,260.8	677.7	760.9	1,018.9	0.44	0.33	
2,628.0	32.40	47.40	2,337.4	710.5	797.3	1,067.9	0.74	-0.44	
2,720.0	31.90	47.80	2,415.3	743.5	833.4	1,116.9	0.59	-0.54	
2,811.0	31.60	48.40	2,492.7	775.5	869.1	1,164.8	0.48	-0.33	
2,903.0	31.50	48.90	2,571.1	807.3	905.2	1,212.9	0.30	-0.11	
2,970.0	33.10	47.60	2,627.7	831.2	931.9	1,248.7	2.60	2.39	
3,074.0	30.50	48.50	2,716.1	867.8	972.6	1,303.5	2.54	-2.50	
3,169.0	28.00	45.10	2,799.0	899.5	1,006.5	1,349.9	3.16	-2.63	
3,264.0	27.90	45.80	2,882.9	930.8	1,038.2	1,394.3	0.36	-0.11	
3,359.0	26.50	48.20	2,967.4	960.4	1,070.0	1,437.8	1.87	-1.47	
3,453.0	24.30	49.70	3,052.3	986.9	1,100.4	1,478.1	2.44	-2.34	
3,548.0	26.30	50.20	3,138.2	1,013.0	1,131.4	1,518.6	2.12	2.11	
3,643.0	30.60	51.90	3,221.7	1,041.4	1,166.6	1,563.8	4.61	4.53	
3,738.0	33.00	49.50	3,302.5	1,073.1	1,205.4	1,613.8	2.86	2.53	
3,833.0	36.40	48.50	3,380.6	1,108.6	1,246.2	1,667.9	3.63	3.58	
3,928.0	37.60	48.00	3,456.4	1,146.7	1,288.8	1,725.1	1.30	1.26	
4,022.0	40.40	48.20	3,529.5	1,186.2	1,332.8	1,784.2	2.98	2.98	
4,117.0	40.40	47.50	3,601.8	1,227.5	1,378.5	1,845.8	0.48	0.00	
4,212.0	39.50	47.00	3,674.6	1,268.9	1,423.3	1,906.8	1.01	-0.95	
4,307.0	39.30	48.00	3,748.1	1,309.7	1,467.7	1,967.1	0.70	-0.21	
4,402.0	36.30	47.20	3,823.1	1,348.9	1,510.7	2,025.3	3.20	-3.16	
4,497.0	37.00	48.30	3,899.3	1,387.0	1,552.7	2,082.0	1.01	0.74	
4,592.0	35.20	50.00	3,976.1	1,423.6	1,595.0	2,138.0	2.17	-1.89	
4,687.0	32.80	50.40	4,054.8	1,457.7	1,635.8	2,191.1	2.54	-2.53	
4,782.0	33.40	48.00	4,134.4	1,491.6	1,675.1	2,242.9	1.52	0.63	
4,876.0	33.80	48.30	4,212.7	1,526.3	1,713.8	2,294.9	0.46	0.43	
4,972.0	33.80	51.00	4,292.5	1,560.8	1,754.5	2,348.3	1.56	0.00	
5,067.0	34.60	49.10	4,371.1	1,595.1	1,795.5	2,401.7	1.40	0.84	
5,161.0	36.10	47.60	4,447.7	1,631.3	1,836.1	2,456.1	1.84	1.60	
5,256.0	37.90	47.60	4,523.6	1,669.8	1,878.3	2,513.2	1.89	1.89	
5,351.0	38.10	49.80	4,598.5	1,708.4	1,922.2	2,571.7	1.44	0.21	
5,446.0	38.80	49.60	4,672.9	1,746.6	1,967.3	2,630.8	0.75	0.74	
5,541.0	38.00	47.70	4,747.3	1,785.6	2,011.6	2,689.8	1.50	-0.84	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well WD01D-30_N30
Project:	Story Gulch	TVD Reference:	Well @ 8336.0ft (Patterson 306)
Site:	N30 495	MD Reference:	Well @ 8336.0ft (Patterson 306)
Well:	WD01D-30_N30	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
5,636.0	37.70	47.80	4,822.3	1,824.8	2,054.7	2,748.1	0.32	-0.32	
5,731.0	39.70	49.60	4,896.5	1,864.0	2,099.4	2,807.4	2.42	2.11	
5,826.0	40.30	49.90	4,969.3	1,903.4	2,146.0	2,868.5	0.66	0.63	
5,921.0	38.80	49.00	5,042.5	1,942.7	2,191.9	2,929.0	1.69	-1.58	
6,016.0	37.80	49.00	5,117.1	1,981.4	2,236.4	2,987.8	1.05	-1.05	
6,111.0	37.40	48.50	5,192.3	2,019.6	2,280.0	3,045.8	0.53	-0.42	
6,206.0	36.10	48.50	5,268.4	2,057.3	2,322.5	3,102.6	1.37	-1.37	
6,301.0	36.40	48.00	5,345.1	2,094.7	2,364.4	3,158.8	0.44	0.32	
6,397.0	36.80	47.80	5,422.1	2,133.0	2,406.9	3,216.1	0.43	0.42	
6,492.0	36.90	48.20	5,498.1	2,171.2	2,449.2	3,273.0	0.27	0.11	
6,586.0	35.30	47.40	5,574.1	2,208.3	2,490.3	3,328.4	1.77	-1.70	
6,681.0	34.20	47.60	5,652.2	2,244.9	2,530.2	3,382.5	1.16	-1.16	
6,777.0	32.00	47.40	5,732.6	2,280.3	2,568.9	3,435.0	2.29	-2.29	
6,872.0	28.70	46.80	5,814.5	2,313.0	2,604.0	3,482.9	3.49	-3.47	
6,966.0	27.00	45.80	5,897.6	2,343.3	2,635.8	3,526.8	1.88	-1.81	
7,061.0	24.30	48.90	5,983.3	2,371.2	2,666.0	3,567.9	3.17	-2.84	
7,156.0	22.50	48.90	6,070.5	2,396.0	2,694.4	3,605.7	1.89	-1.89	
7,251.0	20.00	49.10	6,159.0	2,418.6	2,720.4	3,640.1	2.63	-2.63	
7,346.0	17.90	47.40	6,248.8	2,439.1	2,743.4	3,670.9	2.29	-2.21	
7,441.0	15.40	48.60	6,339.9	2,457.4	2,763.6	3,698.1	2.66	-2.63	
7,536.0	12.60	49.00	6,432.0	2,472.5	2,780.9	3,721.1	2.95	-2.95	
7,630.0	12.00	48.30	6,523.9	2,485.7	2,795.9	3,741.1	0.66	-0.64	
7,725.0	10.90	48.70	6,617.0	2,498.2	2,810.1	3,760.0	1.16	-1.16	
7,821.0	8.90	46.80	6,711.5	2,509.3	2,822.3	3,776.5	2.11	-2.08	
7,916.0	8.80	48.10	6,805.4	2,519.2	2,833.1	3,791.1	0.24	-0.11	
8,011.0	8.90	48.80	6,899.3	2,528.9	2,844.0	3,805.7	0.15	0.11	
8,106.0	9.50	56.00	6,993.1	2,538.1	2,856.0	3,820.9	1.37	0.63	
8,201.0	11.60	55.60	7,086.4	2,547.9	2,870.4	3,838.1	2.21	2.21	
8,296.0	14.00	54.00	7,179.1	2,560.0	2,887.6	3,859.0	2.55	2.53	
8,391.0	14.60	42.80	7,271.2	2,575.6	2,905.0	3,882.4	2.97	0.63	
8,486.0	13.70	42.30	7,363.3	2,592.7	2,920.7	3,905.5	0.96	-0.95	
8,581.0	13.80	49.00	7,455.6	2,608.4	2,936.9	3,928.0	1.68	0.11	
8,675.0	13.20	50.40	7,547.0	2,622.6	2,953.6	3,949.9	0.73	-0.64	
8,771.0	13.00	49.40	7,640.5	2,636.7	2,970.2	3,971.7	0.31	-0.21	
8,866.0	13.10	49.80	7,733.0	2,650.6	2,986.6	3,993.1	0.14	0.11	
8,961.0	13.00	49.90	7,825.6	2,664.4	3,003.0	4,014.6	0.11	-0.11	
9,056.0	11.50	46.40	7,918.4	2,677.8	3,018.0	4,034.7	1.76	-1.58	
9,150.0	9.50	47.60	8,010.8	2,689.5	3,030.5	4,051.8	2.14	-2.13	
9,245.0	9.40	45.60	8,104.5	2,700.2	3,041.8	4,067.4	0.36	-0.11	
9,335.0	8.90	45.60	8,192.1	2,712.4	3,053.4	4,083.6	0.26	-0.26	
9,430.0	8.30	49.00	8,286.0	2,721.0	3,063.9	4,101.8	0.83	-0.63	
9,525.0	7.80	49.00	8,380.1	2,729.7	3,073.9	4,121.1	0.53	-0.53	
9,620.0	6.70	52.60	8,474.3	2,737.3	3,083.9	4,141.1	1.25	-1.16	
9,715.0	5.90	51.50	8,568.9	2,745.0	3,093.9	4,161.6	1.17	-1.16	Last Cathedral Survey @ 9,789' MD
9,810.0	5.90	51.50	8,663.6	2,752.5	3,103.6	4,182.3	0.00	0.00	Projection to Bit @ 9,844'

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well WD01D-30_N30
Project:	Story Gulch	TVD Reference:	Well @ 8336.0ft (Patterson 306)
Site:	N30 495	MD Reference:	Well @ 8336.0ft (Patterson 306)
Well:	WD01D-30_N30	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
WD01D-30_N30 PBHL	0.00	0.00	8,781.3	2,764.5	3,112.0	1,682,124.56	2,271,353.74	39° 40' 39.78 N	108° 5' 20.64 W
- actual wellpath misses target center by 84.6ft at 9844.0ft MD (8697.6 TVD, 2755.5 N, 3103.6 E)									
- Point									
WD01D-30_N30 TGT	0.00	0.00	6,556.3	2,774.5	3,129.0	1,682,134.08	2,271,371.00	39° 40' 39.88 N	108° 5' 20.42 W
- actual wellpath misses target center by 425.9ft at 7737.7ft MD (6629.5 TVD, 2499.8 N, 2811.8 E)									
- Point									

Design Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		
		(ft)	(ft)	Comment	
9,789.0	8,642.9	2,752.0	3,099.1	Last Cathedral Survey @ 9,789' MD	
9,844.0	8,697.6	2,755.5	3,103.6	Projection to Bit @ 9,844'	

Checked By: _____ Approved By: _____ Date: _____