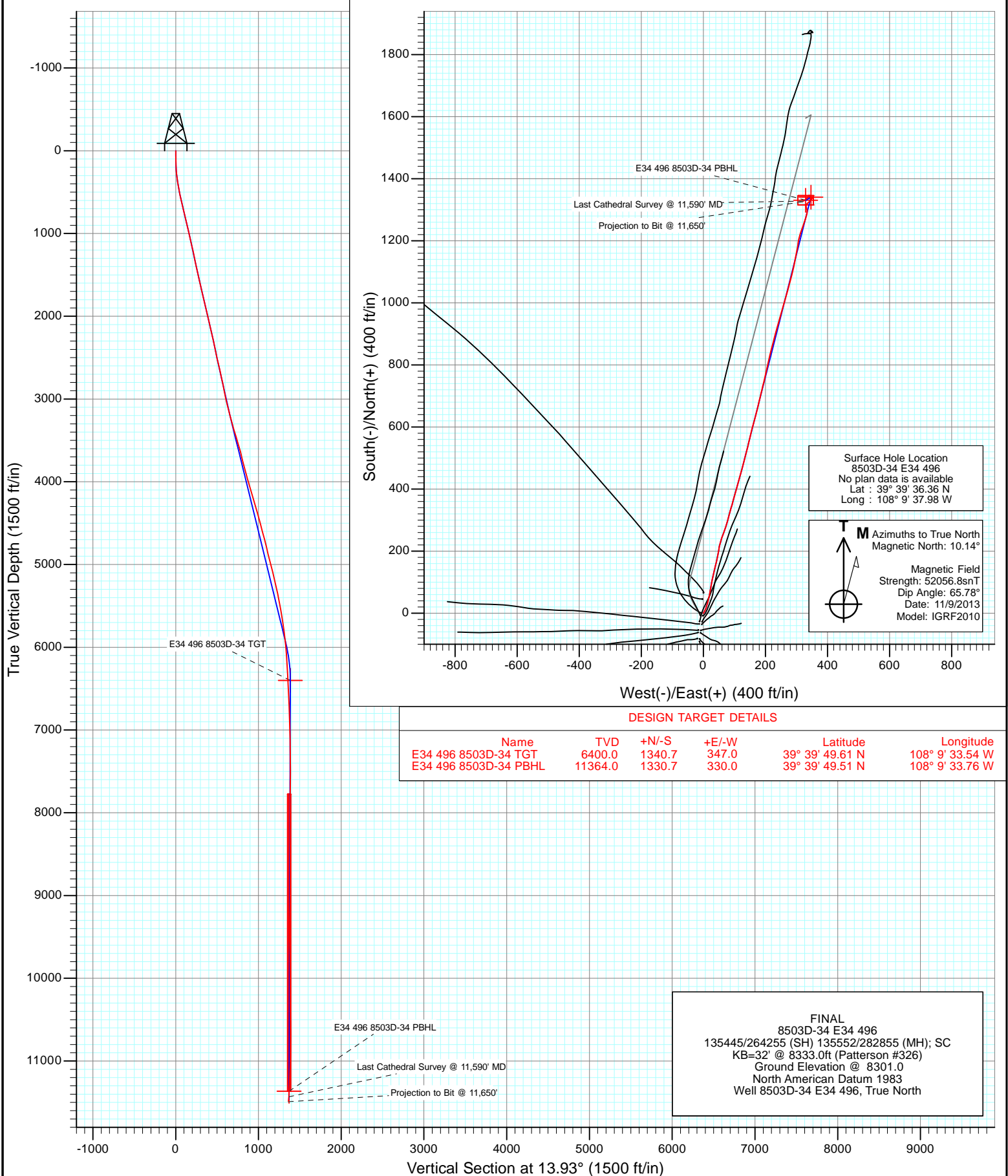


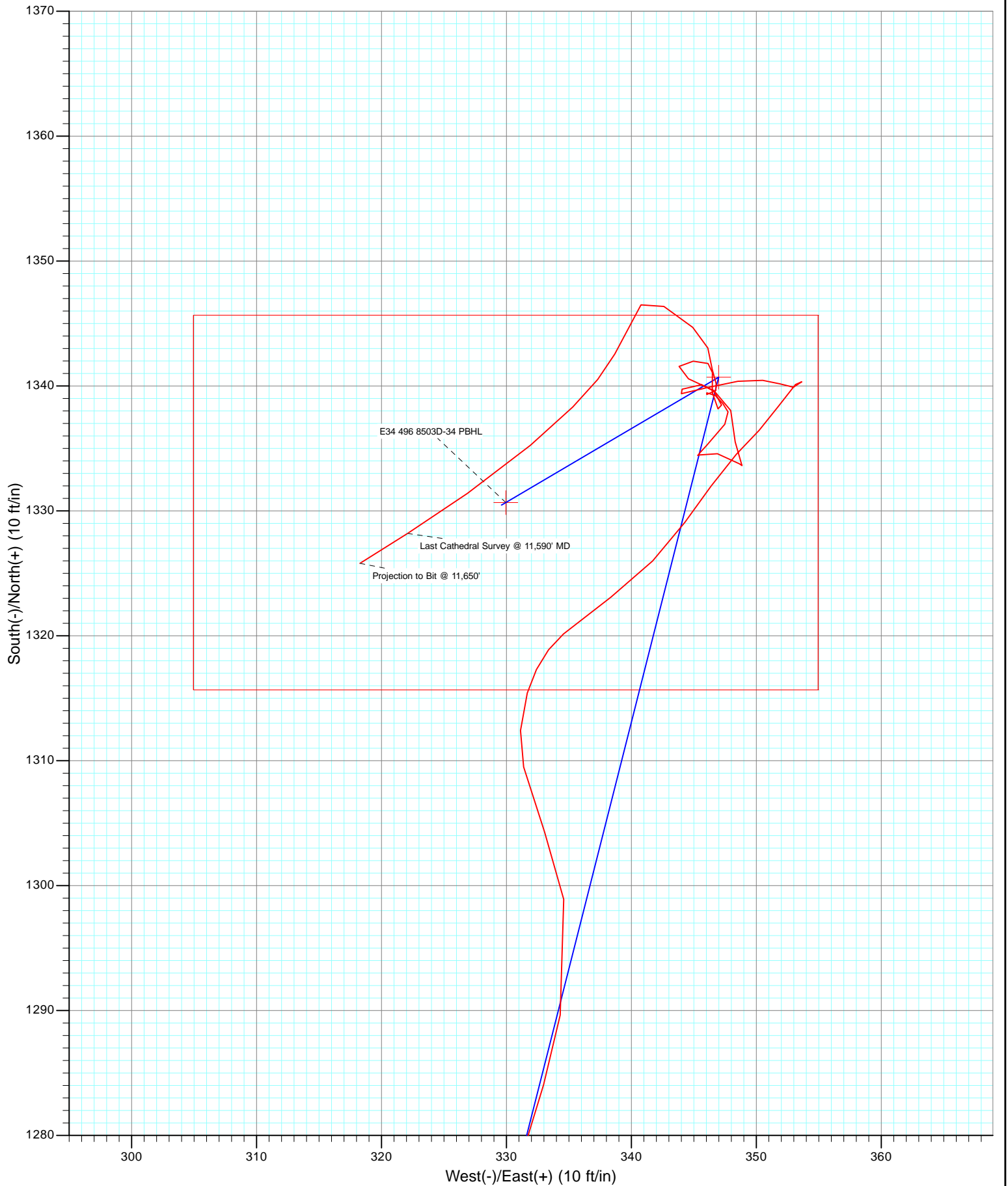


Project: Story Gulch
Site: E34 496 S33-T4S-R96W
Well: 8503D-34 E34 496
Wellbore: DD
Design: FINAL





Project: Story Gulch
Site: E34 496 S33-T4S-R96W
Well: 8503D-34 E34 496
Wellbore: DD
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8503D-34 E34 496
Project:	Story Gulch	TVD Reference:	KB=32' @ 8333.0ft (Patterson #326)
Site:	E34 496 S33-T4S-R96W	MD Reference:	KB=32' @ 8333.0ft (Patterson #326)
Well:	8503D-34 E34 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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		E34 496 S33-T4S-R96W			
Site Position:		Northing:	1,676,257.20 ft	Latitude:	39° 39' 36.02 N
From:	Lat/Long	Easting:	2,251,040.13 ft	Longitude:	108° 9' 38.14 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.68 °

Well	8503D-34 E34 496					
Well Position	+N/-S	0.0 ft	Northing:	1,676,290.83 ft	Latitude:	39° 39' 36.36 N
	+E/-W	0.0 ft	Easting:	2,251,053.92 ft	Longitude:	108° 9' 37.98 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	8,301.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/9/2013	10.14	65.78	52,057

Design	FINAL				
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	13.93	

Survey Program	Date	11/18/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
235.0	11,650.0	Survey #1 (DD)	Geolink 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		
235.0	3.70	33.20	234.8	6.3	4.2	7.2	1.57	1.57		
327.0	7.20	20.40	326.4	14.2	7.8	15.7	4.00	3.80		
419.0	10.00	15.40	417.4	27.3	11.9	29.4	3.15	3.04		
510.0	12.20	16.00	506.7	44.2	16.7	46.9	2.42	2.42		
602.0	12.80	8.90	596.5	63.6	20.9	66.8	1.79	0.65		
696.0	12.30	9.80	688.2	83.8	24.2	87.1	0.57	-0.53		
787.0	13.20	10.90	777.0	103.5	27.9	107.2	1.02	0.99		
879.0	13.80	14.00	866.5	124.5	32.5	128.7	1.02	0.65		
970.0	13.40	13.50	954.9	145.3	37.6	150.1	0.46	-0.44		
1,061.0	13.40	12.60	1,043.4	165.8	42.3	171.1	0.23	0.00		
1,153.0	12.80	10.80	1,133.0	186.2	46.6	192.0	0.79	-0.65		
1,245.0	12.40	9.50	1,222.8	206.0	50.1	212.0	0.53	-0.43		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8503D-34 E34 496
Project:	Story Gulch	TVD Reference:	KB=32' @ 8333.0ft (Patterson #326)
Site:	E34 496 S33-T4S-R96W	MD Reference:	KB=32' @ 8333.0ft (Patterson #326)
Well:	8503D-34 E34 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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
1,336.0	12.00	15.70	1,311.8	224.7	54.3	231.2	1.50	-0.44	
1,428.0	11.90	19.00	1,401.8	242.9	60.0	250.2	0.75	-0.11	
1,519.0	11.90	20.80	1,490.8	260.5	66.4	268.9	0.41	0.00	
1,611.0	12.40	16.10	1,580.8	278.9	72.5	288.1	1.20	0.54	
1,702.0	12.80	16.80	1,669.6	297.9	78.1	308.0	0.47	0.44	
1,793.0	14.20	14.50	1,758.0	318.4	83.8	329.2	1.65	1.54	
1,884.0	14.10	17.00	1,846.3	339.8	89.8	351.4	0.68	-0.11	
1,976.0	13.00	15.20	1,935.7	360.5	95.8	373.0	1.28	-1.20	
2,068.0	13.10	14.50	2,025.3	380.6	101.1	393.7	0.20	0.11	
2,159.0	13.10	15.20	2,114.0	400.5	106.4	414.4	0.17	0.00	
2,250.0	13.10	17.40	2,202.6	420.3	112.2	435.0	0.55	0.00	
2,342.0	12.20	15.90	2,292.4	439.6	118.0	455.1	1.04	-0.98	
2,433.0	11.20	14.20	2,381.5	457.4	122.8	473.5	1.16	-1.10	
2,525.0	12.00	14.80	2,471.6	475.3	127.4	492.0	0.88	0.87	
2,616.0	13.10	13.80	2,560.4	494.5	132.3	511.8	1.23	1.21	
2,708.0	13.00	14.50	2,650.1	514.6	137.4	532.6	0.20	-0.11	
2,799.0	12.60	14.50	2,738.8	534.2	142.4	552.7	0.44	-0.44	
2,896.0	11.90	14.50	2,833.6	554.1	147.6	573.3	0.72	-0.72	
2,993.0	10.50	11.50	2,928.7	572.4	151.9	592.2	1.56	-1.44	
3,084.0	12.50	14.80	3,017.9	590.1	156.0	610.3	2.31	2.20	
3,176.0	15.20	15.90	3,107.2	611.3	161.9	632.3	2.95	2.93	
3,268.0	14.30	15.20	3,196.2	633.9	168.2	655.7	1.00	-0.98	
3,359.0	15.90	13.40	3,284.0	656.9	174.0	679.4	1.83	1.76	
3,451.0	15.80	13.20	3,372.5	681.3	179.8	704.5	0.12	-0.11	
3,543.0	17.20	14.30	3,460.8	706.7	186.0	730.7	1.56	1.52	
3,634.0	16.10	12.20	3,547.9	732.1	192.0	756.7	1.38	-1.21	
3,726.0	15.40	15.10	3,636.5	756.3	197.9	781.7	1.14	-0.76	
3,818.0	13.60	10.80	3,725.6	778.7	203.1	804.7	2.28	-1.96	
3,909.0	13.70	12.20	3,814.0	799.8	207.4	826.2	0.38	0.11	
4,001.0	15.90	13.90	3,902.9	822.7	212.7	849.7	2.44	2.39	
4,092.0	15.60	13.70	3,990.5	846.7	218.6	874.4	0.34	-0.33	
4,184.0	16.90	15.30	4,078.8	871.6	225.0	900.1	1.49	1.41	
4,276.0	16.70	14.80	4,166.9	897.2	231.9	926.7	0.27	-0.22	
4,367.0	15.80	14.20	4,254.3	921.9	238.3	952.2	1.01	-0.99	
4,459.0	16.70	16.30	4,342.6	946.7	245.1	977.9	1.17	0.98	
4,550.0	15.50	16.40	4,430.0	970.9	252.2	1,003.1	1.32	-1.32	
4,642.0	14.00	16.60	4,519.0	993.4	258.9	1,026.5	1.63	-1.63	
4,733.0	15.30	15.70	4,607.0	1,015.5	265.3	1,049.5	1.45	1.43	
4,825.0	14.50	14.40	4,695.9	1,038.4	271.4	1,073.2	0.94	-0.87	
4,917.0	13.50	15.80	4,785.2	1,059.8	277.2	1,095.4	1.15	-1.09	
5,009.0	14.00	13.60	4,874.6	1,081.0	282.7	1,117.3	0.79	0.54	
5,100.0	13.70	14.50	4,962.9	1,102.1	288.0	1,139.0	0.41	-0.33	
5,192.0	14.70	11.30	5,052.1	1,124.1	293.0	1,161.6	1.38	1.09	
5,284.0	13.50	11.10	5,141.3	1,146.1	297.4	1,184.0	1.31	-1.30	
5,375.0	13.20	10.60	5,229.9	1,166.7	301.3	1,205.0	0.35	-0.33	
5,467.0	12.40	9.40	5,319.6	1,186.8	304.9	1,225.3	0.92	-0.87	
5,559.0	11.00	9.60	5,409.7	1,205.2	308.0	1,243.9	1.52	-1.52	
5,650.0	10.30	20.10	5,499.1	1,221.4	312.2	1,260.6	2.26	-0.77	
5,742.0	9.30	20.40	5,589.8	1,236.1	317.6	1,276.2	1.09	-1.09	
5,834.0	8.90	17.40	5,680.6	1,249.9	322.3	1,290.7	0.67	-0.43	
5,925.0	8.00	16.80	5,770.6	1,262.6	326.3	1,304.1	0.99	-0.99	
6,017.0	7.10	18.10	5,861.8	1,274.2	329.9	1,316.1	1.00	-0.98	
6,109.0	5.80	16.30	5,953.2	1,284.0	333.0	1,326.4	1.43	-1.41	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8503D-34 E34 496
Project:	Story Gulch	TVD Reference:	KB=32' @ 8333.0ft (Patterson #326)
Site:	E34 496 S33-T4S-R96W	MD Reference:	KB=32' @ 8333.0ft (Patterson #326)
Well:	8503D-34 E34 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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
6,292.0	3.80	350.80	6,135.6	1,298.9	334.6	1,341.3	1.57	-1.09	
6,384.0	3.20	336.10	6,227.4	1,304.3	333.1	1,346.1	1.17	-0.65	
6,476.0	3.70	347.50	6,319.3	1,309.5	331.4	1,350.8	0.92	0.54	
6,567.0	4.00	16.90	6,410.1	1,315.4	331.7	1,356.6	2.17	0.33	
6,659.0	3.20	49.80	6,501.9	1,320.1	334.6	1,361.9	2.37	-0.87	
6,751.0	2.80	54.60	6,593.8	1,323.1	338.4	1,365.6	0.51	-0.43	
6,842.0	2.80	43.50	6,684.7	1,326.0	341.7	1,369.3	0.59	0.00	
6,934.0	2.20	35.50	6,776.6	1,329.1	344.3	1,372.9	0.75	-0.65	
7,026.0	2.30	36.20	6,868.5	1,332.0	346.4	1,376.2	0.11	0.11	
7,117.0	1.80	41.20	6,959.5	1,334.5	348.4	1,379.2	0.58	-0.55	
7,209.0	1.50	46.50	7,051.4	1,336.5	350.2	1,381.5	0.37	-0.33	
7,301.0	1.60	31.70	7,143.4	1,338.4	351.8	1,383.7	0.45	0.11	
7,392.0	1.20	47.00	7,234.4	1,340.1	353.1	1,385.7	0.60	-0.44	
7,484.0	0.60	204.90	7,326.4	1,340.3	353.6	1,386.0	1.92	-0.65	
7,575.0	0.60	270.60	7,417.4	1,339.9	353.0	1,385.5	0.72	0.00	
7,667.0	0.80	293.80	7,509.3	1,340.2	351.9	1,385.5	0.37	0.22	
7,759.0	1.00	271.80	7,601.3	1,340.5	350.5	1,385.4	0.43	0.22	
7,850.0	1.50	264.90	7,692.3	1,340.4	348.5	1,384.9	0.57	0.55	
7,942.0	1.60	252.50	7,784.3	1,339.9	346.1	1,383.8	0.38	0.11	
8,034.0	1.10	262.80	7,876.3	1,339.4	344.0	1,382.8	0.60	-0.54	
8,126.0	1.30	63.10	7,968.2	1,339.7	344.1	1,383.2	2.57	0.22	
8,218.0	0.80	99.50	8,060.2	1,340.1	345.6	1,383.9	0.88	-0.54	
8,309.0	0.70	139.80	8,151.2	1,339.6	346.6	1,383.6	0.58	-0.11	
8,401.0	0.90	159.60	8,243.2	1,338.5	347.2	1,382.7	0.37	0.22	
8,493.0	0.80	304.50	8,335.2	1,338.2	346.9	1,382.3	1.76	-0.11	
8,585.0	1.20	3.80	8,427.2	1,339.5	346.5	1,383.5	1.14	0.43	
8,676.0	0.80	355.60	8,518.2	1,341.1	346.5	1,385.0	0.47	-0.44	
8,768.0	0.40	287.60	8,610.2	1,341.8	346.1	1,385.7	0.81	-0.43	
8,860.0	1.10	275.10	8,702.2	1,342.0	345.0	1,385.6	0.78	0.76	
8,951.0	0.70	207.60	8,793.2	1,341.6	343.8	1,384.9	1.16	-0.44	
9,043.0	1.40	116.30	8,885.2	1,340.6	344.6	1,384.1	1.72	0.76	
9,135.0	1.40	113.40	8,977.1	1,339.6	346.6	1,383.7	0.08	0.00	
9,226.0	1.50	164.40	9,068.1	1,338.0	348.0	1,382.5	1.38	0.11	
9,318.0	1.70	178.50	9,160.1	1,335.5	348.3	1,380.1	0.48	0.22	
9,410.0	0.90	136.30	9,252.0	1,333.6	348.9	1,378.4	1.30	-0.87	
9,501.0	1.20	313.30	9,343.0	1,333.8	348.7	1,378.5	2.31	0.33	
9,590.0	1.40	279.10	9,432.0	1,334.6	346.9	1,378.8	0.89	0.22	
9,681.0	0.60	234.00	9,523.0	1,334.5	345.4	1,378.4	1.17	-0.88	
9,773.0	1.80	43.50	9,615.0	1,335.2	346.0	1,379.3	2.60	1.30	
9,865.0	1.00	35.70	9,707.0	1,336.9	347.5	1,381.3	0.89	-0.87	
9,956.0	0.50	330.00	9,798.0	1,337.9	347.7	1,382.3	1.01	-0.55	
10,048.0	0.50	325.90	9,889.9	1,338.6	347.3	1,382.9	0.04	0.00	
10,140.0	0.60	308.70	9,981.9	1,339.2	346.7	1,383.3	0.21	0.11	
10,231.0	0.40	255.70	10,072.9	1,339.5	346.0	1,383.4	0.53	-0.22	
10,323.0	0.40	101.00	10,164.9	1,339.3	346.0	1,383.2	0.85	0.00	
10,415.0	0.70	46.00	10,256.9	1,339.6	346.8	1,383.7	0.62	0.33	
10,506.0	0.50	292.60	10,347.9	1,340.2	346.8	1,384.3	1.11	-0.22	
10,598.0	1.20	3.20	10,439.9	1,341.3	346.5	1,385.3	1.24	0.76	
10,690.0	1.10	332.40	10,531.9	1,343.0	346.1	1,386.9	0.67	-0.11	
10,781.0	1.50	317.40	10,622.9	1,344.7	344.9	1,388.2	0.57	0.44	
10,873.0	2.10	297.50	10,714.8	1,346.4	342.6	1,389.2	0.93	0.65	
10,965.0	0.90	207.30	10,806.8	1,346.5	340.8	1,388.9	2.49	-1.30	
11,056.0	1.60	208.30	10,897.8	1,344.7	339.8	1,387.0	0.77	0.77	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8503D-34 E34 496
Project:	Story Gulch	TVD Reference:	KB=32' @ 8333.0ft (Patterson #326)
Site:	E34 496 S33-T4S-R96W	MD Reference:	KB=32' @ 8333.0ft (Patterson #326)
Well:	8503D-34 E34 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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
11,148.0	1.50	208.20	10,989.8	1,342.6	338.7	1,384.6	0.11	-0.11	
11,239.0	1.60	219.10	11,080.7	1,340.5	337.3	1,382.3	0.34	0.11	
11,331.0	2.10	224.50	11,172.7	1,338.3	335.3	1,379.7	0.57	0.54	
11,423.0	3.60	230.00	11,264.6	1,335.3	331.9	1,375.9	1.66	1.63	
11,514.0	4.40	234.60	11,355.3	1,331.4	326.9	1,370.9	0.95	0.88	
11,590.0	4.30	237.90	11,431.1	1,328.2	322.1	1,366.7	0.35	-0.13	Last Cathedral Survey @ 11,590' MD
11,650.0	4.30	237.90	11,491.0	1,325.8	318.3	1,363.4	0.00	0.00	Projection to Bit @ 11,650'

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
E34 496 8503D-34 PBH	0.00	0.00	11,364.0	1,330.7	330.0	1,677,611.26	2,251,422.69	39° 39' 49.51 N	108° 9' 33.76 W
- actual wellpath misses target center by 3.6ft at 11522.5ft MD (11363.8 TVD, 1331.0 N, 326.4 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
E34 496 8503D-34 TGT	0.00	0.00	6,400.0	1,340.7	347.0	1,677,620.80	2,251,440.03	39° 39' 49.61 N	108° 9' 33.54 W
- actual wellpath misses target center by 30.2ft at 6558.6ft MD (6401.7 TVD, 1314.9 N, 331.5 E)									
- Point									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,590.0	11,431.1	1,328.2	322.1	Last Cathedral Survey @ 11,590' MD
11,650.0	11,491.0	1,325.8	318.3	Projection to Bit @ 11,650'

Checked By: _____ Approved By: _____ Date: _____