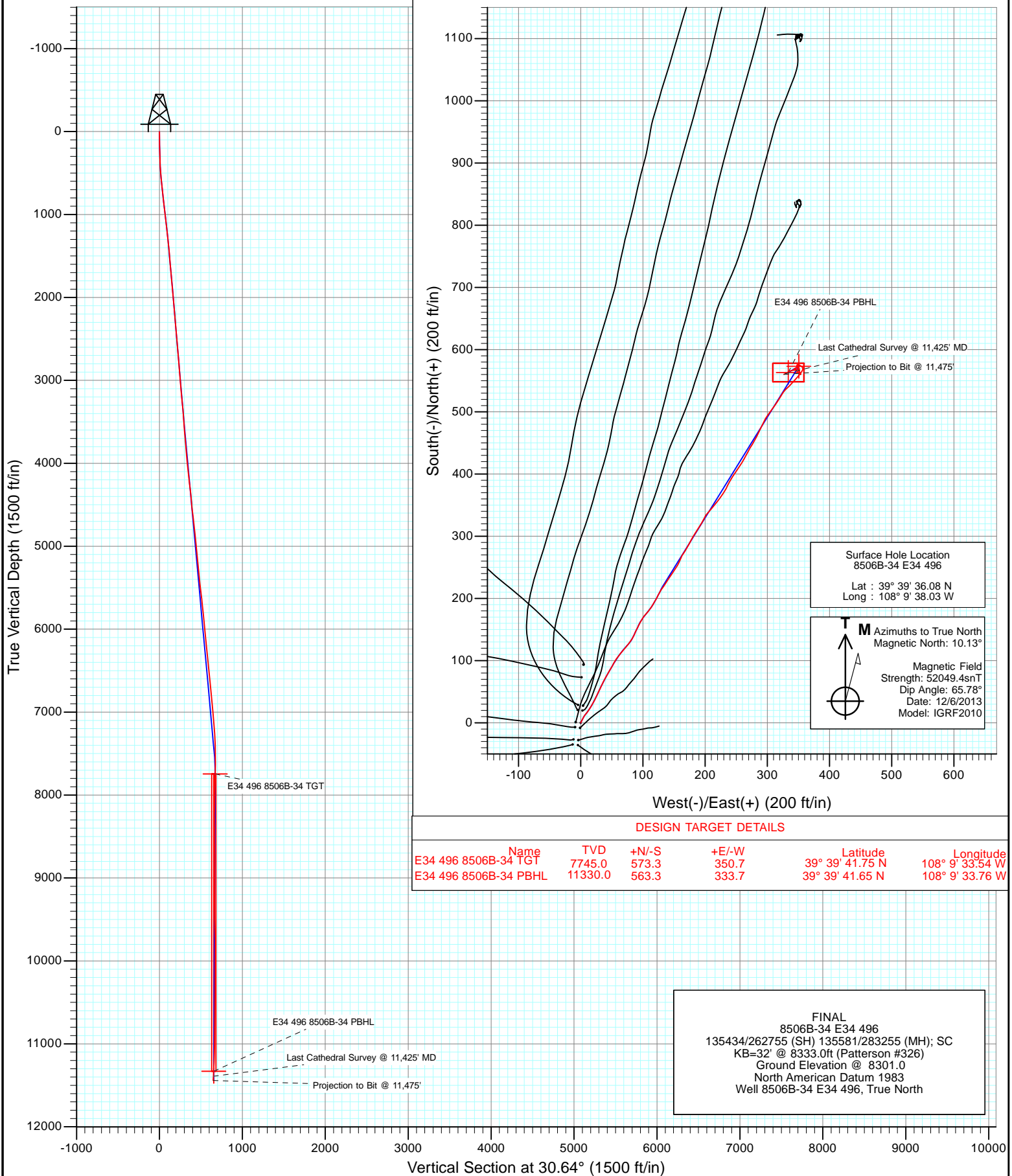


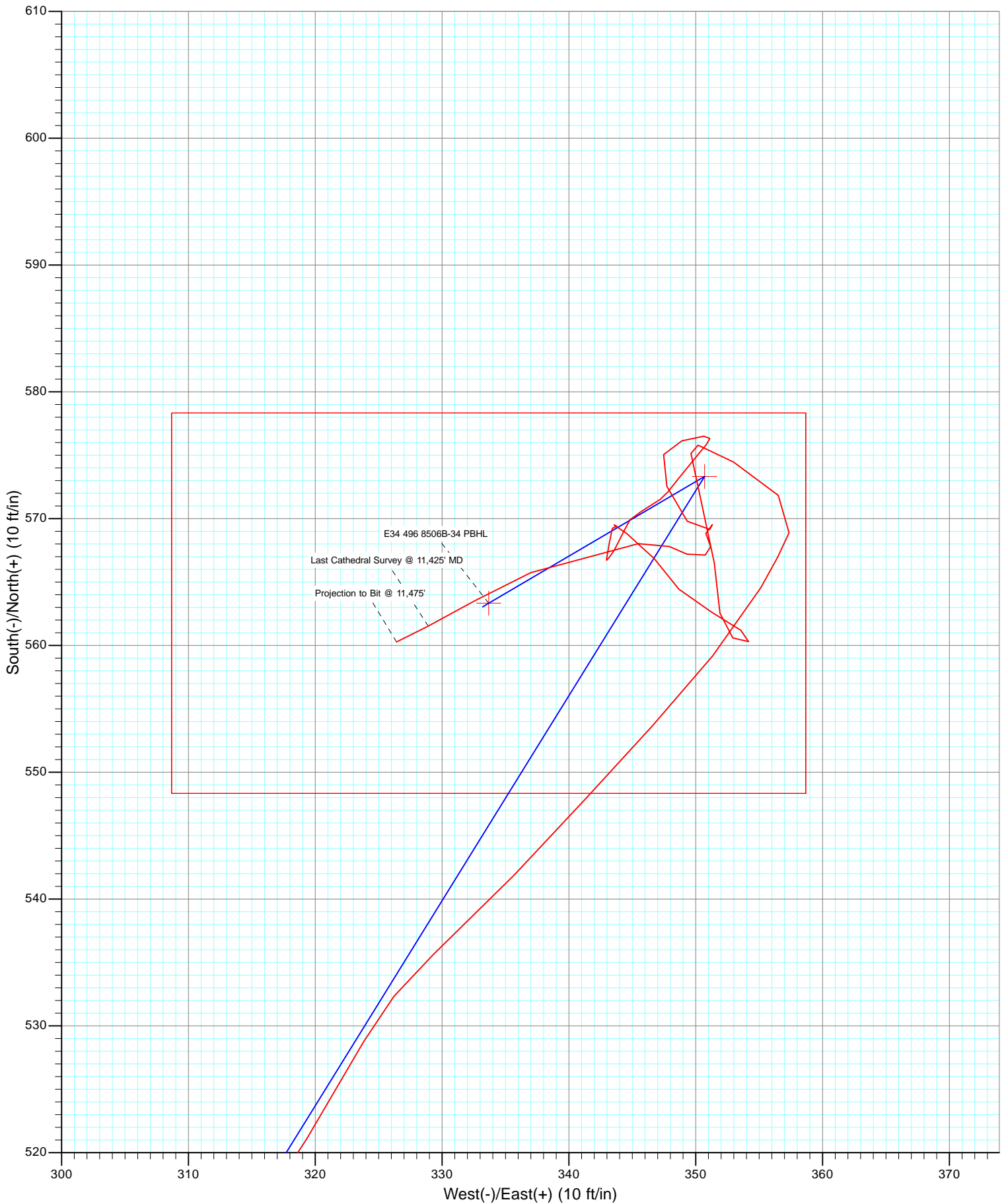


Project: Story Gulch  
Site: E34 496 S33-T4S-R96W  
Well: 8506B-34 E34 496  
Wellbore: DD  
Design: FINAL





Project: Story Gulch  
Site: E34 496 S33-T4S-R96W  
Well: 8506B-34 E34 496  
Wellbore: DD  
Design: FINAL



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8506B-34 E34 496
<b>Project:</b>	Story Gulch	<b>TVD Reference:</b>	KB=32' @ 8333.0ft (Patterson #326)
<b>Site:</b>	E34 496 S33-T4S-R96W	<b>MD Reference:</b>	KB=32' @ 8333.0ft (Patterson #326)
<b>Well:</b>	8506B-34 E34 496	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

<b>Project</b>	Story Gulch		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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	8506B-34 E34 496					
Well Position	+N/-S	0.0 ft	Northing:	1,676,263.27 ft	Latitude:	39° 39' 36.08 N
	+E/-W	0.0 ft	Easting:	2,251,049.17 ft	Longitude:	108° 9' 38.03 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	8,301.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	12/6/2013	10.13	65.78	52,049

<b>Design</b>	FINAL				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	30.64	

<b>Survey Program</b>	<b>Date</b>	12/16/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
327.0	11,475.0	Survey #1 (DD)	Geolink MWD	Geolink MWD	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Formations / Comments</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
327.0	1.80	26.80	326.9	4.6	2.3	5.1	0.55	0.55		
419.0	3.00	26.20	418.9	8.0	4.0	9.0	1.30	1.30		
510.0	4.60	38.60	509.7	13.0	7.4	15.0	1.97	1.76		
604.0	5.60	34.40	603.3	19.8	12.3	23.3	1.13	1.06		
696.0	6.50	31.70	694.8	27.9	17.6	33.0	1.03	0.98		
788.0	6.70	25.30	786.2	37.2	22.6	43.5	0.83	0.22		
879.0	7.00	25.00	876.5	47.0	27.2	54.3	0.33	0.33		
970.0	6.90	26.40	966.9	56.9	32.0	65.3	0.22	-0.11		
1,062.0	6.10	26.90	1,058.3	66.2	36.7	75.7	0.87	-0.87		
1,153.0	6.30	29.10	1,148.7	74.9	41.3	85.5	0.34	0.22		
1,245.0	6.20	30.20	1,240.2	83.6	46.2	95.5	0.17	-0.11		
1,337.0	5.60	30.80	1,331.7	91.8	51.0	104.9	0.66	-0.65		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8506B-34 E34 496
<b>Project:</b>	Story Gulch	<b>TVD Reference:</b>	KB=32' @ 8333.0ft (Patterson #326)
<b>Site:</b>	E34 496 S33-T4S-R96W	<b>MD Reference:</b>	KB=32' @ 8333.0ft (Patterson #326)
<b>Well:</b>	8506B-34 E34 496	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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
1,428.0	5.10	29.60	1,422.3	99.1	55.3	113.4	0.56	-0.55	
1,519.0	5.10	35.10	1,512.9	105.9	59.6	121.5	0.54	0.00	
1,611.0	5.80	40.10	1,604.5	112.8	65.0	130.2	0.92	0.76	
1,702.0	5.70	39.40	1,695.1	119.8	70.8	139.2	0.13	-0.11	
1,793.0	4.90	43.50	1,785.7	126.1	76.3	147.4	0.97	-0.88	
1,885.0	4.90	32.00	1,877.3	132.3	81.1	155.2	1.07	0.00	
1,976.0	4.90	23.30	1,968.0	139.2	84.7	162.9	0.82	0.00	
2,068.0	5.10	26.50	2,059.7	146.5	88.1	170.9	0.37	0.22	
2,159.0	5.20	27.00	2,150.3	153.7	91.8	179.1	0.12	0.11	
2,251.0	4.30	26.10	2,242.0	160.6	95.2	186.7	0.98	-0.98	
2,342.0	4.40	31.40	2,332.7	166.6	98.5	193.5	0.46	0.11	
2,433.0	5.20	39.80	2,423.4	172.7	103.0	201.1	1.17	0.88	
2,525.0	5.50	39.10	2,515.0	179.4	108.4	209.6	0.33	0.33	
2,616.0	5.60	34.90	2,605.6	186.4	113.7	218.3	0.46	0.11	
2,708.0	5.10	30.10	2,697.2	193.6	118.3	226.9	0.73	-0.54	
2,800.0	4.70	27.50	2,788.8	200.5	122.1	234.7	0.50	-0.43	
2,890.0	4.30	26.10	2,878.5	206.8	125.3	241.8	0.46	-0.44	
3,000.0	4.10	34.20	2,988.3	213.8	129.3	249.8	0.57	-0.18	
3,092.0	5.40	34.80	3,079.9	220.0	133.6	257.4	1.41	1.41	
3,183.0	5.20	32.40	3,170.5	227.0	138.3	265.8	0.33	-0.22	
3,275.0	5.30	34.20	3,262.2	234.1	142.9	274.2	0.21	0.11	
3,367.0	5.10	33.50	3,353.8	241.0	147.6	282.5	0.23	-0.22	
3,458.0	4.40	33.70	3,444.5	247.3	151.7	290.1	0.77	-0.77	
3,550.0	4.70	31.00	3,536.2	253.4	155.6	297.4	0.40	0.33	
3,642.0	4.10	22.60	3,627.9	259.7	158.8	304.4	0.96	-0.65	
3,733.0	4.40	22.10	3,718.7	265.9	161.4	311.1	0.33	0.33	
3,825.0	4.20	38.00	3,810.4	271.9	164.8	317.9	1.31	-0.22	
3,917.0	6.00	29.20	3,902.0	278.7	169.2	326.0	2.13	1.96	
4,008.0	5.80	30.30	3,992.6	286.8	173.9	335.4	0.25	-0.22	
4,100.0	5.30	26.60	4,084.1	294.6	178.1	344.3	0.67	-0.54	
4,192.0	7.10	33.20	4,175.6	303.2	183.1	354.2	2.10	1.96	
4,283.0	7.00	32.20	4,265.9	312.6	189.2	365.4	0.17	-0.11	
4,375.0	6.00	29.40	4,357.3	321.5	194.5	375.8	1.14	-1.09	
4,467.0	5.40	26.50	4,448.8	329.6	198.8	384.9	0.72	-0.65	
4,559.0	4.80	41.40	4,540.5	336.4	203.3	393.0	1.57	-0.65	
4,650.0	7.60	40.80	4,630.9	343.8	209.7	402.7	3.08	3.08	
4,742.0	7.20	38.90	4,722.2	352.9	217.3	414.4	0.51	-0.43	
4,834.0	6.00	35.50	4,813.6	361.3	223.7	424.9	1.37	-1.30	
4,925.0	5.70	35.60	4,904.1	368.8	229.1	434.1	0.33	-0.33	
5,017.0	5.80	26.80	4,995.6	376.7	233.9	443.3	0.96	0.11	
5,109.0	5.10	25.30	5,087.2	384.5	237.7	452.0	0.78	-0.76	
5,201.0	5.30	29.90	5,178.8	391.9	241.6	460.3	0.50	0.22	
5,292.0	5.70	35.40	5,269.4	399.2	246.3	469.0	0.73	0.44	
5,384.0	5.10	34.90	5,361.0	406.3	251.3	477.7	0.65	-0.65	
5,475.0	7.30	31.20	5,451.5	414.6	256.6	487.5	2.46	2.42	
5,567.0	7.10	31.40	5,542.7	424.4	262.6	499.0	0.22	-0.22	
5,659.0	5.50	26.00	5,634.2	433.2	267.5	509.1	1.85	-1.74	
5,750.0	6.70	30.40	5,724.7	441.7	272.1	518.7	1.41	1.32	
5,842.0	6.10	31.00	5,816.1	450.6	277.3	529.0	0.66	-0.65	
5,934.0	5.30	27.50	5,907.6	458.5	281.8	538.1	0.95	-0.87	
6,025.0	6.10	28.90	5,998.2	466.5	286.1	547.2	0.89	0.88	
6,117.0	5.30	22.00	6,089.7	474.7	290.0	556.2	1.14	-0.87	
6,208.0	4.90	24.50	6,180.4	482.1	293.2	564.3	0.50	-0.44	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8506B-34 E34 496
<b>Project:</b>	Story Gulch	<b>TVD Reference:</b>	KB=32' @ 8333.0ft (Patterson #326)
<b>Site:</b>	E34 496 S33-T4S-R96W	<b>MD Reference:</b>	KB=32' @ 8333.0ft (Patterson #326)
<b>Well:</b>	8506B-34 E34 496	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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
6,300.0	5.70	33.30	6,272.0	489.5	297.4	572.7	1.24	0.87	
6,392.0	5.00	35.60	6,363.6	496.6	302.2	581.3	0.80	-0.76	
6,483.0	6.90	36.50	6,454.1	504.2	307.8	590.7	2.09	2.09	
6,575.0	6.30	34.60	6,545.5	512.8	313.9	601.2	0.69	-0.65	
6,668.0	5.90	31.80	6,638.0	521.1	319.3	611.1	0.54	-0.43	
6,759.0	5.30	28.70	6,728.5	528.7	323.8	620.0	0.74	-0.66	
6,851.0	5.80	47.60	6,820.1	535.6	329.3	628.7	2.05	0.54	
6,943.0	5.40	43.30	6,911.7	541.9	335.7	637.3	0.63	-0.43	
7,034.0	5.00	43.00	7,002.3	547.9	341.3	645.4	0.44	-0.44	
7,126.0	4.70	41.80	7,094.0	553.7	346.6	653.0	0.34	-0.33	
7,218.0	4.40	39.70	7,185.7	559.2	351.3	660.2	0.37	-0.33	
7,309.0	3.90	30.10	7,276.4	564.5	355.1	666.7	0.94	-0.55	
7,401.0	2.20	22.10	7,368.3	568.9	357.4	671.6	1.90	-1.85	
7,493.0	2.50	311.00	7,460.2	571.8	356.5	673.7	2.98	0.33	
7,585.0	3.00	303.00	7,552.1	574.5	353.0	674.2	0.68	0.54	
7,676.0	1.00	272.20	7,643.1	575.8	350.2	673.9	2.42	-2.20	
7,768.0	0.90	160.20	7,735.1	575.1	349.6	673.0	1.71	-0.11	
8,043.0	2.80	170.50	8,009.9	566.5	351.5	666.5	0.70	0.69	
8,134.0	2.20	177.50	8,100.8	562.5	351.9	663.4	0.74	-0.66	
8,226.0	1.20	101.00	8,192.8	560.6	352.9	662.2	2.44	-1.09	
8,317.0	0.40	110.90	8,283.8	560.3	354.2	662.6	0.89	-0.88	
8,409.0	1.70	317.90	8,375.8	561.2	353.6	663.0	2.24	1.41	
8,501.0	1.80	286.60	8,467.7	562.6	351.3	663.1	1.03	0.11	
8,593.0	2.30	319.60	8,559.7	564.4	348.7	663.3	1.37	0.54	
8,684.0	1.60	323.50	8,650.6	566.9	346.7	664.4	0.78	-0.77	
8,776.0	2.10	303.70	8,742.6	568.8	344.6	665.0	0.87	0.54	
8,868.0	0.60	121.70	8,834.6	569.5	343.6	665.1	2.93	-1.63	
8,959.0	0.30	304.10	8,925.6	569.4	343.8	665.1	0.99	-0.33	
9,051.0	0.40	207.90	9,017.5	569.2	343.4	664.8	0.57	0.11	
9,144.0	1.10	185.50	9,110.5	568.1	343.2	663.7	0.80	0.75	
9,236.0	0.50	199.40	9,202.5	566.8	343.0	662.5	0.68	-0.65	
9,328.0	1.60	34.30	9,294.5	567.5	343.6	663.4	2.27	1.20	
9,419.0	0.90	13.40	9,385.5	569.2	344.5	665.3	0.91	-0.77	
9,511.0	1.50	60.20	9,477.5	570.5	345.7	667.0	1.20	0.65	
9,603.0	0.80	52.40	9,569.5	571.5	347.2	668.7	0.78	-0.76	
9,694.0	1.80	36.60	9,660.4	573.1	348.6	670.7	1.16	1.10	
9,786.0	1.50	42.00	9,752.4	575.1	350.2	673.3	0.37	-0.33	
9,878.0	0.40	12.40	9,844.4	576.3	351.1	674.8	1.27	-1.20	
9,969.0	0.70	256.60	9,935.4	576.5	350.6	674.7	1.04	0.33	
10,061.0	1.50	258.40	10,027.4	576.1	348.9	673.5	0.87	0.87	
10,153.0	1.10	197.20	10,119.3	575.1	347.5	671.9	1.49	-0.43	
10,244.0	2.20	162.80	10,210.3	572.5	347.7	669.8	1.58	1.21	
10,336.0	1.90	134.40	10,302.3	569.8	349.3	668.3	1.14	-0.33	
10,428.0	1.00	58.00	10,394.2	569.2	351.1	668.6	2.10	-0.98	
10,519.0	0.60	264.00	10,485.2	569.5	351.3	669.1	1.72	-0.44	
10,611.0	0.80	182.70	10,577.2	568.8	350.8	668.2	1.00	0.22	
10,703.0	0.70	133.90	10,669.2	567.8	351.2	667.5	0.68	-0.11	
10,794.0	1.10	250.70	10,760.2	567.1	350.8	666.7	1.70	0.44	
10,886.0	0.90	301.00	10,852.2	567.2	349.3	666.0	0.94	-0.22	
10,977.0	1.00	287.20	10,943.2	567.8	347.9	665.9	0.27	0.11	
11,069.0	2.10	269.20	11,035.1	568.0	345.5	664.8	1.29	1.20	
11,252.0	3.50	246.50	11,217.9	565.7	337.0	658.5	0.96	0.77	
11,344.0	2.70	239.10	11,309.8	563.5	332.6	654.3	0.97	-0.87	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8506B-34 E34 496
<b>Project:</b>	Story Gulch	<b>TVD Reference:</b>	KB=32' @ 8333.0ft (Patterson #326)
<b>Site:</b>	E34 496 S33-T4S-R96W	<b>MD Reference:</b>	KB=32' @ 8333.0ft (Patterson #326)
<b>Well:</b>	8506B-34 E34 496	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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
11,425.0	3.20	243.40	11,390.7	561.5	328.9	650.8	0.67	0.62	Last Cathedral Survey @ 11,425' MD
11,475.0	3.20	243.40	11,440.6	560.3	326.4	648.4	0.00	0.00	Projection to Bit @ 11,475'

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
E34 496 8506B-34 TGT	0.00	0.00	7,745.0	573.3	350.7	1,676,826.08	2,251,416.51	39° 39' 41.75 N	108° 9' 33.54 W
- hit/miss target									
- Shape									
- actual wellpath misses target center by 1.9ft at 7778.0ft MD (7745.1 TVD, 575.0 N, 349.7 E)									
- Point									
E34 496 8506B-34 PBH	0.00	0.00	11,330.0	563.3	333.7	1,676,816.59	2,251,399.20	39° 39' 41.65 N	108° 9' 33.76 W
- actual wellpath misses target center by 2.0ft at 11364.1ft MD (11329.9 TVD, 563.0 N, 331.7 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
11,425.0	11,390.7	561.5	328.9	Last Cathedral Survey @ 11,425' MD	
11,475.0	11,440.6	560.3	326.4	Projection to Bit @ 11,475'	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_