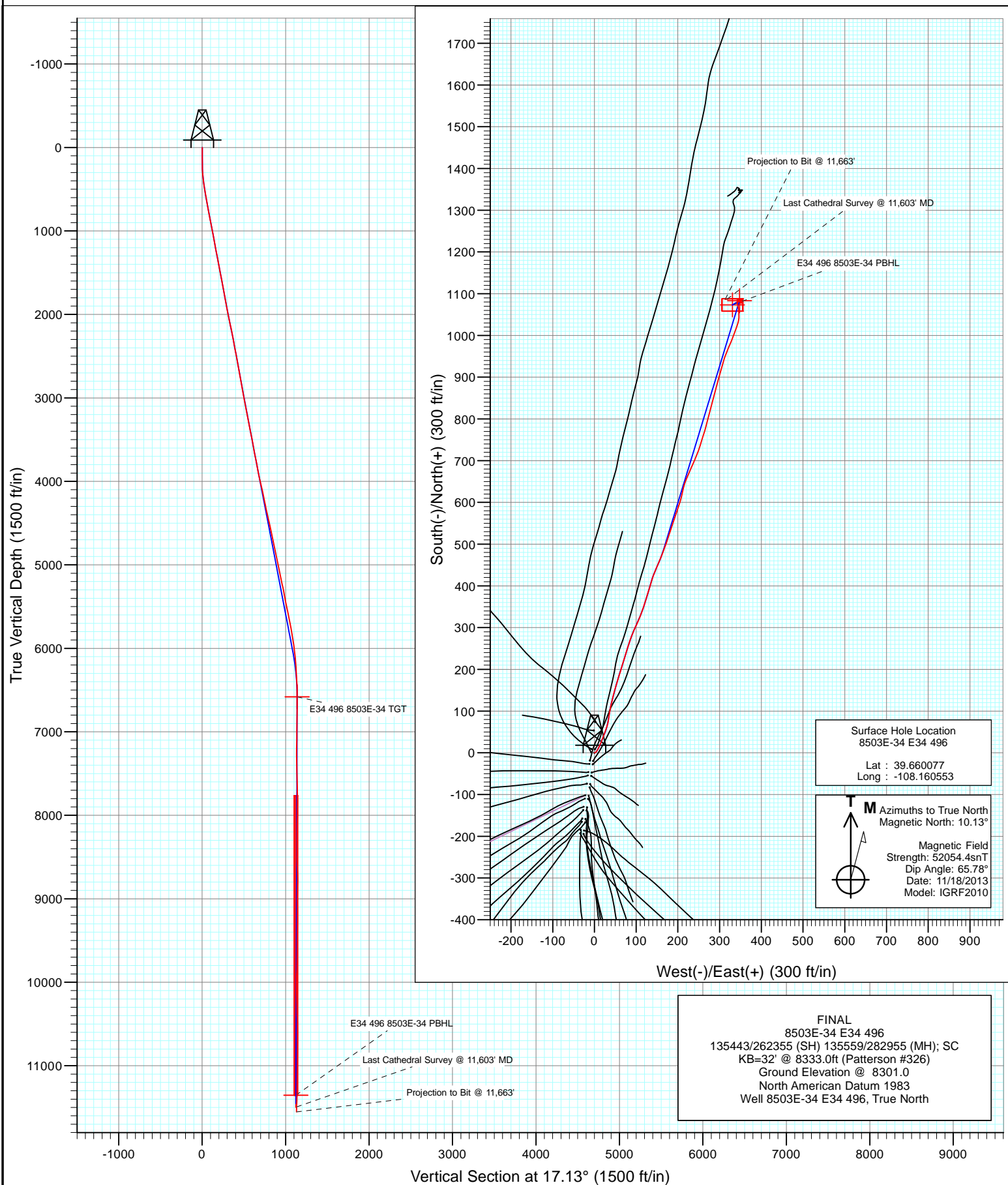


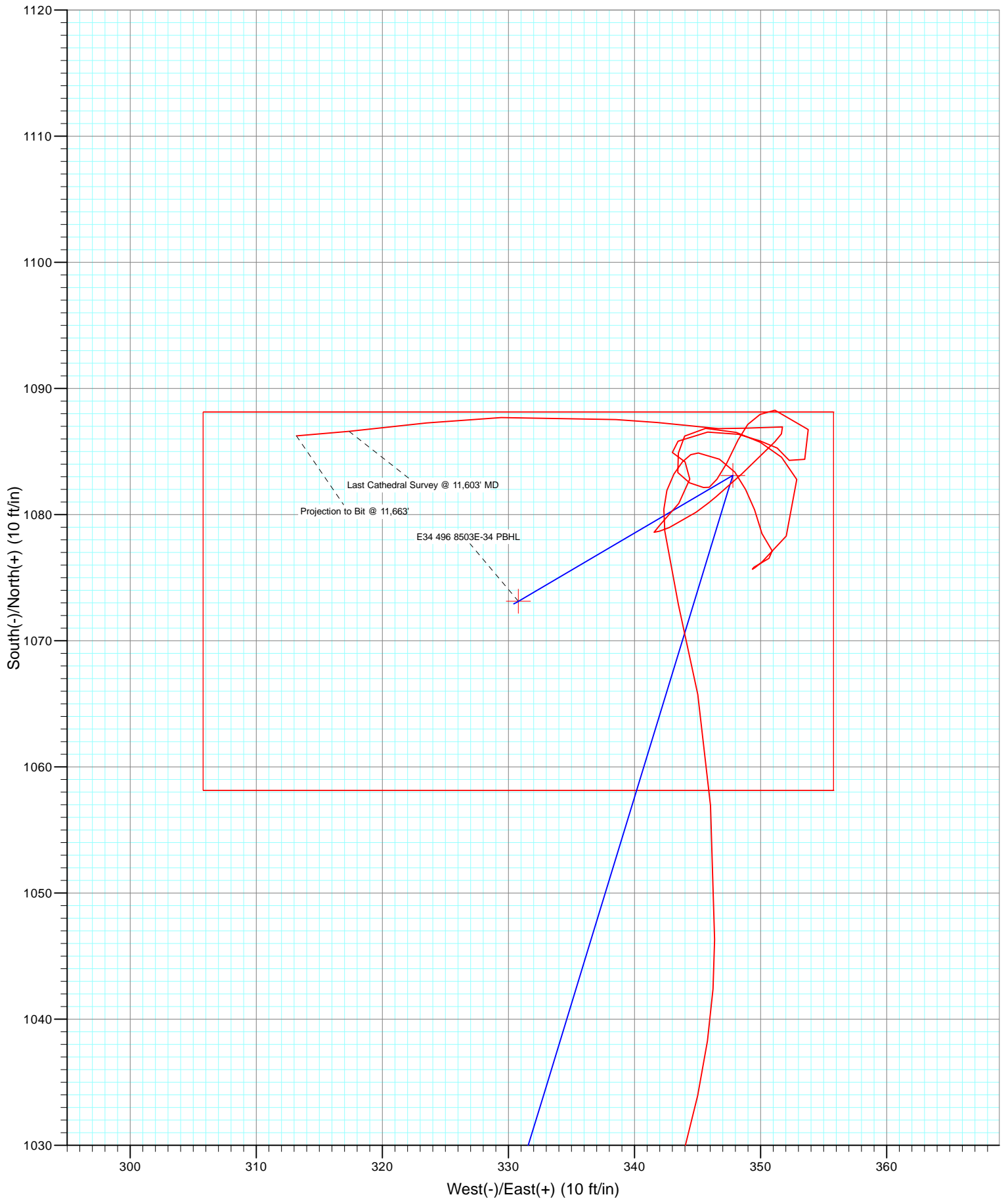


Project: Story Gulch  
Site: E34 496 S33-T4S-R96W  
Well: 8503E-34 E34 496  
Wellbore: DD  
Design: FINAL





Project: Story Gulch  
Site: E34 496 S33-T4S-R96W  
Well: 8503E-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 8503E-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>	8503E-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	8503E-34 E34 496					
Well Position	+N/-S	0.0 ft	Northing:	1,676,282.85 ft	Latitude:	39° 39' 36.28 N
	+E/-W	0.0 ft	Easting:	2,251,052.62 ft	Longitude:	108° 9' 37.99 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	11/18/2013	10.13	65.78	52,054

<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	17.13	

<b>Survey Program</b>	<b>Date</b>	11/24/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
232.0	11,663.0	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		
232.0	1.60	65.20	232.0	1.4	2.9	2.2	0.69	0.69		
324.0	5.10	33.10	323.8	5.3	6.3	7.0	4.17	3.80		
416.0	7.20	25.20	415.3	14.0	11.0	16.6	2.46	2.28		
510.0	9.40	21.80	508.3	26.4	16.4	30.1	2.40	2.34		
601.0	10.30	19.70	597.9	41.0	21.9	45.6	1.06	0.99		
693.0	10.10	21.40	688.5	56.2	27.6	61.9	0.39	-0.22		
785.0	10.50	10.60	779.0	72.0	32.1	78.3	2.14	0.43		
876.0	11.40	7.70	868.4	89.1	34.8	95.4	1.16	0.99		
967.0	11.20	12.50	957.6	106.6	37.9	113.0	1.06	-0.22		
1,059.0	11.10	14.00	1,047.9	123.9	42.0	130.8	0.33	-0.11		
1,150.0	10.50	15.00	1,137.2	140.4	46.3	147.8	0.69	-0.66		
1,242.0	10.80	14.50	1,227.7	156.9	50.6	164.8	0.34	0.33		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8503E-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>	8503E-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
1,333.0	10.80	16.60	1,317.0	173.3	55.2	181.9	0.43	0.00	
1,425.0	10.20	17.70	1,407.5	189.3	60.1	198.6	0.69	-0.65	
1,516.0	10.80	17.80	1,497.0	205.1	65.2	215.2	0.66	0.66	
1,608.0	11.50	17.80	1,587.2	222.0	70.6	233.0	0.76	0.76	
1,699.0	10.60	15.90	1,676.6	238.7	75.7	250.4	1.07	-0.99	
1,790.0	10.50	17.60	1,766.0	254.7	80.5	267.1	0.36	-0.11	
1,882.0	9.80	18.90	1,856.6	270.1	85.6	283.3	0.80	-0.76	
1,973.0	10.60	21.90	1,946.1	285.2	91.2	299.4	1.06	0.88	
2,065.0	12.40	24.30	2,036.3	302.0	98.4	317.6	2.02	1.96	
2,156.0	12.60	23.40	2,125.1	320.0	106.4	337.2	0.31	0.22	
2,248.0	11.50	20.90	2,215.1	337.8	113.6	356.3	1.32	-1.20	
2,339.0	10.50	18.50	2,304.4	354.2	119.5	373.6	1.21	-1.10	
2,430.0	10.20	16.40	2,394.0	369.8	124.4	390.0	0.53	-0.33	
2,522.0	10.90	16.90	2,484.4	385.9	129.2	406.8	0.77	0.76	
2,613.0	10.10	15.00	2,573.9	401.8	133.8	423.4	0.96	-0.88	
2,705.0	10.00	18.50	2,664.5	417.2	138.4	439.5	0.67	-0.11	
2,795.0	10.80	23.20	2,753.0	432.4	144.2	455.7	1.30	0.89	
2,895.0	10.40	22.60	2,851.3	449.3	151.4	474.0	0.41	-0.40	
3,080.0	10.20	21.50	3,033.3	480.0	163.8	506.9	0.15	-0.11	
3,171.0	10.90	21.00	3,122.8	495.5	169.8	523.5	0.78	0.77	
3,263.0	11.40	18.00	3,213.0	512.3	175.8	541.3	0.83	0.54	
3,355.0	10.80	17.20	3,303.3	529.1	181.1	559.0	0.67	-0.65	
3,446.0	11.80	19.20	3,392.5	546.1	186.7	576.8	1.18	1.10	
3,538.0	10.70	17.40	3,482.8	563.1	192.3	594.8	1.25	-1.20	
3,629.0	9.80	18.40	3,572.3	578.5	197.3	611.0	1.01	-0.99	
3,721.0	10.90	20.10	3,662.8	594.1	202.8	627.5	1.24	1.20	
3,813.0	11.70	14.10	3,753.0	611.3	208.0	645.5	1.54	0.87	
3,904.0	10.40	10.80	3,842.3	628.3	211.8	662.9	1.59	-1.43	
3,996.0	11.50	19.00	3,932.7	645.2	216.4	680.3	2.07	1.20	
4,088.0	13.30	23.30	4,022.5	663.6	223.5	700.0	2.20	1.96	
4,179.0	12.70	24.30	4,111.2	682.3	231.8	720.3	0.70	-0.66	
4,271.0	12.10	23.00	4,201.0	700.4	239.7	739.9	0.72	-0.65	
4,363.0	11.00	21.50	4,291.2	717.4	246.7	758.3	1.24	-1.20	
4,454.0	12.80	17.00	4,380.2	735.2	252.8	777.0	2.22	1.98	
4,546.0	12.40	17.50	4,470.0	754.3	258.8	797.1	0.45	-0.43	
4,638.0	11.70	17.30	4,560.0	772.6	264.5	816.3	0.76	-0.76	
4,729.0	13.20	15.00	4,648.8	791.5	270.0	835.9	1.74	1.65	
4,821.0	12.40	13.70	4,738.6	811.2	275.0	856.3	0.92	-0.87	
4,913.0	10.90	13.80	4,828.7	829.3	279.4	874.8	1.63	-1.63	
5,005.0	12.10	14.80	4,918.8	847.1	284.0	893.1	1.32	1.30	
5,096.0	11.70	16.20	5,007.9	865.1	289.0	911.9	0.54	-0.44	
5,188.0	10.60	15.50	5,098.1	882.2	293.9	929.7	1.20	-1.20	
5,280.0	12.90	15.20	5,188.2	900.3	298.8	948.4	2.50	2.50	
5,371.0	11.70	15.80	5,277.1	919.0	304.0	967.8	1.33	-1.32	
5,463.0	10.50	14.70	5,367.4	936.1	308.7	985.5	1.32	-1.30	
5,554.0	12.00	21.50	5,456.6	952.9	314.2	1,003.2	2.20	1.65	
5,646.0	11.70	22.80	5,546.7	970.4	321.3	1,022.0	0.44	-0.33	
5,738.0	10.60	21.90	5,636.9	986.9	328.1	1,039.7	1.21	-1.20	
5,830.0	11.40	20.60	5,727.2	1,003.2	334.5	1,057.2	0.91	0.87	
5,921.0	10.50	20.90	5,816.6	1,019.4	340.6	1,074.5	0.99	-0.99	
6,013.0	8.60	12.00	5,907.3	1,033.9	345.0	1,089.7	2.61	-2.07	
6,104.0	7.20	359.20	5,997.4	1,046.3	346.4	1,101.9	2.46	-1.54	
6,196.0	6.10	357.20	6,088.8	1,056.9	346.0	1,112.0	1.22	-1.20	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8503E-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>	8503E-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
6,287.0	5.10	349.00	6,179.4	1,065.7	345.0	1,120.1	1.40	-1.10	
6,379.0	4.00	346.40	6,271.1	1,072.9	343.5	1,126.5	1.22	-1.20	
6,471.0	3.40	353.00	6,362.9	1,078.7	342.4	1,131.7	0.80	-0.65	
6,563.0	2.60	30.60	6,454.8	1,083.2	343.1	1,136.2	2.26	-0.87	
6,655.0	1.10	97.80	6,546.7	1,084.9	345.1	1,138.4	2.61	-1.63	
6,747.0	1.10	115.00	6,638.7	1,084.4	346.7	1,138.4	0.36	0.00	
6,838.0	1.00	146.90	6,729.7	1,083.4	348.0	1,137.8	0.64	-0.11	
6,930.0	1.00	149.50	6,821.7	1,082.0	348.8	1,136.7	0.05	0.00	
7,022.0	1.20	161.50	6,913.7	1,080.4	349.5	1,135.4	0.33	0.22	
7,113.0	1.30	164.30	7,004.7	1,078.5	350.1	1,133.8	0.13	0.11	
7,205.0	0.80	124.70	7,096.6	1,077.1	350.9	1,132.7	0.93	-0.54	
7,297.0	1.00	253.50	7,188.6	1,076.5	350.7	1,132.1	1.77	0.22	
7,389.0	0.80	222.50	7,280.6	1,075.8	349.5	1,131.0	0.56	-0.22	
7,480.0	1.70	50.90	7,371.6	1,076.2	350.1	1,131.6	2.74	0.99	
7,572.0	1.90	35.90	7,463.6	1,078.3	352.0	1,134.2	0.55	0.22	
7,755.0	1.40	334.70	7,646.5	1,082.8	352.9	1,138.7	0.95	-0.27	
7,847.0	1.30	315.90	7,738.5	1,084.6	351.7	1,140.0	0.49	-0.11	
7,939.0	1.30	294.60	7,830.5	1,085.7	350.0	1,140.7	0.52	0.00	
8,030.0	1.30	289.50	7,921.4	1,086.5	348.1	1,140.8	0.13	0.00	
8,122.0	1.80	269.10	8,013.4	1,086.8	345.6	1,140.4	0.80	0.54	
8,213.0	0.80	201.70	8,104.4	1,086.2	344.0	1,139.4	1.83	-1.10	
8,305.0	1.00	199.10	8,196.4	1,084.9	343.5	1,137.9	0.22	0.22	
8,397.0	1.00	163.80	8,288.4	1,083.3	343.4	1,136.4	0.66	0.00	
8,488.0	0.90	95.20	8,379.3	1,082.5	344.4	1,135.9	1.18	-0.11	
8,580.0	0.60	127.70	8,471.3	1,082.2	345.5	1,135.9	0.55	-0.33	
8,763.0	3.00	24.50	8,654.3	1,085.9	348.2	1,140.3	1.74	1.31	
8,855.0	2.40	85.10	8,746.2	1,088.3	351.1	1,143.4	3.01	-0.65	
8,947.0	2.30	157.10	8,838.1	1,086.7	353.8	1,142.7	3.00	-0.11	
9,038.0	1.50	235.60	8,929.1	1,084.4	353.5	1,140.4	2.73	-0.88	
9,130.0	0.80	337.90	9,021.1	1,084.3	352.3	1,140.0	2.00	-0.76	
9,222.0	1.00	298.30	9,113.1	1,085.3	351.3	1,140.6	0.69	0.22	
9,313.0	0.90	286.60	9,204.0	1,085.9	349.9	1,140.8	0.24	-0.11	
9,405.0	1.30	286.40	9,296.0	1,086.4	348.2	1,140.7	0.43	0.43	
9,497.0	1.80	265.50	9,388.0	1,086.5	345.8	1,140.2	0.81	0.54	
9,588.0	1.40	236.60	9,479.0	1,085.8	343.5	1,138.8	0.98	-0.44	
9,680.0	0.70	118.80	9,570.9	1,084.9	343.0	1,137.8	1.99	-0.76	
9,771.0	0.90	132.80	9,661.9	1,084.2	344.0	1,137.4	0.31	0.22	
9,863.0	1.10	190.10	9,753.9	1,082.8	344.4	1,136.2	1.06	0.22	
9,955.0	1.60	214.40	9,845.9	1,080.9	343.5	1,134.1	0.81	0.54	
10,046.0	1.20	230.40	9,936.9	1,079.2	342.1	1,132.1	0.61	-0.44	
10,138.0	0.30	93.30	10,028.9	1,078.6	341.6	1,131.4	1.56	-0.98	
10,230.0	1.30	68.40	10,120.9	1,079.0	342.8	1,132.1	1.13	1.09	
10,321.0	1.80	54.10	10,211.8	1,080.2	344.9	1,133.9	0.69	0.55	
10,413.0	0.70	47.80	10,303.8	1,081.4	346.5	1,135.5	1.20	-1.20	
10,505.0	2.70	48.70	10,395.8	1,083.2	348.5	1,137.8	2.17	2.17	
10,596.0	1.90	41.70	10,486.7	1,085.8	351.1	1,141.0	0.93	-0.88	
10,688.0	0.50	278.20	10,578.7	1,087.0	351.7	1,142.3	2.41	-1.52	
10,771.0	1.40	264.30	10,671.6	1,086.9	348.7	1,141.4	0.50	0.49	
10,863.0	1.20	274.20	10,764.6	1,086.8	346.7	1,140.7	0.33	-0.22	
11,055.0	1.50	277.20	10,945.6	1,087.0	344.5	1,140.3	0.33	0.33	
11,146.0	1.90	274.80	11,036.5	1,087.3	341.8	1,139.8	0.45	0.44	
11,238.0	2.20	273.10	11,128.5	1,087.5	338.5	1,139.0	0.33	0.33	
11,421.0	3.50	269.70	11,311.3	1,087.7	329.4	1,136.5	0.72	0.71	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8503E-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>	8503E-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
11,513.0	3.90	262.50	11,403.1	1,087.3	323.5	1,134.3	0.67	0.43	
11,603.0	4.00	265.10	11,492.9	1,086.6	317.4	1,131.9	0.23	0.11	Last Cathedral Survey @ 11,603' MD Projection to Bit @ 11,663'
11,663.0	4.00	265.10	11,552.7	1,086.2	313.2	1,130.3	0.00	0.00	

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
E34 496 8503E-34 TGT		0.00	0.00	6,580.0	1,083.1	347.8	1,677,355.31	2,251,431.99	39° 39' 46.98 N 108° 9' 33.54 W
- actual wellpath misses target center by 2.7ft at 6688.3ft MD (6580.0 TVD, 1084.8 N, 345.7 E)									
- Point									
E34 496 8503E-34 PBH		0.00	0.00	11,354.0	1,073.1	330.8	1,677,345.83	2,251,414.70	39° 39' 46.88 N 108° 9' 33.76 W
- actual wellpath misses target center by 15.0ft at 11463.6ft MD (11353.8 TVD, 1087.6 N, 326.8 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	
11,603.0	11,492.9	1,086.6	317.4	Last Cathedral Survey @ 11,603' MD	
11,663.0	11,552.7	1,086.2	313.2	Projection to Bit @ 11,663'	

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