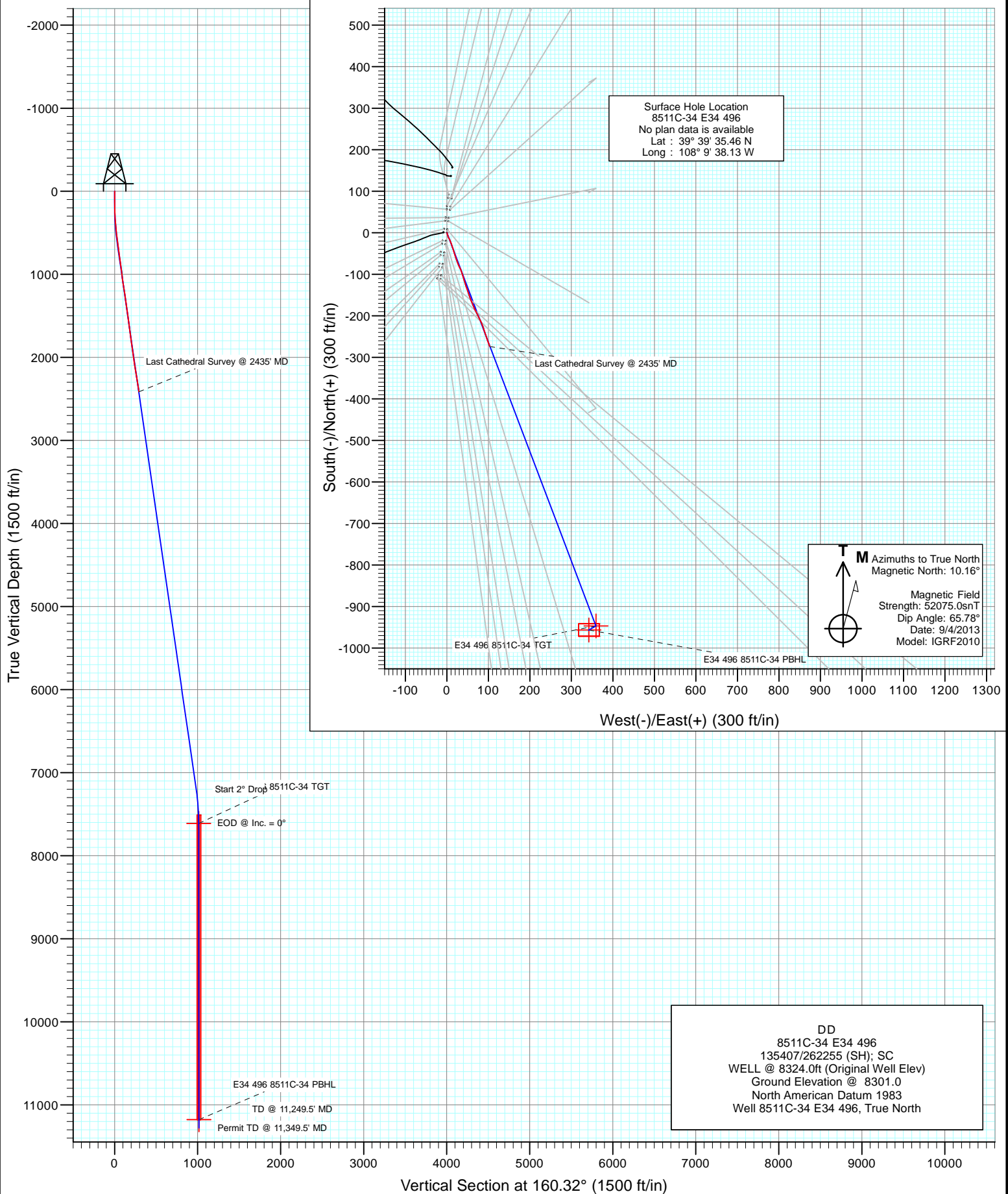




Project: Story Gulch  
Site: E34 496 S33-T4S-R96W  
Well: 8511C-34 E34 496  
Wellbore: DD  
Design: DD





Cathedral Energy Services  
Survey Report



<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8511C-34 E34 496
<b>Project:</b>	Story Gulch	<b>TVD Reference:</b>	WELL @ 8324.0ft (Original Well Elev)
<b>Site:</b>	E34 496 S33-T4S-R96W	<b>MD Reference:</b>	WELL @ 8324.0ft (Original Well Elev)
<b>Well:</b>	8511C-34 E34 496	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<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		

<b>Site</b>	E34 496 S33-T4S-R96W			
<b>Site Position:</b>		<b>Northing:</b>	1,676,257.20 ft	<b>Latitude:</b> 39° 39' 36.02 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,251,040.13 ft	<b>Longitude:</b> 108° 9' 38.14 W
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.68 °

<b>Well</b>	8511C-34 E34 496			
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,676,200.17 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,251,038.87 ft
<b>Position Uncertainty</b>	0.0 ft		<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	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	9/4/2013	10.16	65.78	52,075

<b>Design</b>	DD			
<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	160.32

<b>Survey Program</b>	<b>Date</b>	9/6/2013		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
237.0	2,435.0	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	
237.0	1.10	156.90	237.0	-2.1	0.9	2.3	0.46	0.46	
329.0	3.70	167.20	328.9	-5.8	1.9	6.1	2.85	2.83	
421.0	5.10	152.60	420.6	-12.3	4.4	13.1	1.94	1.52	
512.0	6.20	156.80	511.2	-20.4	8.2	22.0	1.29	1.21	
606.0	7.50	161.10	604.5	-30.9	12.2	33.2	1.49	1.38	
698.0	8.20	162.50	695.6	-42.8	16.1	45.8	0.79	0.76	
789.0	8.30	162.90	785.7	-55.3	20.0	58.8	0.13	0.11	
881.0	8.00	159.30	876.8	-67.6	24.2	71.9	0.64	-0.33	
1,063.0	6.90	154.80	1,057.2	-89.4	33.4	95.4	0.68	-0.60	
1,155.0	8.30	162.30	1,148.4	-100.7	37.7	107.5	1.86	1.52	
1,246.0	8.90	164.90	1,238.4	-113.8	41.6	121.1	0.79	0.66	
1,338.0	8.30	161.80	1,329.4	-126.9	45.5	134.9	0.82	-0.65	



Cathedral Energy Services  
Survey Report



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<b>Site:</b>	E34 496 S33-T4S-R96W	<b>MD Reference:</b>	WELL @ 8324.0ft (Original Well Elev)
<b>Well:</b>	8511C-34 E34 496	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<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
1,430.0	8.20	159.80	1,420.4	-139.4	49.8	148.1	0.33	-0.11	
1,521.0	7.40	161.30	1,510.6	-151.1	54.0	160.4	0.91	-0.88	
1,613.0	7.70	159.20	1,601.8	-162.4	58.0	172.5	0.44	0.33	
1,704.0	7.30	156.60	1,692.0	-173.4	62.5	184.4	0.58	-0.44	
1,795.0	8.00	155.00	1,782.2	-184.5	67.5	196.4	0.80	0.77	
1,886.0	8.40	153.20	1,872.3	-196.1	73.2	209.3	0.52	0.44	
1,978.0	8.80	152.50	1,963.2	-208.4	79.4	223.0	0.45	0.43	
2,070.0	8.70	159.40	2,054.2	-221.1	85.1	236.9	1.15	-0.11	
2,161.0	9.00	163.00	2,144.1	-234.4	89.6	250.9	0.69	0.33	
2,252.0	8.70	160.50	2,234.0	-247.7	94.0	264.9	0.54	-0.33	
2,344.0	8.70	160.20	2,324.9	-260.8	98.7	278.8	0.05	0.00	
2,435.0	9.10	158.90	2,414.8	-274.0	103.6	292.9	0.49	0.44	Last Cathedral Survey @ 2435' MD

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 8511C-34 PBH	0.00	0.00	11,178.0	-956.5	342.2	1,675,234.04	2,251,352.86	39° 39' 26.00 N	108° 9' 33.76 W
- survey misses target center by 8792.9ft at 2435.0ft MD (2414.8 TVD, -274.0 N, 103.6 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
E34 496 8511C-34 TGT	0.00	0.00	7,610.0	-946.5	359.2	1,675,243.56	2,251,370.20	39° 39' 26.10 N	108° 9' 33.54 W
- survey misses target center by 5244.7ft at 2435.0ft MD (2414.8 TVD, -274.0 N, 103.6 E)									
- Point									

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,435.0	2,414.8	-274.0	103.6	Last Cathedral Survey @ 2435' MD	

Checked By: _____	Approved By: _____	Date: _____
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