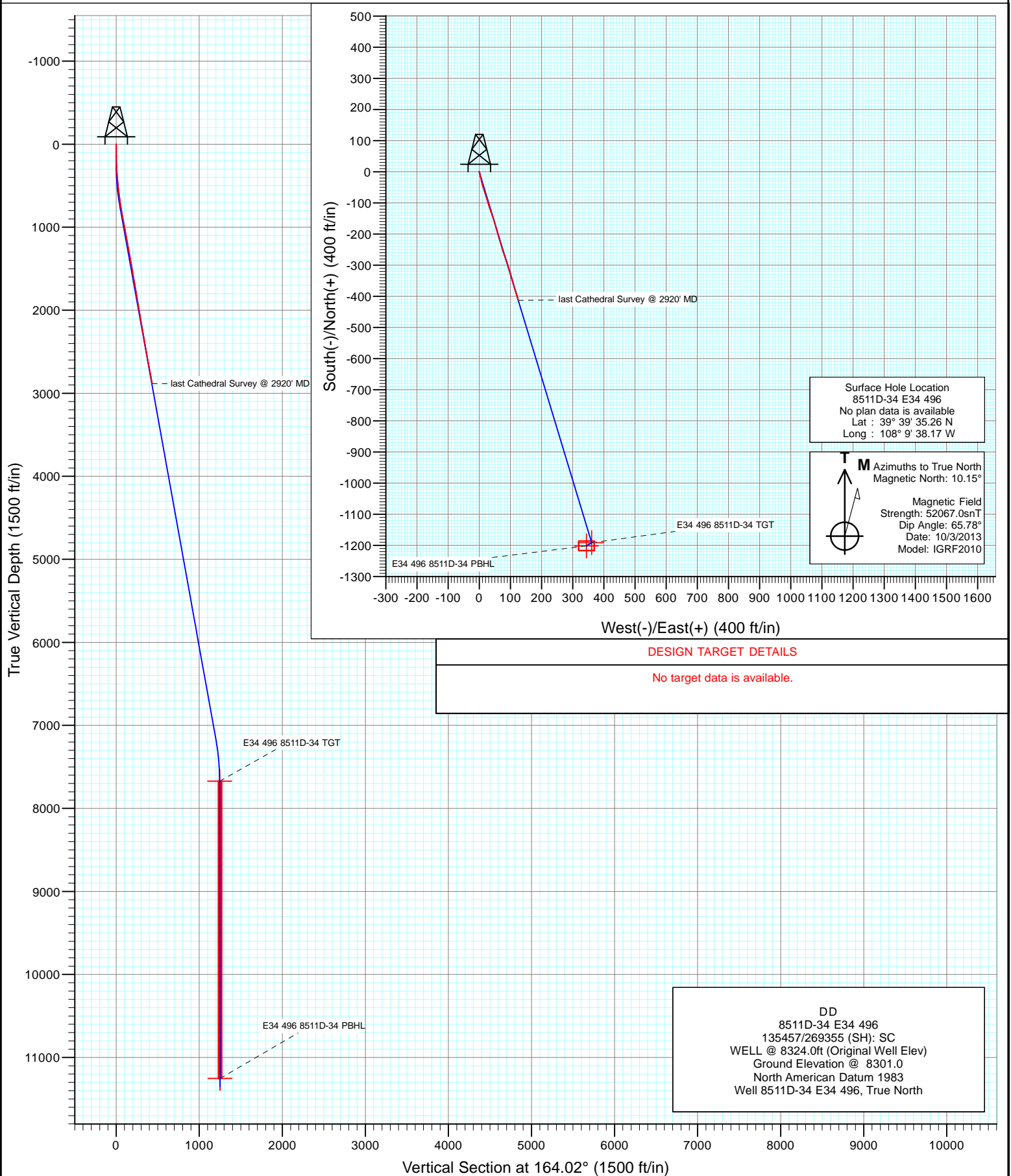




Project: Story Gulch  
Site: E34 496 S33-T4S-R96W  
Well: 8511D-34 E34 496  
Wellbore: DD  
Design: DD



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8511D-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>	8511D-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		

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	8511D-34 E34 496					
Well Position	+N/-S	0.0 ft	Northing:	1,676,180.58 ft	Latitude:	39° 39' 35.26 N
	+E/-W	0.0 ft	Easting:	2,251,035.76 ft	Longitude:	108° 9' 38.17 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	10/3/2013	10.15	65.78	52,067

<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)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	164.02	

<b>Survey Program</b>	<b>Date</b>	10/5/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
237.0	2,920.0	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	1.00	165.40	237.0	-2.0	0.5	2.1	0.42	0.42		
268.0	1.90	152.70	268.0	-2.7	0.8	2.8	3.07	2.90		
299.0	2.80	161.10	299.0	-3.9	1.3	4.1	3.10	2.90		
330.0	3.50	170.80	329.9	-5.5	1.7	5.8	2.83	2.26		
360.0	4.70	170.00	359.8	-7.7	2.1	7.9	4.00	4.00		
391.0	5.60	166.90	390.7	-10.4	2.6	10.7	3.04	2.90		
421.0	6.00	164.10	420.5	-13.3	3.4	13.7	1.63	1.33		
452.0	6.70	163.90	451.4	-16.6	4.3	17.2	2.26	2.26		
482.0	6.70	166.50	481.2	-20.0	5.2	20.7	1.01	0.00		
513.0	6.90	168.90	511.9	-23.6	6.0	24.3	1.12	0.65		
558.0	6.90	167.70	556.6	-28.9	7.1	29.7	0.32	0.00		
607.0	6.60	164.80	605.3	-34.5	8.5	35.5	0.93	-0.61		
699.0	7.40	164.80	696.6	-45.3	11.4	46.7	0.87	0.87		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8511D-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>	8511D-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
790.0	9.10	161.40	786.6	-57.8	15.2	59.7	1.94	1.87	
882.0	10.80	161.90	877.3	-72.9	20.2	75.6	1.85	1.85	
973.0	11.20	164.50	966.6	-89.5	25.2	93.0	0.70	0.44	
1,064.0	10.60	162.00	1,055.9	-105.9	30.2	110.2	0.84	-0.66	
1,156.0	10.30	161.10	1,146.4	-121.8	35.5	126.8	0.37	-0.33	
1,247.0	9.50	160.10	1,236.1	-136.5	40.7	142.5	0.90	-0.88	
1,339.0	10.30	163.30	1,326.7	-151.6	45.6	158.3	1.06	0.87	
1,430.0	11.10	163.20	1,416.1	-167.7	50.5	175.2	0.88	0.88	
1,522.0	10.40	163.10	1,506.5	-184.2	55.5	192.3	0.76	-0.76	
1,613.0	9.50	163.70	1,596.1	-199.2	60.0	208.0	1.00	-0.99	
1,705.0	8.70	165.00	1,687.0	-213.2	63.9	222.6	0.90	-0.87	
1,796.0	9.20	162.40	1,776.9	-226.8	67.9	236.7	0.71	0.55	
1,888.0	9.50	163.90	1,867.6	-241.1	72.2	251.7	0.42	0.33	
1,979.0	9.60	161.40	1,957.4	-255.5	76.7	266.8	0.47	0.11	
2,071.0	9.80	161.00	2,048.1	-270.2	81.7	282.2	0.23	0.22	
2,163.0	10.00	161.10	2,138.7	-285.2	86.8	298.0	0.22	0.22	
2,254.0	10.30	163.10	2,228.3	-300.4	91.8	314.1	0.51	0.33	
2,346.0	10.30	162.80	2,318.8	-316.1	96.6	330.5	0.06	0.00	
2,438.0	9.90	161.90	2,409.4	-331.5	101.5	346.6	0.47	-0.43	
2,529.0	10.10	165.10	2,499.0	-346.7	106.0	362.4	0.65	0.22	
2,621.0	10.40	163.40	2,589.5	-362.4	110.4	378.8	0.46	0.33	
2,712.0	10.20	163.00	2,679.0	-378.0	115.1	395.1	0.23	-0.22	
2,804.0	10.30	163.80	2,769.6	-393.7	119.8	411.4	0.19	0.11	
2,895.0	9.80	163.60	2,859.2	-408.9	124.2	427.3	0.55	-0.55	
2,920.0	9.80	163.70	2,883.8	-413.0	125.4	431.6	0.07	0.00	last Cathedral Survey @ 2920' 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 8511D-34 PBH	0.00	0.00	11,252.0	-1,201.2	344.1	1,674,969.79	2,251,344.50	39° 39' 23.39 N	108° 9' 33.77 W
- survey misses target center by 8408.1ft at 2920.0ft MD (2883.8 TVD, -413.0 N, 125.4 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
E34 496 8511D-34 TGT	0.00	0.00	7,671.0	-1,191.2	361.1	1,674,979.32	2,251,361.82	39° 39' 23.49 N	108° 9' 33.55 W
- survey misses target center by 4855.8ft at 2920.0ft MD (2883.8 TVD, -413.0 N, 125.4 E)									
- Point									

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,920.0	2,883.8	-413.0	125.4	last Cathedral Survey @ 2920' MD	

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------