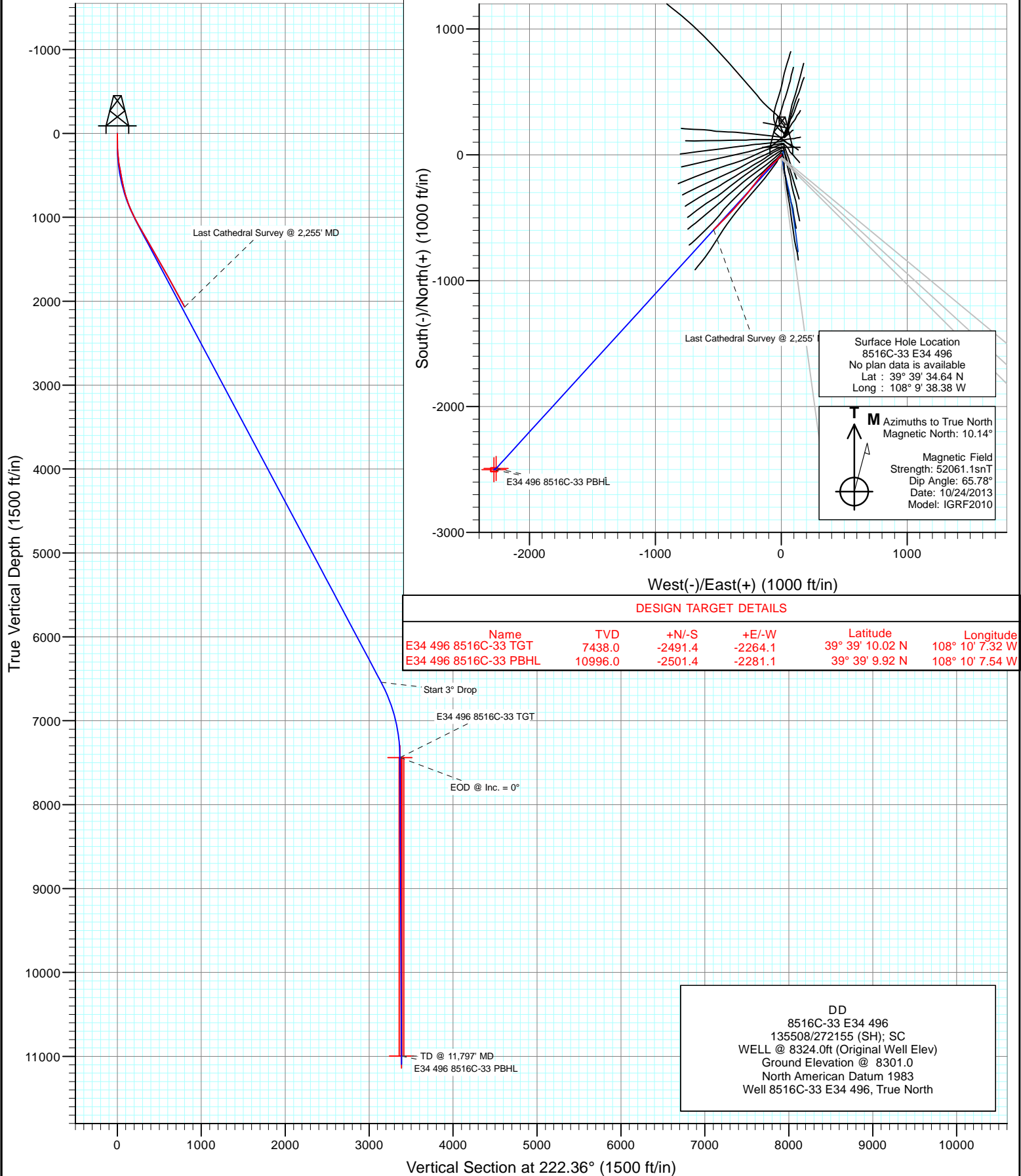




Project: Story Gulch  
 Site: E34 496 S33-T4S-R96W  
 Well: 8516C-33 E34 496  
 Wellbore: DD  
 Design: DD



# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8516C-33 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>	8516C-33 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	8516C-33 E34 496					
Well Position	+N/-S	0.0 ft	Northing:	1,676,118.44 ft	Latitude:	39° 39' 34.64 N
	+E/-W	0.0 ft	Easting:	2,251,017.60 ft	Longitude:	108° 9' 38.38 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	10/24/2013	10.14	65.78	52,061

<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</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	222.36	

<b>Survey Program</b>	<b>Date</b>	10/26/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
141.0	2,255.0	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		
141.0	0.90	241.80	141.0	-0.5	-1.0	1.0	0.64	0.64		
172.0	2.00	214.30	172.0	-1.1	-1.5	1.8	4.10	3.55		
202.0	3.30	211.30	202.0	-2.3	-2.2	3.2	4.36	4.33		
233.0	4.50	206.00	232.9	-4.1	-3.2	5.2	4.04	3.87		
263.0	5.40	211.20	262.8	-6.4	-4.5	7.7	3.35	3.00		
294.0	6.10	222.60	293.6	-8.8	-6.4	10.8	4.31	2.26		
325.0	7.10	224.50	324.4	-11.4	-8.8	14.4	3.30	3.23		
355.0	8.70	224.50	354.1	-14.4	-11.7	18.5	5.33	5.33		
386.0	10.30	223.40	384.7	-18.0	-15.2	23.6	5.19	5.16		
416.0	11.00	220.60	414.2	-22.2	-19.0	29.1	2.90	2.33		
447.0	11.00	220.50	444.6	-26.7	-22.8	35.1	0.06	0.00		
477.0	10.30	215.20	474.1	-31.0	-26.2	40.6	4.01	-2.33		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well 8516C-33 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>	8516C-33 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
508.0	9.40	213.20	504.6	-35.4	-29.2	45.8	3.11	-2.90	
538.0	10.10	218.60	534.2	-39.5	-32.2	50.9	3.84	2.33	
608.0	12.30	231.90	602.9	-48.9	-41.9	64.4	4.83	3.14	
699.0	14.60	228.80	691.4	-62.5	-58.1	85.3	2.65	2.53	
791.0	17.90	223.80	779.7	-80.3	-76.6	111.0	3.89	3.59	
882.0	22.10	226.10	865.2	-102.3	-98.7	142.1	4.69	4.62	
974.0	25.30	226.80	949.4	-127.7	-125.5	178.9	3.49	3.48	
1,065.0	27.30	219.10	1,031.0	-157.3	-152.8	219.2	4.34	2.20	
1,157.0	29.50	216.80	1,111.9	-191.8	-179.7	262.8	2.67	2.39	
1,248.0	30.80	217.40	1,190.6	-228.2	-207.3	308.3	1.47	1.43	
1,340.0	30.20	219.10	1,269.9	-264.9	-236.2	354.9	1.14	-0.65	
1,431.0	29.00	217.50	1,349.0	-300.2	-264.0	399.7	1.58	-1.32	
1,522.0	29.80	221.30	1,428.3	-334.6	-292.4	444.3	2.23	0.88	
1,614.0	30.40	222.50	1,507.9	-369.0	-323.2	490.4	0.92	0.65	
1,705.0	29.40	219.40	1,586.8	-403.2	-352.9	535.8	2.02	-1.10	
1,797.0	28.70	222.40	1,667.2	-437.0	-382.2	580.4	1.76	-0.76	
1,889.0	29.30	223.20	1,747.7	-469.7	-412.5	625.0	0.78	0.65	
1,980.0	28.40	226.50	1,827.4	-500.8	-443.4	668.9	2.01	-0.99	
2,072.0	28.10	224.20	1,908.4	-531.4	-474.4	712.3	1.23	-0.33	
2,163.0	28.80	224.20	1,988.5	-562.5	-504.6	755.7	0.77	0.77	
2,255.0	30.00	225.60	2,068.6	-594.5	-536.5	800.8	1.50	1.30	Last Cathedral Survey @ 2,255' 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 8516C-33 PBH	0.00	0.00	10,996.0	-2,501.4	-2,281.1	1,673,684.90	2,248,664.28	39° 39' 9.92 N	108° 10' 7.54 W
- survey misses target center by 9294.0ft at 2255.0ft MD (2068.6 TVD, -594.5 N, -536.5 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
E34 496 8516C-33 TGT	0.00	0.00	7,438.0	-2,491.4	-2,264.1	1,673,694.42	2,248,681.52	39° 39' 10.02 N	108° 10' 7.32 W
- survey misses target center by 5950.9ft at 2255.0ft MD (2068.6 TVD, -594.5 N, -536.5 E)									
- Point									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,255.0	2,068.6	-594.5	-536.5	Last Cathedral Survey @ 2,255' MD

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