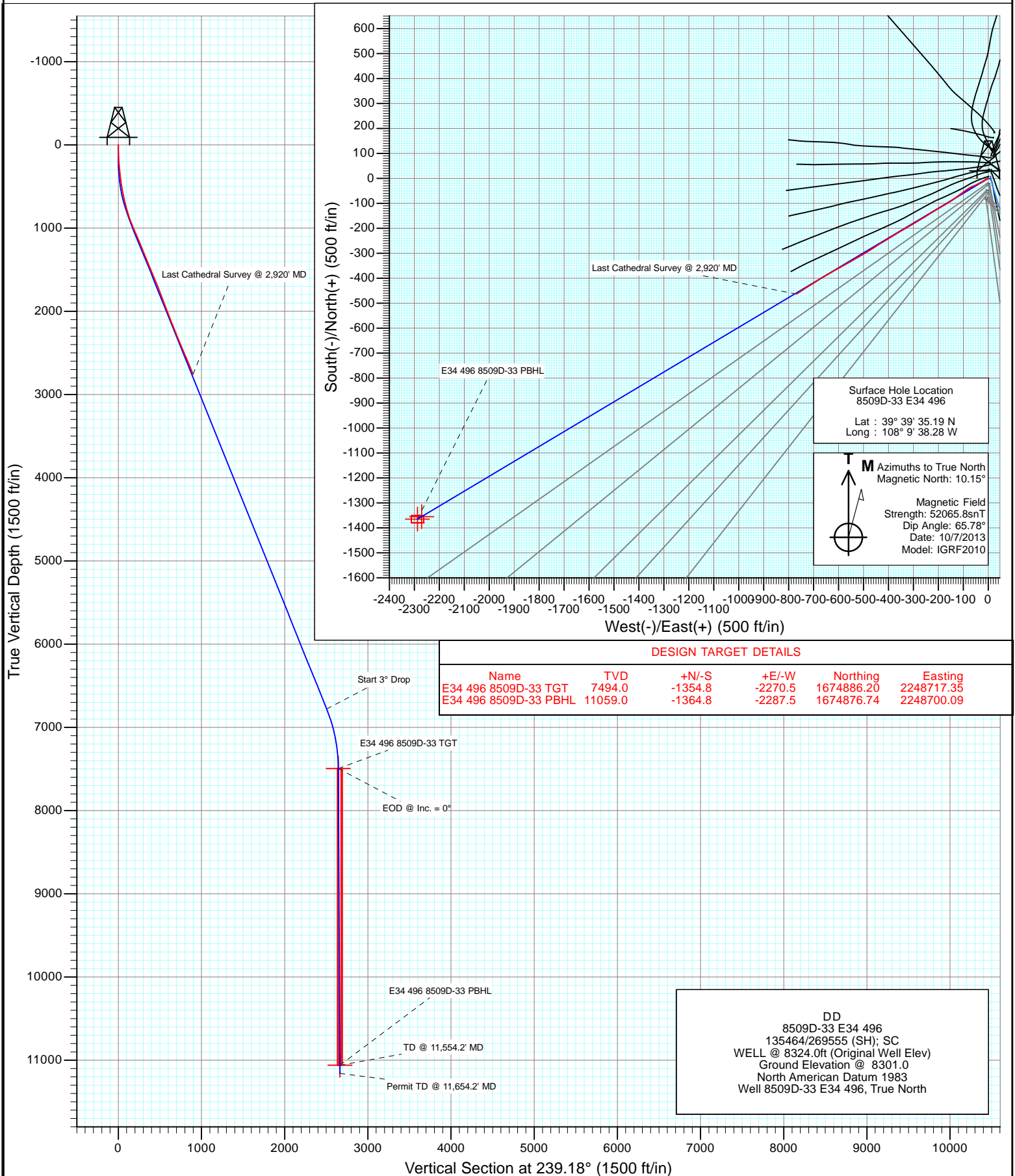




Project: Story Gulch
Site: E34 496 S33-T4S-R96W
Well: 8509D-33 E34 496
Wellbore: DD
Design: DD



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8509D-33 E34 496
Project:	Story Gulch	TVD Reference:	WELL @ 8324.0ft (Original Well Elev)
Site:	E34 496 S33-T4S-R96W	MD Reference:	WELL @ 8324.0ft (Original Well Elev)
Well:	8509D-33 E34 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Project	Story Gulch		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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		8509D-33 E34 496				
Well Position	+N/-S	0.0 ft	Northing:	1,676,173.93 ft	Latitude:	39° 39' 35.19 N
	+E/-W	0.0 ft	Easting:	2,251,026.55 ft	Longitude:	108° 9' 38.28 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	8,301.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/7/2013	10.15	65.78	52,066

Design	DD				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	239.18	

Survey Program	Date	10/9/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
263.0	2,920.0	Survey #1 (DD)	Geolink MWD	Geolink MWD	

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	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
263.0	4.90	244.80	262.7	-4.8	-10.2	11.2	1.86	1.86		
416.0	7.70	235.70	414.7	-13.3	-24.6	27.9	1.94	1.83		
510.0	9.30	241.80	507.7	-20.5	-36.4	41.8	1.95	1.70		
602.0	11.60	246.80	598.2	-27.6	-51.5	58.4	2.69	2.50		
693.0	13.80	244.60	686.9	-35.9	-69.7	78.3	2.47	2.42		
784.0	15.70	233.90	775.0	-47.8	-89.5	101.3	3.64	2.09		
875.0	18.60	233.50	861.9	-63.7	-111.1	128.0	3.19	3.19		
967.0	22.20	235.80	948.1	-82.2	-137.3	160.0	4.01	3.91		
1,058.0	23.60	239.50	1,032.0	-101.1	-167.2	195.4	2.21	1.54		
1,150.0	22.90	239.30	1,116.5	-119.6	-198.5	231.7	0.77	-0.76		
1,241.0	22.30	238.90	1,200.5	-137.6	-228.5	266.7	0.68	-0.66		
1,332.0	21.50	237.30	1,284.9	-155.5	-257.3	300.6	1.10	-0.88		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8509D-33 E34 496
Project:	Story Gulch	TVD Reference:	WELL @ 8324.0ft (Original Well Elev)
Site:	E34 496 S33-T4S-R96W	MD Reference:	WELL @ 8324.0ft (Original Well Elev)
Well:	8509D-33 E34 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	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
1,424.0	22.70	239.70	1,370.2	-173.6	-286.8	335.2	1.63	1.30	
1,515.0	23.20	239.80	1,454.0	-191.4	-317.4	370.7	0.55	0.55	
1,607.0	22.40	238.20	1,538.8	-209.8	-348.0	406.3	1.10	-0.87	
1,698.0	22.30	238.90	1,622.9	-227.8	-377.5	440.9	0.31	-0.11	
1,790.0	21.40	239.80	1,708.3	-245.3	-407.0	475.2	1.04	-0.98	
1,881.0	21.60	237.90	1,793.0	-262.5	-435.5	508.5	0.80	0.22	
1,973.0	21.10	237.20	1,878.7	-280.5	-463.8	542.0	0.61	-0.54	
2,065.0	20.50	238.10	1,964.7	-298.0	-491.4	574.7	0.74	-0.65	
2,156.0	21.00	241.60	2,049.8	-314.2	-519.3	606.9	1.47	0.55	
2,248.0	21.50	240.60	2,135.5	-330.3	-548.4	640.2	0.67	0.54	
2,340.0	21.80	240.40	2,221.0	-347.0	-578.0	674.1	0.34	0.33	
2,431.0	22.50	240.00	2,305.3	-364.1	-607.8	708.5	0.79	0.77	
2,523.0	23.30	240.20	2,390.1	-381.9	-638.8	744.2	0.87	0.87	
2,614.0	22.80	238.40	2,473.8	-400.1	-669.4	779.9	0.95	-0.55	
2,706.0	23.00	238.10	2,558.6	-418.9	-699.9	815.7	0.25	0.22	
2,798.0	23.10	237.40	2,643.2	-438.2	-730.3	851.7	0.32	0.11	
2,889.0	22.00	236.80	2,727.3	-457.1	-759.6	886.5	1.23	-1.21	
2,920.0	21.80	236.60	2,756.0	-463.5	-769.3	898.1	0.69	-0.65	Last Cathedral Survey @ 2,920' 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 8509D-33 TGT	0.00	0.00	7,494.0	-1,354.8	-2,270.5	1,674,886.20	2,248,717.35	39° 39' 21.80 N	108° 10' 7.31 W
- survey misses target center by 5049.4ft at 2920.0ft MD (2756.0 TVD, -463.5 N, -769.3 E)									
- Point									
E34 496 8509D-33 PBH	0.00	0.00	11,059.0	-1,364.8	-2,287.5	1,674,876.74	2,248,700.09	39° 39' 21.70 N	108° 10' 7.53 W
- survey misses target center by 8488.6ft at 2920.0ft MD (2756.0 TVD, -463.5 N, -769.3 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,920.0	2,756.0	-463.5	-769.3	Last Cathedral Survey @ 2,920' MD

Checked By: _____ Approved By: _____ Date: _____