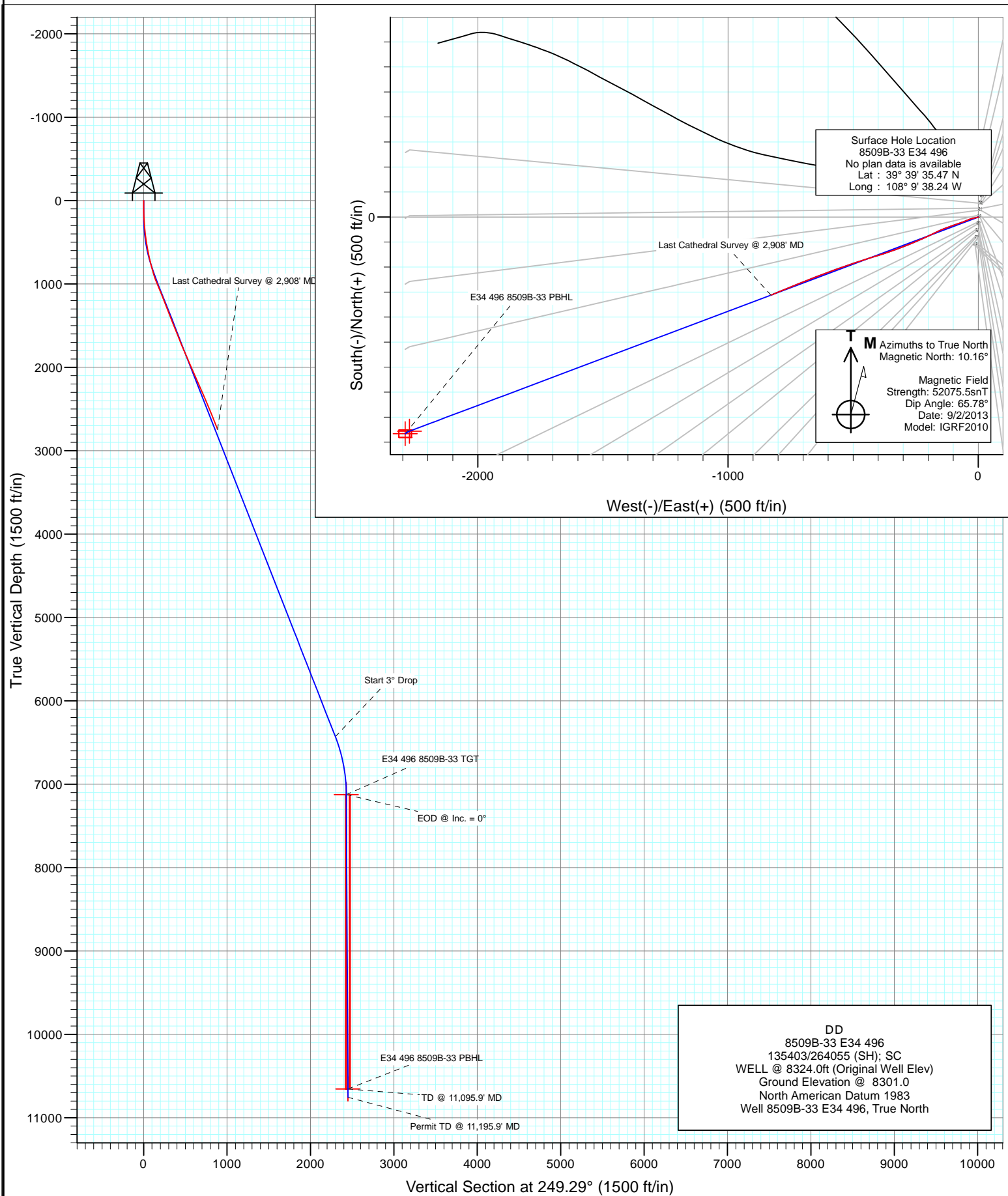




Project: Story Gulch
Site: E34 496 S33-T4S-R96W
Well: 8509B-33 E34 496
Wellbore: DD
Design: DD



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8509B-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:	8509B-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	8509B-33 E34 496					
Well Position	+N/-S	0.0 ft	Northing:	1,676,201.50 ft	Latitude:	39° 39' 35.47 N
	+E/-W	0.0 ft	Easting:	2,251,031.02 ft	Longitude:	108° 9' 38.24 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	9/2/2013	10.16	65.78	52,076

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	249.29	

Survey Program	Date	9/4/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
236.0	2,908.0	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		
236.0	2.30	252.20	235.9	-1.4	-4.5	4.7	0.97	0.97		
328.0	4.90	258.50	327.7	-2.8	-10.1	10.5	2.85	2.83		
419.0	8.00	259.70	418.2	-4.7	-20.2	20.5	3.41	3.41		
511.0	9.10	250.50	509.1	-8.3	-33.3	34.1	1.90	1.20		
605.0	10.90	246.70	601.7	-14.3	-48.5	50.4	2.04	1.91		
697.0	12.30	250.30	691.8	-21.0	-65.7	68.9	1.71	1.52		
788.0	14.50	251.50	780.3	-27.9	-85.6	90.0	2.44	2.42		
880.0	17.10	249.40	868.9	-36.3	-109.2	115.0	2.89	2.83		
972.0	20.60	249.20	955.9	-46.8	-137.0	144.7	3.81	3.80		
1,064.0	22.60	244.00	1,041.5	-60.3	-168.0	178.5	3.01	2.17		
1,155.0	22.60	244.20	1,125.5	-75.6	-199.5	213.3	0.08	0.00		
1,247.0	21.70	246.80	1,210.7	-90.0	-231.1	248.0	1.45	-0.98		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8509B-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:	8509B-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
1,339.0	21.00	247.00	1,296.4	-103.1	-261.9	281.4	0.76	-0.76	
1,430.0	21.10	248.60	1,381.3	-115.5	-292.1	314.1	0.64	0.11	
1,522.0	21.70	249.50	1,467.0	-127.5	-323.5	347.7	0.74	0.65	
1,613.0	21.60	250.50	1,551.5	-139.0	-355.0	381.2	0.42	-0.11	
1,705.0	22.00	252.70	1,637.0	-149.7	-387.4	415.4	0.99	0.43	
1,797.0	22.90	254.00	1,722.0	-159.8	-421.1	450.4	1.12	0.98	
1,888.0	22.80	252.00	1,805.8	-170.1	-454.9	485.7	0.86	-0.11	
1,980.0	23.30	251.70	1,890.5	-181.4	-489.1	521.6	0.56	0.54	
2,072.0	23.90	250.50	1,974.8	-193.3	-524.0	558.5	0.84	0.65	
2,163.0	24.00	250.30	2,058.0	-205.7	-558.8	595.4	0.14	0.11	
2,255.0	23.90	249.60	2,142.0	-218.5	-593.8	632.7	0.33	-0.11	
2,347.0	23.80	249.70	2,226.2	-231.4	-628.7	669.9	0.12	-0.11	
2,438.0	23.80	248.40	2,309.5	-244.5	-663.0	706.6	0.58	0.00	
2,530.0	23.10	248.00	2,393.9	-258.1	-697.0	743.3	0.78	-0.76	
2,622.0	21.90	247.90	2,478.9	-271.4	-729.6	778.4	1.31	-1.30	
2,713.0	22.10	247.90	2,563.2	-284.2	-761.2	812.5	0.22	0.22	
2,805.0	22.10	247.20	2,648.5	-297.4	-793.2	847.1	0.29	0.00	
2,896.0	21.50	249.00	2,733.0	-310.0	-824.6	880.9	0.99	-0.66	
2,908.0	21.30	249.00	2,744.1	-311.6	-828.6	885.3	1.67	-1.67	Last Cathedral Survey @ 2,908' 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 8509B-33 PBH	0.00	0.00	10,654.0	-865.7	-2,290.3	1,675,403.21	2,248,716.34	39° 39' 26.91 N	108° 10' 7.52 W
- survey misses target center by 8062.9ft at 2908.0ft MD (2744.1 TVD, -311.6 N, -828.6 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
E34 496 8509B-33 TGT	0.00	0.00	7,125.0	-855.7	-2,273.3	1,675,412.72	2,248,733.64	39° 39' 27.01 N	108° 10' 7.30 W
- survey misses target center by 4644.9ft at 2908.0ft MD (2744.1 TVD, -311.6 N, -828.6 E)									
- Point									

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,908.0	2,744.1	-311.6	-828.6	Last Cathedral Survey @ 2,908' MD	

Checked By: _____ Approved By: _____ Date: _____