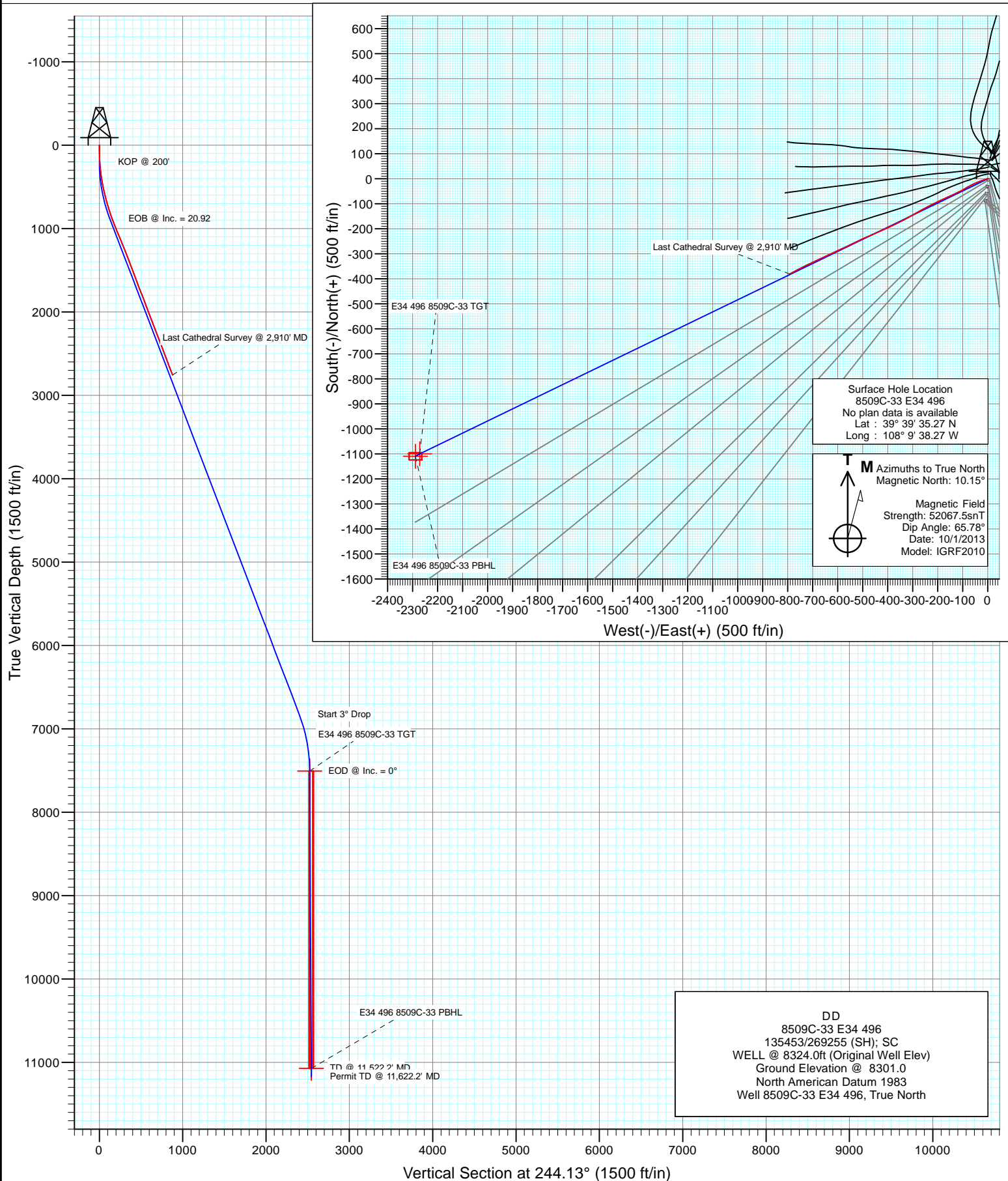




Project: Story Gulch
Site: E34 496 S33-T4S-R96W
Well: 8509C-33 E34 496
Wellbore: DD
Design: DD





Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8509C-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:	8509C-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	8509C-33 E34 496			
Well Position	+N/-S	0.0 ft	Northing:	1,676,181.61 ft
	+E/-W	0.0 ft	Easting:	2,251,027.90 ft
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	10/1/2013	10.15	65.78	52,068

Design	DD			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	244.13

Survey Program	Date	10/3/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
267.0	2,910.0	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	
267.0	4.50	254.60	266.7	-2.8	-10.1	10.3	1.69	1.69	
298.0	5.50	249.00	297.6	-3.6	-12.7	13.0	3.59	3.23	
420.0	10.20	249.90	418.4	-9.4	-28.3	29.6	3.85	3.85	
512.0	12.00	248.20	508.7	-15.8	-44.8	47.2	1.99	1.96	
606.0	13.70	243.40	600.4	-24.4	-63.8	68.1	2.13	1.81	
698.0	15.10	239.10	689.5	-35.4	-83.9	90.9	1.91	1.52	
789.0	17.80	242.10	776.7	-48.0	-106.3	116.6	3.11	2.97	
881.0	20.20	244.70	863.7	-61.4	-133.1	146.6	2.77	2.61	
972.0	21.20	245.70	948.8	-74.9	-162.3	178.7	1.17	1.10	
1,064.0	22.50	246.10	1,034.2	-88.9	-193.6	213.0	1.42	1.41	
1,155.0	22.80	242.70	1,118.2	-104.0	-225.2	248.0	1.48	0.33	
1,247.0	22.60	240.90	1,203.1	-120.8	-256.5	283.5	0.79	-0.22	



Cathedral Energy Services

Survey Report

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Site:	E34 496 S33-T4S-R96W	MD Reference:	WELL @ 8324.0ft (Original Well Elev)
Well:	8509C-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
1,338.0	21.20	241.10	1,287.5	-137.3	-286.1	317.3	1.54	-1.54	
1,429.0	21.10	240.30	1,372.4	-153.3	-314.8	350.1	0.34	-0.11	
1,521.0	21.10	243.30	1,458.2	-169.0	-343.9	383.2	1.17	0.00	
1,612.0	20.40	245.20	1,543.3	-183.0	-373.0	415.4	1.07	-0.77	
1,704.0	20.20	244.60	1,629.6	-196.5	-401.9	447.4	0.31	-0.22	
1,795.0	21.80	246.30	1,714.6	-210.0	-431.6	480.0	1.88	1.76	
1,887.0	21.80	246.50	1,800.0	-223.7	-462.9	514.1	0.08	0.00	
1,978.0	20.80	245.50	1,884.8	-237.2	-493.1	547.1	1.17	-1.10	
2,070.0	19.90	243.70	1,971.0	-250.9	-522.0	579.1	1.19	-0.98	
2,162.0	20.00	245.20	2,057.5	-264.4	-550.3	610.5	0.57	0.11	
2,253.0	21.10	244.80	2,142.7	-277.9	-579.2	642.4	1.22	1.21	
2,345.0	21.30	244.50	2,228.5	-292.2	-609.3	675.7	0.25	0.22	
2,437.0	21.60	245.80	2,314.1	-306.3	-639.8	709.3	0.61	0.33	
2,528.0	21.40	245.50	2,398.8	-320.0	-670.2	742.7	0.25	-0.22	
2,620.0	20.30	245.10	2,484.8	-333.7	-700.0	775.4	1.21	-1.20	
2,711.0	20.50	243.10	2,570.0	-347.6	-728.5	807.1	0.80	0.22	
2,803.0	21.30	242.20	2,656.0	-362.7	-757.6	839.9	0.94	0.87	
2,892.0	20.90	242.10	2,739.0	-377.6	-786.0	872.0	0.45	-0.45	
2,910.0	20.80	242.10	2,755.8	-380.6	-791.6	878.4	0.56	-0.56	Last Cathedral Survey @ 2,910' 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 8509C-33 TGT	0.00	0.00	7,506.0	-1,099.5	-2,271.2	1,675,149.09	2,248,725.48	39° 39' 24.40 N	108° 10' 7.31 W
- survey misses target center by 5026.9ft at 2910.0ft MD (2755.8 TVD, -380.6 N, -791.6 E)									
- Point									
E34 496 8509C-33 PBH	0.00	0.00	11,072.0	-1,109.5	-2,288.2	1,675,139.61	2,248,708.19	39° 39' 24.30 N	108° 10' 7.53 W
- survey misses target center by 8481.1ft at 2910.0ft MD (2755.8 TVD, -380.6 N, -791.6 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,910.0	2,755.8	-380.6	-791.6	Last Cathedral Survey @ 2,910' MD	

Checked By: _____ Approved By: _____ Date: _____