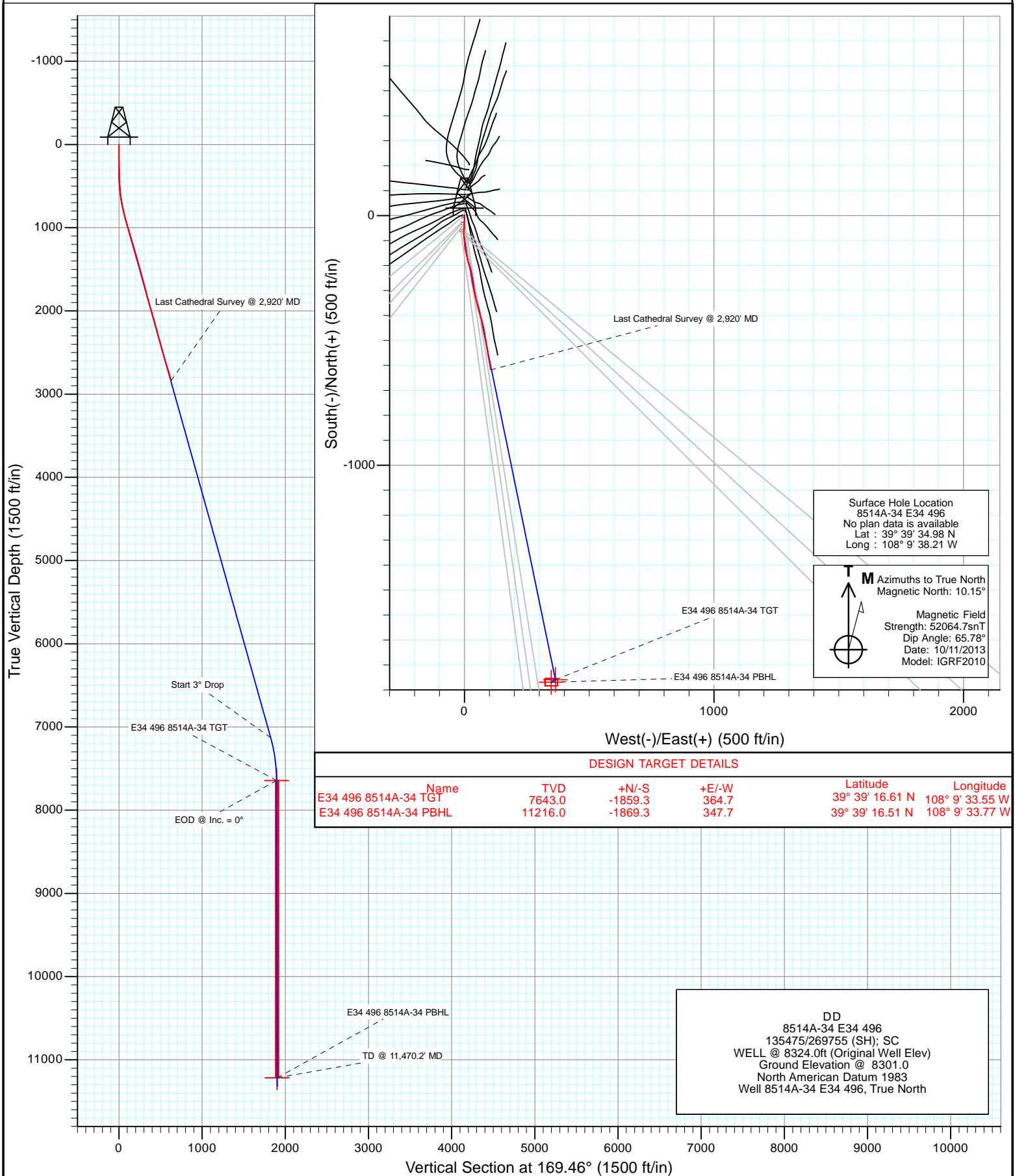




Project: Story Gulch
Site: E34 496 S33-T4S-R96W
Well: 8514A-34 E34 496
Wellbore: DD
Design: DD



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8514A-34 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:	8514A-34 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	8514A-34 E34 496					
Well Position	+N/-S	0.0 ft	Northing:	1,676,152.66 ft	Latitude:	39° 39' 34.98 N
	+E/-W	0.0 ft	Easting:	2,251,031.28 ft	Longitude:	108° 9' 38.21 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	10/11/2013	10.15	65.78	52,065

Design	DD				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	169.46	

Survey Program	Date	10/13/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
355.0	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		
355.0	1.20	186.50	355.0	-3.7	-0.4	3.6	0.34	0.34		
416.0	2.20	188.40	415.9	-5.5	-0.7	5.3	1.64	1.64		
477.0	3.10	168.70	476.9	-8.3	-0.5	8.0	2.08	1.48		
508.0	3.90	174.90	507.8	-10.1	-0.3	9.9	2.85	2.58		
602.0	7.00	174.70	601.4	-19.0	0.6	18.8	3.30	3.30		
694.0	10.10	189.00	692.4	-32.6	-0.2	32.0	4.06	3.37		
785.0	12.70	182.00	781.6	-50.5	-1.8	49.3	3.23	2.86		
877.0	15.10	180.60	870.9	-72.6	-2.3	70.9	2.63	2.61		
968.0	16.70	173.50	958.4	-97.4	-0.9	95.6	2.76	1.76		
1,060.0	16.40	172.30	1,046.6	-123.4	2.3	121.7	0.49	-0.33		
1,151.0	16.70	168.20	1,133.8	-148.9	6.7	147.7	1.32	0.33		
1,243.0	16.70	166.80	1,221.9	-174.7	12.4	174.1	0.44	0.00		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8514A-34 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:	8514A-34 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
1,334.0	15.40	163.80	1,309.4	-199.1	18.8	199.2	1.69	-1.43	
1,425.0	15.40	168.10	1,397.1	-222.5	24.7	223.3	1.25	0.00	
1,517.0	16.10	173.20	1,485.7	-247.1	28.7	248.2	1.69	0.76	
1,608.0	15.80	168.80	1,573.2	-271.8	32.6	273.2	1.37	-0.33	
1,700.0	14.20	166.50	1,662.0	-295.1	37.7	297.0	1.86	-1.74	
1,791.0	14.40	169.10	1,750.2	-317.0	42.4	319.4	0.74	0.22	
1,883.0	15.20	166.70	1,839.2	-340.0	47.3	342.9	1.10	0.87	
1,974.0	16.50	164.50	1,926.7	-364.1	53.5	367.7	1.57	1.43	
2,066.0	16.70	165.20	2,014.9	-389.4	60.4	393.9	0.31	0.22	
2,158.0	15.00	164.30	2,103.4	-413.7	67.0	419.0	1.87	-1.85	
2,249.0	15.10	163.90	2,191.2	-436.4	73.5	442.5	0.16	0.11	
2,341.0	14.90	169.00	2,280.1	-459.5	79.1	466.2	1.45	-0.22	
2,433.0	15.20	171.60	2,369.0	-483.1	83.1	490.1	0.80	0.33	
2,524.0	16.10	171.30	2,456.6	-507.3	86.7	514.7	0.99	0.99	
2,616.0	16.10	171.00	2,545.0	-532.6	90.7	540.2	0.09	0.00	
2,708.0	16.50	169.60	2,633.3	-558.0	95.0	566.0	0.61	0.43	
2,799.0	17.10	169.10	2,720.4	-583.9	99.9	592.3	0.68	0.66	
2,891.0	16.40	169.70	2,808.5	-609.9	104.8	618.8	0.78	-0.76	
2,920.0	15.90	168.70	2,836.3	-617.8	106.3	626.9	1.97	-1.72	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 8514A-34 PBH	0.00	0.00	11,216.0	-1,869.3	347.7	1,674,273.95	2,251,324.12	39° 39' 16.51 N	108° 9' 33.77 W
- survey misses target center by 8476.0ft at 2920.0ft MD (2836.3 TVD, -617.8 N, 106.3 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
E34 496 8514A-34 TGT	0.00	0.00	7,643.0	-1,859.3	364.7	1,674,283.50	2,251,341.38	39° 39' 16.61 N	108° 9' 33.55 W
- survey misses target center by 4971.1ft at 2920.0ft MD (2836.3 TVD, -617.8 N, 106.3 E)									
- Point									

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,920.0	2,836.3	-617.8	106.3	Last Cathedral Survey @ 2,920' MD	

Checked By: _____	Approved By: _____	Date: _____
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