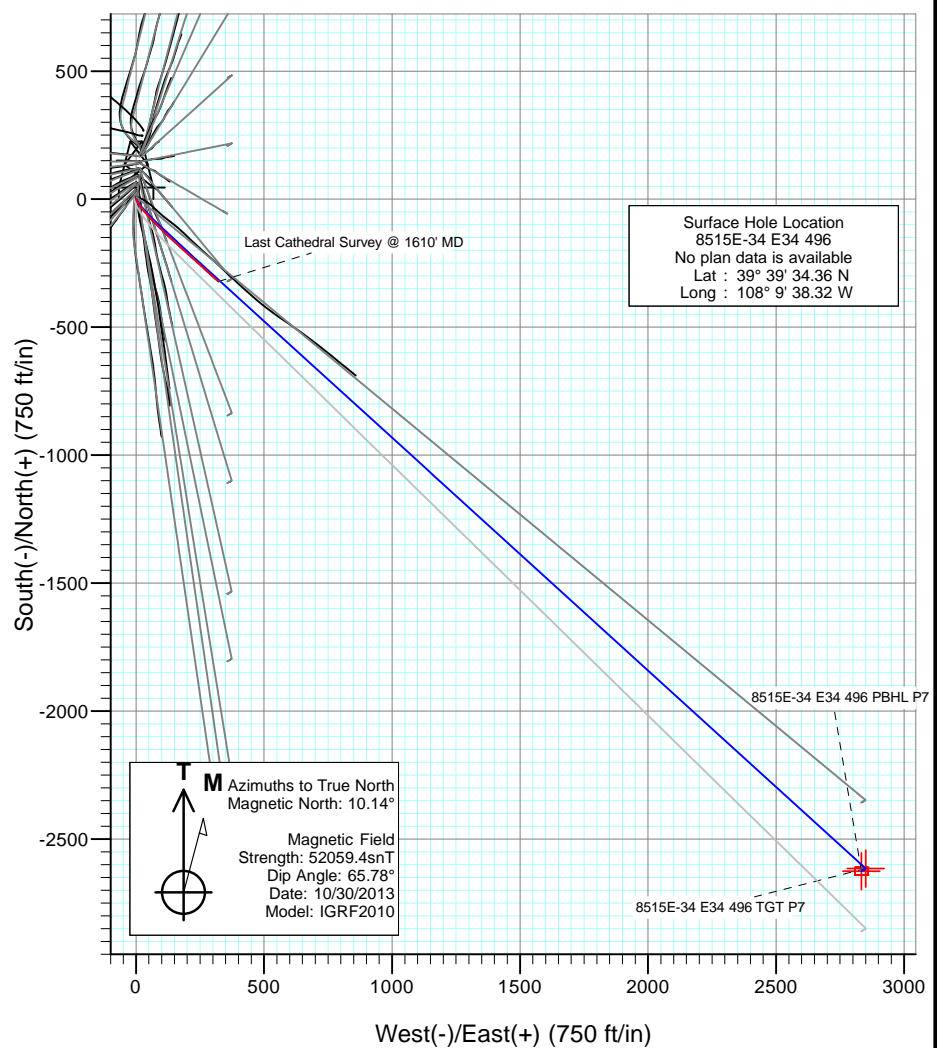
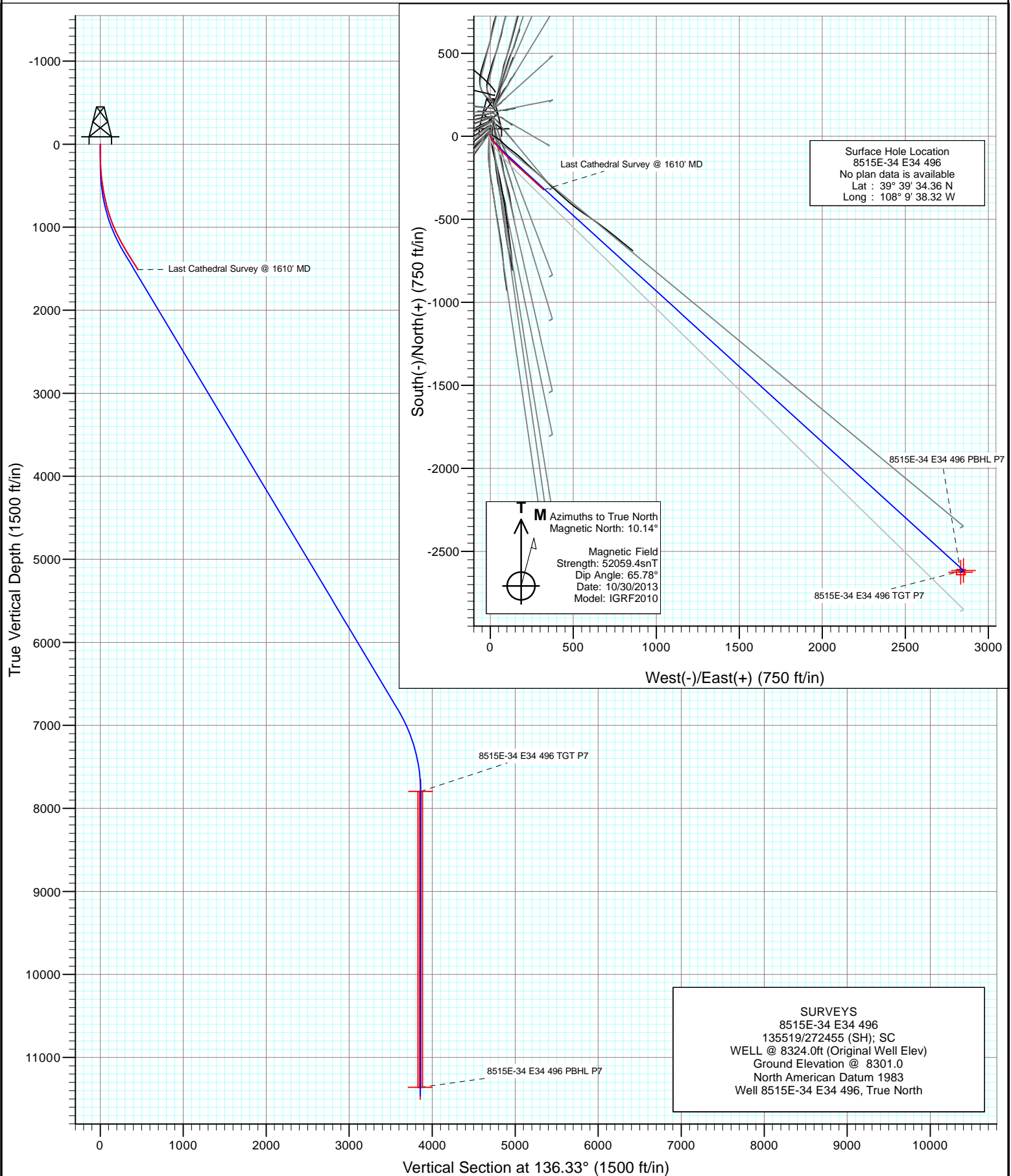




Project: Story Gulch
Site: E34 496 S33-T4S-R96W
Well: 8515E-34 E34 496
Wellbore: DD
Design: SURVEYS



SURVEYS
8515E-34 E34 496
135519/272455 (SH); SC
WELL @ 8324.0ft (Original Well Elev)
Ground Elevation @ 8301.0
North American Datum 1983
Well 8515E-34 E34 496, True North

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8515E-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:	8515E-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	8515E-34 E34 496					
Well Position	+N/-S	0.0 ft	Northing:	1,676,089.51 ft	Latitude:	39° 39' 34.36 N
	+E/-W	0.0 ft	Easting:	2,251,020.98 ft	Longitude:	108° 9' 38.32 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	10/30/2013	10.14	65.78	52,059

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	136.33

Survey Program	Date	11/2/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
265.0	1,610.0	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		
265.0	2.40	160.20	264.9	-5.2	1.9	5.1	0.91	0.91		
324.0	4.20	149.90	323.8	-8.3	3.4	8.3	3.20	3.05		
418.0	7.00	146.70	417.4	-16.0	8.3	17.3	3.00	2.98		
510.0	9.00	145.00	508.5	-26.6	15.5	29.9	2.19	2.17		
601.0	11.30	141.10	598.0	-39.4	25.1	45.8	2.64	2.53		
696.0	13.20	139.00	690.9	-54.8	38.1	66.0	2.05	2.00		
787.0	15.20	137.90	779.1	-71.5	52.9	88.3	2.22	2.20		
879.0	17.90	135.60	867.3	-90.6	70.9	114.5	3.02	2.93		
970.0	21.50	134.00	952.9	-112.1	92.7	145.1	4.00	3.96		
1,062.0	24.70	134.30	1,037.5	-137.3	118.6	181.2	3.48	3.48		
1,153.0	26.90	132.20	1,119.5	-164.4	147.4	220.7	2.62	2.42		
1,245.0	29.20	132.00	1,200.7	-193.4	179.5	263.9	2.50	2.50		
1,336.0	31.50	131.90	1,279.2	-224.1	213.7	309.7	2.53	2.53		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8515E-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:	8515E-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
1,427.0	31.90	133.20	1,356.6	-256.5	249.0	357.4	0.87	0.44	
1,519.0	32.30	132.00	1,434.5	-289.5	284.9	406.2	0.82	0.43	
1,610.0	32.90	130.70	1,511.2	-321.9	321.8	455.0	1.01	0.66	Last Cathedral Survey @ 1610' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
8515F-34 E34 496 TGT - hit/miss target - Shape	0.00	0.00	7,600.0	-2,946.2	2,839.2	1,673,061.44	2,253,772.72	39° 39' 5.24 N	108° 9' 2.02 W
- survey misses target center by 7092.1ft at 1610.0ft MD (1511.2 TVD, -321.9 N, 321.8 E)									
- Point									
8515E-34 E34 496 PBHI - survey misses target center by 10421.7ft at 1610.0ft MD (1511.2 TVD, -321.9 N, 321.8 E)	0.00	0.00	11,360.0	-2,625.4	2,833.1	1,673,382.31	2,253,775.99	39° 39' 8.41 N	108° 9' 2.10 W
- Rectangle (sides W30.0 H50.0 D0.0)									
8515F-34 E34 496 PBHI - survey misses target center by 11409.3ft at 1610.0ft MD (1511.2 TVD, -321.9 N, 321.8 E)	0.00	0.00	12,327.0	-2,956.2	2,822.2	1,673,051.94	2,253,755.40	39° 39' 5.14 N	108° 9' 2.24 W
- Rectangle (sides W30.0 H50.0 D0.0)									
8515E-34 E34 496 TGT - survey misses target center by 7151.1ft at 1610.0ft MD (1511.2 TVD, -321.9 N, 321.8 E)	0.00	0.00	7,795.0	-2,615.4	2,850.1	1,673,391.82	2,253,793.27	39° 39' 8.51 N	108° 9' 1.88 W
- Point									

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,610.0	1,511.2	-321.9	321.8	Last Cathedral Survey @ 1610' MD	

Checked By: _____ Approved By: _____ Date: _____