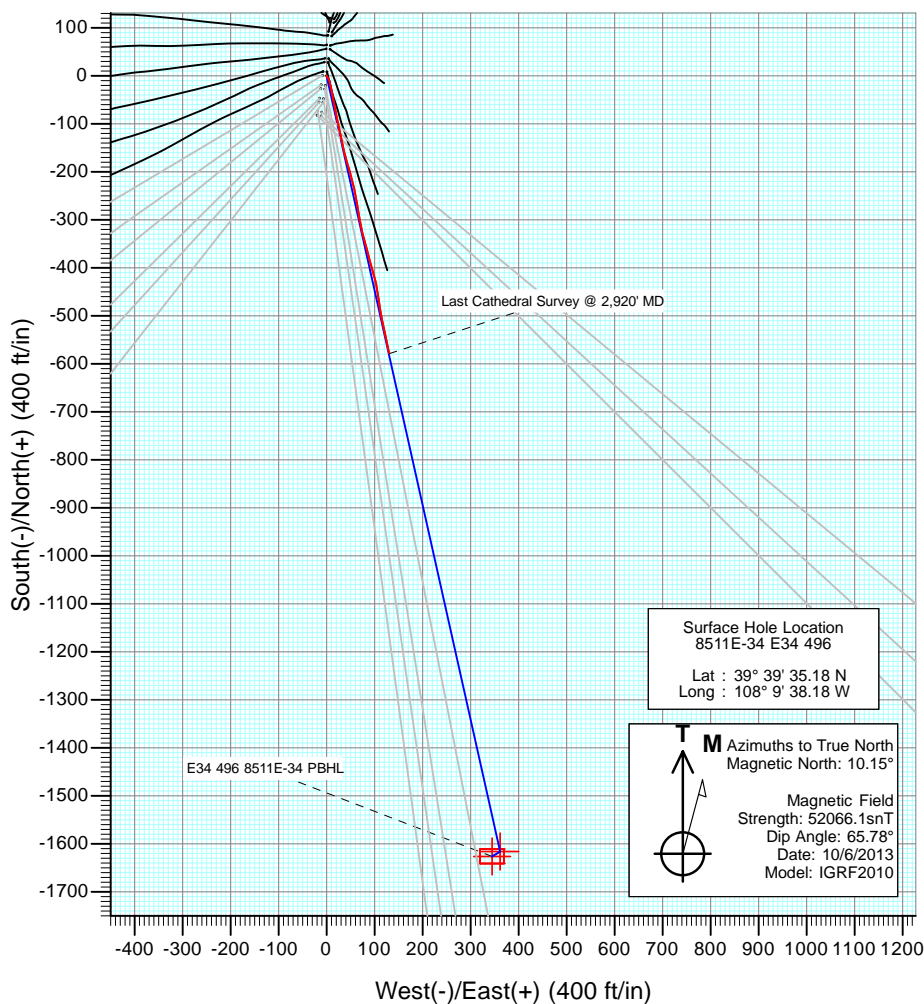
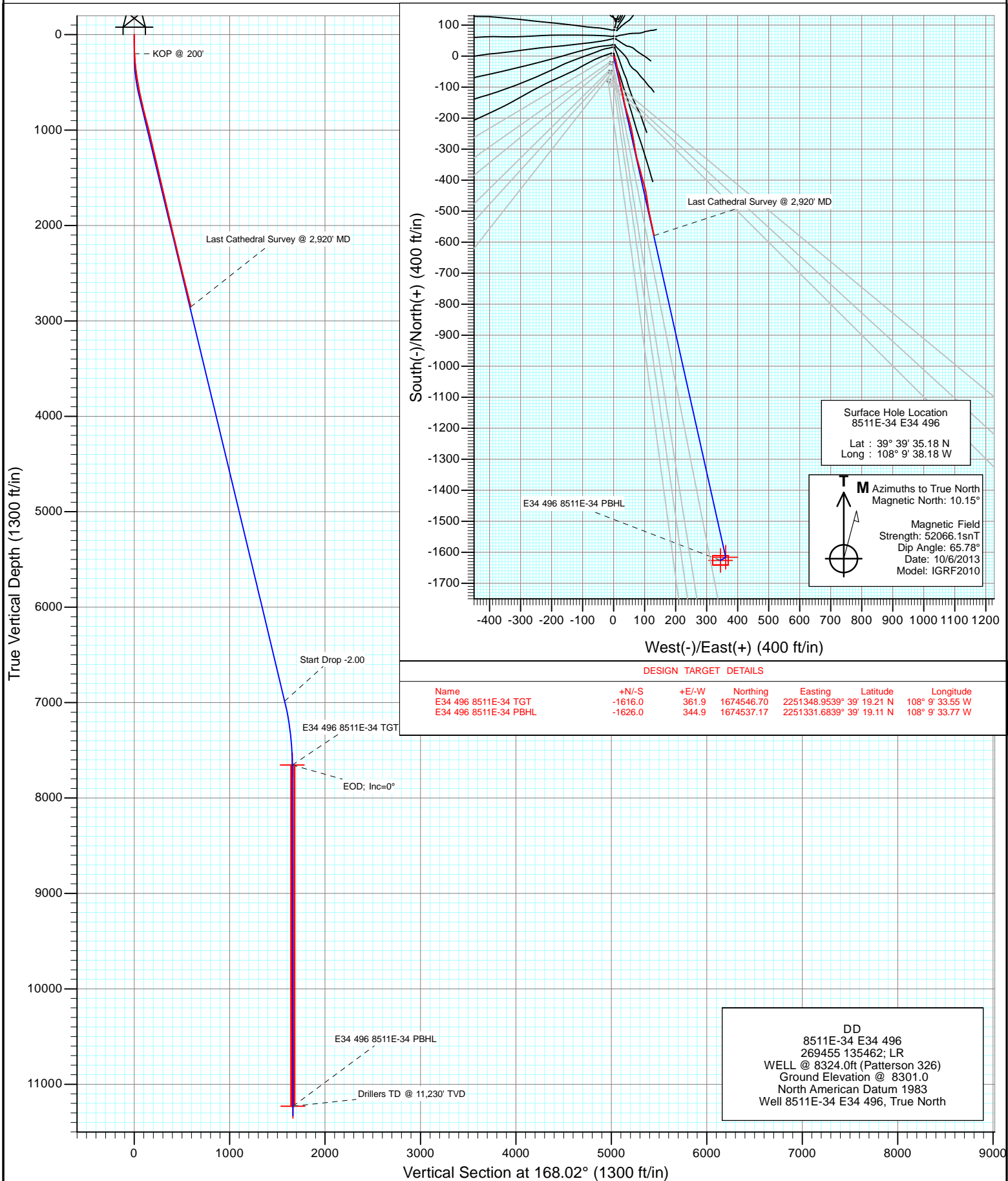




Project: Story Gulch
 Site: E34 496 S33-T4S-R96W
 Well: 8511E-34 E34 496
 Wellbore: DD
 Design: DD



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
E34 496 8511E-34 TGT	-1616.0	361.9	1674546.70	2251348.9539° 39' 19.21 N	108° 9' 33.55 W	
E34 496 8511E-34 PBHL	-1626.0	344.9	1674537.17	2251331.6839° 39' 19.11 N	108° 9' 33.77 W	

DD
 8511E-34 E34 496
 269455 135462; LR
 WELL @ 8324.0ft (Patterson 326)
 Ground Elevation @ 8301.0
 North American Datum 1983
 Well 8511E-34 E34 496, True North

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8511E-34 E34 496
Project:	Story Gulch	TVD Reference:	WELL @ 8324.0ft (Patterson 326)
Site:	E34 496 S33-T4S-R96W	MD Reference:	WELL @ 8324.0ft (Patterson 326)
Well:	8511E-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	8511E-34 E34 496					
Well Position	+N/-S	0.0 ft	Northing:	1,676,172.60 ft	Latitude:	39° 39' 35.18 N
	+E/-W	0.0 ft	Easting:	2,251,034.52 ft	Longitude:	108° 9' 38.18 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	10/6/2013	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	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	168.02	

Survey Program	Date	10/7/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
207.0	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		
207.0	2.20	145.70	206.9	-3.3	2.2	3.7	1.06	1.06		
237.0	3.30	148.50	236.9	-4.5	3.0	5.0	3.69	3.67		
268.0	4.40	149.20	267.8	-6.3	4.1	7.0	3.55	3.55		
299.0	5.10	157.70	298.7	-8.6	5.2	9.5	3.20	2.26		
330.0	6.00	164.70	329.6	-11.4	6.2	12.4	3.63	2.90		
360.0	7.00	166.80	359.4	-14.7	7.0	15.8	3.43	3.33		
391.0	7.80	165.70	390.1	-18.6	8.0	19.8	2.62	2.58		
421.0	8.20	167.70	419.8	-22.6	8.9	24.0	1.62	1.33		
604.0	11.80	170.30	600.0	-53.8	14.8	55.8	1.98	1.97		
696.0	12.20	167.20	690.0	-72.6	18.6	74.9	0.82	0.43		
790.0	13.60	168.50	781.7	-93.1	23.0	95.9	1.52	1.49		
882.0	14.90	168.40	870.8	-115.3	27.5	118.5	1.41	1.41		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8511E-34 E34 496
Project:	Story Gulch	TVD Reference:	WELL @ 8324.0ft (Patterson 326)
Site:	E34 496 S33-T4S-R96W	MD Reference:	WELL @ 8324.0ft (Patterson 326)
Well:	8511E-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
973.0	14.20	168.50	958.9	-137.7	32.1	141.4	0.77	-0.77	
1,065.0	13.90	165.40	1,048.2	-159.5	37.1	163.7	0.88	-0.33	
1,156.0	13.30	163.90	1,136.6	-180.1	42.8	185.0	0.76	-0.66	
1,247.0	13.20	164.40	1,225.2	-200.2	48.5	205.9	0.17	-0.11	
1,339.0	12.00	164.30	1,315.0	-219.5	53.9	225.9	1.30	-1.30	
1,430.0	12.80	169.10	1,403.8	-238.5	58.4	245.4	1.43	0.88	
1,522.0	13.80	170.10	1,493.4	-259.3	62.2	266.6	1.12	1.09	
1,613.0	13.20	171.20	1,581.9	-280.3	65.6	287.8	0.72	-0.66	
1,705.0	13.00	168.80	1,671.5	-300.8	69.3	308.6	0.63	-0.22	
1,796.0	14.00	166.70	1,759.9	-321.5	73.8	329.9	1.22	1.10	
1,888.0	13.80	165.20	1,849.3	-343.0	79.1	351.9	0.45	-0.22	
1,979.0	13.00	165.80	1,937.8	-363.4	84.4	373.0	0.89	-0.88	
2,071.0	13.20	164.30	2,027.4	-383.5	89.8	393.8	0.43	0.22	
2,163.0	12.70	164.30	2,117.0	-403.4	95.4	414.4	0.54	-0.54	
2,254.0	12.90	164.80	2,205.8	-422.8	100.8	434.5	0.25	0.22	
2,346.0	14.00	171.00	2,295.3	-443.7	105.2	455.9	1.97	1.20	
2,438.0	13.90	172.30	2,384.5	-465.7	108.4	478.0	0.36	-0.11	
2,529.0	13.30	169.60	2,473.0	-486.8	111.8	499.4	0.96	-0.66	
2,621.0	14.10	168.90	2,562.4	-508.2	115.8	521.2	0.89	0.87	
2,712.0	13.90	168.30	2,650.7	-529.8	120.2	543.2	0.27	-0.22	
2,804.0	14.20	167.40	2,739.9	-551.6	124.9	565.5	0.40	0.33	
2,895.0	13.50	167.70	2,828.3	-572.9	129.6	587.3	0.77	-0.77	
2,920.0	13.10	167.10	2,852.6	-578.5	130.8	593.1	1.69	-1.60	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 8511E-34 TGT	0.00	0.00	7,654.0	-1,616.0	361.9	1,674,546.70	2,251,348.95	39° 39' 19.21 N	108° 9' 33.55 W
- survey misses target center by 4917.6ft at 2920.0ft MD (2852.6 TVD, -578.5 N, 130.8 E)									
- Point									
E34 496 8511E-34 PBHI	0.00	0.00	11,230.0	-1,626.0	344.9	1,674,537.17	2,251,331.68	39° 39' 19.11 N	108° 9' 33.77 W
- survey misses target center by 8445.3ft at 2920.0ft MD (2852.6 TVD, -578.5 N, 130.8 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	2,852.6	-578.5	130.8	Last Cathedral Survey @ 2,920' MD

Checked By: _____ Approved By: _____ Date: _____