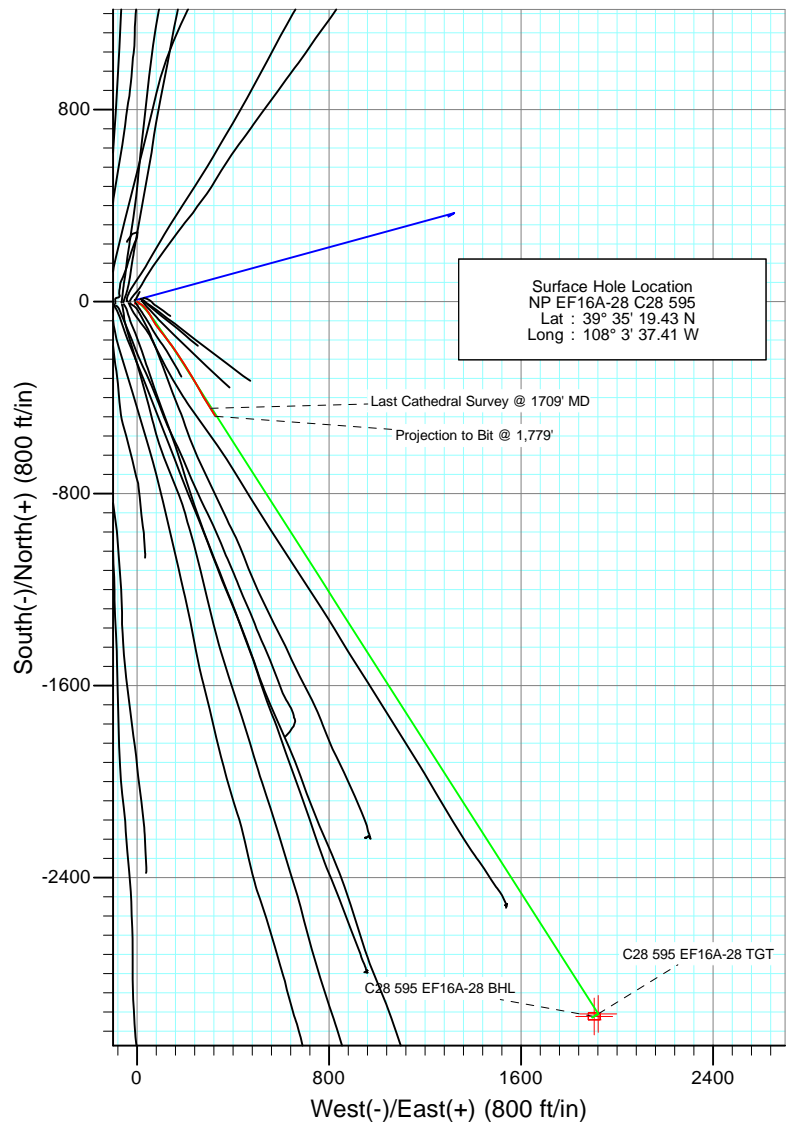
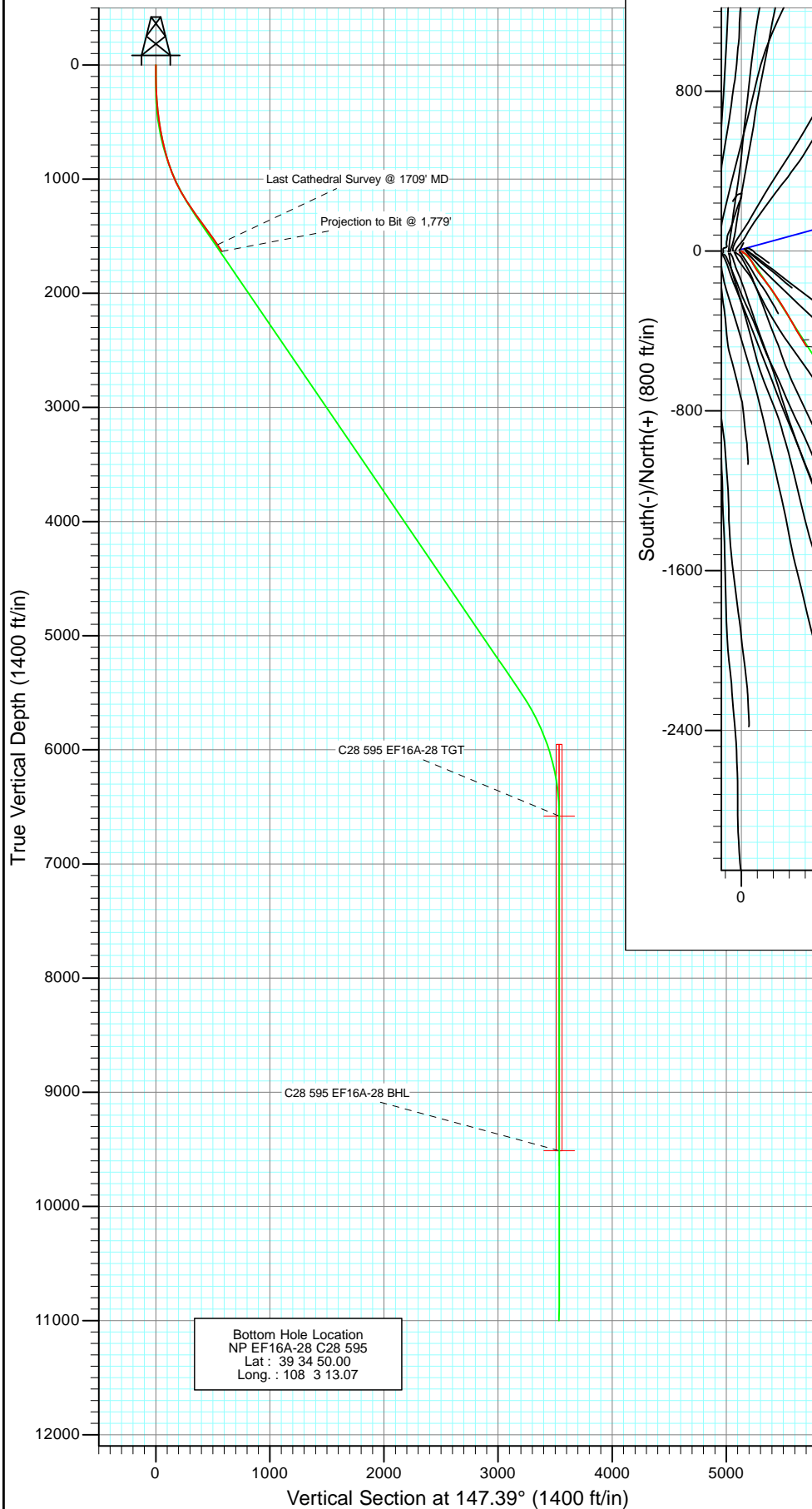




Project: North Piceance
Site: C28 595 (S28-T5S-R95W)
Well: NP EF16A-28 C28 595
Wellbore: DD
Design: DD



Azimuths to True North
Magnetic North: 10.52°

Magnetic Field
Strength: 52389.8snT
Dip Angle: 65.83°
Date: 6/21/2010
Model: IGRF2010

DESIGN DETAILS: DD

105265; LR
KBE @ 6197.0ft (Original Well Elev)

Target	Azimuth	Origin	N/SE/W	From TVD
C28 595 EF16A-28 BHL	147.39	Slot	0.0 0.0	0.0

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NP EF16A-28 C28 595
Project:	North Piceance	TVD Reference:	KBE @ 6197.0ft (Original Well Elev)
Site:	C28 595 (S28-T5S-R95W)	MD Reference:	KBE @ 6197.0ft (Original Well Elev)
Well:	NP EF16A-28 C28 595	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Project	North Piceance		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		C28 595 (S28-T5S-R95W)			
Site Position:		Northing:	1,649,466.64 ft	Latitude:	39° 35' 19.10 N
From:	Lat/Long	Easting:	2,278,319.64 ft	Longitude:	108° 3' 39.81 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.62 °

Well	NP EF16A-28 C28 595					
Well Position	+N/-S	0.0 ft	Northing:	1,649,494.75 ft	Latitude:	39° 35' 19.43 N
	+E/-W	0.0 ft	Easting:	2,278,508.64 ft	Longitude:	108° 3' 37.41 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,175.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/21/2010	10.52	65.83	52,390

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	147.39	

Survey Program	Date	10/11/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
170.0	1,779.0	Survey #1 (DD)	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		
170.0	1.60	116.00	170.0	-1.0	2.1	2.0	0.94	0.94		
200.0	2.00	121.30	200.0	-1.5	3.0	2.9	1.44	1.33		
231.0	2.80	124.00	230.9	-2.2	4.0	4.0	2.61	2.58		
262.0	3.50	122.20	261.9	-3.1	5.5	5.6	2.28	2.26		
292.0	4.30	129.00	291.8	-4.3	7.1	7.5	3.08	2.67		
322.0	5.00	116.10	321.7	-5.6	9.2	9.7	4.18	2.33		
353.0	5.70	125.00	352.6	-7.1	11.6	12.2	3.50	2.26		
383.0	6.40	129.60	382.4	-9.0	14.2	15.2	2.84	2.33		
414.0	7.20	124.00	413.2	-11.2	17.1	18.6	3.35	2.58		
444.0	7.70	126.40	442.9	-13.4	20.3	22.2	1.96	1.67		
474.0	8.30	128.80	472.7	-16.0	23.6	26.2	2.29	2.00		
505.0	8.50	132.30	503.3	-18.9	27.0	30.5	1.77	0.65		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NP EF16A-28 C28 595
Project:	North Piceance	TVD Reference:	KBE @ 6197.0ft (Original Well Elev)
Site:	C28 595 (S28-T5S-R95W)	MD Reference:	KBE @ 6197.0ft (Original Well Elev)
Well:	NP EF16A-28 C28 595	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
535.0	9.10	138.00	533.0	-22.2	30.2	35.0	3.53	2.00	
566.0	9.80	138.70	563.5	-26.0	33.6	40.0	2.29	2.26	
597.0	10.50	143.50	594.1	-30.2	37.0	45.4	3.54	2.26	
628.0	11.50	142.90	624.5	-35.0	40.6	51.3	3.25	3.23	
660.0	12.30	144.70	655.8	-40.3	44.5	57.9	2.76	2.50	
692.0	13.10	145.90	687.0	-46.1	48.5	65.0	2.63	2.50	
724.0	13.80	145.40	718.1	-52.2	52.7	72.4	2.22	2.19	
755.0	14.60	151.30	748.2	-58.7	56.7	80.0	5.33	2.58	
787.0	15.60	150.00	779.1	-66.0	60.8	88.3	3.30	3.12	
818.0	16.40	148.40	808.9	-73.3	65.1	96.9	2.95	2.58	
850.0	17.20	148.30	839.5	-81.2	70.0	106.1	2.50	2.50	
882.0	18.20	148.80	870.0	-89.5	75.1	115.8	3.16	3.12	
914.0	19.50	146.80	900.3	-98.2	80.6	126.2	4.54	4.06	
945.0	20.40	144.20	929.4	-106.9	86.6	136.7	4.08	2.90	
977.0	21.70	140.80	959.3	-116.0	93.6	148.2	5.57	4.06	
1,008.0	23.00	140.20	988.0	-125.1	101.1	159.9	4.26	4.19	
1,040.0	24.40	143.40	1,017.3	-135.2	109.0	172.7	5.94	4.37	
1,136.0	30.00	142.80	1,102.6	-170.3	135.4	216.4	5.84	5.83	
1,231.0	32.00	146.30	1,184.1	-210.2	163.7	265.3	2.83	2.11	
1,327.0	35.00	146.10	1,264.1	-254.2	193.2	318.2	3.13	3.12	
1,422.0	35.20	149.70	1,341.8	-300.5	222.2	372.8	2.19	0.21	
1,518.0	36.80	150.90	1,419.5	-349.5	250.1	429.2	1.82	1.67	
1,613.0	35.40	148.80	1,496.3	-397.9	278.2	485.1	1.97	-1.47	
1,709.0	33.90	147.70	1,575.2	-444.3	306.9	539.7	1.69	-1.56	Last Cathedral Survey @ 1709' MD Projection to Bit @ 1,779'
1,779.0	33.90	147.70	1,633.3	-477.3	327.8	578.7	0.00	0.00	

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									
C28 595 EF16A-28 TGT	0.00	0.00	6,580.0	-2,967.8	1,922.3	1,646,473.97	2,280,346.59	39° 34' 50.10 N	108° 3' 12.85 W
- survey misses target center by 5763.2ft at 1779.0ft MD (1633.3 TVD, -477.3 N, 327.8 E)									
- Point									
C28 595 EF16A-28 BHL	0.00	0.00	9,512.0	-2,977.8	1,905.4	1,646,464.49	2,280,329.33	39° 34' 50.00 N	108° 3' 13.07 W
- survey misses target center by 8415.1ft at 1779.0ft MD (1633.3 TVD, -477.3 N, 327.8 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	
1,709.0	1,575.2	-444.3	306.9	Last Cathedral Survey @ 1709' MD	
1,779.0	1,633.3	-477.3	327.8	Projection to Bit @ 1,779'	

Checked By: _____ Approved By: _____ Date: _____