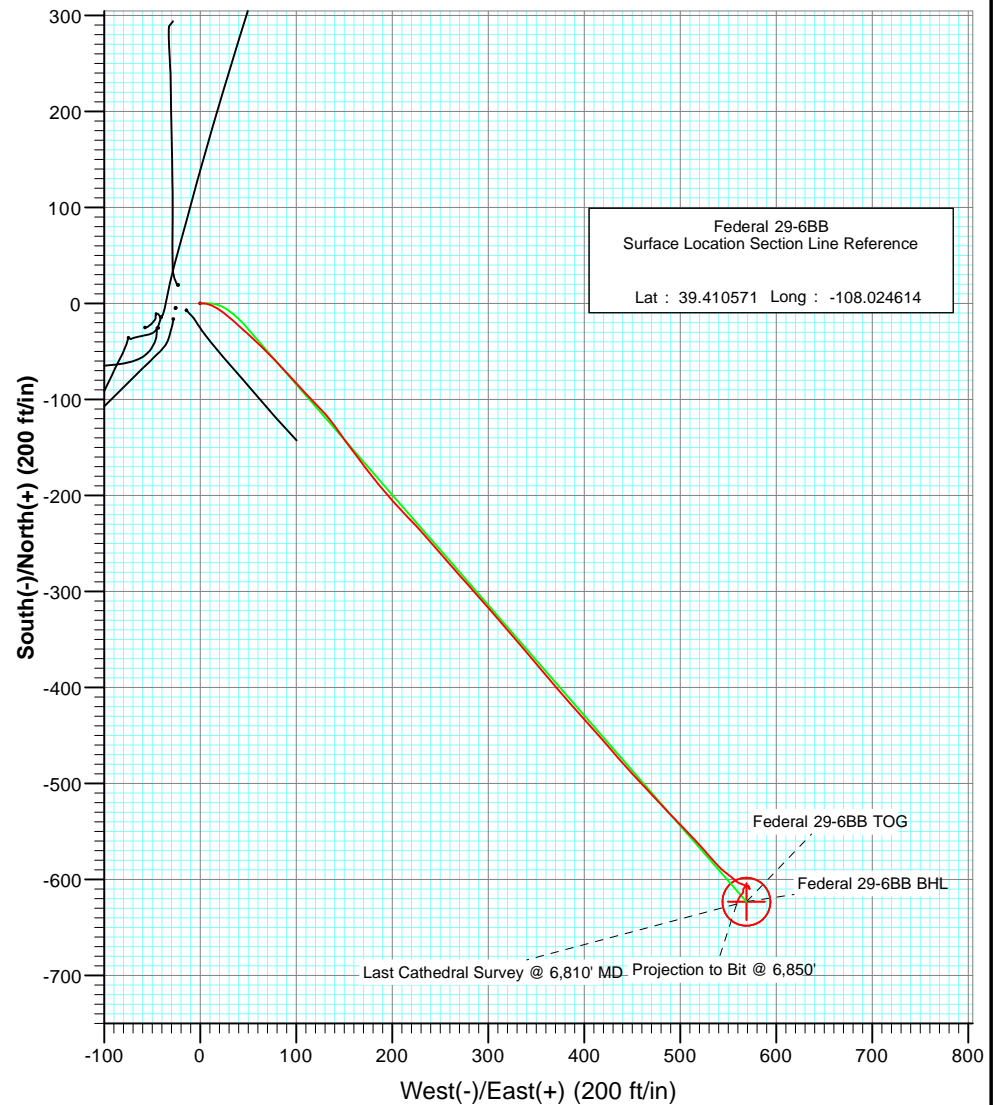
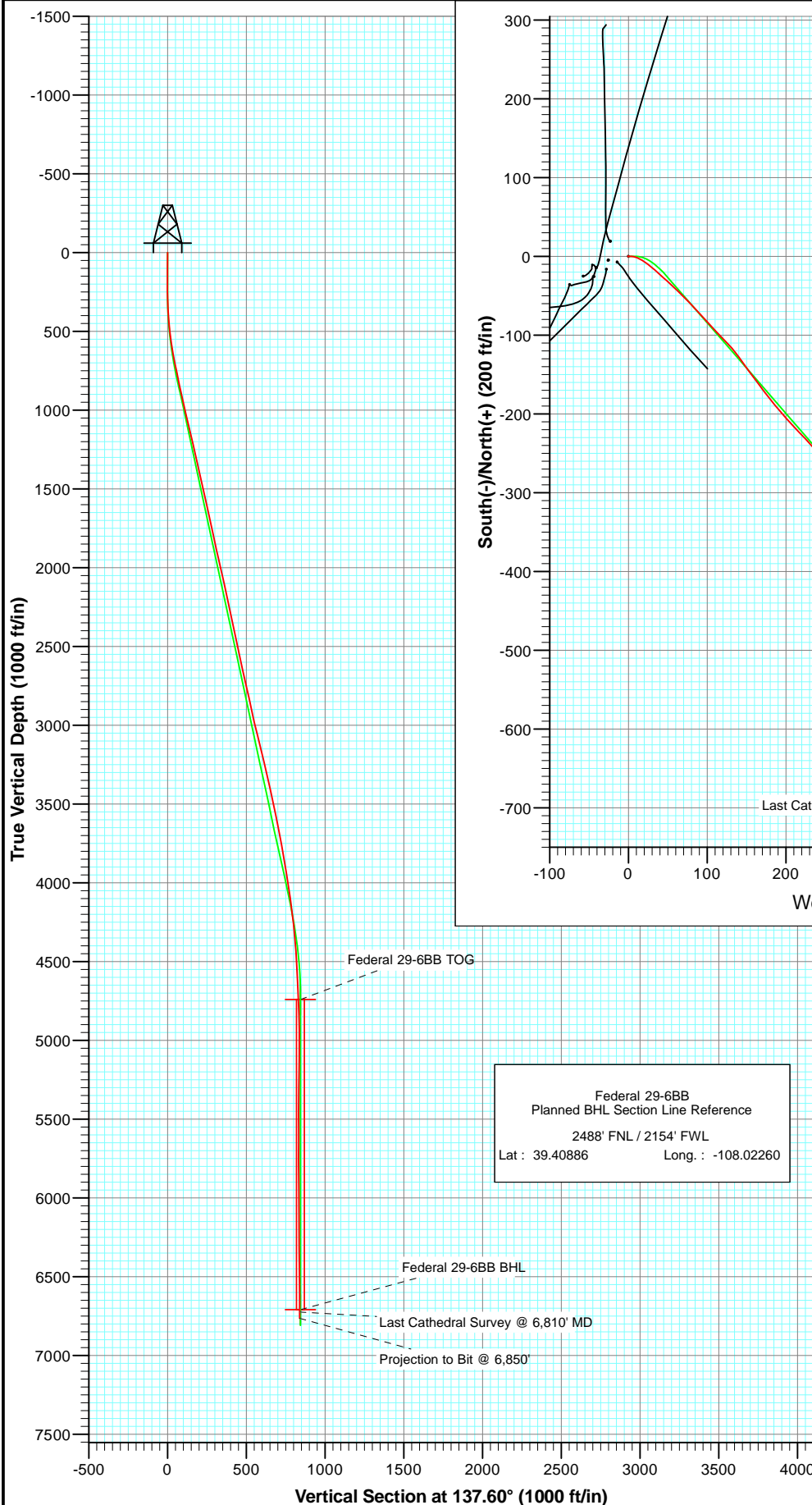




Project: S. Piceance (Parachute)
Site: S29-T7S-R95W (PFD 29-6BB)
Well: Federal 29-6BB
Wellbore: DD
Plan: Final Survey



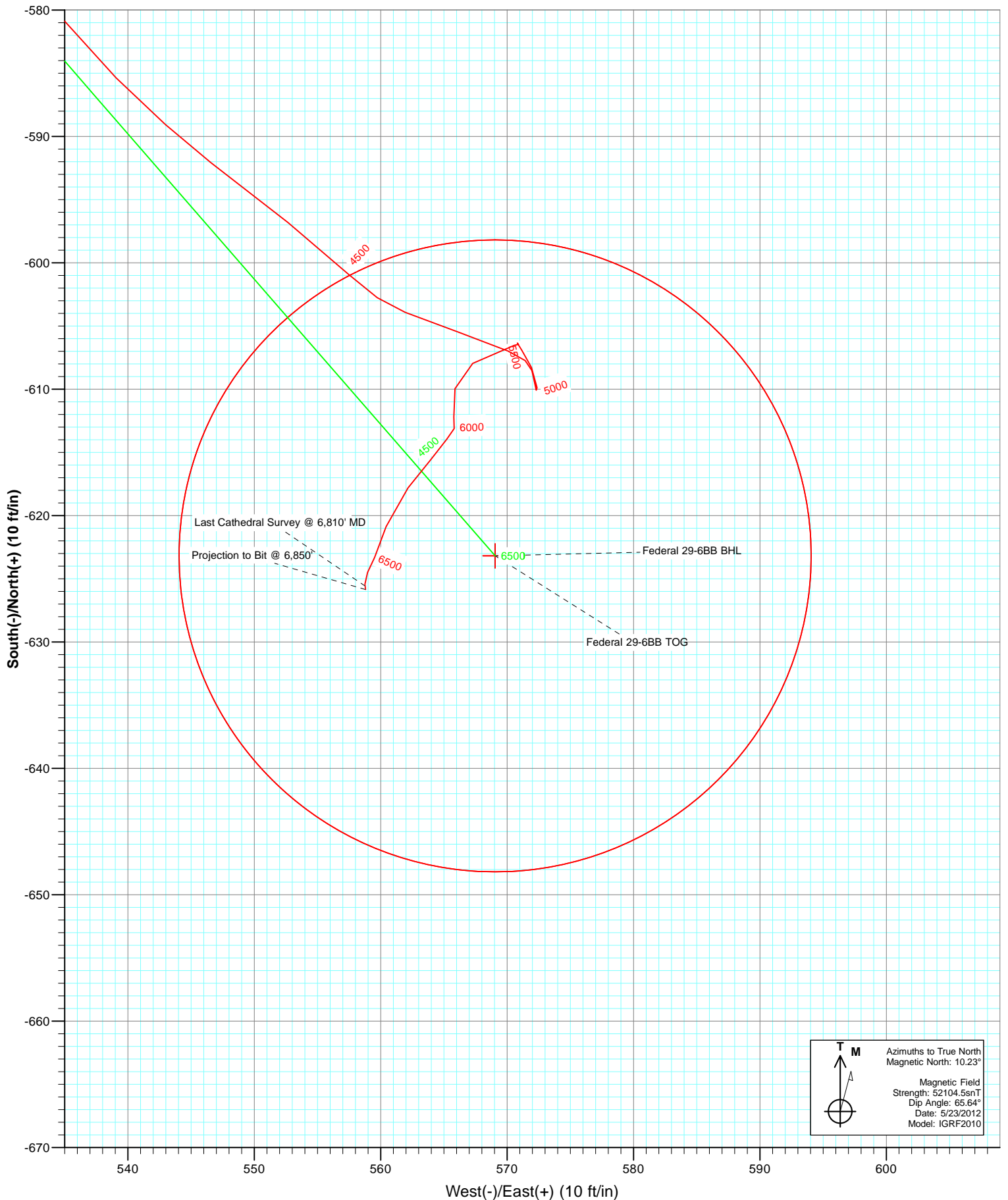
Azimuths to True North
Magnetic North: 10.23°

Magnetic Field
Strength: 52104.5nT
Dip Angle: 65.64°
Date: 5/23/2012
Model: IGRF2010

DESIGN DETAILS: DD
125345/169955 (SH-TD); SC

WELL @ 6058.0ft (Original Well Elev)

Target	137.60	Origin Type	N/S	E/W
Federal 29-6BB BHL		Slot	0.0	0.0



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 29-6BB
Project:	S. Piceance (Parachute)	TVD Reference:	WELL @ 6058.0ft (Original Well Elev)
Site:	S29-T7S-R95W (PF-29 Pad)	MD Reference:	WELL @ 6058.0ft (Original Well Elev)
Well:	Federal 29-6BB	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Project	S. Piceance (Parachute), Garfield County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		S29-T7S-R95W (PF-29 Pad)			
Site Position:		Northing:	1,584,347.66 ft	Latitude:	39.410580
From:	Lat/Long	Easting:	2,286,791.27 ft	Longitude:	-108.024590
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.59 °

Well	Federal 29-6BB					
Well Position	+N/-S	0.0 ft	Northing:	1,584,344.56 ft	Latitude:	39.410571
	+E/-W	0.0 ft	Easting:	2,286,784.40 ft	Longitude:	-108.024614
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	6,036.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/23/2012	10.23	65.64	52,105

Design	DD				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	137.60	

Survey Program	Date	5/29/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
112.0	6,850.0	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		
112.0	0.20	292.50	112.0	0.1	-0.2	-0.2	0.18	0.18		
143.0	0.30	286.50	143.0	0.1	-0.3	-0.3	0.33	0.32		
173.0	0.40	285.20	173.0	0.2	-0.5	-0.5	0.33	0.33		
204.0	0.20	298.30	204.0	0.2	-0.6	-0.6	0.68	-0.65		
235.0	0.30	100.20	235.0	0.2	-0.6	-0.6	1.59	0.32		
266.0	1.30	97.10	266.0	0.2	-0.2	-0.2	3.23	3.23		
296.0	2.10	94.50	296.0	0.1	0.7	0.4	2.68	2.67		
327.0	3.10	89.40	326.9	0.1	2.1	1.4	3.31	3.23		
357.0	4.00	91.80	356.9	0.0	4.0	2.7	3.04	3.00		
388.0	4.40	98.10	387.8	-0.2	6.2	4.3	1.97	1.29		
418.0	4.70	104.80	417.7	-0.6	8.6	6.2	2.03	1.00		
449.0	5.30	114.20	448.6	-1.6	11.1	8.6	3.27	1.94		

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 29-6BB
Project:	S. Piceance (Parachute)	TVD Reference:	WELL @ 6058.0ft (Original Well Elev)
Site:	S29-T7S-R95W (PF-29 Pad)	MD Reference:	WELL @ 6058.0ft (Original Well Elev)
Well:	Federal 29-6BB	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
479.0	6.20	116.90	478.4	-2.9	13.8	11.4	3.13	3.00	
510.0	7.20	119.80	509.2	-4.6	17.0	14.8	3.40	3.23	
541.0	7.80	124.30	540.0	-6.7	20.4	18.7	2.71	1.94	
572.0	8.40	127.40	570.7	-9.3	23.9	23.0	2.39	1.94	
602.0	9.50	128.30	600.3	-12.2	27.6	27.6	3.70	3.67	
633.0	10.20	131.10	630.8	-15.5	31.7	32.9	2.74	2.26	
664.0	10.80	131.40	661.3	-19.3	35.9	38.5	1.94	1.94	
756.0	11.80	132.70	751.5	-31.4	49.3	56.4	1.12	1.09	
849.0	12.30	132.90	842.5	-44.5	63.6	75.8	0.54	0.54	
940.0	12.60	137.20	931.3	-58.4	77.4	95.3	1.07	0.33	
1,032.0	12.90	137.50	1,021.1	-73.4	91.2	115.7	0.33	0.33	
1,165.0	13.30	136.90	1,150.6	-95.5	111.7	145.8	0.32	0.30	
1,260.0	12.90	135.90	1,243.1	-111.1	126.5	167.3	0.48	-0.42	
1,355.0	13.50	144.70	1,335.6	-127.7	140.3	188.9	2.21	0.63	
1,449.0	13.00	143.70	1,427.1	-145.2	152.9	210.3	0.59	-0.53	
1,545.0	12.40	142.70	1,520.8	-162.1	165.5	231.3	0.67	-0.62	
1,640.0	11.40	143.30	1,613.7	-177.8	177.3	250.8	1.06	-1.05	
1,736.0	12.20	139.20	1,707.7	-193.0	189.6	270.4	1.21	0.83	
1,831.0	12.90	137.80	1,800.4	-208.5	203.3	291.1	0.80	0.74	
1,927.0	12.30	136.10	1,894.1	-223.8	217.6	312.0	0.73	-0.62	
2,022.0	13.40	138.70	1,986.8	-239.4	231.9	333.1	1.31	1.16	
2,117.0	12.70	138.30	2,079.3	-255.4	246.1	354.6	0.74	-0.74	
2,212.0	12.20	140.10	2,172.1	-270.9	259.5	375.0	0.67	-0.53	
2,308.0	11.60	137.20	2,266.0	-285.8	272.5	394.8	0.88	-0.62	
2,403.0	12.80	139.10	2,358.9	-300.8	285.9	414.9	1.33	1.26	
2,499.0	12.00	138.70	2,452.6	-316.3	299.5	435.5	0.84	-0.83	
2,594.0	11.40	139.20	2,545.6	-330.8	312.1	454.8	0.64	-0.63	
2,690.0	12.90	138.60	2,639.5	-346.0	325.4	475.0	1.57	1.56	
2,785.0	12.60	140.60	2,732.2	-362.0	339.0	495.9	0.56	-0.32	
2,881.0	12.20	139.50	2,825.9	-377.8	352.2	516.5	0.48	-0.42	
2,977.0	11.90	140.20	2,919.8	-393.1	365.1	536.5	0.35	-0.31	
3,072.0	14.20	138.70	3,012.3	-409.4	379.1	558.0	2.45	2.42	
3,168.0	13.70	138.10	3,105.5	-426.7	394.5	581.1	0.54	-0.52	
3,263.0	13.40	138.60	3,197.9	-443.3	409.3	603.4	0.34	-0.32	
3,358.0	13.00	138.90	3,290.3	-459.7	423.6	625.0	0.43	-0.42	
3,454.0	12.60	139.30	3,384.0	-475.7	437.5	646.3	0.43	-0.42	
3,549.0	12.40	136.70	3,476.7	-491.0	451.3	666.9	0.63	-0.21	
3,644.0	11.90	136.80	3,569.6	-505.6	465.0	686.9	0.53	-0.53	
3,739.0	10.90	137.00	3,662.7	-519.3	477.8	705.6	1.05	-1.05	
3,835.0	10.10	136.30	3,757.1	-532.0	489.8	723.1	0.84	-0.83	
3,930.0	9.90	136.30	3,850.7	-543.9	501.2	739.6	0.21	-0.21	
4,026.0	9.40	136.30	3,945.3	-555.6	512.3	755.7	0.52	-0.52	
4,120.0	8.60	138.40	4,038.1	-566.4	522.3	770.4	0.92	-0.85	
4,215.0	7.60	140.20	4,132.2	-576.5	531.0	783.8	1.09	-1.05	
4,310.0	6.90	134.90	4,226.4	-585.4	539.1	795.8	1.02	-0.74	
4,405.0	5.30	127.80	4,320.9	-592.1	546.6	805.8	1.86	-1.68	
4,500.0	4.00	127.80	4,415.6	-596.8	552.7	813.4	1.37	-1.37	
4,595.0	3.70	133.60	4,510.4	-600.9	557.5	819.7	0.52	-0.32	
4,691.0	2.80	110.90	4,606.2	-603.9	561.9	824.9	1.62	-0.94	
4,786.0	2.70	109.90	4,701.1	-605.5	566.2	828.9	0.12	-0.11	
4,826.2	2.53	110.75	4,741.3	-606.1	567.9	830.6	0.43	-0.42	Federal 29-6BB TOG
4,881.0	2.30	112.10	4,796.0	-607.0	570.1	832.6	0.43	-0.42	
4,976.0	1.00	172.10	4,891.0	-608.5	572.0	835.0	2.10	-1.37	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Federal 29-6BB
Project:	S. Piceance (Parachute)	TVD Reference:	WELL @ 6058.0ft (Original Well Elev)
Site:	S29-T7S-R95W (PF-29 Pad)	MD Reference:	WELL @ 6058.0ft (Original Well Elev)
Well:	Federal 29-6BB	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
5,072.0	0.90	162.60	4,987.0	-610.1	572.3	836.4	0.19	-0.10	
5,167.0	1.10	350.60	5,082.0	-609.9	572.4	836.3	2.10	0.21	
5,263.0	0.90	336.90	5,177.9	-608.3	571.9	834.8	0.32	-0.21	
5,358.0	1.00	325.40	5,272.9	-606.9	571.2	833.3	0.23	0.11	
5,454.0	0.20	132.40	5,368.9	-606.3	570.8	832.7	1.25	-0.83	
5,549.0	0.04	280.20	5,463.9	-606.4	570.9	832.8	0.25	-0.17	
5,645.0	0.40	253.00	5,559.9	-606.5	570.6	832.6	0.38	0.37	
5,740.0	1.10	243.70	5,654.9	-607.0	569.4	832.2	0.75	0.74	
5,835.0	1.70	248.70	5,749.9	-608.0	567.3	831.5	0.64	0.63	
5,930.0	1.80	183.60	5,844.9	-610.0	565.9	832.0	1.98	0.11	
6,025.0	0.90	179.20	5,939.8	-612.2	565.8	833.6	0.95	-0.95	
6,121.0	0.20	176.70	6,035.8	-613.1	565.8	834.3	0.73	-0.73	
6,216.0	1.10	221.30	6,130.8	-614.0	565.2	834.5	1.02	0.95	
6,312.0	1.40	215.50	6,226.8	-615.6	563.9	834.9	0.34	0.31	
6,407.0	2.00	221.30	6,321.7	-617.8	562.2	835.3	0.66	0.63	
6,503.0	2.30	199.10	6,417.7	-620.9	560.4	836.4	0.92	0.31	
6,599.0	0.80	204.70	6,513.6	-623.3	559.5	837.6	1.57	-1.56	
6,693.0	0.80	205.40	6,607.6	-624.5	559.0	838.1	0.01	0.00	
6,788.0	0.40	167.30	6,702.6	-625.4	558.8	838.6	0.57	-0.42	
6,794.4	0.40	169.21	6,709.0	-625.5	558.8	838.7	0.21	-0.01	Federal 29-6BB BHL
6,810.0	0.40	173.90	6,724.6	-625.6	558.8	838.7	0.21	0.00	Last Cathedral Survey @ 6,810' MD
6,850.0	0.40	173.90	6,764.6	-625.8	558.8	839.0	0.00	0.00	Projection to Bit @ 6,850'

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									
Federal 29-6BB BHL	0.00	0.00	6,709.0	-623.2	569.1	1,583,705.80	2,287,335.92	39.408860	-108.022600
- actual wellpath misses target center by 10.5ft at 6794.4ft MD (6709.0 TVD, -625.5 N, 558.8 E)									
- Circle (radius 25.0)									
Federal 29-6BB TOG	0.00	0.00	4,741.0	-623.2	569.1	1,583,705.80	2,287,335.92	39.408860	-108.022600
- actual wellpath misses target center by 17.1ft at 4826.2ft MD (4741.3 TVD, -606.1 N, 567.9 E)									
- Point									

Design Annotations

	Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
			+N/-S (ft)	+E/-W (ft)	
	6,810.0	6,724.6	-625.6	558.8	Last Cathedral Survey @ 6,810' MD
	6,850.0	6,764.6	-625.8	558.8	Projection to Bit @ 6,850'

Checked By: _____ Approved By: _____ Date: _____