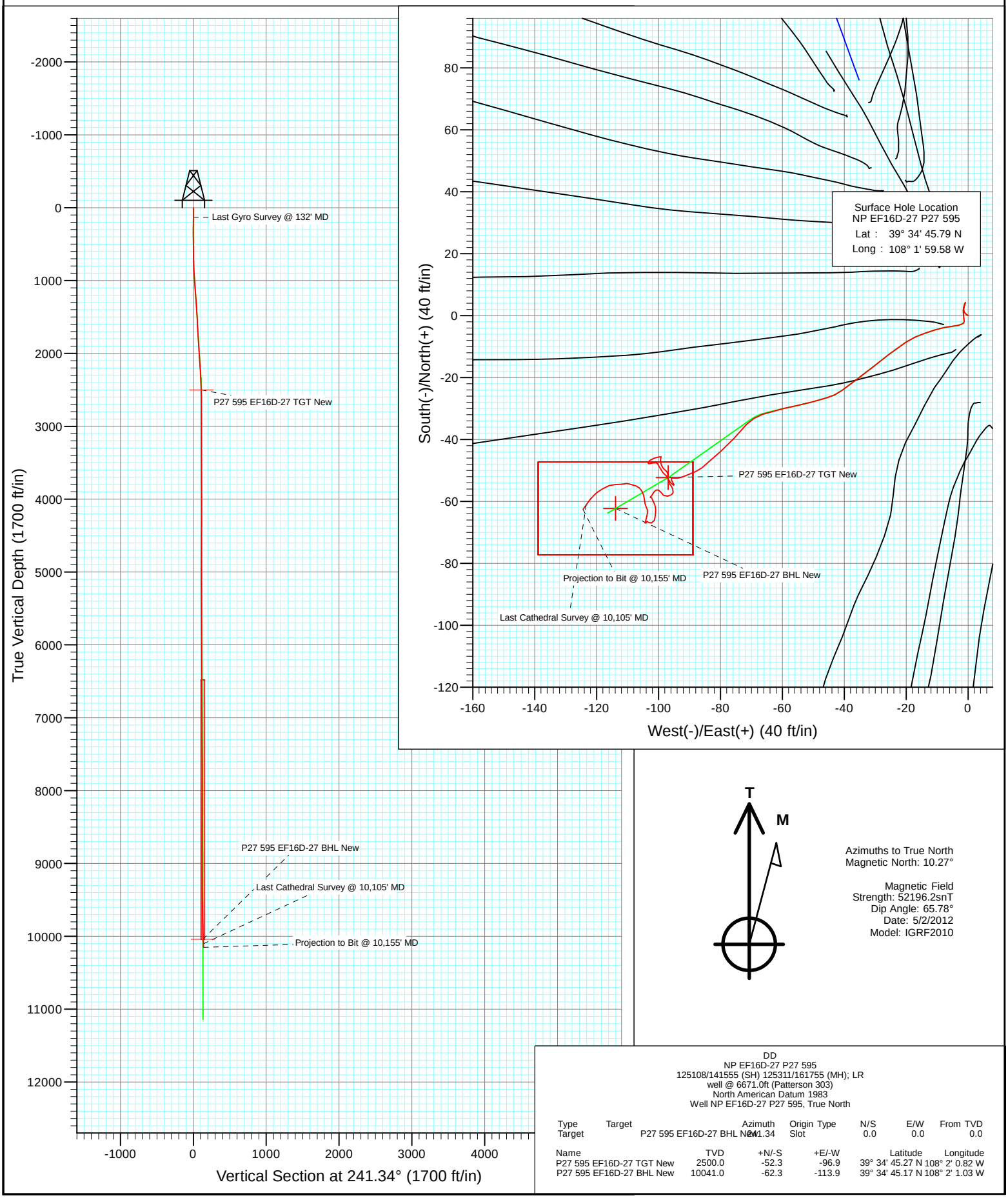
Project: North Piceance
Site: P27 595 (S27-T5S-R95W)
Well: NP EF16D-27 P27 595
Wellbore: DD
Design: Final Survey

CATHEDRAL



Azimuths to True North
Magnetic North: 10.27°

Magnetic Field
Strength: 52196.2snT
Dip Angle: 65.78°
Date: 5/2/2012
Model: IGRF2010

DD
NP EF16D-27 P27 595
125108/141555 (SH) 125311/161755 (MH); LR
well @ 6671.0ft (Patterson 303)
North American Datum 1983
Well NP EF16D-27 P27 595, True North

Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
Target	P27 595 EF16D-27 BHL New	241.34	Slot	0.0	0.0	0.0

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
P27 595 EF16D-27 TGT New	2500.0	-52.3	-96.9	39° 34' 45.27 N	108° 2' 0.82 W
P27 595 EF16D-27 BHL New	10041.0	-62.3	-113.9	39° 34' 45.17 N	108° 2' 1.03 W

Project: North Piceance
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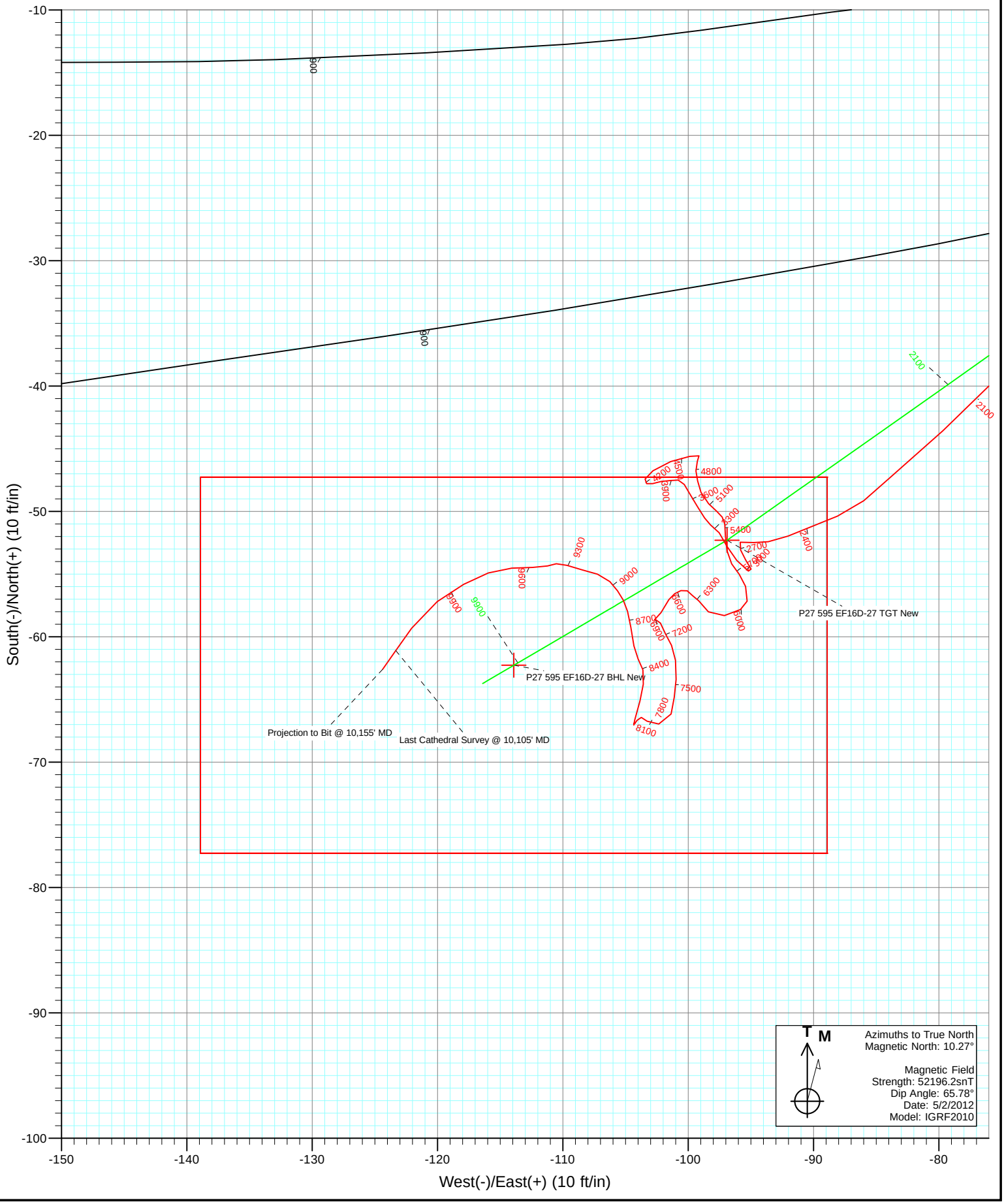

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well NP EF16D-27 P27 595
Project:	North Piceance	**TVD Reference:**	well @ 6671.0ft (Patterson 303)
Site:	P27 595 (S27-T5S-R95W)	**MD Reference:**	well @ 6671.0ft (Patterson 303)
Well:	NP EF16D-27 P27 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 P27 595 (S27-T5S-R95W)

Site Position:		**Northing:**	1,645,842.89 ft	**Latitude:**	39° 34' 45.45 N
From:	Lat/Long	**Easting:**	2,286,079.88 ft	**Longitude:**	108° 1' 59.43 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	0.000 in	**Grid Convergence:**	-1.60 °

Well NP EF16D-27 P27 595

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,645,877.22 ft	**Latitude:**	39° 34' 45.79 N
	+E/-W	0.0 ft	**Easting:**	2,286,069.08 ft	**Longitude:**	108° 1' 59.58 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	6,649.0 ft

Wellbore DD

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/2/2012	10.27	65.78	52,196

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	241.34

Survey Program **Date** 5/9/2012

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
50.0	132.0	Survey #1 (DD)	Gyro	Gyro
155.0	10,155.0	Survey #2 (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	
50.0	0.43	311.55	50.0	0.1	-0.1	0.1	0.86	0.86	
100.0	0.86	305.23	100.0	0.5	-0.6	0.3	0.87	0.86	
132.0	1.05	314.65	132.0	0.8	-1.0	0.5	0.77	0.59	**Last Gyro Survey @ 132' MD**
155.0	1.20	340.00	155.0	1.2	-1.2	0.5	2.24	0.65	
173.0	1.60	348.30	173.0	1.6	-1.3	0.4	2.49	2.22	
203.0	1.50	6.70	203.0	2.4	-1.4	0.1	1.68	-0.33	
234.0	1.30	11.30	234.0	3.2	-1.3	-0.4	0.74	-0.65	
265.0	0.80	33.90	265.0	3.7	-1.1	-0.8	2.06	-1.61	
296.0	0.70	9.70	296.0	4.0	-0.9	-1.1	1.06	-0.32	
326.0	0.10	86.50	326.0	4.2	-0.9	-1.3	2.28	-2.00	
357.0	1.00	210.50	357.0	4.0	-1.0	-1.1	3.42	2.90	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well NP EF16D-27 P27 595
Project:	North Piceance	**TVD Reference:**	well @ 6671.0ft (Patterson 303)
Site:	P27 595 (S27-T5S-R95W)	**MD Reference:**	well @ 6671.0ft (Patterson 303)
Well:	NP EF16D-27 P27 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
388.0	0.80	193.00	387.9	3.6	-1.2	-0.7	1.09	-0.65	
418.0	1.10	201.00	417.9	3.1	-1.3	-0.3	1.09	1.00	
449.0	1.10	187.00	448.9	2.5	-1.5	0.1	0.86	0.00	
479.0	1.30	189.20	478.9	1.9	-1.5	0.4	0.68	0.67	
510.0	1.10	173.70	509.9	1.2	-1.6	0.8	1.22	-0.65	
559.0	1.30	178.80	558.9	0.2	-1.5	1.2	0.46	0.41	
605.0	1.50	168.40	604.9	-0.9	-1.4	1.6	0.70	0.43	
650.0	1.00	182.70	649.9	-1.9	-1.3	2.0	1.30	-1.11	
696.0	0.70	233.80	695.9	-2.4	-1.5	2.5	1.70	-0.65	
742.0	1.10	245.60	741.9	-2.8	-2.1	3.2	0.95	0.87	
788.0	1.90	255.90	787.9	-3.1	-3.3	4.4	1.83	1.74	
834.0	3.10	263.50	833.8	-3.5	-5.3	6.3	2.70	2.61	
879.0	3.50	259.30	878.7	-3.9	-7.8	8.7	1.04	0.89	
925.0	4.00	251.40	924.6	-4.6	-10.7	11.6	1.56	1.09	
971.0	4.20	252.50	970.5	-5.7	-13.8	14.9	0.47	0.43	
1,063.0	4.40	237.90	1,062.3	-8.5	-20.1	21.7	1.21	0.22	
1,154.0	4.00	230.00	1,153.0	-12.4	-25.4	28.3	0.77	-0.44	
1,246.0	4.00	234.00	1,244.8	-16.4	-30.5	34.6	0.30	0.00	
1,338.0	4.00	230.80	1,336.6	-20.3	-35.6	41.0	0.24	0.00	
1,429.0	4.00	235.20	1,427.4	-24.1	-40.6	47.2	0.34	0.00	
1,521.0	2.90	256.80	1,519.2	-26.5	-45.5	52.7	1.83	-1.20	
1,612.0	3.00	251.40	1,610.1	-27.8	-50.0	57.2	0.32	0.11	
1,704.0	3.40	260.40	1,701.9	-29.0	-55.0	62.2	0.70	0.43	
1,778.0	3.70	256.20	1,775.8	-29.9	-59.5	66.6	0.54	0.41	
1,890.0	3.70	252.00	1,887.6	-31.9	-66.4	73.6	0.24	0.00	
1,982.0	4.00	224.80	1,979.4	-35.1	-71.5	79.6	1.99	0.33	
2,073.0	3.70	219.20	2,070.2	-39.6	-75.6	85.4	0.53	-0.33	
2,165.0	3.40	233.00	2,162.0	-43.6	-79.7	90.8	0.98	-0.33	
2,257.0	3.70	224.30	2,253.8	-47.3	-83.9	96.3	0.67	0.33	
2,348.0	2.90	246.00	2,344.7	-50.4	-88.1	101.4	1.61	-0.88	
2,440.0	2.40	250.50	2,436.6	-52.0	-92.0	105.7	0.59	-0.54	
2,503.6	1.52	264.79	2,500.1	-52.5	-94.1	107.8	1.57	-1.38	**P27 595 EF16D-27 TGT New**
2,531.0	1.20	277.10	2,527.5	-52.5	-94.8	108.3	1.57	-1.17	
2,623.0	0.20	233.60	2,619.5	-52.5	-95.8	109.3	1.16	-1.09	
2,714.0	0.70	162.40	2,710.5	-53.1	-95.8	109.5	0.73	0.55	
2,806.0	0.40	136.80	2,802.5	-53.9	-95.4	109.6	0.41	-0.33	
2,897.0	0.70	156.50	2,893.5	-54.6	-95.0	109.5	0.39	0.33	
2,989.0	0.70	309.30	2,985.5	-54.8	-95.2	109.8	1.48	0.00	
3,080.0	0.90	315.30	3,076.5	-53.9	-96.1	110.2	0.24	0.22	
3,172.0	0.80	336.20	3,168.5	-52.8	-96.9	110.3	0.35	-0.11	
3,263.0	0.80	323.30	3,259.5	-51.7	-97.5	110.4	0.20	0.00	
3,355.0	0.40	289.20	3,351.5	-51.1	-98.2	110.7	0.56	-0.43	
3,446.0	0.60	339.20	3,442.5	-50.5	-98.7	110.8	0.51	0.22	
3,538.0	0.70	318.10	3,534.5	-49.7	-99.2	110.9	0.28	0.11	
3,629.0	0.70	340.00	3,625.4	-48.7	-99.8	110.9	0.29	0.00	
3,721.0	0.60	317.40	3,717.4	-47.8	-100.3	111.0	0.30	-0.11	
3,812.0	0.20	269.00	3,808.4	-47.5	-100.8	111.2	0.54	-0.44	
3,904.0	0.50	264.30	3,900.4	-47.5	-101.4	111.7	0.33	0.33	
3,995.0	0.50	265.40	3,991.4	-47.6	-102.1	112.5	0.01	0.00	
4,087.0	0.40	243.90	4,083.4	-47.8	-102.8	113.1	0.21	-0.11	
4,178.0	0.30	305.20	4,174.4	-47.8	-103.3	113.6	0.40	-0.11	
4,270.0	0.30	16.80	4,266.4	-47.4	-103.4	113.5	0.38	0.00	
4,361.0	0.90	52.50	4,357.4	-46.8	-102.8	112.6	0.75	0.66	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well NP EF16D-27 P27 595
Project:	North Piceance	**TVD Reference:**	well @ 6671.0ft (Patterson 303)
Site:	P27 595 (S27-T5S-R95W)	**MD Reference:**	well @ 6671.0ft (Patterson 303)
Well:	NP EF16D-27 P27 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
4,453.0	1.10	70.90	4,449.4	-46.0	-101.4	111.0	0.41	0.22	
4,544.0	0.90	79.80	4,540.4	-45.6	-99.9	109.5	0.28	-0.22	
4,636.0	0.10	166.50	4,632.4	-45.6	-99.1	108.8	0.98	-0.87	
4,727.0	0.50	202.50	4,723.4	-46.0	-99.3	109.2	0.47	0.44	
4,819.0	0.50	173.30	4,815.4	-46.8	-99.4	109.6	0.27	0.00	
4,911.0	0.50	167.70	4,907.4	-47.6	-99.2	109.9	0.05	0.00	
5,002.0	0.70	160.30	4,998.4	-48.5	-99.0	110.1	0.24	0.22	
5,094.0	0.70	132.80	5,090.4	-49.4	-98.4	110.0	0.36	0.00	
5,185.0	0.40	133.10	5,181.4	-50.0	-97.7	109.7	0.33	-0.33	
5,277.0	0.40	139.10	5,273.4	-50.4	-97.3	109.6	0.05	0.00	
5,368.0	0.40	180.10	5,364.4	-51.0	-97.1	109.6	0.31	0.00	
5,460.0	0.80	175.10	5,456.4	-52.0	-97.0	110.1	0.44	0.43	
5,551.0	0.70	172.70	5,547.4	-53.1	-96.9	110.5	0.12	-0.11	
5,643.0	0.70	147.90	5,639.3	-54.2	-96.5	110.7	0.33	0.00	
5,735.0	0.60	139.50	5,731.3	-55.0	-95.9	110.6	0.15	-0.11	
5,826.0	0.80	162.10	5,822.3	-56.0	-95.4	110.6	0.37	0.22	
5,918.0	0.70	187.80	5,914.3	-57.2	-95.3	111.0	0.38	-0.11	
6,009.0	0.60	255.60	6,005.3	-57.8	-95.8	111.8	0.80	-0.11	
6,101.0	1.10	246.30	6,097.3	-58.3	-97.1	113.2	0.56	0.54	
6,193.0	1.00	324.10	6,189.3	-58.0	-98.4	114.1	1.44	-0.11	
6,284.0	0.50	307.80	6,280.3	-57.1	-99.2	114.4	0.59	-0.55	
6,376.0	0.30	313.30	6,372.3	-56.7	-99.7	114.6	0.22	-0.22	
6,467.0	0.40	310.20	6,463.3	-56.3	-100.1	114.8	0.11	0.11	
6,559.0	0.40	234.80	6,555.3	-56.3	-100.6	115.3	0.53	0.00	
6,651.0	0.30	256.20	6,647.3	-56.6	-101.1	115.8	0.18	-0.11	
6,742.0	0.60	209.00	6,738.3	-57.0	-101.5	116.5	0.50	0.33	
6,834.0	0.90	212.10	6,830.3	-58.1	-102.2	117.5	0.33	0.33	
6,925.0	0.20	280.30	6,921.3	-58.6	-102.7	118.2	0.93	-0.77	
7,017.0	0.30	91.50	7,013.3	-58.6	-102.6	118.2	0.54	0.11	
7,109.0	0.40	150.00	7,105.3	-58.9	-102.2	117.9	0.38	0.11	
7,200.0	0.80	157.40	7,196.3	-59.8	-101.8	118.0	0.45	0.44	
7,292.0	0.50	144.10	7,288.3	-60.7	-101.3	118.0	0.36	-0.33	
7,383.0	1.10	174.40	7,379.3	-61.9	-101.0	118.3	0.78	0.66	
7,475.0	0.80	183.30	7,471.2	-63.4	-101.0	119.0	0.36	-0.33	
7,567.0	1.00	188.00	7,563.2	-64.8	-101.1	119.8	0.23	0.22	
7,658.0	0.70	194.80	7,654.2	-66.2	-101.4	120.7	0.35	-0.33	
7,750.0	1.10	253.30	7,746.2	-67.0	-102.3	121.9	1.03	0.43	
7,841.0	0.60	348.70	7,837.2	-66.7	-103.3	122.6	1.43	-0.55	
7,933.0	0.50	244.70	7,929.2	-66.4	-103.7	122.9	0.94	-0.11	
7,979.0	0.50	227.40	7,975.2	-66.7	-104.1	123.3	0.33	0.00	
8,029.0	0.60	208.60	8,025.2	-67.0	-104.3	123.7	0.41	0.20	
8,121.0	1.10	21.20	8,117.2	-66.6	-104.3	123.4	1.84	0.54	
8,212.0	0.90	7.90	8,208.2	-65.1	-103.8	122.4	0.34	-0.22	
8,304.0	0.80	14.90	8,300.2	-63.8	-103.6	121.5	0.16	-0.11	
8,395.0	0.70	340.50	8,391.2	-62.6	-103.6	121.0	0.50	-0.11	
8,487.0	0.50	328.80	8,483.2	-61.8	-104.0	120.9	0.25	-0.22	
8,578.0	0.90	350.10	8,574.1	-60.7	-104.3	120.7	0.52	0.44	
8,670.0	1.00	351.30	8,666.1	-59.2	-104.6	120.2	0.11	0.11	
8,761.0	0.60	342.60	8,757.1	-58.0	-104.8	119.8	0.46	-0.44	
8,853.0	0.60	335.30	8,849.1	-57.1	-105.2	119.7	0.08	0.00	
8,945.0	0.50	320.50	8,941.1	-56.3	-105.6	119.7	0.19	-0.11	
9,036.0	0.70	320.30	9,032.1	-55.6	-106.2	119.9	0.22	0.22	
9,128.0	0.80	284.20	9,124.1	-55.0	-107.2	120.5	0.52	0.11	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well NP EF16D-27 P27 595
Project:	North Piceance	**TVD Reference:**	well @ 6671.0ft (Patterson 303)
Site:	P27 595 (S27-T5S-R95W)	**MD Reference:**	well @ 6671.0ft (Patterson 303)
Well:	NP EF16D-27 P27 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
9,219.0	0.80	287.00	9,215.1	-54.7	-108.4	121.4	0.04	0.00	
9,311.0	0.80	286.80	9,307.1	-54.3	-109.7	122.3	0.00	0.00	
9,402.0	0.30	253.70	9,398.1	-54.2	-110.5	123.0	0.63	-0.55	
9,494.0	0.60	257.80	9,490.1	-54.3	-111.2	123.7	0.33	0.33	
9,586.0	0.90	268.70	9,582.1	-54.5	-112.4	124.8	0.36	0.33	
9,677.0	1.20	267.20	9,673.0	-54.5	-114.1	126.2	0.33	0.33	
9,769.0	1.20	249.70	9,765.0	-54.9	-115.9	128.1	0.40	0.00	
9,861.0	1.50	241.70	9,857.0	-55.8	-117.9	130.2	0.38	0.33	
9,952.0	1.70	232.80	9,948.0	-57.2	-120.0	132.8	0.35	0.22	
10,044.0	2.00	215.90	10,039.9	-59.3	-122.1	135.6	0.67	0.33	
10,045.0	2.00	215.89	10,040.9	-59.3	-122.1	135.6	0.17	0.16	**P27 595 EF16D-27 BHL New**
10,105.0	2.10	215.10	10,100.9	-61.1	-123.3	137.5	0.17	0.16	**Last Cathedral Survey @ 10,105' MD**
10,155.0	2.10	215.10	10,150.8	-62.6	-124.4	139.2	0.00	0.00	**Projection to Bit @ 10,155' MD**

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
P27 595 EF16D-27 BHL	0.00	0.00	10,041.0	-62.3	-113.9	1,645,818.16	2,285,953.49	39° 34' 45.17 N	108° 2' 1.03 W
- actual wellpath misses target center by 8.7ft at 10045.0ft MD (10040.9 TVD, -59.3 N, -122.1 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
P27 595 EF16D-27 TGT	0.00	0.00	2,500.0	-52.3	-96.9	1,645,827.65	2,285,970.76	39° 34' 45.27 N	108° 2' 0.82 W
- actual wellpath misses target center by 2.8ft at 2503.6ft MD (2500.1 TVD, -52.5 N, -94.1 E)									
- Point									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
132.0	132.0	0.8	-1.0	Last Gyro Survey @ 132' MD
10,105.0	10,100.9	-61.1	-123.3	Last Cathedral Survey @ 10,105' MD
10,155.0	10,150.8	-62.6	-124.4	Projection to Bit @ 10,155' MD

Checked By: _____ Approved By: _____ Date: _____