

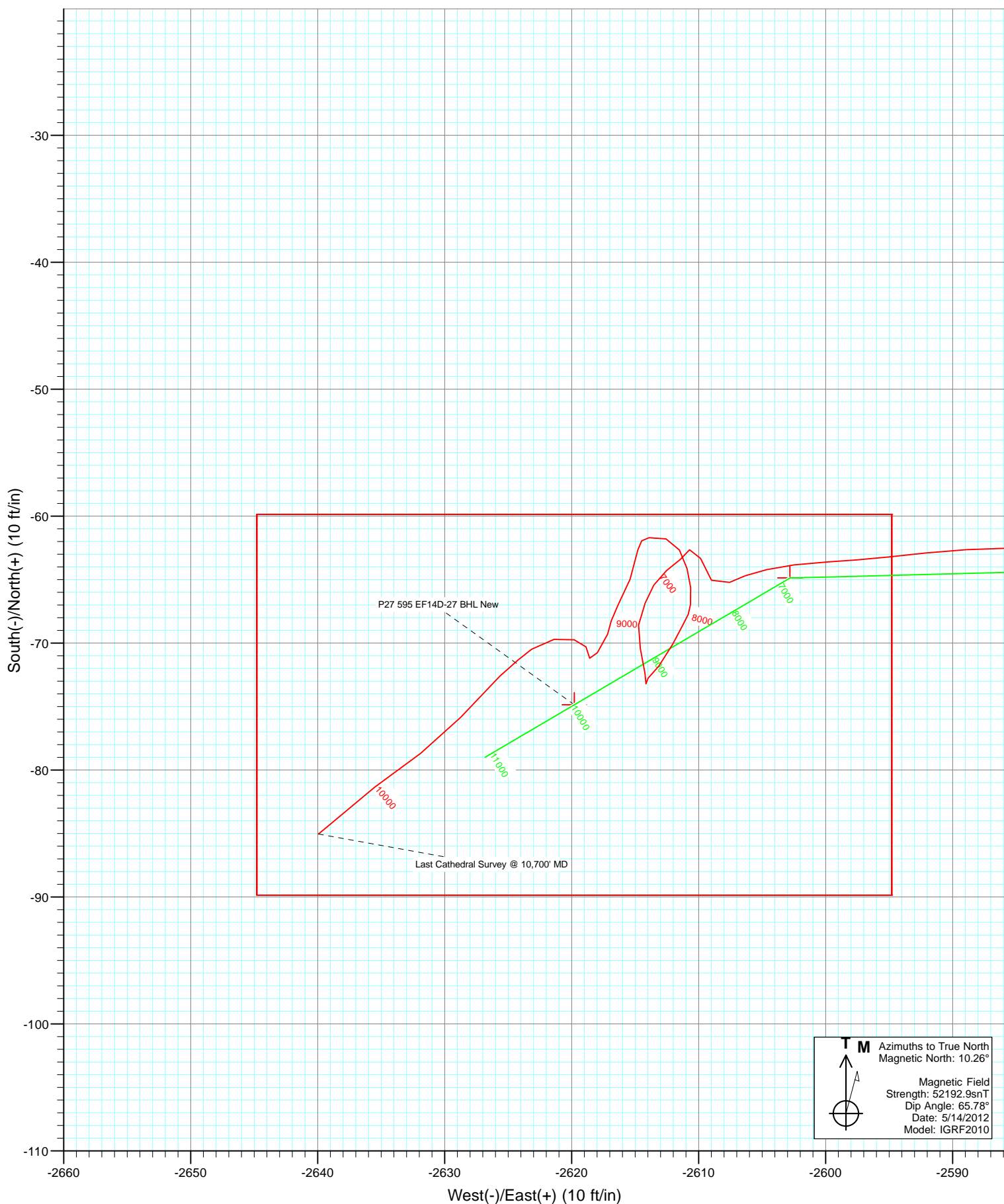
Surface Hole Location
 NP EF14D-27 P27 595
 Lat : 39° 34' 45.94 N
 Long : 108° 1' 59.78 W



Azimuths to True North
 Magnetic North: 10.26°

Magnetic Field
 Strength: 52192.9nT
 Dip Angle: 65.78°
 Date: 5/14/2012
 Model: IGRF2010

DD NP EF14D-27 P27 595 168555; 125336; DN EF14D-27 P27 @ 6671.0ft (Patterson #303) North American Datum 1983 Well NP EF14D-27 P27 595, True North							
Type User	Target	No Target (Freehand)	Azimuth	Origin Type	N/S	E/W	From TVD
			268.57	Slot	0.0	0.0	0.0
Name			TVD	+N/-S	+E/-W	Latitude	Longitude
P27 595 EF14D-27 TGT New			6472.0	-64.9	-2602.8	39° 34' 45.29 N 108° 2' 33.02 W	
P27 595 EF14D-27 BHL New			10032.0	-74.9	-2619.8	39° 34' 45.20 N 108° 2' 33.24 W	



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NP EF14D-27 P27 595
Project:	North Piceance	TVD Reference:	EF14D-27 P27 @ 6671.0ft (Patterson #303)
Site:	P27 595 (S27-T5S-R95W)	MD Reference:	EF14D-27 P27 @ 6671.0ft (Patterson #303)
Well:	NP EF14D-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 EF14D-27 P27 595					
Well Position	+N/-S	0.0 ft	Northing:	1,645,892.93 ft	Latitude:	39° 34' 45.94 N
	+E/-W	0.0 ft	Easting:	2,286,053.73 ft	Longitude:	108° 1' 59.78 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	5/14/2012	10.26	65.78	52,193

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	268.57	

Survey Program	Date	5/23/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
50.0	137.0	Survey #1 (DD)	Gyro	Gyro	
172.0	1,785.0	Survey #2 (DD)	MWD	Geolink MWD	
1,896.0	10,700.0	Survey #3 (DD)	MWD	Geolink MWD	

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Formations /
Depth (ft)	(°)	(°)	Depth (ft)	(ft)	(ft)	Section (ft)	Rate (°/100ft)	Rate (°/100ft)	Comments
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
50.0	0.27	177.10	50.0	-0.1	0.0	0.0	0.54	0.54	
100.0	0.30	266.50	100.0	-0.2	-0.1	0.1	0.80	0.06	
137.0	0.20	220.70	137.0	-0.3	-0.3	0.3	0.58	-0.27	
172.0	0.80	244.90	172.0	-0.4	-0.5	0.5	1.78	1.71	
206.0	1.10	244.90	206.0	-0.7	-1.0	1.0	0.88	0.88	
233.0	1.30	250.00	233.0	-0.9	-1.6	1.6	0.84	0.74	
264.0	1.60	267.70	264.0	-1.0	-2.3	2.3	1.73	0.97	
295.0	2.50	272.10	295.0	-1.0	-3.4	3.4	2.95	2.90	
325.0	2.90	272.50	324.9	-1.0	-4.8	4.9	1.33	1.33	
356.0	4.00	272.30	355.9	-0.9	-6.7	6.7	3.55	3.55	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NP EF14D-27 P27 595
Project:	North Piceance	TVD Reference:	EF14D-27 P27 @ 6671.0ft (Patterson #303)
Site:	P27 595 (S27-T5S-R95W)	MD Reference:	EF14D-27 P27 @ 6671.0ft (Patterson #303)
Well:	NP EF14D-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
387.0	4.60	270.00	386.8	-0.9	-9.0	9.0	2.01	1.94	
417.0	5.30	269.50	416.7	-0.9	-11.6	11.6	2.34	2.33	
448.0	6.40	268.70	447.5	-0.9	-14.8	14.8	3.56	3.55	
479.0	6.90	267.50	478.3	-1.0	-18.4	18.4	1.67	1.61	
509.0	7.50	265.30	508.1	-1.3	-22.1	22.1	2.20	2.00	
557.0	8.50	271.30	555.6	-1.5	-28.8	28.8	2.71	2.08	
603.0	8.70	268.40	601.1	-1.5	-35.7	35.7	1.04	0.43	
649.0	9.50	270.20	646.5	-1.6	-42.9	43.0	1.85	1.74	
695.0	10.50	269.00	691.8	-1.6	-50.9	50.9	2.22	2.17	
741.0	10.90	270.70	737.0	-1.6	-59.5	59.5	1.11	0.87	
786.0	11.80	271.10	781.1	-1.5	-68.3	68.3	2.01	2.00	
832.0	12.90	270.50	826.1	-1.4	-78.1	78.2	2.41	2.39	
878.0	14.00	269.60	870.8	-1.4	-88.8	88.9	2.43	2.39	
924.0	15.30	268.90	915.3	-1.5	-100.5	100.5	2.85	2.83	
969.0	16.70	265.60	958.6	-2.1	-112.9	112.9	3.71	3.11	
1,015.0	18.40	269.50	1,002.4	-2.7	-126.7	126.7	4.49	3.70	
1,061.0	19.70	269.50	1,045.9	-2.8	-141.7	141.8	2.83	2.83	
1,107.0	20.30	268.50	1,089.1	-3.1	-157.5	157.5	1.50	1.30	
1,153.0	22.10	270.30	1,132.0	-3.3	-174.1	174.1	4.16	3.91	
1,198.0	23.80	271.00	1,173.4	-3.1	-191.6	191.6	3.83	3.78	
1,244.0	25.00	270.20	1,215.3	-2.9	-210.6	210.6	2.71	2.61	
1,336.0	26.60	269.50	1,298.2	-3.0	-250.7	250.7	1.77	1.74	
1,427.0	26.40	269.10	1,379.6	-3.5	-291.3	291.3	0.29	-0.22	
1,519.0	27.70	268.80	1,461.5	-4.2	-333.1	333.1	1.42	1.41	
1,610.0	28.40	268.70	1,541.8	-5.2	-375.9	375.9	0.77	0.77	
1,702.0	27.90	266.80	1,623.0	-6.9	-419.3	419.3	1.12	-0.54	
1,785.0	26.40	267.30	1,696.8	-8.8	-457.1	457.2	1.83	-1.81	
1,896.0	25.80	262.90	1,796.5	-13.0	-505.7	505.9	1.83	-0.54	
1,988.0	25.30	264.30	1,879.5	-17.4	-545.1	545.4	0.85	-0.54	
2,080.0	24.80	269.20	1,962.9	-19.6	-584.0	584.3	2.32	-0.54	
2,171.0	25.80	267.80	2,045.1	-20.7	-622.9	623.2	1.28	1.10	
2,263.0	26.90	270.20	2,127.6	-21.3	-663.7	664.0	1.66	1.20	
2,354.0	27.00	270.30	2,208.7	-21.2	-704.9	705.2	0.12	0.11	
2,446.0	27.90	269.80	2,290.3	-21.1	-747.3	747.6	1.01	0.98	
2,537.0	27.80	268.70	2,370.8	-21.7	-789.8	790.1	0.58	-0.11	
2,629.0	27.90	270.70	2,452.1	-21.9	-832.8	833.1	1.02	0.11	
2,720.0	26.90	269.80	2,532.9	-21.7	-874.7	875.0	1.19	-1.10	
2,812.0	27.90	267.40	2,614.6	-22.8	-917.0	917.3	1.62	1.09	
2,904.0	27.40	270.60	2,696.1	-23.5	-959.7	960.0	1.70	-0.54	
2,995.0	27.90	270.20	2,776.7	-23.2	-1,001.9	1,002.2	0.59	0.55	
3,087.0	26.90	269.10	2,858.4	-23.5	-1,044.2	1,044.5	1.22	-1.09	
3,178.0	26.90	270.90	2,939.5	-23.5	-1,085.4	1,085.7	0.89	0.00	
3,270.0	27.50	268.20	3,021.4	-23.8	-1,127.4	1,127.7	1.49	0.65	
3,361.0	28.10	268.40	3,101.9	-25.1	-1,169.9	1,170.1	0.67	0.66	
3,452.0	27.60	266.50	3,182.3	-27.0	-1,212.3	1,212.6	1.12	-0.55	
3,544.0	28.20	267.30	3,263.6	-29.3	-1,255.3	1,255.7	0.77	0.65	
3,636.0	26.60	267.50	3,345.3	-31.2	-1,297.6	1,298.0	1.74	-1.74	
3,727.0	26.80	266.60	3,426.6	-33.3	-1,338.4	1,338.9	0.50	0.22	
3,819.0	27.20	270.30	3,508.6	-34.4	-1,380.2	1,380.6	1.88	0.43	
3,910.0	27.20	269.40	3,589.5	-34.6	-1,421.8	1,422.2	0.45	0.00	
4,002.0	27.40	270.00	3,671.3	-34.8	-1,464.0	1,464.4	0.37	0.22	
4,093.0	27.60	269.70	3,752.0	-34.9	-1,506.0	1,506.4	0.27	0.22	
4,185.0	26.00	269.30	3,834.1	-35.2	-1,547.5	1,547.9	1.75	-1.74	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well NP EF14D-27 P27 595
Project:	North Piceance	TVD Reference:	EF14D-27 P27 @ 6671.0ft (Patterson #303)
Site:	P27 595 (S27-T5S-R95W)	MD Reference:	EF14D-27 P27 @ 6671.0ft (Patterson #303)
Well:	NP EF14D-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
4,276.0	27.10	268.20	3,915.5	-36.1	-1,588.1	1,588.5	1.32	1.21	
4,368.0	28.20	269.10	3,997.0	-37.1	-1,630.8	1,631.2	1.28	1.20	
4,459.0	26.60	268.00	4,077.8	-38.2	-1,672.7	1,673.1	1.84	-1.76	
4,551.0	28.60	266.70	4,159.3	-40.2	-1,715.2	1,715.7	2.27	2.17	
4,642.0	26.90	266.90	4,239.9	-42.5	-1,757.5	1,758.1	1.87	-1.87	
4,734.0	27.60	266.50	4,321.6	-45.0	-1,799.6	1,800.2	0.79	0.76	
4,825.0	28.50	267.90	4,402.0	-47.0	-1,842.3	1,842.9	1.23	0.99	
4,917.0	27.30	267.90	4,483.3	-48.6	-1,885.4	1,886.0	1.30	-1.30	
5,008.0	28.30	268.70	4,563.8	-49.9	-1,927.8	1,928.4	1.17	1.10	
5,100.0	26.50	266.00	4,645.4	-51.8	-1,970.1	1,970.7	2.38	-1.96	
5,191.0	26.20	268.00	4,727.0	-53.9	-2,010.4	2,011.1	1.03	-0.33	
5,283.0	26.60	270.80	4,809.4	-54.3	-2,051.3	2,052.0	1.42	0.43	
5,374.0	27.10	270.40	4,890.6	-53.9	-2,092.4	2,093.1	0.58	0.55	
5,466.0	27.20	270.20	4,972.4	-53.7	-2,134.4	2,135.0	0.15	0.11	
5,558.0	26.70	270.90	5,054.5	-53.3	-2,176.1	2,176.7	0.64	-0.54	
5,649.0	27.40	268.60	5,135.5	-53.5	-2,217.4	2,218.1	1.38	0.77	
5,741.0	28.70	268.50	5,216.7	-54.6	-2,260.7	2,261.3	1.41	1.41	
5,832.0	27.90	267.40	5,296.8	-56.1	-2,303.8	2,304.5	1.05	-0.88	
5,924.0	26.40	267.70	5,378.7	-57.9	-2,345.7	2,346.4	1.64	-1.63	
6,015.0	24.40	269.20	5,460.9	-59.0	-2,384.7	2,385.5	2.31	-2.20	
6,107.0	22.30	268.80	5,545.3	-59.6	-2,421.2	2,421.9	2.29	-2.28	
6,199.0	19.90	267.30	5,631.2	-60.7	-2,454.3	2,455.1	2.67	-2.61	
6,290.0	17.70	267.40	5,717.3	-62.1	-2,483.6	2,484.4	2.42	-2.42	
6,382.0	14.20	268.60	5,805.7	-63.0	-2,508.9	2,509.6	3.82	-3.80	
6,473.0	13.80	270.20	5,894.0	-63.2	-2,530.9	2,531.7	0.61	-0.44	
6,565.0	12.00	269.90	5,983.7	-63.2	-2,551.4	2,552.2	1.96	-1.96	
6,657.0	9.10	272.00	6,074.2	-63.0	-2,568.2	2,569.0	3.18	-3.15	
6,748.0	7.60	271.60	6,164.2	-62.6	-2,581.4	2,582.2	1.65	-1.65	
6,840.0	5.80	263.50	6,255.6	-62.9	-2,592.2	2,592.9	2.21	-1.96	
6,931.0	3.80	266.80	6,346.2	-63.6	-2,599.7	2,600.5	2.22	-2.20	
7,023.0	2.40	256.50	6,438.1	-64.2	-2,604.6	2,605.4	1.63	-1.52	
7,056.8	2.05	252.73	6,471.9	-64.6	-2,605.9	2,606.7	1.11	-1.02	P27 595 EF14D-27 TGT New
7,114.0	1.50	242.50	6,529.0	-65.2	-2,607.6	2,608.4	1.11	-0.97	
7,206.0	1.00	333.20	6,621.0	-65.0	-2,609.0	2,609.8	1.97	-0.54	
7,298.0	1.40	333.60	6,713.0	-63.3	-2,609.8	2,610.6	0.43	0.43	
7,389.0	0.60	228.60	6,804.0	-62.6	-2,610.7	2,611.5	1.82	-0.88	
7,481.0	0.70	220.30	6,896.0	-63.4	-2,611.4	2,612.2	0.15	0.11	
7,572.0	1.10	237.90	6,987.0	-64.3	-2,612.5	2,613.3	0.53	0.44	
7,664.0	0.90	200.30	7,079.0	-65.4	-2,613.5	2,614.3	0.73	-0.22	
7,755.0	1.10	210.10	7,169.9	-66.9	-2,614.2	2,615.1	0.29	0.22	
7,847.0	1.20	184.60	7,261.9	-68.6	-2,614.7	2,615.6	0.56	0.11	
7,937.0	1.20	166.40	7,351.9	-70.4	-2,614.6	2,615.5	0.42	0.00	
8,029.0	1.30	172.10	7,443.9	-72.4	-2,614.2	2,615.2	0.17	0.11	
8,121.0	0.30	343.20	7,535.9	-73.2	-2,614.1	2,615.2	1.74	-1.09	
8,212.0	0.40	48.10	7,626.9	-72.8	-2,614.0	2,615.0	0.42	0.11	
8,304.0	1.20	39.30	7,718.9	-71.8	-2,613.1	2,614.1	0.88	0.87	
8,395.0	1.40	26.10	7,809.9	-70.1	-2,612.0	2,613.0	0.39	0.22	
8,487.0	0.80	31.30	7,901.8	-68.5	-2,611.2	2,612.1	0.66	-0.65	
8,579.0	0.30	13.90	7,993.8	-67.7	-2,610.8	2,611.7	0.57	-0.54	
8,670.0	0.00	30.40	8,084.8	-67.5	-2,610.8	2,611.6	0.33	-0.33	
8,762.0	0.70	12.00	8,176.8	-66.9	-2,610.6	2,611.5	0.76	0.76	
8,853.0	1.00	352.40	8,267.8	-65.6	-2,610.6	2,611.5	0.45	0.33	
8,945.0	0.90	346.30	8,359.8	-64.1	-2,610.9	2,611.7	0.15	-0.11	

Cathedral Energy Services

Survey Report

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Project:	North Piceance	TVD Reference:	EF14D-27 P27 @ 6671.0ft (Patterson #303)
Site:	P27 595 (S27-T5S-R95W)	MD Reference:	EF14D-27 P27 @ 6671.0ft (Patterson #303)
Well:	NP EF14D-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
9,036.0	1.10	330.60	8,450.8	-62.7	-2,611.5	2,612.3	0.37	0.22	
9,128.0	0.80	280.30	8,542.8	-61.8	-2,612.6	2,613.3	0.93	-0.33	
9,219.0	0.90	268.00	8,633.8	-61.7	-2,613.9	2,614.6	0.23	0.11	
9,311.0	1.20	189.20	8,725.8	-62.7	-2,614.8	2,615.5	1.47	0.33	
9,402.0	1.80	198.60	8,816.7	-65.0	-2,615.4	2,616.2	0.71	0.66	
9,494.0	1.10	215.20	8,908.7	-67.1	-2,616.4	2,617.2	0.88	-0.76	
9,585.0	0.60	181.80	8,999.7	-68.2	-2,616.9	2,617.8	0.75	-0.55	
9,677.0	0.80	205.30	9,091.7	-69.3	-2,617.2	2,618.1	0.38	0.22	
9,768.0	1.30	210.90	9,182.7	-70.8	-2,618.0	2,618.9	0.56	0.55	
9,860.0	0.60	351.50	9,274.7	-71.2	-2,618.6	2,619.5	1.96	-0.76	
9,951.0	0.60	333.10	9,365.7	-70.3	-2,618.9	2,619.8	0.21	0.00	
10,043.0	0.90	280.30	9,457.7	-69.7	-2,619.8	2,620.7	0.78	0.33	
10,135.0	1.10	263.10	9,549.6	-69.7	-2,621.4	2,622.3	0.39	0.22	
10,226.0	1.40	233.70	9,640.6	-70.5	-2,623.1	2,624.1	0.77	0.33	
10,318.0	2.70	227.60	9,732.6	-72.6	-2,625.6	2,626.6	1.43	1.41	
10,410.0	2.90	219.70	9,824.4	-75.8	-2,628.7	2,629.8	0.47	0.22	
10,501.0	2.50	238.00	9,915.3	-78.7	-2,631.9	2,633.0	1.04	-0.44	
10,593.0	3.10	229.90	10,007.2	-81.3	-2,635.5	2,636.7	0.78	0.65	
10,616.9	3.10	230.00	10,031.1	-82.2	-2,636.5	2,637.7	0.02	0.00	P27 595 EF14D-27 BHL New
10,685.0	3.10	230.30	10,099.1	-84.5	-2,639.3	2,640.6	0.02	0.00	
10,700.0	3.00	231.50	10,114.1	-85.0	-2,639.9	2,641.2	0.79	-0.67	Last Cathedral Survey @ 10,700' 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									
P27 595 EF14D-27 BHL	0.00	0.00	10,032.0	-74.9	-2,619.8	1,645,891.15	2,283,432.87	39° 34' 45.20 N	108° 2' 33.24 W
- actual wellpath misses target center by 18.2ft at 10616.9ft MD (10031.1 TVD, -82.2 N, -2636.5 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
P27 595 EF14D-27 TGT	0.00	0.00	6,472.0	-64.9	-2,602.8	1,645,900.66	2,283,450.13	39° 34' 45.29 N	108° 2' 33.02 W
- actual wellpath misses target center by 3.1ft at 7056.8ft MD (6471.9 TVD, -64.6 N, -2605.9 E)									
- Point									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
10,700.0	10,114.1	-85.0	-2,639.9	Last Cathedral Survey @ 10,700' MD

Checked By: _____ Approved By: _____ Date: _____