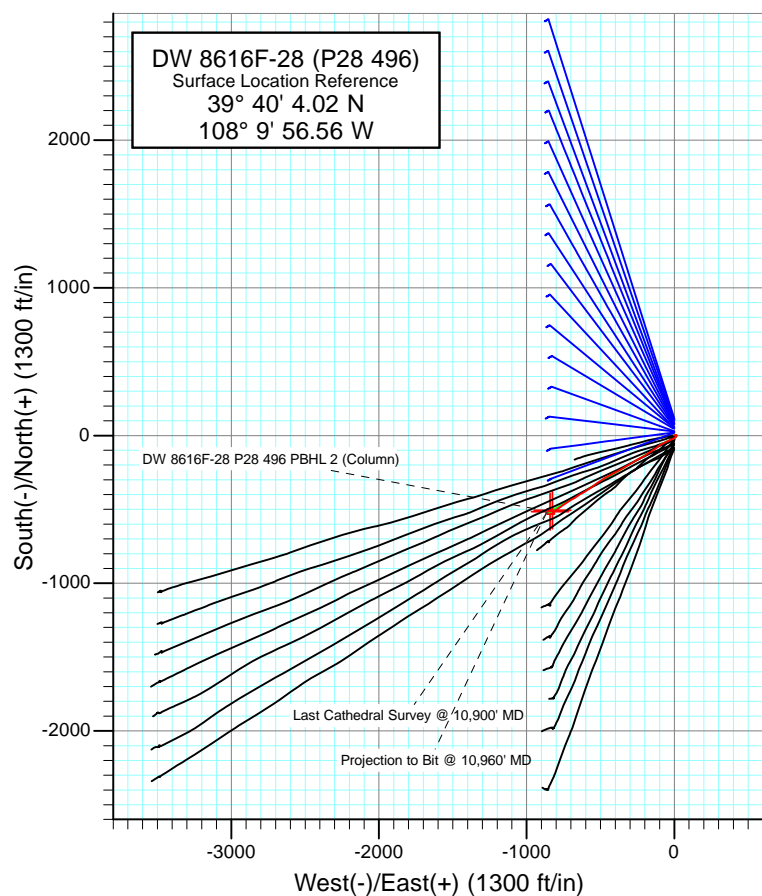
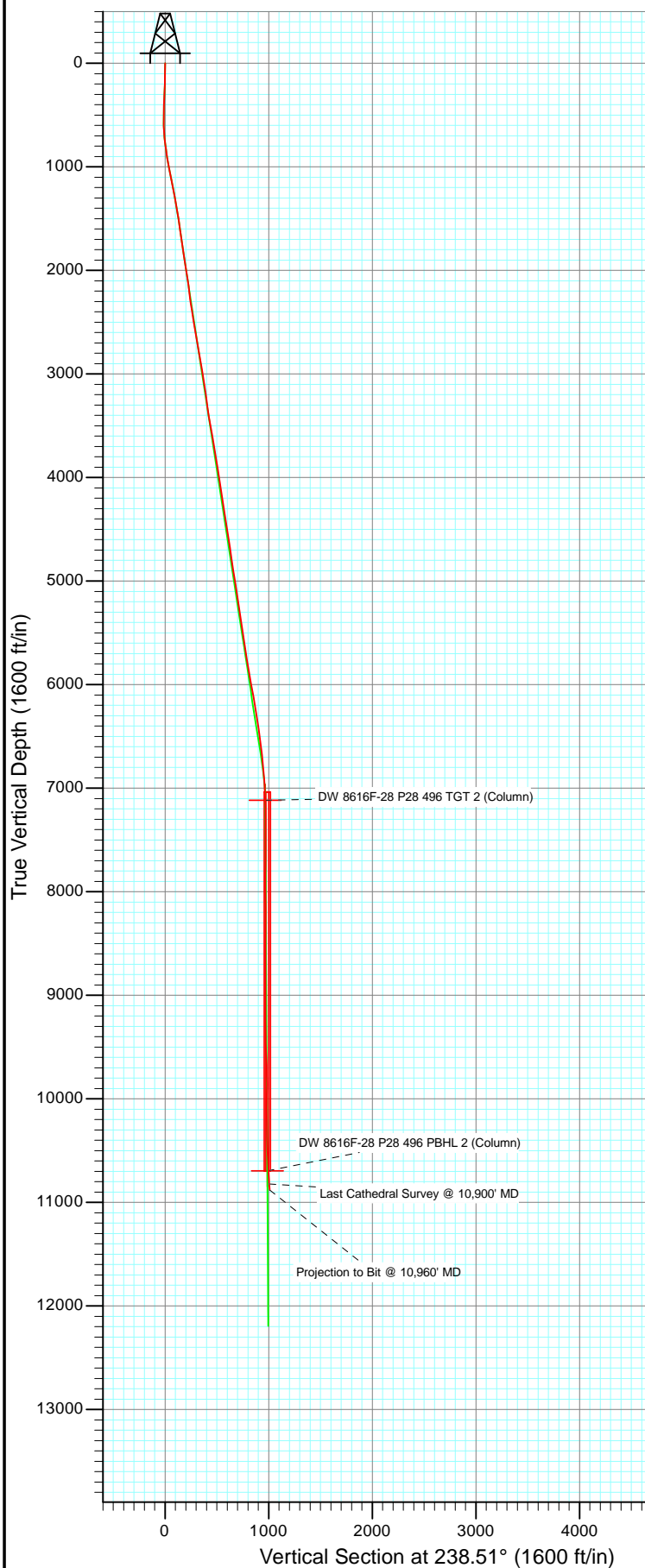




Project: Double Willow
Site: S28-T4S-R96W (P28 496)(column pattern)
Well: DW 8616F-28 (P28 496)
Wellbore: DD
Design: FINAL



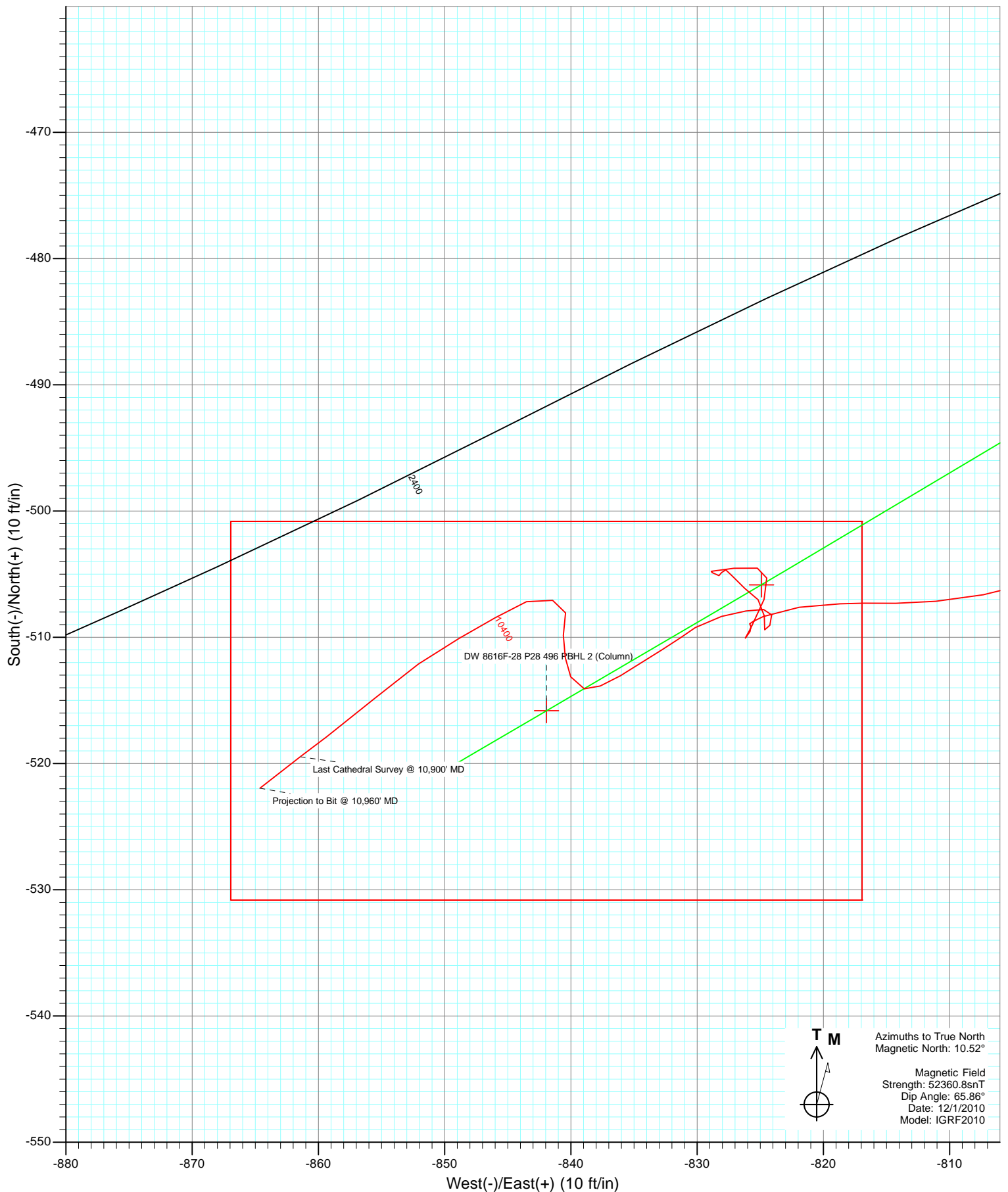
Azimuths to True North
Magnetic North: 10.52°

Magnetic Field
Strength: 52360.8snT
Dip Angle: 65.86°
Date: 12/1/2010
Model: IGRF2010

DD DW 8616F-28 (P28 496) 115374 (SH); SC 115560 (MH); DS						
KBE @ 7813.0ft (Patterson 308) North American Datum 1983 Well DW 8616F-28 (P28 496), True North						
Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
Target	DW 8616F-28 P28 496 PBHL (Column)	238.51	Slot	0.0	0.0	0.0
Name	TVDD	+N/-S	+E/-W	Latitude		Longitude
DW 8616F-28 P28 496 TGT 2 (Column)	7116.0	-505.8	-824.9	39° 39' 59.02 N 108° 10' 7.11 W		
DW 8616F-28 P28 496 PBHL 2 (Column)	10696.0	-515.8	-841.9	39° 39' 58.92 N 108° 10' 7.32 W		



Project: Double Willow
Site: S28-T4S-R96W (P28 496)(column pattern)
Well: DW 8616F-28 (P28 496)
Wellbore: DD
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well DW 8616F-28 (P28 496)
Project:	Double Willow	TVD Reference:	KBE @ 7813.0ft (Patterson 308)
Site:	S28-T4S-R96W (P28 496)(column pattern)	MD Reference:	KBE @ 7813.0ft (Patterson 308)
Well:	DW 8616F-28 (P28 496)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

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

Site	S28-T4S-R96W (P28 496)(column pattern)			
Site Position:		Northing:	1,679,243.29 ft	Latitude: 39° 40' 5.13 N
From:	Lat/Long	Easting:	2,249,687.54 ft	Longitude: 108° 9' 56.55 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: -1.68 °

Well	DW 8616F-28 (P28 496)			
Well Position	+N/-S	0.0 ft	Northing:	1,679,131.33 ft
	+E/-W	0.0 ft	Easting:	2,249,683.59 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level: 7,780.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/1/2010	10.52	65.86	52,361

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	238.51

Survey Program	Date	12/12/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
169.0	2,080.0	Survey #1 (DD)	MWD	Geolink MWD
2,165.0	10,960.0	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	
169.0	0.70	62.40	169.0	0.5	0.9	-1.0	0.41	0.41	
199.0	1.30	60.30	199.0	0.7	1.4	-1.6	2.00	2.00	
230.0	1.90	59.90	230.0	1.2	2.1	-2.4	1.94	1.94	
260.0	2.00	70.70	260.0	1.6	3.0	-3.4	1.27	0.33	
291.0	2.40	78.80	290.9	1.9	4.2	-4.6	1.63	1.29	
322.0	2.90	74.30	321.9	2.2	5.6	-5.9	1.75	1.61	
352.0	3.30	74.70	351.9	2.7	7.1	-7.5	1.34	1.33	
383.0	3.30	85.00	382.8	3.0	8.9	-9.1	1.91	0.00	
414.0	3.30	81.30	413.8	3.2	10.7	-10.8	0.69	0.00	
444.0	2.90	91.30	443.7	3.3	12.3	-12.2	2.24	-1.33	
475.0	2.60	108.60	474.7	3.1	13.7	-13.3	2.83	-0.97	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well DW 8616F-28 (P28 496)
Project:	Double Willow	TVD Reference:	KBE @ 7813.0ft (Patterson 308)
Site:	S28-T4S-R96W (P28 496)(column pattern)	MD Reference:	KBE @ 7813.0ft (Patterson 308)
Well:	DW 8616F-28 (P28 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
505.0	2.20	130.10	504.7	2.5	14.8	-13.9	3.26	-1.33	
535.0	2.30	157.80	534.6	1.5	15.5	-14.0	3.60	0.33	
565.0	2.80	180.70	564.6	0.3	15.7	-13.5	3.75	1.67	
600.0	3.50	194.30	599.6	-1.6	15.4	-12.3	2.91	2.00	
646.0	4.40	208.00	645.4	-4.6	14.3	-9.8	2.82	1.96	
691.0	5.20	213.80	690.3	-7.8	12.3	-6.4	2.08	1.78	
737.0	5.80	225.00	736.1	-11.2	9.5	-2.3	2.67	1.30	
783.0	6.90	231.30	781.8	-14.5	5.7	2.7	2.83	2.39	
829.0	7.40	237.30	827.4	-17.8	1.1	8.4	1.95	1.09	
874.0	8.90	246.60	872.0	-20.8	-4.6	14.8	4.43	3.33	
966.0	10.80	247.80	962.6	-26.9	-19.1	30.3	2.08	2.07	
1,057.0	11.10	246.40	1,052.0	-33.6	-35.0	47.4	0.44	0.33	
1,149.0	11.00	245.20	1,142.3	-40.8	-51.1	64.9	0.27	-0.11	
1,241.0	11.00	241.60	1,232.6	-48.7	-66.8	82.4	0.75	0.00	
1,332.0	10.30	241.50	1,322.0	-56.7	-81.6	99.2	0.77	-0.77	
1,424.0	9.70	237.20	1,412.6	-64.8	-95.3	115.1	1.04	-0.65	
1,515.0	9.00	233.00	1,502.4	-73.3	-107.4	129.9	1.07	-0.77	
1,607.0	8.00	230.10	1,593.4	-81.7	-118.1	143.4	1.18	-1.09	
1,698.0	8.30	233.40	1,683.5	-89.7	-128.2	156.2	0.61	0.33	
1,790.0	8.60	236.80	1,774.5	-97.4	-139.3	169.7	0.63	0.33	
1,881.0	8.80	238.90	1,864.4	-104.7	-151.0	183.4	0.41	0.22	
1,973.0	8.90	238.50	1,955.3	-112.1	-163.1	197.6	0.13	0.11	
2,080.0	8.80	238.40	2,061.1	-120.7	-177.1	214.1	0.09	-0.09	Last Cathedral Survey @ 2,080' MD
2,165.0	6.90	234.20	2,145.3	-127.1	-186.8	225.7	2.33	-2.24	
2,256.0	7.40	235.70	2,235.5	-133.6	-196.0	237.0	0.59	0.55	
2,348.0	8.40	242.50	2,326.7	-140.0	-206.9	249.6	1.49	1.09	
2,439.0	9.60	241.10	2,416.5	-146.8	-219.4	263.8	1.34	1.32	
2,531.0	9.30	239.40	2,507.3	-154.3	-232.6	278.9	0.45	-0.33	
2,622.0	8.80	239.00	2,597.2	-161.6	-244.9	293.2	0.55	-0.55	
2,714.0	10.90	241.10	2,687.8	-169.4	-258.5	308.9	2.32	2.28	
2,805.0	10.60	241.00	2,777.2	-177.6	-273.4	325.9	0.33	-0.33	
2,897.0	9.80	240.10	2,867.8	-185.6	-287.5	342.2	0.89	-0.87	
2,989.0	8.70	237.50	2,958.6	-193.3	-300.2	356.9	1.28	-1.20	
3,080.0	9.10	239.90	3,048.5	-200.6	-312.2	371.0	0.60	0.44	
3,172.0	7.40	238.20	3,139.5	-207.4	-323.6	384.2	1.87	-1.85	
3,263.0	7.50	237.90	3,229.7	-213.6	-333.6	396.0	0.12	0.11	
3,354.0	9.30	242.70	3,319.8	-220.1	-345.1	409.3	2.12	1.98	
3,446.0	8.80	242.90	3,410.6	-226.7	-358.0	423.7	0.54	-0.54	
3,537.0	10.70	242.60	3,500.3	-233.8	-371.7	439.1	2.09	2.09	
3,628.0	10.10	241.80	3,589.8	-241.5	-386.2	455.5	0.68	-0.66	
3,720.0	9.10	242.10	3,680.5	-248.7	-399.8	470.8	1.09	-1.09	
3,811.0	8.30	243.00	3,770.5	-255.0	-412.0	484.5	0.89	-0.88	
3,903.0	9.80	238.70	3,861.3	-262.1	-424.6	499.0	1.79	1.63	
3,994.0	9.50	240.60	3,951.0	-269.8	-437.8	514.2	0.48	-0.33	
4,086.0	9.50	241.70	4,041.8	-277.1	-451.1	529.4	0.20	0.00	
4,177.0	8.70	243.00	4,131.6	-283.8	-463.8	543.8	0.91	-0.88	
4,269.0	7.70	241.30	4,222.7	-290.0	-475.4	556.9	1.12	-1.09	
4,360.0	8.70	234.50	4,312.7	-296.9	-486.4	569.8	1.53	1.10	
4,452.0	8.50	233.40	4,403.7	-305.0	-497.5	583.5	0.28	-0.22	
4,543.0	8.10	234.10	4,493.8	-312.7	-508.1	596.6	0.45	-0.44	
4,635.0	9.60	234.00	4,584.7	-321.0	-519.5	610.7	1.63	1.63	
4,727.0	9.10	233.50	4,675.4	-329.9	-531.6	625.6	0.55	-0.54	
4,818.0	8.30	237.50	4,765.4	-337.7	-542.9	639.4	1.10	-0.88	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well DW 8616F-28 (P28 496)
Project:	Double Willow	TD Reference:	KBE @ 7813.0ft (Patterson 308)
Site:	S28-T4S-R96W (P28 496)(column pattern)	MD Reference:	KBE @ 7813.0ft (Patterson 308)
Well:	DW 8616F-28 (P28 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
4,910.0	8.00	234.60	4,856.5	-345.0	-553.7	652.4	0.55	-0.33	
5,001.0	9.40	237.60	4,946.4	-352.6	-565.2	666.1	1.62	1.54	
5,093.0	8.80	236.20	5,037.3	-360.6	-577.4	680.7	0.70	-0.65	
5,184.0	8.80	235.40	5,127.2	-368.4	-588.9	694.6	0.13	0.00	
5,276.0	8.10	235.20	5,218.2	-376.1	-600.0	708.1	0.76	-0.76	
5,367.0	9.30	240.10	5,308.1	-383.4	-611.6	721.8	1.55	1.32	
5,459.0	8.00	238.70	5,399.1	-390.4	-623.5	735.7	1.43	-1.41	
5,551.0	8.50	242.70	5,490.1	-396.9	-635.1	748.8	0.83	0.54	
5,642.0	9.00	236.00	5,580.1	-403.9	-646.9	762.7	1.25	0.55	
5,733.0	7.90	235.40	5,670.1	-411.5	-658.0	776.0	1.21	-1.21	
5,825.0	9.00	236.70	5,761.1	-419.0	-669.2	789.5	1.21	1.20	
5,916.0	10.70	241.00	5,850.8	-427.0	-682.5	805.1	2.03	1.87	
6,008.0	10.60	239.80	5,941.2	-435.4	-697.3	822.1	0.26	-0.11	
6,100.0	10.40	238.40	6,031.6	-444.0	-711.7	838.8	0.35	-0.22	
6,191.0	9.40	237.90	6,121.3	-452.3	-725.0	854.5	1.10	-1.10	
6,283.0	9.30	236.80	6,212.0	-460.3	-737.6	869.4	0.22	-0.11	
6,375.0	8.60	236.90	6,302.9	-468.2	-749.6	883.7	0.76	-0.76	
6,466.0	7.70	233.00	6,393.0	-475.6	-760.1	896.6	1.16	-0.99	
6,558.0	8.20	236.90	6,484.1	-482.9	-770.6	909.3	0.80	0.54	
6,650.0	7.70	232.90	6,575.2	-490.2	-781.0	922.0	0.81	-0.54	
6,741.0	7.10	231.30	6,665.5	-497.3	-790.2	933.6	0.70	-0.66	
6,833.0	6.20	239.60	6,756.9	-503.4	-798.9	944.2	1.43	-0.98	
6,925.0	5.20	260.30	6,848.4	-506.6	-807.3	953.1	2.47	-1.09	
7,016.0	3.60	270.50	6,939.1	-507.3	-814.3	959.3	1.95	-1.76	
7,108.0	1.90	267.50	7,031.0	-507.3	-818.7	963.1	1.85	-1.85	
7,199.0	2.20	262.90	7,122.0	-507.6	-821.9	966.0	0.38	0.33	
7,291.0	1.50	245.00	7,213.9	-508.4	-824.8	968.8	0.98	-0.76	
7,382.0	0.10	180.10	7,304.9	-508.9	-825.8	970.1	1.60	-1.54	
7,474.0	0.20	143.20	7,396.9	-509.1	-825.7	970.1	0.15	0.11	
7,565.0	0.40	209.60	7,487.9	-509.5	-825.8	970.3	0.41	0.22	
7,657.0	0.40	221.20	7,579.9	-510.1	-826.2	970.9	0.09	0.00	
7,749.0	1.60	31.30	7,671.9	-509.2	-825.7	970.1	2.17	1.30	
7,840.0	1.50	17.80	7,762.9	-507.0	-824.7	968.1	0.41	-0.11	
7,932.0	0.70	343.40	7,854.8	-505.3	-824.5	967.0	1.09	-0.87	
8,023.0	0.80	292.70	7,945.8	-504.5	-825.2	967.2	0.71	0.11	
8,115.0	1.60	258.40	8,037.8	-504.5	-827.1	968.8	1.13	0.87	
8,206.0	0.70	271.60	8,128.8	-504.8	-828.9	970.5	1.02	-0.99	
8,298.0	0.80	99.60	8,220.8	-504.9	-828.8	970.5	1.63	0.11	
8,389.0	0.20	212.40	8,311.8	-505.1	-828.3	970.1	0.99	-0.66	
8,480.0	0.60	38.80	8,402.8	-504.9	-828.1	969.8	0.88	0.44	
8,572.0	0.20	171.80	8,494.8	-504.7	-827.7	969.4	0.82	-0.43	
8,663.0	0.80	124.70	8,585.8	-505.2	-827.2	969.2	0.75	0.66	
8,755.0	0.90	143.80	8,677.8	-506.1	-826.2	968.9	0.32	0.11	
8,846.0	0.90	117.10	8,768.8	-507.0	-825.2	968.5	0.46	0.00	
8,938.0	1.20	189.00	8,860.8	-508.3	-824.7	968.7	1.37	0.33	
9,029.0	0.30	130.30	8,951.7	-509.4	-824.6	969.3	1.18	-0.99	
9,121.0	0.70	23.70	9,043.7	-509.0	-824.2	968.7	0.91	0.43	
9,212.0	0.40	343.90	9,134.7	-508.2	-824.1	968.2	0.52	-0.33	
9,304.0	0.70	283.30	9,226.7	-507.8	-824.7	968.5	0.67	0.33	
9,396.0	1.10	253.50	9,318.7	-507.9	-826.1	969.8	0.66	0.43	
9,487.0	1.40	260.40	9,409.7	-508.3	-828.1	971.6	0.37	0.33	
9,579.0	1.50	234.20	9,501.7	-509.2	-830.1	973.9	0.72	0.11	
9,670.0	2.50	237.90	9,592.6	-511.0	-832.8	977.1	1.11	1.10	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well DW 8616F-28 (P28 496)
Project:	Double Willow	TVD Reference:	KBE @ 7813.0ft (Patterson 308)
Site:	S28-T4S-R96W (P28 496)(column pattern)	MD Reference:	KBE @ 7813.0ft (Patterson 308)
Well:	DW 8616F-28 (P28 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
9,757.0	2.60	237.90	9,679.5	-513.0	-836.1	980.9	0.11	0.11	
9,848.0	1.40	273.20	9,770.5	-514.1	-838.9	983.9	1.83	-1.32	
9,940.0	1.10	3.30	9,862.5	-513.1	-840.0	984.3	1.94	-0.33	
10,031.0	1.00	322.30	9,953.5	-511.6	-840.4	983.9	0.81	-0.11	
10,123.0	1.50	16.30	10,045.4	-509.8	-840.6	983.1	1.33	0.54	
10,215.0	0.80	345.60	10,137.4	-508.1	-840.4	982.0	0.99	-0.76	
10,306.0	1.20	293.30	10,228.4	-507.1	-841.4	982.4	1.05	0.44	
10,398.0	1.60	247.50	10,320.4	-507.2	-843.5	984.2	1.25	0.43	
10,489.0	1.90	239.10	10,411.3	-508.4	-846.0	987.0	0.43	0.33	
10,581.0	2.20	241.10	10,503.3	-510.1	-848.8	990.3	0.34	0.33	
10,672.0	2.60	235.00	10,594.2	-512.1	-852.1	994.1	0.52	0.44	
10,764.0	2.90	229.00	10,686.1	-514.8	-855.5	998.5	0.45	0.33	
10,855.0	3.20	233.50	10,777.0	-517.9	-859.3	1,003.3	0.42	0.33	
10,900.0	3.60	232.60	10,821.9	-519.5	-861.4	1,005.9	0.90	0.89	Last Cathedral Survey @ 10,900' MD
10,960.0	4.13	231.40	10,881.8	-522.0	-864.6	1,009.9	0.89	0.88	Projection to Bit @ 10,960' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
DW 8616F-28 P28 496 f - hit/miss target - Shape	0.00	0.00	10,703.0	-515.8	-841.9	1,678,640.43	2,248,826.89	39° 39' 58.92 N	108° 10' 7.32 W
- actual wellpath misses target center by 14.3ft at 10780.3ft MD (10702.4 TVD, -515.4 N, -856.2 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
DW 8616F-28 P28 496 T - actual wellpath misses target center by 3.7ft at 7193.1ft MD (7116.1 TVD, -507.6 N, -821.7 E)	0.00	0.00	7,116.0	-505.8	-824.9	1,678,649.90	2,248,844.20	39° 39' 59.02 N	108° 10' 7.11 W
- Point									
DW 8616F-28 P28 496 T - actual wellpath misses target center by 6.0ft at 7120.2ft MD (7043.2 TVD, -507.4 N, -819.1 E)	0.00	0.00	7,043.0	-505.8	-824.9	1,678,649.90	2,248,844.20	39° 39' 59.02 N	108° 10' 7.11 W
- Point									
DW 8616F-28 P28 496 f - actual wellpath misses target center by 14.0ft at 10773.4ft MD (10695.4 TVD, -515.1 N, -855.9 E)	0.00	0.00	10,696.0	-515.8	-841.9	1,678,640.43	2,248,826.89	39° 39' 58.92 N	108° 10' 7.32 W
- Rectangle (sides W30.0 H50.0 D0.0)									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,080.0	2,061.1	-120.7	-177.1	Last Cathedral Survey @ 2,080' MD	
10,900.0	10,821.9	-519.5	-861.4	Last Cathedral Survey @ 10,900' MD	
10,960.0	10,881.8	-522.0	-864.6	Projection to Bit @ 10,960' MD	

Checked By: _____ Approved By: _____ Date: _____