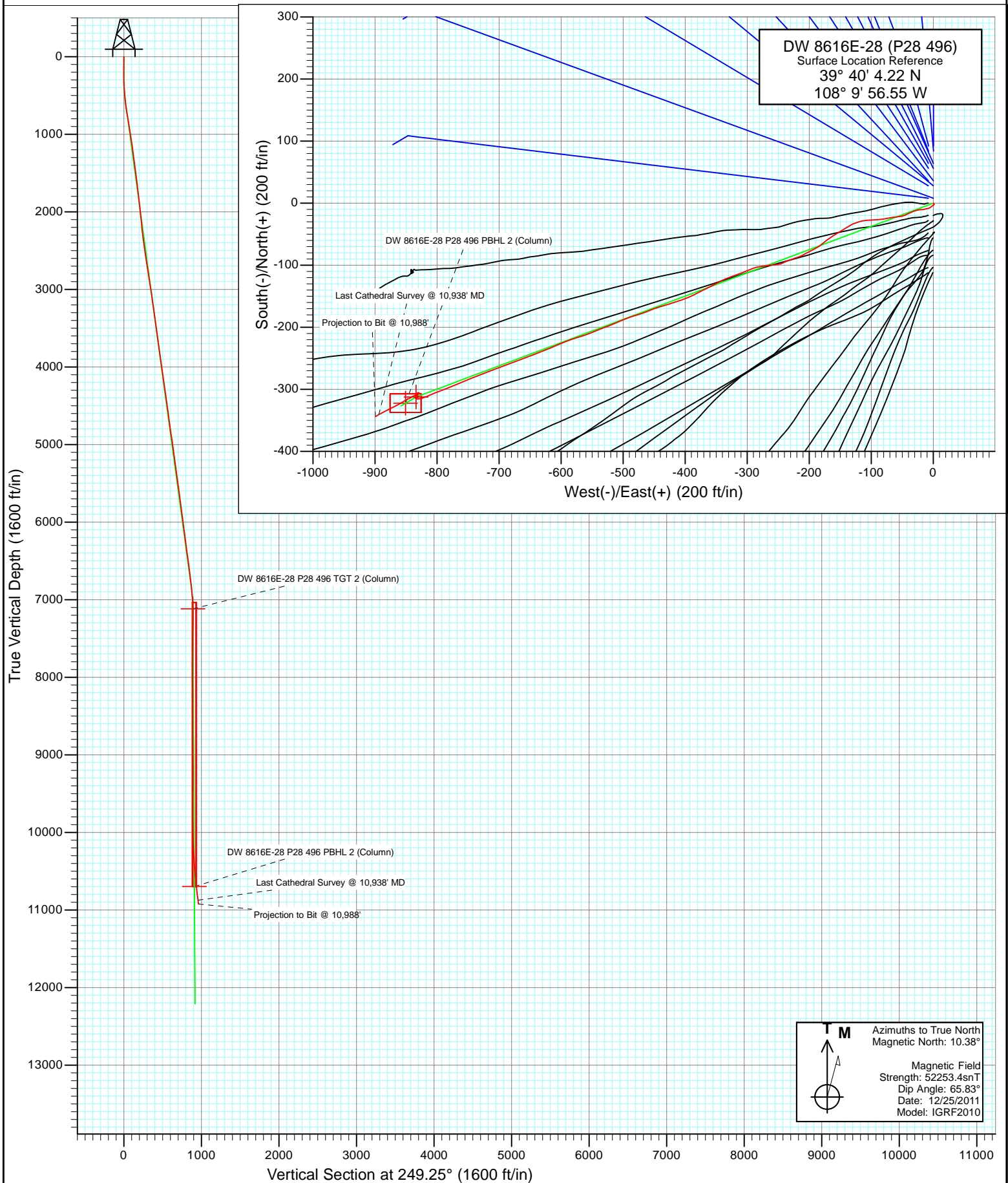


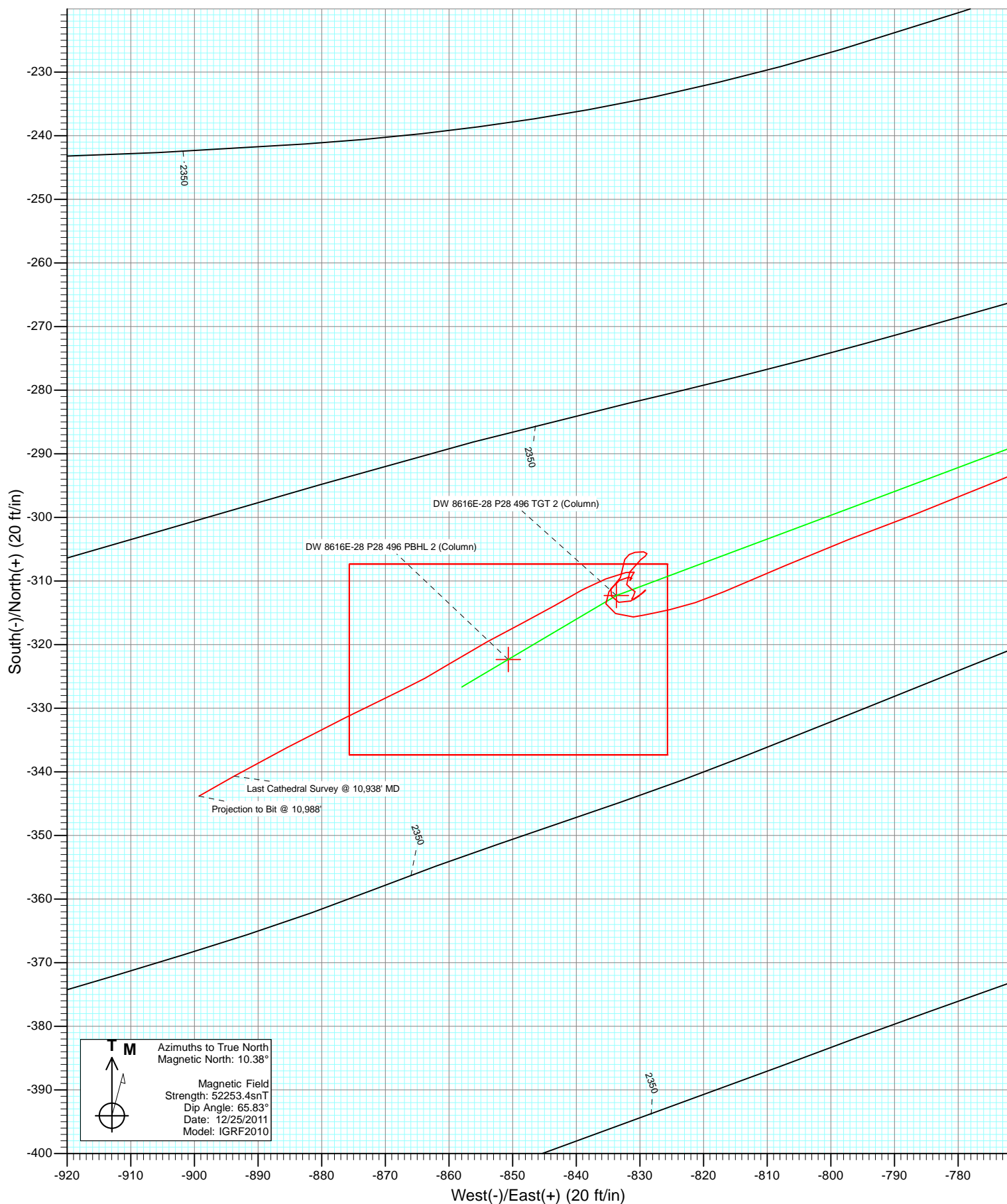


Project: Double Willow  
Site: S28-T4S-R96W (P28 496)(column pattern)  
Well: DW 8616E-28 (P28 496)  
Wellbore: DD  
Design: FINAL





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



# Cathedral Energy Services

## Survey Report

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

<b>Project</b>	Double Willow		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 8616E-28 (P28 496)					
Well Position	+N/-S	0.0 ft	Northing:	1,679,151.31 ft	Latitude:	39° 40' 4.22 N
	+E/-W	0.0 ft	Easting:	2,249,684.33 ft	Longitude:	108° 9' 56.55 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,780.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	12/25/2011	10.38	65.83	52,253

<b>Design</b>	FINAL				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	249.25	

<b>Survey Program</b>	<b>Date</b>	9/18/2013			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
171.0	10,988.0	Survey #1 (DD)	MWD	Geolink MWD	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Formations / Comments</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
171.0	0.80	126.50	171.0	-0.7	1.0	-0.6	0.47	0.47		
202.0	0.80	107.20	202.0	-0.9	1.3	-0.9	0.87	0.00		
231.0	0.40	151.30	231.0	-1.1	1.6	-1.1	2.01	-1.38		
260.0	0.70	195.80	260.0	-1.3	1.6	-1.0	1.73	1.03		
291.0	1.60	194.30	291.0	-1.9	1.4	-0.7	2.90	2.90		
320.0	1.90	225.70	320.0	-2.6	1.0	0.0	3.41	1.03		
351.0	3.00	237.70	350.9	-3.4	-0.1	1.3	3.90	3.55		
381.0	3.00	242.90	380.9	-4.2	-1.4	2.8	0.91	0.00		
412.0	3.40	218.90	411.9	-5.3	-2.7	4.4	4.47	1.29		
442.0	4.60	240.00	441.8	-6.6	-4.3	6.4	6.27	4.00		
472.0	4.80	239.70	471.7	-7.8	-6.5	8.8	0.67	0.67		
503.0	5.50	261.00	502.6	-8.7	-9.0	11.5	6.52	2.26		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well DW 8616E-28 (P28 496)
<b>Project:</b>	Double Willow	<b>TVD Reference:</b>	KBE @ 7813.0ft (Patterson 308)
<b>Site:</b>	S28-T4S-R96W (P28 496)(column pattern)	<b>MD Reference:</b>	KBE @ 7813.0ft (Patterson 308)
<b>Well:</b>	DW 8616E-28 (P28 496)	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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
552.0	5.40	253.40	551.3	-9.7	-13.6	16.1	1.49	-0.20	
597.0	7.20	269.60	596.1	-10.4	-18.4	20.9	5.58	4.00	
689.0	8.40	249.10	687.2	-12.8	-30.5	33.0	3.27	1.30	
780.0	9.60	244.70	777.1	-18.4	-43.5	47.2	1.52	1.32	
872.0	10.00	266.80	867.8	-22.1	-58.5	62.5	4.09	0.43	
963.0	9.10	256.90	957.5	-24.2	-73.4	77.2	2.05	-0.99	
1,055.0	8.90	265.10	1,048.4	-26.5	-87.5	91.2	1.41	-0.22	
1,146.0	8.30	268.00	1,138.4	-27.3	-101.1	104.2	0.81	-0.66	
1,238.0	8.70	259.50	1,229.4	-28.8	-114.6	117.4	1.43	0.43	
1,284.0	7.80	250.20	1,274.9	-30.5	-121.0	123.9	3.49	-1.96	
1,330.0	7.60	253.20	1,320.5	-32.4	-126.8	130.1	0.98	-0.43	
1,375.0	7.60	239.40	1,365.1	-34.8	-132.2	136.0	4.05	0.00	
1,421.0	8.20	238.90	1,410.7	-38.0	-137.6	142.2	1.31	1.30	
1,513.0	7.40	238.80	1,501.8	-44.5	-148.3	154.5	0.87	-0.87	
1,604.0	6.70	237.30	1,592.1	-50.4	-157.8	165.4	0.80	-0.77	
1,696.0	6.50	237.00	1,683.5	-56.1	-166.7	175.8	0.22	-0.22	
1,787.0	6.90	228.30	1,773.9	-62.6	-175.1	185.9	1.20	0.44	
1,879.0	6.60	236.10	1,865.3	-69.2	-183.6	196.2	1.05	-0.33	
1,970.0	6.60	243.00	1,955.7	-74.5	-192.6	206.5	0.87	0.00	
2,050.0	6.80	243.00	2,035.1	-78.7	-200.9	215.8	0.25	0.25	
2,167.0	5.00	241.50	2,151.5	-84.3	-211.6	227.7	1.54	-1.54	
2,258.0	6.50	252.70	2,242.0	-87.7	-220.0	236.8	2.05	1.65	
2,350.0	8.00	249.80	2,333.3	-91.5	-231.0	248.4	1.68	1.63	
2,441.0	6.60	244.10	2,423.6	-96.0	-241.6	259.9	1.73	-1.54	
2,533.0	8.60	263.40	2,514.8	-99.1	-253.2	271.9	3.50	2.17	
2,624.0	8.30	263.80	2,604.8	-100.6	-266.5	284.8	0.34	-0.33	
2,716.0	9.50	260.90	2,695.7	-102.5	-280.6	298.7	1.39	1.30	
2,807.0	9.90	246.40	2,785.4	-106.8	-295.2	313.9	2.71	0.44	
2,899.0	9.00	250.10	2,876.1	-112.4	-309.2	329.0	1.18	-0.98	
2,990.0	8.10	250.10	2,966.1	-117.0	-321.9	342.5	0.99	-0.99	
3,082.0	8.70	247.20	3,057.1	-121.9	-334.4	355.9	0.80	0.65	
3,173.0	7.80	241.90	3,147.2	-127.5	-346.2	368.9	1.29	-0.99	
3,265.0	7.40	242.80	3,238.4	-133.1	-357.0	381.0	0.45	-0.43	
3,356.0	8.20	243.00	3,328.5	-138.8	-368.0	393.3	0.88	0.88	
3,447.0	8.30	245.50	3,418.6	-144.4	-379.7	406.3	0.41	0.11	
3,539.0	7.50	241.80	3,509.7	-150.0	-391.1	418.9	1.03	-0.87	
3,630.0	8.90	252.30	3,599.8	-155.0	-403.0	431.8	2.25	1.54	
3,722.0	8.10	250.10	3,690.8	-159.4	-415.9	445.4	0.94	-0.87	
3,813.0	7.40	253.70	3,780.9	-163.2	-427.5	457.6	0.94	-0.77	
3,905.0	8.10	254.10	3,872.1	-166.6	-439.5	470.0	0.76	0.76	
3,996.0	7.80	249.20	3,962.2	-170.6	-451.4	482.5	0.81	-0.33	
4,088.0	7.40	247.70	4,053.4	-175.0	-462.7	494.7	0.49	-0.43	
4,179.0	8.80	252.90	4,143.5	-179.3	-474.8	507.5	1.73	1.54	
4,271.0	8.30	252.30	4,234.5	-183.4	-487.8	521.2	0.55	-0.54	
4,362.0	8.20	246.50	4,324.6	-188.0	-500.1	534.2	0.92	-0.11	
4,454.0	8.10	246.50	4,415.6	-193.2	-512.0	547.2	0.11	-0.11	
4,545.0	7.80	249.30	4,505.7	-197.9	-523.7	559.8	0.54	-0.33	
4,637.0	7.70	249.30	4,596.9	-202.3	-535.3	572.2	0.11	-0.11	
4,729.0	7.00	246.90	4,688.2	-206.7	-546.2	584.0	0.83	-0.76	
4,820.0	7.60	249.50	4,778.4	-211.0	-556.9	595.6	0.75	0.66	
4,912.0	9.00	253.00	4,869.4	-215.2	-569.5	608.8	1.62	1.52	
5,003.0	8.90	251.90	4,959.3	-219.5	-583.0	622.9	0.22	-0.11	
5,095.0	8.40	247.50	5,050.3	-224.2	-596.0	636.8	0.90	-0.54	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well DW 8616E-28 (P28 496)
<b>Project:</b>	Double Willow	<b>TVD Reference:</b>	KBE @ 7813.0ft (Patterson 308)
<b>Site:</b>	S28-T4S-R96W (P28 496)(column pattern)	<b>MD Reference:</b>	KBE @ 7813.0ft (Patterson 308)
<b>Well:</b>	DW 8616E-28 (P28 496)	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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
5,186.0	7.80	245.10	5,140.4	-229.4	-607.7	649.6	0.76	-0.66	
5,278.0	7.60	250.00	5,231.6	-234.1	-619.1	661.9	0.75	-0.22	
5,369.0	6.90	246.20	5,321.8	-238.4	-629.8	673.4	0.93	-0.77	
5,461.0	7.70	250.50	5,413.1	-242.7	-640.6	685.0	1.05	0.87	
5,553.0	7.40	249.00	5,504.3	-246.8	-652.0	697.1	0.39	-0.33	
5,644.0	6.90	247.60	5,594.6	-251.0	-662.5	708.5	0.58	-0.55	
5,735.0	7.80	251.50	5,684.8	-255.1	-673.4	720.1	1.13	0.99	
5,827.0	7.10	249.10	5,776.1	-259.1	-684.6	732.0	0.83	-0.76	
5,918.0	8.70	249.10	5,866.2	-263.5	-696.3	744.5	1.76	1.76	
6,010.0	8.00	249.40	5,957.2	-268.3	-708.8	757.9	0.76	-0.76	
6,102.0	7.80	250.10	6,048.3	-272.6	-720.7	770.5	0.24	-0.22	
6,193.0	7.00	246.00	6,138.6	-277.0	-731.6	782.2	1.05	-0.88	
6,285.0	6.50	247.80	6,229.9	-281.2	-741.5	793.0	0.59	-0.54	
6,377.0	8.10	247.70	6,321.2	-285.7	-752.3	804.7	1.74	1.74	
6,468.0	7.80	249.30	6,411.3	-290.3	-764.0	817.3	0.41	-0.33	
6,560.0	7.70	246.30	6,502.5	-295.0	-775.5	829.7	0.45	-0.11	
6,652.0	7.30	249.90	6,593.7	-299.5	-786.6	841.7	0.67	-0.43	
6,743.0	6.90	248.40	6,684.0	-303.5	-797.1	853.0	0.48	-0.44	
6,835.0	6.60	246.80	6,775.4	-307.6	-807.1	863.8	0.38	-0.33	
6,927.0	6.50	247.10	6,866.8	-311.7	-816.8	874.2	0.11	-0.11	
7,018.0	4.80	257.80	6,957.3	-314.5	-825.3	883.2	2.19	-1.87	
7,110.0	2.50	260.50	7,049.1	-315.6	-831.0	888.9	2.51	-2.50	
7,201.0	1.50	315.50	7,140.1	-315.1	-833.8	891.4	2.25	-1.10	
7,293.0	1.20	315.30	7,232.1	-313.6	-835.3	892.2	0.33	-0.33	
7,384.0	2.10	43.10	7,323.0	-311.7	-834.9	891.1	2.61	0.99	
7,476.0	1.50	33.30	7,415.0	-309.4	-833.0	888.6	0.73	-0.65	
7,567.0	0.90	339.00	7,506.0	-307.8	-832.6	887.7	1.34	-0.66	
7,659.0	0.90	47.50	7,598.0	-306.6	-832.4	887.0	1.10	0.00	
7,751.0	0.40	26.10	7,690.0	-305.8	-831.7	886.1	0.59	-0.54	
7,842.0	1.00	86.00	7,781.0	-305.5	-830.8	885.1	0.96	0.66	
7,934.0	0.70	86.70	7,872.9	-305.4	-829.4	883.8	0.33	-0.33	
8,025.0	0.40	187.70	7,963.9	-305.7	-828.9	883.4	0.96	-0.33	
8,116.0	1.40	236.30	8,054.9	-306.6	-829.9	884.7	1.29	1.10	
8,208.0	1.90	210.50	8,146.9	-308.6	-831.6	887.0	0.96	0.54	
8,299.0	0.90	157.80	8,237.9	-310.5	-832.1	888.1	1.68	-1.10	
8,391.0	0.60	99.50	8,329.9	-311.3	-831.3	887.7	0.84	-0.33	
8,482.0	0.40	162.80	8,420.9	-311.7	-830.8	887.3	0.61	-0.22	
8,574.0	0.80	217.10	8,512.9	-312.5	-831.0	887.8	0.71	0.43	
8,665.0	0.30	42.60	8,603.8	-312.8	-831.3	888.2	1.21	-0.55	
8,757.0	0.40	169.20	8,695.8	-312.9	-831.0	888.0	0.68	0.11	
8,848.0	1.50	42.70	8,786.8	-312.4	-830.2	887.0	1.94	1.21	
8,940.0	0.30	71.00	8,878.8	-311.4	-829.1	885.7	1.35	-1.30	
9,031.0	1.00	229.10	8,969.8	-311.9	-829.5	886.2	1.41	0.77	
9,123.0	1.90	240.30	9,061.8	-313.1	-831.4	888.5	1.02	0.98	
9,214.0	1.00	315.30	9,152.8	-313.3	-833.3	890.3	2.09	-0.99	
9,306.0	0.80	301.40	9,244.8	-312.4	-834.4	891.0	0.32	-0.22	
9,397.0	1.20	25.70	9,335.7	-311.2	-834.6	890.7	1.51	0.44	
9,489.0	1.30	63.80	9,427.7	-309.9	-833.2	888.9	0.89	0.11	
9,581.0	0.60	87.20	9,519.7	-309.4	-831.8	887.4	0.85	-0.76	
9,672.0	0.20	149.10	9,610.7	-309.5	-831.2	887.0	0.59	-0.44	
9,764.0	0.60	241.10	9,702.7	-309.9	-831.6	887.4	0.69	0.43	
9,855.0	1.00	41.80	9,793.7	-309.5	-831.4	887.2	1.73	0.44	
9,947.0	0.40	4.40	9,885.7	-308.6	-830.9	886.3	0.79	-0.65	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well DW 8616E-28 (P28 496)
<b>Project:</b>	Double Willow	<b>TVD Reference:</b>	KBE @ 7813.0ft (Patterson 308)
<b>Site:</b>	S28-T4S-R96W (P28 496)(column pattern)	<b>MD Reference:</b>	KBE @ 7813.0ft (Patterson 308)
<b>Well:</b>	DW 8616E-28 (P28 496)	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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
10,038.0	1.70	255.10	9,976.7	-308.6	-832.2	887.5	2.06	1.43	
10,130.0	2.50	250.20	10,068.6	-309.7	-835.4	890.9	0.89	0.87	
10,222.0	2.60	240.10	10,160.5	-311.4	-839.1	895.0	0.50	0.11	
10,313.0	3.60	240.60	10,251.4	-313.8	-843.4	899.8	1.10	1.10	
10,405.0	3.60	242.10	10,343.2	-316.6	-848.4	905.6	0.10	0.00	
10,496.0	4.30	242.20	10,434.0	-319.5	-854.0	911.8	0.77	0.77	
10,588.0	4.80	237.40	10,525.7	-323.2	-860.3	919.0	0.68	0.54	
10,679.0	5.90	244.70	10,616.3	-327.3	-867.7	927.4	1.42	1.21	
10,771.0	6.10	242.80	10,707.8	-331.5	-876.3	936.9	0.31	0.22	
10,862.0	6.90	242.90	10,798.2	-336.2	-885.5	947.2	0.88	0.88	
10,938.0	7.30	240.50	10,873.6	-340.7	-893.7	956.5	0.66	0.53	Last Cathedral Survey @ 10,938' MD
10,988.0	7.30	240.50	10,923.2	-343.8	-899.3	962.7	0.00	0.00	Projection to Bit @ 10,988'

### 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
DW 8616E-28 P28 496 I - survey misses target center by 26.1ft at 10758.4ft MD (10695.3 TVD, -330.9 N, -875.1 E) - Rectangle (sides W30.0 H50.0 D0.0)	0.00	0.00	10,698.0	-322.3	-850.7	1,678,854.08	2,248,824.56	39° 40' 1.03 N	108° 10' 7.43 W
DW 8616E-28 P28 496 I - survey misses target center by 28.2ft at 10778.1ft MD (10714.8 TVD, -331.9 N, -877.0 E) - Rectangle (sides W30.0 H50.0 D0.0)	0.00	0.00	10,718.0	-322.3	-850.7	1,678,854.08	2,248,824.56	39° 40' 1.03 N	108° 10' 7.43 W
DW 8616E-28 P28 496 ^ - survey misses target center by 3.2ft at 7178.9ft MD (7118.0 TVD, -315.5 N, -833.3 E) - Point	0.00	0.00	7,118.0	-312.3	-833.7	1,678,863.63	2,248,841.83	39° 40' 1.13 N	108° 10' 7.22 W
DW 8616E-28 P28 496 ^ - survey misses target center by 4.1ft at 7119.0ft MD (7058.1 TVD, -315.7 N, -831.4 E) - Point	0.00	0.00	7,058.0	-312.3	-833.7	1,678,863.63	2,248,841.83	39° 40' 1.13 N	108° 10' 7.22 W

### Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
10,938.0	10,873.6	-340.7	-893.7	Last Cathedral Survey @ 10,938' MD
10,988.0	10,923.2	-343.8	-899.3	Projection to Bit @ 10,988'

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_