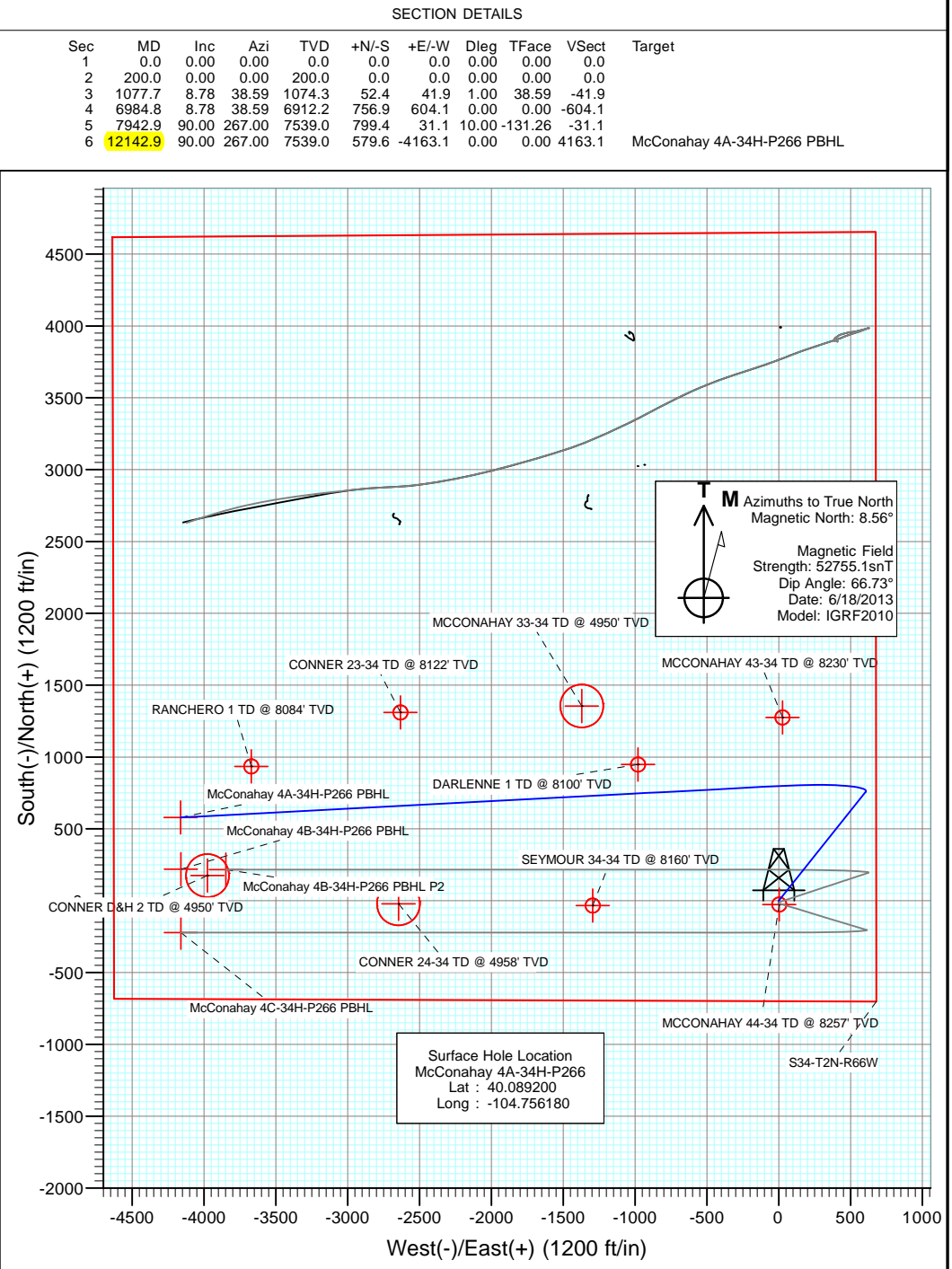
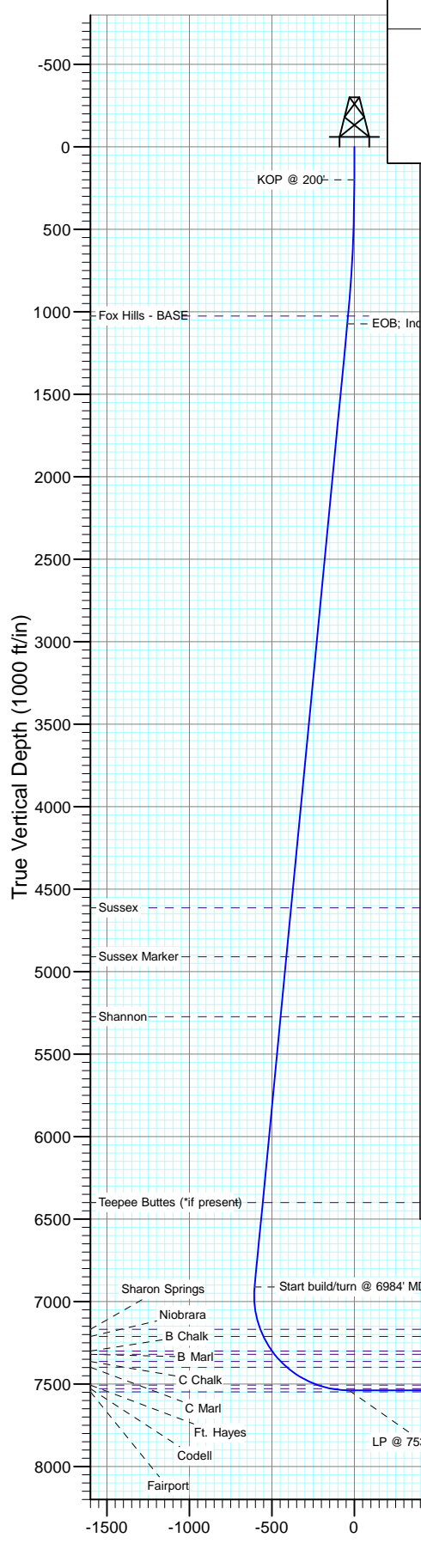




Project: DJ Wattenberg  
Site: S34-T2N-R66W (McConahay)  
Well: McConahay 4A-34H-P266  
Wellbore: Hz  
Design: Plan #2



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
McConahay 4A-34H-P266 PBHL	579.6	-4163.1	1276760.21	3203947.40	40.090790	-104.771060

Plan #2  
McConahay 4A-34H-P266  
13xxx; LR  
WELL @ 5101.0ft (Original Well Elev)  
Ground Elevation @ 5076.0  
North American Datum 1983  
Well McConahay 4A-34H-P266, True North

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Project:</b>	DJ Wattenberg	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site:</b>	S34-T2N-R66W (McConahay)	<b>North Reference:</b>	True
<b>Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Plan #2		

<b>Project</b>	DJ Wattenberg		
<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 Northern Zone		

Site		S34-T2N-R66W (McConahay)			
Site Position:		Northing:	1,280,109.37 ft	Latitude:	40.099880
From:	Lat/Long	Easting:	3,208,491.04 ft	Longitude:	-104.754720
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.48 °

Well	McConahay 4A-34H-P266					
Well Position	+N/-S	0.0 ft	Northing:	1,276,215.58 ft	Latitude:	40.089200
	+E/-W	0.0 ft	Easting:	3,208,115.26 ft	Longitude:	-104.756180
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,076.0 ft

<b>Wellbore</b>	Hz				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	6/18/2013	8.56	66.73	52,755

<b>Design</b>	Plan #2			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	270.00

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,077.7	8.78	38.59	1,074.3	52.4	41.9	1.00	1.00	0.00	38.59	
6,984.8	8.78	38.59	6,912.2	756.9	604.1	0.00	0.00	0.00	0.00	
7,942.9	90.00	267.00	7,539.0	799.4	31.1	10.00	8.48	-13.73	-131.26	
12,142.9	90.00	267.00	7,539.0	579.6	-4,163.1	0.00	0.00	0.00	0.00	McConahay 4A-34H-F

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Project:</b>	DJ Wattenberg	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site:</b>	S34-T2N-R66W (McConahay)	<b>North Reference:</b>	True
<b>Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Plan #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	1.00	38.59	300.0	0.7	0.5	-0.5	1.00	1.00	
400.0	2.00	38.59	400.0	2.7	2.2	-2.2	1.00	1.00	
500.0	3.00	38.59	499.9	6.1	4.9	-4.9	1.00	1.00	
600.0	4.00	38.59	599.7	10.9	8.7	-8.7	1.00	1.00	
700.0	5.00	38.59	699.4	17.0	13.6	-13.6	1.00	1.00	
800.0	6.00	38.59	798.9	24.5	19.6	-19.6	1.00	1.00	
900.0	7.00	38.59	898.3	33.4	26.6	-26.6	1.00	1.00	
1,000.0	8.00	38.59	997.4	43.6	34.8	-34.8	1.00	1.00	
1,028.9	8.29	38.59	1,026.0	46.8	37.3	-37.3	1.00	1.00	Fox Hills - BASE
1,077.7	8.78	38.59	1,074.3	52.4	41.9	-41.9	1.00	1.00	EOB; Inc=8.78°
1,100.0	8.78	38.59	1,096.3	55.1	44.0	-44.0	0.00	0.00	
1,200.0	8.78	38.59	1,195.1	67.0	53.5	-53.5	0.00	0.00	
1,300.0	8.78	38.59	1,294.0	79.0	63.0	-63.0	0.00	0.00	
1,400.0	8.78	38.59	1,392.8	90.9	72.5	-72.5	0.00	0.00	
1,500.0	8.78	38.59	1,491.6	102.8	82.1	-82.1	0.00	0.00	
1,600.0	8.78	38.59	1,590.5	114.7	91.6	-91.6	0.00	0.00	
1,700.0	8.78	38.59	1,689.3	126.7	101.1	-101.1	0.00	0.00	
1,800.0	8.78	38.59	1,788.1	138.6	110.6	-110.6	0.00	0.00	
1,900.0	8.78	38.59	1,886.9	150.5	120.1	-120.1	0.00	0.00	
2,000.0	8.78	38.59	1,985.8	162.4	129.6	-129.6	0.00	0.00	
2,100.0	8.78	38.59	2,084.6	174.4	139.2	-139.2	0.00	0.00	
2,200.0	8.78	38.59	2,183.4	186.3	148.7	-148.7	0.00	0.00	
2,300.0	8.78	38.59	2,282.3	198.2	158.2	-158.2	0.00	0.00	
2,400.0	8.78	38.59	2,381.1	210.1	167.7	-167.7	0.00	0.00	
2,500.0	8.78	38.59	2,479.9	222.1	177.2	-177.2	0.00	0.00	
2,600.0	8.78	38.59	2,578.7	234.0	186.8	-186.8	0.00	0.00	
2,700.0	8.78	38.59	2,677.6	245.9	196.3	-196.3	0.00	0.00	
2,800.0	8.78	38.59	2,776.4	257.8	205.8	-205.8	0.00	0.00	
2,900.0	8.78	38.59	2,875.2	269.8	215.3	-215.3	0.00	0.00	
3,000.0	8.78	38.59	2,974.1	281.7	224.8	-224.8	0.00	0.00	
3,100.0	8.78	38.59	3,072.9	293.6	234.3	-234.3	0.00	0.00	
3,200.0	8.78	38.59	3,171.7	305.6	243.9	-243.9	0.00	0.00	
3,300.0	8.78	38.59	3,270.5	317.5	253.4	-253.4	0.00	0.00	
3,400.0	8.78	38.59	3,369.4	329.4	262.9	-262.9	0.00	0.00	
3,500.0	8.78	38.59	3,468.2	341.3	272.4	-272.4	0.00	0.00	
3,600.0	8.78	38.59	3,567.0	353.3	281.9	-281.9	0.00	0.00	
3,700.0	8.78	38.59	3,665.9	365.2	291.5	-291.5	0.00	0.00	
3,800.0	8.78	38.59	3,764.7	377.1	301.0	-301.0	0.00	0.00	
3,900.0	8.78	38.59	3,863.5	389.0	310.5	-310.5	0.00	0.00	
4,000.0	8.78	38.59	3,962.4	401.0	320.0	-320.0	0.00	0.00	
4,100.0	8.78	38.59	4,061.2	412.9	329.5	-329.5	0.00	0.00	
4,200.0	8.78	38.59	4,160.0	424.8	339.0	-339.0	0.00	0.00	
4,300.0	8.78	38.59	4,258.8	436.7	348.6	-348.6	0.00	0.00	
4,400.0	8.78	38.59	4,357.7	448.7	358.1	-358.1	0.00	0.00	
4,500.0	8.78	38.59	4,456.5	460.6	367.6	-367.6	0.00	0.00	
4,600.0	8.78	38.59	4,555.3	472.5	377.1	-377.1	0.00	0.00	
4,659.4	8.78	38.59	4,614.0	479.6	382.8	-382.8	0.00	0.00	Sussex
4,700.0	8.78	38.59	4,654.2	484.4	386.6	-386.6	0.00	0.00	
4,800.0	8.78	38.59	4,753.0	496.4	396.2	-396.2	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Project:</b>	DJ Wattenberg	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site:</b>	S34-T2N-R66W (McConahay)	<b>North Reference:</b>	True
<b>Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Plan #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
4,900.0	8.78	38.59	4,851.8	508.3	405.7	-405.7	0.00	0.00	
4,958.9	8.78	38.59	4,910.0	515.3	411.3	-411.3	0.00	0.00	Sussex Marker
5,000.0	8.78	38.59	4,950.6	520.2	415.2	-415.2	0.00	0.00	
5,100.0	8.78	38.59	5,049.5	532.1	424.7	-424.7	0.00	0.00	
5,200.0	8.78	38.59	5,148.3	544.1	434.2	-434.2	0.00	0.00	
5,300.0	8.78	38.59	5,247.1	556.0	443.8	-443.8	0.00	0.00	
5,327.2	8.78	38.59	5,274.0	559.2	446.3	-446.3	0.00	0.00	Shannon
5,400.0	8.78	38.59	5,346.0	567.9	453.3	-453.3	0.00	0.00	
5,500.0	8.78	38.59	5,444.8	579.9	462.8	-462.8	0.00	0.00	
5,600.0	8.78	38.59	5,543.6	591.8	472.3	-472.3	0.00	0.00	
5,700.0	8.78	38.59	5,642.4	603.7	481.8	-481.8	0.00	0.00	
5,800.0	8.78	38.59	5,741.3	615.6	491.3	-491.3	0.00	0.00	
5,900.0	8.78	38.59	5,840.1	627.6	500.9	-500.9	0.00	0.00	
6,000.0	8.78	38.59	5,938.9	639.5	510.4	-510.4	0.00	0.00	
6,100.0	8.78	38.59	6,037.8	651.4	519.9	-519.9	0.00	0.00	
6,200.0	8.78	38.59	6,136.6	663.3	529.4	-529.4	0.00	0.00	
6,300.0	8.78	38.59	6,235.4	675.3	538.9	-538.9	0.00	0.00	
6,400.0	8.78	38.59	6,334.2	687.2	548.5	-548.5	0.00	0.00	
6,466.5	8.78	38.59	6,400.0	695.1	554.8	-554.8	0.00	0.00	Teepee Buttes (*if present)
6,500.0	8.78	38.59	6,433.1	699.1	558.0	-558.0	0.00	0.00	
6,600.0	8.78	38.59	6,531.9	711.0	567.5	-567.5	0.00	0.00	
6,700.0	8.78	38.59	6,630.7	723.0	577.0	-577.0	0.00	0.00	
6,800.0	8.78	38.59	6,729.6	734.9	586.5	-586.5	0.00	0.00	
6,900.0	8.78	38.59	6,828.4	746.8	596.0	-596.0	0.00	0.00	
6,984.8	8.78	38.59	6,912.2	756.9	604.1	-604.1	0.00	0.00	Start build/turn @ 6984' MD
7,000.0	7.86	30.19	6,927.2	758.7	605.4	-605.4	10.00	-6.05	
7,100.0	8.71	315.93	7,026.4	770.1	603.5	-603.5	10.00	0.85	
7,200.0	17.00	289.19	7,123.9	780.4	584.4	-584.4	10.00	8.29	
7,247.7	21.47	284.07	7,169.0	784.8	569.3	-569.3	10.00	9.36	Sharon Springs
7,294.7	25.97	280.71	7,212.0	788.8	550.9	-550.9	10.00	9.58	Niobrara
7,300.0	26.48	280.40	7,216.7	789.2	548.6	-548.6	10.00	9.66	
7,397.5	35.98	276.15	7,300.0	796.2	498.6	-498.6	10.00	9.75	B Chalk
7,400.0	36.23	276.07	7,302.0	796.4	497.1	-497.1	10.00	9.81	
7,422.6	38.45	275.36	7,320.0	797.8	483.5	-483.5	10.00	9.82	B Marl
7,481.2	44.22	273.81	7,364.0	800.8	444.9	-444.9	10.00	9.85	C Chalk
7,500.0	46.08	273.38	7,377.2	801.7	431.6	-431.6	10.00	9.87	
7,532.3	49.27	272.71	7,399.0	802.9	407.8	-407.8	10.00	9.88	C Marl
7,600.0	55.97	271.47	7,440.1	804.9	354.1	-354.1	10.00	9.89	
7,700.0	65.88	269.96	7,488.6	805.9	266.8	-266.8	10.00	9.91	
7,749.9	70.83	269.30	7,507.0	805.6	220.4	-220.4	10.00	9.92	Ft. Hayes
7,800.0	75.81	268.67	7,521.4	804.8	172.4	-172.4	10.00	9.93	
7,835.3	79.32	268.25	7,529.0	803.8	137.9	-137.9	10.00	9.93	Codell
7,900.0	85.74	267.49	7,537.4	801.4	73.9	-73.9	10.00	9.93	
7,942.9	90.00	267.00	7,539.0	799.4	31.1	-31.1	10.00	9.93	LP @ 7539' TVD; 90°
8,000.0	90.00	267.00	7,539.0	796.4	-25.9	25.9	0.00	0.00	
8,100.0	90.00	267.00	7,539.0	791.2	-125.8	125.8	0.00	0.00	
8,200.0	90.00	267.00	7,539.0	785.9	-225.6	225.6	0.00	0.00	
8,300.0	90.00	267.00	7,539.0	780.7	-325.5	325.5	0.00	0.00	
8,400.0	90.00	267.00	7,539.0	775.5	-425.4	425.4	0.00	0.00	
8,500.0	90.00	267.00	7,539.0	770.2	-525.2	525.2	0.00	0.00	
8,600.0	90.00	267.00	7,539.0	765.0	-625.1	625.1	0.00	0.00	
8,700.0	90.00	267.00	7,539.0	759.8	-725.0	725.0	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Project:</b>	DJ Wattenberg	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site:</b>	S34-T2N-R66W (McConahay)	<b>North Reference:</b>	True
<b>Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Plan #2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
8,800.0	90.00	267.00	7,539.0	754.5	-824.8	824.8	0.00	0.00	
8,900.0	90.00	267.00	7,539.0	749.3	-924.7	924.7	0.00	0.00	
9,000.0	90.00	267.00	7,539.0	744.1	-1,024.5	1,024.5	0.00	0.00	
9,100.0	90.00	267.00	7,539.0	738.8	-1,124.4	1,124.4	0.00	0.00	
9,200.0	90.00	267.00	7,539.0	733.6	-1,224.3	1,224.3	0.00	0.00	
9,300.0	90.00	267.00	7,539.0	728.4	-1,324.1	1,324.1	0.00	0.00	
9,400.0	90.00	267.00	7,539.0	723.1	-1,424.0	1,424.0	0.00	0.00	
9,500.0	90.00	267.00	7,539.0	717.9	-1,523.9	1,523.9	0.00	0.00	
9,600.0	90.00	267.00	7,539.0	712.7	-1,623.7	1,623.7	0.00	0.00	
9,700.0	90.00	267.00	7,539.0	707.4	-1,723.6	1,723.6	0.00	0.00	
9,800.0	90.00	267.00	7,539.0	702.2	-1,823.4	1,823.4	0.00	0.00	
9,900.0	90.00	267.00	7,539.0	697.0	-1,923.3	1,923.3	0.00	0.00	
10,000.0	90.00	267.00	7,539.0	691.7	-2,023.2	2,023.2	0.00	0.00	
10,100.0	90.00	267.00	7,539.0	686.5	-2,123.0	2,123.0	0.00	0.00	
10,200.0	90.00	267.00	7,539.0	681.3	-2,222.9	2,222.9	0.00	0.00	
10,300.0	90.00	267.00	7,539.0	676.0	-2,322.8	2,322.8	0.00	0.00	
10,400.0	90.00	267.00	7,539.0	670.8	-2,422.6	2,422.6	0.00	0.00	
10,500.0	90.00	267.00	7,539.0	665.6	-2,522.5	2,522.5	0.00	0.00	
10,600.0	90.00	267.00	7,539.0	660.3	-2,622.3	2,622.3	0.00	0.00	
10,700.0	90.00	267.00	7,539.0	655.1	-2,722.2	2,722.2	0.00	0.00	
10,800.0	90.00	267.00	7,539.0	649.9	-2,822.1	2,822.1	0.00	0.00	
10,900.0	90.00	267.00	7,539.0	644.6	-2,921.9	2,921.9	0.00	0.00	
11,000.0	90.00	267.00	7,539.0	639.4	-3,021.8	3,021.8	0.00	0.00	
11,100.0	90.00	267.00	7,539.0	634.2	-3,121.7	3,121.7	0.00	0.00	
11,200.0	90.00	267.00	7,539.0	628.9	-3,221.5	3,221.5	0.00	0.00	
11,300.0	90.00	267.00	7,539.0	623.7	-3,321.4	3,321.4	0.00	0.00	
11,400.0	90.00	267.00	7,539.0	618.4	-3,421.3	3,421.3	0.00	0.00	
11,500.0	90.00	267.00	7,539.0	613.2	-3,521.1	3,521.1	0.00	0.00	
11,600.0	90.00	267.00	7,539.0	608.0	-3,621.0	3,621.0	0.00	0.00	
11,700.0	90.00	267.00	7,539.0	602.7	-3,720.8	3,720.8	0.00	0.00	
11,800.0	90.00	267.00	7,539.0	597.5	-3,820.7	3,820.7	0.00	0.00	
11,900.0	90.00	267.00	7,539.0	592.3	-3,920.6	3,920.6	0.00	0.00	
12,000.0	90.00	267.00	7,539.0	587.0	-4,020.4	4,020.4	0.00	0.00	
12,100.0	90.00	267.00	7,539.0	581.8	-4,120.3	4,120.3	0.00	0.00	
12,142.9	90.00	267.00	7,539.0	579.6	-4,163.1	4,163.1	0.00	0.00	TD at 12142.9

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
McConahay 4A-34H-P266 - hit/miss target - Shape - plan hits target center - Point	0.00	0.00	7,539.0	579.6	-4,163.1	1,276,760.21	3,203,947.40	40.090790	-104.771060

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Project:</b>	DJ Wattenberg	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site:</b>	S34-T2N-R66W (McConahay)	<b>North Reference:</b>	True
<b>Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Hz		
<b>Design:</b>	Plan #2		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,028.9	1,026.0	Fox Hills - BASE				
4,659.4	4,614.0	Sussex				
4,958.9	4,910.0	Sussex Marker				
5,327.2	5,274.0	Shannon				
6,466.5	6,400.0	Teepee Buttes (*if present)				
7,247.7	7,169.0	Sharon Springs				
7,294.7	7,212.0	Niobrara				
7,397.5	7,300.0	B Chalk				
7,422.6	7,320.0	B Marl				
7,481.2	7,364.0	C Chalk				
7,532.3	7,399.0	C Marl				
7,749.9	7,507.0	Ft. Hayes				
7,835.3	7,529.0	Codell				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.0	200.0	0.0	0.0	KOP @ 200'	
1,077.7	1,074.3	52.4	41.9	EOB; Inc=8.78°	
6,984.8	6,912.2	756.9	604.1	Start build/turn @ 6984' MD	
7,942.9	7,539.0	799.4	31.1	LP @ 7539' TVD; 90°	
12,142.9	7,539.0	579.6	-4,163.1	TD at 12142.9	

# **EnCana Oil & Gas (USA) Inc**

**DJ Wattenberg**

**S34-T2N-R66W (McConahay)**

**McConahay 4A-34H-P266**

**Hz**

**Plan #2**

## **Anticollision Report**

**11 July, 2013**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Reference Site:</b>	S34-T2N-R66W (McConahay)	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Plan #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	Systematic Ellipse
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	7/11/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,142.9	Plan #2 (Hz)	Geolink MWD	Geolink MWD	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S34-T2N-R66W (McConahay)						
CONNER 22-34 (EXISTING) - DD - DD						Out of range
CONNER 23-34 (EXISTING) - ENCANA WELL - NO SUR						Out of range
CONNER 24-34 (EXISTING) - FOUNDATION WELL - NO						Out of range
CONNER D&H 2 (EXISTING) - MARINER WELL - NO SU						Out of range
DARLENNE 1 (EXISTING) - ENCANA WELL - NO SURV	8,944.4	7,489.0	200.8	154.2	4.305	CC, ES, SF
MCCONAHAY #1 (EXISTING) - DD - DD						Out of range
McConahay 1A-34H - Hz - Hz						Out of range
McConahay 1A-34H - Hz - Plan #7						Out of range
MCCONAHAY 31-34 (EXISTING) - DD - GYROS						Out of range
MCCONAHAY 33-34 (EXISTING) - FOUNDATION WELL						Out of range
MCCONAHAY 41-34 (EXISTING) - DD - DD						Out of range
MCCONAHAY 41-34A (EXISTING) - VH - VH						Out of range
MCCONAHAY 43-34 (EXISTING) - ENCANA WELL - NO	7,926.4	7,506.1	475.6	447.0	16.623	CC, ES
MCCONAHAY 43-34 (EXISTING) - ENCANA WELL - NO	8,000.0	7,506.0	481.7	452.5	16.466	SF
MCCONAHAY 44-34 (EXISTING) - ENCANA WELL - NO	200.0	176.0	26.4	25.8	43.136	CC, ES
MCCONAHAY 44-34 (EXISTING) - ENCANA WELL - NO	600.0	575.7	37.5	35.5	18.583	SF
McConahay 4B-34H-P266 - Hz - Plan #3	200.0	200.0	10.9	10.3	17.890	CC, ES
McConahay 4B-34H-P266 - Hz - Plan #3	11,846.3	11,572.2	444.0	274.8	2.625	SF
McConahay 4C-34H-P266 - Hz - Plan #2	200.0	200.0	18.2	17.6	29.810	CC, ES
McConahay 4C-34H-P266 - Hz - Plan #2	500.0	499.8	24.9	23.3	15.000	SF
MCCONAHAY 6-4-34 (EXISTING) - DD - DD						Out of range
RANCHERO 1 (EXISTING) - ENCANA WELL - NO SURV	11,632.5	7,448.0	328.8	218.0	2.968	CC, ES, SF
RANCHERO 32-34 (EXISTING) - DD - GYROS						Out of range
SEYMOUR 34-34 (EXISTING) - ENCANA WELL - NO SU						Out of range



# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Reference Site:</b>	S34-T2N-R66W (McConahay)	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S34-T2N-R66W (McConahay) - DARLENNE 1 (EXISTING) - ENCANA WELL - NO SURVEYS													Offset Site Error:	0.0 ft
Survey Program: 8100-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
8,500.0	7,539.0	7,489.0	7,489.0	26.0	13.1	90.00	947.5	-979.5	487.6	450.4	37.23	13.098		
8,600.0	7,539.0	7,489.0	7,489.0	27.9	13.1	90.00	947.5	-979.5	398.6	359.4	39.24	10.158		
8,700.0	7,539.0	7,489.0	7,489.0	29.9	13.1	90.00	947.5	-979.5	316.3	275.0	41.33	7.654		
8,800.0	7,539.0	7,489.0	7,489.0	31.9	13.1	90.00	947.5	-979.5	247.3	203.9	43.47	5.690		
8,900.0	7,539.0	7,489.0	7,489.0	34.0	13.1	90.00	947.5	-979.5	205.7	160.0	45.66	4.504		
8,944.4	7,539.0	7,489.0	7,489.0	35.0	13.1	90.00	947.5	-979.5	200.8	154.2	46.65	4.305 CC, ES, SF		
9,000.0	7,539.0	7,489.0	7,489.0	36.2	13.1	90.00	947.5	-979.5	208.4	160.5	47.89	4.352		
9,100.0	7,539.0	7,489.0	7,489.0	38.4	13.1	90.00	947.5	-979.5	254.1	203.9	50.15	5.066		
9,200.0	7,539.0	7,489.0	7,489.0	40.6	13.1	90.00	947.5	-979.5	325.1	272.6	52.43	6.200		
9,300.0	7,539.0	7,489.0	7,489.0	42.9	13.1	90.00	947.5	-979.5	408.4	353.7	54.74	7.461		
9,400.0	7,539.0	7,489.0	7,489.0	45.1	13.1	90.00	947.5	-979.5	497.9	440.9	57.06	8.726		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Reference Site:</b>	S34-T2N-R66W (McConahay)	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> S34-T2N-R66W (McConahay) - MCCONAHAY 43-34 (EXISTING) - ENCANA WELL - NO SURVEYS													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 8230-Geolink MWD													<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	+E/-W	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)				
7,800.0	7,521.4	7,488.4	7,488.4	19.7	13.1	85.98	1,275.3	25.7	492.9	465.1	27.81	17.728		
7,900.0	7,537.4	7,504.4	7,504.4	19.7	13.1	89.75	1,275.3	25.7	476.4	448.0	28.36	16.795		
7,926.4	7,539.1	7,506.1	7,506.1	19.7	13.1	90.00	1,275.3	25.7	475.6	447.0	28.61	16.623 CC, ES		
8,000.0	7,539.0	7,506.0	7,506.0	19.8	13.1	90.00	1,275.3	25.7	481.7	452.5	29.26	16.466 SF		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Reference Site:</b>	S34-T2N-R66W (McConahay)	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		S34-T2N-R66W (McConahay) - MCCONAHAY 44-34 (EXISTING) - ENCANA WELL - NO SURVEYS										Offset Site Error:		0.0 ft
Survey Program:		8257-Geolink MWD										Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis				Distance						Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty	Separation		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	172.70	-26.2	3.4	35.7					
100.0	100.0	76.0	76.0	0.1	0.1	172.70	-26.2	3.4	26.4	26.2	0.26	100.225		
200.0	200.0	176.0	176.0	0.3	0.3	172.70	-26.2	3.4	26.4	25.8	0.61	43.136	CC, ES	
300.0	300.0	276.0	276.0	0.5	0.5	135.43	-26.2	3.4	27.0	26.1	0.96	28.108		
400.0	400.0	376.0	376.0	0.7	0.7	139.05	-26.2	3.4	29.0	27.7	1.31	22.059		
500.0	499.9	475.9	475.9	0.8	0.8	144.09	-26.2	3.4	32.4	30.7	1.67	19.445		
600.0	599.7	575.7	575.7	1.0	1.0	149.54	-26.2	3.4	37.5	35.5	2.02	18.583	SF	
700.0	699.4	675.4	675.4	1.3	1.2	154.64	-26.2	3.4	44.5	42.1	2.37	18.760		
800.0	798.9	774.9	774.9	1.5	1.4	159.03	-26.2	3.4	53.3	50.6	2.72	19.598		
900.0	898.3	874.3	874.3	1.7	1.5	162.62	-26.2	3.4	64.0	60.9	3.07	20.875		
1,000.0	997.4	973.4	973.4	2.0	1.7	165.51	-26.2	3.4	76.5	73.1	3.41	22.453		
1,100.0	1,096.3	1,072.3	1,072.3	2.3	1.9	167.81	-26.2	3.4	90.9	87.1	3.75	24.226		
1,200.0	1,195.1	1,171.1	1,171.1	2.6	2.0	169.55	-26.2	3.4	105.9	101.8	4.10	25.837		
1,300.0	1,294.0	1,270.0	1,270.0	2.9	2.2	170.86	-26.2	3.4	120.9	116.5	4.44	27.214		
1,400.0	1,392.8	1,368.8	1,368.8	3.2	2.4	171.88	-26.2	3.4	136.0	131.2	4.79	28.402		
1,500.0	1,491.6	1,467.6	1,467.6	3.5	2.6	172.70	-26.2	3.4	151.1	146.0	5.13	29.438		
1,600.0	1,590.5	1,566.5	1,566.5	3.9	2.7	173.37	-26.2	3.4	166.3	160.8	5.48	30.347		
1,700.0	1,689.3	1,665.3	1,665.3	4.2	2.9	173.93	-26.2	3.4	181.4	175.6	5.82	31.151		
1,800.0	1,788.1	1,764.1	1,764.1	4.5	3.1	174.40	-26.2	3.4	196.6	190.5	6.17	31.867		
1,900.0	1,886.9	1,862.9	1,862.9	4.8	3.3	174.80	-26.2	3.4	211.8	205.3	6.52	32.509		
2,000.0	1,985.8	1,961.8	1,961.8	5.1	3.4	175.15	-26.2	3.4	227.0	220.2	6.86	33.087		
2,100.0	2,084.6	2,060.6	2,060.6	5.4	3.6	175.45	-26.2	3.4	242.2	235.0	7.21	33.610		
2,200.0	2,183.4	2,159.4	2,159.4	5.7	3.8	175.72	-26.2	3.4	257.4	249.9	7.55	34.086		
2,300.0	2,282.3	2,258.3	2,258.3	6.1	3.9	175.96	-26.2	3.4	272.7	264.8	7.90	34.521		
2,400.0	2,381.1	2,357.1	2,357.1	6.4	4.1	176.18	-26.2	3.4	287.9	279.6	8.24	34.920		
2,500.0	2,479.9	2,455.9	2,455.9	6.7	4.3	176.37	-26.2	3.4	303.1	294.5	8.59	35.287		
2,600.0	2,578.7	2,554.7	2,554.7	7.0	4.5	176.54	-26.2	3.4	318.3	309.4	8.94	35.626		
2,700.0	2,677.6	2,653.6	2,653.6	7.3	4.6	176.70	-26.2	3.4	333.6	324.3	9.28	35.940		
2,800.0	2,776.4	2,752.4	2,752.4	7.6	4.8	176.84	-26.2	3.4	348.8	339.2	9.63	36.231		
2,900.0	2,875.2	2,851.2	2,851.2	8.0	5.0	176.98	-26.2	3.4	364.1	354.1	9.97	36.503		
3,000.0	2,974.1	2,950.1	2,950.1	8.3	5.1	177.10	-26.2	3.4	379.3	369.0	10.32	36.756		
3,100.0	3,072.9	3,048.9	3,048.9	8.6	5.3	177.21	-26.2	3.4	394.5	383.9	10.67	36.993		
3,200.0	3,171.7	3,147.7	3,147.7	8.9	5.5	177.31	-26.2	3.4	409.8	398.8	11.01	37.215		
3,300.0	3,270.5	3,246.5	3,246.5	9.2	5.7	177.41	-26.2	3.4	425.0	413.7	11.36	37.423		
3,400.0	3,369.4	3,345.4	3,345.4	9.5	5.8	177.50	-26.2	3.4	440.3	428.6	11.70	37.620		
3,500.0	3,468.2	3,444.2	3,444.2	9.9	6.0	177.58	-26.2	3.4	455.5	443.5	12.05	37.805		
3,600.0	3,567.0	3,543.0	3,543.0	10.2	6.2	177.66	-26.2	3.4	470.8	458.4	12.39	37.980		
3,700.0	3,665.9	3,641.9	3,641.9	10.5	6.4	177.74	-26.2	3.4	486.0	473.3	12.74	38.145		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Reference Site:</b>	S34-T2N-R66W (McConahay)	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S34-T2N-R66W (McConahay) - McConahay 4B-34H-P266 - Hz - Plan #3													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-10.9	0.0	10.9					
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-10.9	0.0	10.9	10.7	0.26	41.743		
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-10.9	0.0	10.9	10.3	0.61	17.890 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	144.09	-10.9	0.0	11.6	10.7	0.96	12.105		
400.0	400.0	400.1	400.1	0.7	0.7	147.15	-10.7	0.8	13.5	12.1	1.31	10.258		
500.0	499.9	500.1	500.1	0.8	0.8	147.04	-9.8	3.3	16.1	14.4	1.67	9.626		
600.0	599.7	600.2	600.1	1.0	1.0	145.04	-8.5	7.5	19.4	17.4	2.04	9.543		
700.0	699.4	700.2	699.9	1.3	1.2	142.16	-6.6	13.3	23.6	21.2	2.42	9.749		
800.0	798.9	800.2	799.6	1.5	1.4	139.04	-4.1	20.7	28.7	25.8	2.84	10.112		
900.0	898.3	900.2	899.1	1.7	1.7	136.02	-1.1	29.8	34.7	31.4	3.28	10.554		
1,000.0	997.4	999.9	998.3	2.0	1.9	134.07	2.2	40.0	41.7	37.9	3.75	11.104		
1,100.0	1,096.3	1,099.6	1,097.3	2.3	2.1	134.09	5.6	50.2	49.9	45.7	4.23	11.797		
1,200.0	1,195.1	1,199.2	1,196.4	2.6	2.4	134.50	8.9	60.3	58.5	53.8	4.71	12.417		
1,300.0	1,294.0	1,298.9	1,295.5	2.9	2.6	134.81	12.3	70.5	67.1	61.9	5.20	12.912		
1,400.0	1,392.8	1,398.5	1,394.5	3.2	2.9	135.05	15.6	80.7	75.7	70.1	5.69	13.315		
1,500.0	1,491.6	1,498.1	1,493.6	3.5	3.1	135.24	18.9	90.8	84.3	78.2	6.18	13.649		
1,600.0	1,590.5	1,597.7	1,592.6	3.9	3.4	135.40	22.3	101.0	93.0	86.3	6.67	13.930		
1,700.0	1,689.3	1,697.4	1,691.7	4.2	3.6	135.53	25.6	111.1	101.6	94.4	7.17	14.170		
1,800.0	1,788.1	1,797.0	1,790.7	4.5	3.9	135.64	29.0	121.3	110.2	102.5	7.66	14.376		
1,900.0	1,886.9	1,896.6	1,889.8	4.8	4.1	135.73	32.3	131.5	118.8	110.6	8.16	14.556		
2,000.0	1,985.8	1,996.3	1,988.8	5.1	4.4	135.81	35.7	141.6	127.4	118.7	8.66	14.714		
2,100.0	2,084.6	2,095.9	2,087.9	5.4	4.6	135.88	39.0	151.8	136.0	126.8	9.16	14.853		
2,200.0	2,183.4	2,195.5	2,186.9	5.7	4.9	135.94	42.3	162.0	144.6	134.9	9.65	14.977		
2,300.0	2,282.3	2,295.1	2,286.0	6.1	5.1	136.00	45.7	172.1	153.2	143.1	10.15	15.088		
2,400.0	2,381.1	2,394.8	2,385.0	6.4	5.4	136.05	49.0	182.3	161.8	151.2	10.65	15.188		
2,500.0	2,479.9	2,494.4	2,484.1	6.7	5.6	136.09	52.4	192.5	170.4	159.3	11.15	15.279		
2,600.0	2,578.7	2,594.0	2,583.1	7.0	5.9	136.13	55.7	202.6	179.0	167.4	11.65	15.362		
2,700.0	2,677.6	2,693.7	2,682.2	7.3	6.2	136.17	59.1	212.8	187.7	175.5	12.16	15.437		
2,800.0	2,776.4	2,793.3	2,781.2	7.6	6.4	136.20	62.4	223.0	196.3	183.6	12.66	15.506		
2,900.0	2,875.2	2,892.9	2,880.3	8.0	6.7	136.23	65.7	233.1	204.9	191.7	13.16	15.570		
3,000.0	2,974.1	2,992.5	2,979.3	8.3	6.9	136.26	69.1	243.3	213.5	199.8	13.66	15.628		
3,100.0	3,072.9	3,092.2	3,078.4	8.6	7.2	136.28	72.4	253.4	222.1	207.9	14.16	15.683		
3,200.0	3,171.7	3,191.8	3,177.4	8.9	7.4	136.31	75.8	263.6	230.7	216.0	14.66	15.733		
3,300.0	3,270.5	3,291.4	3,276.5	9.2	7.7	136.33	79.1	273.8	239.3	224.1	15.17	15.780		
3,400.0	3,369.4	3,391.1	3,375.6	9.5	7.9	136.35	82.5	283.9	247.9	232.3	15.67	15.824		
3,500.0	3,468.2	3,490.7	3,474.6	9.9	8.2	136.37	85.8	294.1	256.5	240.4	16.17	15.865		
3,600.0	3,567.0	3,590.3	3,573.7	10.2	8.4	136.39	89.1	304.3	265.1	248.5	16.67	15.904		
3,700.0	3,665.9	3,689.9	3,672.7	10.5	8.7	136.41	92.5	314.4	273.7	256.6	17.17	15.940		
3,800.0	3,764.7	3,789.6	3,771.8	10.8	9.0	136.42	95.8	324.6	282.4	264.7	17.68	15.974		
3,900.0	3,863.5	3,889.2	3,870.8	11.1	9.2	136.44	99.2	334.8	291.0	272.8	18.18	16.006		
4,000.0	3,962.4	3,988.8	3,969.9	11.5	9.5	136.45	102.5	344.9	299.6	280.9	18.68	16.036		
4,100.0	4,061.2	4,088.5	4,068.9	11.8	9.7	136.46	105.9	355.1	308.2	289.0	19.18	16.065		
4,200.0	4,160.0	4,188.1	4,168.0	12.1	10.0	136.48	109.2	365.3	316.8	297.1	19.69	16.092		
4,300.0	4,258.8	4,287.7	4,267.0	12.4	10.2	136.49	112.5	375.4	325.4	305.2	20.19	16.117		
4,400.0	4,357.7	4,387.3	4,366.1	12.7	10.5	136.50	115.9	385.6	334.0	313.3	20.69	16.142		
4,500.0	4,456.5	4,487.0	4,465.1	13.1	10.7	136.51	119.2	395.7	342.6	321.4	21.20	16.165		
4,600.0	4,555.3	4,586.6	4,564.2	13.4	11.0	136.52	122.6	405.9	351.2	329.5	21.70	16.187		
4,700.0	4,654.2	4,686.2	4,663.2	13.7	11.3	136.53	125.9	416.1	359.9	337.6	22.20	16.208		
4,800.0	4,753.0	4,785.9	4,762.3	14.0	11.5	136.54	129.3	426.2	368.5	345.8	22.70	16.228		
4,900.0	4,851.8	4,885.5	4,861.3	14.3	11.8	136.55	132.6	436.4	377.1	353.9	23.21	16.248		
5,000.0	4,950.6	4,985.1	4,960.4	14.6	12.0	136.56	135.9	446.6	385.7	362.0	23.71	16.266		
5,100.0	5,049.5	5,084.7	5,059.4	15.0	12.3	136.56	139.3	456.7	394.3	370.1	24.21	16.284		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Reference Site:</b>	S34-T2N-R66W (McConahay)	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S34-T2N-R66W (McConahay) - McConahay 4B-34H-P266 - Hz - Plan #3													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total		Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis	Separation Factor		
5,200.0	5,148.3	5,184.4	5,158.5	15.3	12.5	136.57	142.6	466.9	402.9	378.2	24.72	16.300		
5,300.0	5,247.1	5,284.0	5,257.5	15.6	12.8	136.58	146.0	477.1	411.5	386.3	25.22	16.317		
5,400.0	5,346.0	5,383.6	5,356.6	15.9	13.0	136.59	149.3	487.2	420.1	394.4	25.72	16.332		
5,500.0	5,444.8	5,483.3	5,455.7	16.2	13.3	136.59	152.7	497.4	428.7	402.5	26.23	16.347		
5,600.0	5,543.6	5,582.9	5,554.7	16.6	13.6	136.60	156.0	507.6	437.3	410.6	26.73	16.361		
5,700.0	5,642.4	5,682.5	5,653.8	16.9	13.8	136.60	159.3	517.7	446.0	418.7	27.23	16.375		
5,800.0	5,741.3	5,782.1	5,752.8	17.2	14.1	136.61	162.7	527.9	454.6	426.8	27.74	16.388		
5,900.0	5,840.1	5,881.8	5,851.9	17.5	14.3	136.62	166.0	538.0	463.2	434.9	28.24	16.401		
6,000.0	5,938.9	5,981.4	5,950.9	17.8	14.6	136.62	169.4	548.2	471.8	443.0	28.74	16.414		
6,100.0	6,037.8	6,081.0	6,050.0	18.2	14.8	136.63	172.7	558.4	480.4	451.1	29.25	16.425		
6,200.0	6,136.6	6,180.7	6,149.0	18.5	15.1	136.63	176.1	568.5	489.0	459.3	29.75	16.437		
6,300.0	6,235.4	6,280.3	6,248.1	18.8	15.3	136.64	179.4	578.7	497.6	467.4	30.25	16.448		
10,700.0	7,539.0	10,447.4	7,310.0	75.8	66.3	-62.46	215.2	-2,722.2	495.9	370.1	125.80	3.942		
10,800.0	7,539.0	10,547.2	7,310.0	78.2	68.7	-62.18	215.2	-2,822.1	491.3	361.5	129.78	3.785		
10,900.0	7,539.0	10,647.1	7,310.0	80.6	71.1	-61.90	215.2	-2,921.9	486.6	352.9	133.72	3.639		
11,000.0	7,539.0	10,747.0	7,310.0	83.0	73.6	-61.60	215.2	-3,021.8	482.0	344.4	137.64	3.502		
11,100.0	7,539.0	10,846.8	7,310.0	85.5	76.0	-61.30	215.2	-3,121.7	477.4	335.9	141.53	3.373		
11,200.0	7,539.0	10,946.7	7,310.0	87.9	78.4	-61.00	215.2	-3,221.5	472.8	327.4	145.39	3.252		
11,300.0	7,539.0	11,046.6	7,310.0	90.3	80.8	-60.69	215.2	-3,321.4	468.3	319.0	149.22	3.138		
11,400.0	7,539.0	11,146.4	7,310.0	92.7	83.3	-60.37	215.2	-3,421.3	463.7	310.7	153.01	3.031		
11,500.0	7,539.0	11,246.3	7,310.0	95.2	85.7	-60.05	215.2	-3,521.1	459.2	302.4	156.76	2.929		
11,600.0	7,539.0	11,346.2	7,310.0	97.6	88.1	-59.72	215.2	-3,621.0	454.6	294.2	160.48	2.833		
11,700.0	7,539.0	11,446.0	7,310.0	100.0	90.6	-59.38	215.2	-3,720.8	450.1	286.0	164.15	2.742		
11,800.0	7,539.0	11,545.9	7,310.0	102.4	93.0	-59.04	215.2	-3,820.7	445.6	277.8	167.78	2.656		
11,846.3	7,539.0	11,572.2	7,310.0	103.6	93.7	-58.95	215.2	-3,847.0	444.0	274.8	169.15	2.625 SF		
11,900.0	7,539.0	11,572.2	7,310.0	104.9	93.7	-58.95	215.2	-3,847.0	447.2	276.9	170.28	2.626		
12,000.0	7,539.0	11,572.2	7,310.0	107.3	93.7	-58.95	215.2	-3,847.0	469.8	297.5	172.38	2.726		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Reference Site:</b>	S34-T2N-R66W (McConahay)	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S34-T2N-R66W (McConahay) - McConahay 4C-34H-P266 - Hz - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty	Separation		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	Axis	Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-18.2	0.0	18.2					
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-18.2	0.0	18.2	17.9	0.26	69.556		
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-18.2	0.0	18.2	17.6	0.61	29.810	CC, ES	
300.0	300.0	300.0	300.0	0.5	0.5	143.05	-18.2	0.0	18.9	17.9	0.96	19.683		
400.0	400.0	400.0	400.0	0.7	0.7	147.33	-18.2	0.0	21.1	19.7	1.31	16.063		
500.0	499.9	499.8	499.8	0.8	0.8	150.76	-18.5	0.8	24.9	23.3	1.66	15.000	SF	
600.0	599.7	599.6	599.5	1.0	1.0	151.46	-19.2	3.3	30.6	28.6	2.02	15.157		
700.0	699.4	699.2	699.1	1.3	1.2	150.57	-20.5	7.5	38.0	35.6	2.39	15.929		
800.0	798.9	798.7	798.4	1.5	1.4	148.92	-22.2	13.3	47.2	44.4	2.77	17.035		
900.0	898.3	897.9	897.3	1.7	1.6	147.02	-24.5	20.7	58.2	55.0	3.18	18.320		
1,000.0	997.4	996.9	995.8	2.0	1.8	145.14	-27.2	29.7	71.0	67.4	3.61	19.690		
1,100.0	1,096.3	1,095.8	1,094.2	2.3	2.0	144.06	-30.1	39.4	85.4	81.3	4.05	21.081		
1,200.0	1,195.1	1,194.7	1,192.6	2.6	2.3	143.52	-33.1	49.0	100.2	95.7	4.50	22.251		
1,300.0	1,294.0	1,293.6	1,291.0	2.9	2.5	143.11	-36.0	58.7	115.1	110.1	4.96	23.182		
1,400.0	1,392.8	1,392.5	1,389.4	3.2	2.7	142.80	-38.9	68.3	129.9	124.5	5.43	23.938		
1,500.0	1,491.6	1,491.4	1,487.7	3.5	3.0	142.56	-41.9	78.0	144.8	138.9	5.89	24.562		
1,600.0	1,590.5	1,590.3	1,586.1	3.9	3.2	142.36	-44.8	87.6	159.6	153.3	6.36	25.085		
1,700.0	1,689.3	1,689.2	1,684.5	4.2	3.5	142.19	-47.7	97.2	174.5	167.6	6.83	25.529		
1,800.0	1,788.1	1,788.0	1,782.8	4.5	3.7	142.05	-50.6	106.9	189.3	182.0	7.31	25.910		
1,900.0	1,886.9	1,886.9	1,881.2	4.8	3.9	141.93	-53.6	116.5	204.2	196.4	7.78	26.241		
2,000.0	1,985.8	1,985.8	1,979.6	5.1	4.2	141.83	-56.5	126.2	219.0	210.8	8.26	26.530		
2,100.0	2,084.6	2,084.7	2,078.0	5.4	4.4	141.74	-59.4	135.8	233.9	225.2	8.73	26.785		
2,200.0	2,183.4	2,183.6	2,176.3	5.7	4.7	141.66	-62.3	145.5	248.7	239.5	9.21	27.012		
2,300.0	2,282.3	2,282.5	2,274.7	6.1	4.9	141.59	-65.3	155.1	263.6	253.9	9.69	27.214		
2,400.0	2,381.1	2,381.4	2,373.1	6.4	5.2	141.53	-68.2	164.8	278.5	268.3	10.16	27.396		
2,500.0	2,479.9	2,480.3	2,471.5	6.7	5.4	141.47	-71.1	174.4	293.3	282.7	10.64	27.561		
2,600.0	2,578.7	2,579.2	2,569.8	7.0	5.6	141.42	-74.0	184.1	308.2	297.1	11.12	27.710		
2,700.0	2,677.6	2,678.1	2,668.2	7.3	5.9	141.37	-77.0	193.7	323.0	311.4	11.60	27.846		
2,800.0	2,776.4	2,776.9	2,766.6	7.6	6.1	141.33	-79.9	203.4	337.9	325.8	12.08	27.970		
2,900.0	2,875.2	2,875.8	2,865.0	8.0	6.4	141.29	-82.8	213.0	352.7	340.2	12.56	28.085		
3,000.0	2,974.1	2,974.7	2,963.3	8.3	6.6	141.25	-85.7	222.7	367.6	354.6	13.04	28.190		
3,100.0	3,072.9	3,073.6	3,061.7	8.6	6.9	141.22	-88.7	232.3	382.5	368.9	13.52	28.288		
3,200.0	3,171.7	3,172.5	3,160.1	8.9	7.1	141.19	-91.6	242.0	397.3	383.3	14.00	28.378		
3,300.0	3,270.5	3,271.4	3,258.5	9.2	7.4	141.16	-94.5	251.6	412.2	397.7	14.48	28.462		
3,400.0	3,369.4	3,370.3	3,356.8	9.5	7.6	141.14	-97.4	261.3	427.0	412.1	14.96	28.540		
3,500.0	3,468.2	3,469.2	3,455.2	9.9	7.9	141.11	-100.4	270.9	441.9	426.5	15.44	28.614		
3,600.0	3,567.0	3,568.1	3,553.6	10.2	8.1	141.09	-103.3	280.5	456.8	440.8	15.92	28.682		
3,700.0	3,665.9	3,667.0	3,652.0	10.5	8.3	141.07	-106.2	290.2	471.6	455.2	16.41	28.746		
3,800.0	3,764.7	3,765.8	3,750.3	10.8	8.6	141.05	-109.2	299.8	486.5	469.6	16.89	28.807		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Reference Site:</b>	S34-T2N-R66W (McConahay)	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design S34-T2N-R66W (McConahay) - RANCHERO 1 (EXISTING) - ENCANA WELL - NO SURVEYS													Offset Site Error:	0.0 ft
Survey Program: 8084-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
11,300.0	7,539.0	7,448.0	7,448.0	90.3	13.0	90.00	934.7	-3,670.7	467.7	365.0	102.67	4.555	2.968 CC, ES, SF	
11,400.0	7,539.0	7,448.0	7,448.0	92.7	13.0	90.00	934.7	-3,670.7	402.7	297.6	105.11	3.832		
11,500.0	7,539.0	7,448.0	7,448.0	95.2	13.0	90.00	934.7	-3,670.7	354.5	247.0	107.55	3.296		
11,600.0	7,539.0	7,448.0	7,448.0	97.6	13.0	90.00	934.7	-3,670.7	330.4	220.4	110.00	3.004		
11,632.5	7,539.0	7,448.0	7,448.0	98.4	13.0	90.00	934.7	-3,670.7	328.8	218.0	110.79			
11,700.0	7,539.0	7,448.0	7,448.0	100.0	13.0	90.00	934.7	-3,670.7	335.7	223.2	112.44	2.985		
11,800.0	7,539.0	7,448.0	7,448.0	102.4	13.0	90.00	934.7	-3,670.7	369.0	254.1	114.89	3.212		
11,900.0	7,539.0	7,448.0	7,448.0	104.9	13.0	90.00	934.7	-3,670.7	423.9	306.5	117.34	3.612		
12,000.0	7,539.0	7,448.0	7,448.0	107.3	13.0	90.00	934.7	-3,670.7	493.1	373.3	119.79	4.117		

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well McConahay 4A-34H-P266
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Reference Site:</b>	S34-T2N-R66W (McConahay)	<b>MD Reference:</b>	WELL @ 5101.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	McConahay 4A-34H-P266	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Hz	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #2	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 5101.0ft (Original Well Elev)  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: McConahay 4A-34H-P266  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.48°

