



Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5052.0ft
Project:	DJ Wattenberg	MD Reference:	KBE @ 5052.0ft
Site:	S36 T2N-R66W (Marcus State)	North Reference:	True
Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Project	DJ Wattenberg		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		S36 T2N-R66W (Marcus State)			
Site Position:		Northing:	1,275,942.66 ft	Latitude:	40.088280
From:	Lat/Long	Easting:	3,215,403.58 ft	Longitude:	-104.730140
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.50 °

Well	Marcus State 3E-36H					
Well Position	+N/-S	0.0 ft	Northing:	1,275,942.98 ft	Latitude:	40.088280
	+E/-W	0.0 ft	Easting:	3,215,442.75 ft	Longitude:	-104.730000
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,039.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/28/2012	8.58	66.77	52,842

Design	Plan #3			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	0.00

Plan Sections										
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	
700.0	0.00	0.00	700.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,454.5	7.54	116.24	1,452.3	-21.9	44.5	1.00	1.00	0.00	116.24	
5,693.6	7.54	116.24	5,654.7	-268.1	543.7	0.00	0.00	0.00	0.00	
6,448.1	0.00	0.00	6,407.0	-290.0	588.2	1.00	-1.00	0.00	180.00	Marcus State 3E-36H
6,800.9	0.00	0.00	6,759.8	-290.0	588.2	0.00	0.00	0.00	0.00	
7,925.9	90.00	0.00	7,476.0	426.2	588.2	8.00	8.00	0.00	0.00	
9,000.0	90.00	0.00	7,476.0	1,500.3	588.2	0.00	0.00	0.00	0.00	Interp @ 7476.0 (Mar
9,050.0	90.00	0.50	7,476.0	1,550.3	588.4	1.00	0.00	1.00	90.00	
10,550.0	90.00	0.50	7,476.0	3,050.3	601.5	0.00	0.00	0.00	0.00	
10,700.0	90.00	359.00	7,476.0	3,200.3	600.9	1.00	0.00	-1.00	-90.00	
11,700.0	90.00	359.00	7,476.0	4,200.1	583.4	0.00	0.00	0.00	0.00	
12,023.9	90.00	2.24	7,476.0	4,524.0	586.9	1.00	0.00	1.00	90.00	
12,057.1	90.00	2.24	7,476.0	4,557.1	588.2	0.00	0.00	0.00	0.00	Marcus State 3E-36H

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5052.0ft
Project:	DJ Wattenberg	MD Reference:	KBE @ 5052.0ft
Site:	S36 T2N-R66W (Marcus State)	North Reference:	True
Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	KOP @ 700'
800.0	1.00	116.24	800.0	-0.4	0.8	-0.4	1.00	1.00	
900.0	2.00	116.24	900.0	-1.5	3.1	-1.5	1.00	1.00	
1,000.0	3.00	116.24	999.9	-3.5	7.0	-3.5	1.00	1.00	
1,002.1	3.02	116.24	1,002.0	-3.5	7.1	-3.5	1.00	1.00	Base of Fox Hills
1,100.0	4.00	116.24	1,099.7	-6.2	12.5	-6.2	1.00	1.00	
1,200.0	5.00	116.24	1,199.4	-9.6	19.6	-9.6	1.00	1.00	
1,300.0	6.00	116.24	1,298.9	-13.9	28.2	-13.9	1.00	1.00	
1,400.0	7.00	116.24	1,398.3	-18.9	38.3	-18.9	1.00	1.00	
1,454.5	7.54	116.24	1,452.3	-21.9	44.5	-21.9	1.00	1.00	EOB; Inc=7.54°
1,500.0	7.54	116.24	1,497.4	-24.6	49.9	-24.6	0.00	0.00	
1,600.0	7.54	116.24	1,596.6	-30.4	61.6	-30.4	0.00	0.00	
1,700.0	7.54	116.24	1,695.7	-36.2	73.4	-36.2	0.00	0.00	
1,800.0	7.54	116.24	1,794.8	-42.0	85.2	-42.0	0.00	0.00	
1,900.0	7.54	116.24	1,894.0	-47.8	97.0	-47.8	0.00	0.00	
2,000.0	7.54	116.24	1,993.1	-53.6	108.7	-53.6	0.00	0.00	
2,100.0	7.54	116.24	2,092.2	-59.4	120.5	-59.4	0.00	0.00	
2,200.0	7.54	116.24	2,191.4	-65.2	132.3	-65.2	0.00	0.00	
2,300.0	7.54	116.24	2,290.5	-71.0	144.1	-71.0	0.00	0.00	
2,400.0	7.54	116.24	2,389.6	-76.8	155.8	-76.8	0.00	0.00	
2,500.0	7.54	116.24	2,488.8	-82.6	167.6	-82.6	0.00	0.00	
2,600.0	7.54	116.24	2,587.9	-88.4	179.4	-88.4	0.00	0.00	
2,700.0	7.54	116.24	2,687.0	-94.3	191.2	-94.3	0.00	0.00	
2,800.0	7.54	116.24	2,786.2	-100.1	202.9	-100.1	0.00	0.00	
2,900.0	7.54	116.24	2,885.3	-105.9	214.7	-105.9	0.00	0.00	
3,000.0	7.54	116.24	2,984.4	-111.7	226.5	-111.7	0.00	0.00	
3,100.0	7.54	116.24	3,083.6	-117.5	238.3	-117.5	0.00	0.00	
3,200.0	7.54	116.24	3,182.7	-123.3	250.1	-123.3	0.00	0.00	
3,300.0	7.54	116.24	3,281.8	-129.1	261.8	-129.1	0.00	0.00	
3,400.0	7.54	116.24	3,381.0	-134.9	273.6	-134.9	0.00	0.00	
3,500.0	7.54	116.24	3,480.1	-140.7	285.4	-140.7	0.00	0.00	
3,600.0	7.54	116.24	3,579.2	-146.5	297.2	-146.5	0.00	0.00	
3,700.0	7.54	116.24	3,678.4	-152.3	308.9	-152.3	0.00	0.00	
3,800.0	7.54	116.24	3,777.5	-158.1	320.7	-158.1	0.00	0.00	
3,900.0	7.54	116.24	3,876.6	-163.9	332.5	-163.9	0.00	0.00	
4,000.0	7.54	116.24	3,975.8	-169.7	344.3	-169.7	0.00	0.00	
4,100.0	7.54	116.24	4,074.9	-175.5	356.0	-175.5	0.00	0.00	
4,200.0	7.54	116.24	4,174.1	-181.3	367.8	-181.3	0.00	0.00	
4,300.0	7.54	116.24	4,273.2	-187.1	379.6	-187.1	0.00	0.00	
4,400.0	7.54	116.24	4,372.3	-193.0	391.4	-193.0	0.00	0.00	
4,500.0	7.54	116.24	4,471.5	-198.8	403.1	-198.8	0.00	0.00	
4,600.0	7.54	116.24	4,570.6	-204.6	414.9	-204.6	0.00	0.00	
4,700.0	7.54	116.24	4,669.7	-210.4	426.7	-210.4	0.00	0.00	
4,708.3	7.54	116.24	4,678.0	-210.9	427.7	-210.9	0.00	0.00	Sussex
4,800.0	7.54	116.24	4,768.9	-216.2	438.5	-216.2	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5052.0ft
Project:	DJ Wattenberg	MD Reference:	KBE @ 5052.0ft
Site:	S36 T2N-R66W (Marcus State)	North Reference:	True
Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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
4,884.9	7.54	116.24	4,853.0	-221.1	448.5	-221.1	0.00	0.00	Sussex Marker
4,900.0	7.54	116.24	4,868.0	-222.0	450.3	-222.0	0.00	0.00	
5,000.0	7.54	116.24	4,967.1	-227.8	462.0	-227.8	0.00	0.00	
5,100.0	7.54	116.24	5,066.3	-233.6	473.8	-233.6	0.00	0.00	
5,200.0	7.54	116.24	5,165.4	-239.4	485.6	-239.4	0.00	0.00	
5,264.2	7.54	116.24	5,229.0	-243.1	493.1	-243.1	0.00	0.00	Shannon
5,300.0	7.54	116.24	5,264.5	-245.2	497.4	-245.2	0.00	0.00	
5,400.0	7.54	116.24	5,363.7	-251.0	509.1	-251.0	0.00	0.00	
5,500.0	7.54	116.24	5,462.8	-256.8	520.9	-256.8	0.00	0.00	
5,600.0	7.54	116.24	5,561.9	-262.6	532.7	-262.6	0.00	0.00	
5,693.6	7.54	116.24	5,654.7	-268.1	543.7	-268.1	0.00	0.00	Start Drop -1.00
5,700.0	7.48	116.24	5,661.1	-268.4	544.5	-268.4	1.00	-1.00	
5,800.0	6.48	116.24	5,760.3	-273.8	555.4	-273.8	1.00	-1.00	
5,900.0	5.48	116.24	5,859.8	-278.4	564.7	-278.4	1.00	-1.00	
6,000.0	4.48	116.24	5,959.4	-282.3	572.5	-282.3	1.00	-1.00	
6,100.0	3.48	116.24	6,059.2	-285.3	578.7	-285.3	1.00	-1.00	
6,200.0	2.48	116.24	6,159.0	-287.6	583.4	-287.6	1.00	-1.00	
6,300.0	1.48	116.24	6,259.0	-289.1	586.5	-289.1	1.00	-1.00	
6,400.0	0.48	116.24	6,358.9	-289.9	588.0	-289.9	1.00	-1.00	
6,448.1	0.00	0.00	6,407.0	-290.0	588.2	-290.0	1.00	-1.00	EOD; Inc=0° - Marcus State 3E-36H VT
6,500.0	0.00	0.00	6,458.9	-290.0	588.2	-290.0	0.00	0.00	
6,600.0	0.00	0.00	6,558.9	-290.0	588.2	-290.0	0.00	0.00	
6,693.1	0.00	0.00	6,652.0	-290.0	588.2	-290.0	0.00	0.00	Teepee Buttes
6,700.0	0.00	0.00	6,658.9	-290.0	588.2	-290.0	0.00	0.00	
6,800.0	0.00	0.00	6,758.9	-290.0	588.2	-290.0	0.00	0.00	
6,800.9	0.00	0.00	6,759.8	-290.0	588.2	-290.0	0.00	0.00	Start Build 8.00
6,900.0	7.93	0.00	6,858.6	-283.1	588.2	-283.1	8.00	8.00	
7,000.0	15.93	0.00	6,956.4	-262.5	588.2	-262.5	8.00	8.00	
7,100.0	23.93	0.00	7,050.3	-228.4	588.2	-228.4	8.00	8.00	
7,166.8	29.27	0.00	7,110.0	-198.5	588.2	-198.5	8.00	8.00	Sharon Springs
7,200.0	31.93	0.00	7,138.6	-181.6	588.2	-181.6	8.00	8.00	
7,209.9	32.73	0.00	7,147.0	-176.3	588.2	-176.3	8.00	8.00	Niobrara
7,300.0	39.93	0.00	7,219.5	-123.0	588.2	-123.0	8.00	8.00	
7,320.5	41.57	0.00	7,235.0	-109.6	588.2	-109.6	8.00	8.00	B Chalk
7,400.0	47.93	0.00	7,291.5	-53.7	588.2	-53.7	8.00	8.00	
7,500.0	55.93	0.00	7,353.1	25.0	588.2	25.0	8.00	8.00	
7,600.0	63.93	0.00	7,403.1	111.5	588.2	111.5	8.00	8.00	
7,700.0	71.93	0.00	7,440.7	204.1	588.2	204.1	8.00	8.00	
7,707.6	72.54	0.00	7,443.0	211.3	588.2	211.3	8.00	8.00	Ft. Hayes
7,800.0	79.93	0.00	7,465.0	301.0	588.2	301.0	8.00	8.00	
7,806.0	80.41	0.00	7,466.0	306.9	588.2	306.9	8.00	8.00	Codell
7,900.0	87.93	0.00	7,475.5	400.3	588.2	400.3	8.00	8.00	
7,925.9	90.00	0.00	7,476.0	426.2	588.2	426.2	8.00	8.00	LP @ 7476' TVD; 90°
8,000.0	90.00	0.00	7,476.0	500.3	588.2	500.3	0.00	0.00	
8,100.0	90.00	0.00	7,476.0	600.3	588.2	600.3	0.00	0.00	
8,200.0	90.00	0.00	7,476.0	700.3	588.2	700.3	0.00	0.00	
8,300.0	90.00	0.00	7,476.0	800.3	588.2	800.3	0.00	0.00	
8,400.0	90.00	0.00	7,476.0	900.3	588.2	900.3	0.00	0.00	
8,500.0	90.00	0.00	7,476.0	1,000.3	588.2	1,000.3	0.00	0.00	
8,600.0	90.00	0.00	7,476.0	1,100.3	588.2	1,100.3	0.00	0.00	
8,700.0	90.00	0.00	7,476.0	1,200.3	588.2	1,200.3	0.00	0.00	
8,800.0	90.00	0.00	7,476.0	1,300.3	588.2	1,300.3	0.00	0.00	

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5052.0ft
Project:	DJ Wattenberg	MD Reference:	KBE @ 5052.0ft
Site:	S36 T2N-R66W (Marcus State)	North Reference:	True
Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

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
8,900.0	90.00	0.00	7,476.0	1,400.3	588.2	1,400.3	0.00	0.00	
9,000.0	90.00	0.00	7,476.0	1,500.3	588.2	1,500.3	0.00	0.00	Start turn @ 9000' MD - Interp @ 7476.0 (Marcus State 3E-36H PBHL - N)
9,050.0	90.00	0.50	7,476.0	1,550.3	588.4	1,550.3	1.00	0.00	
9,100.0	90.00	0.50	7,476.0	1,600.3	588.9	1,600.3	0.00	0.00	End of turn @ 9050' MD
9,200.0	90.00	0.50	7,476.0	1,700.3	589.7	1,700.3	0.00	0.00	
9,300.0	90.00	0.50	7,476.0	1,800.3	590.6	1,800.3	0.00	0.00	
9,400.0	90.00	0.50	7,476.0	1,900.3	591.5	1,900.3	0.00	0.00	
9,500.0	90.00	0.50	7,476.0	2,000.3	592.3	2,000.3	0.00	0.00	
9,600.0	90.00	0.50	7,476.0	2,100.3	593.2	2,100.3	0.00	0.00	
9,700.0	90.00	0.50	7,476.0	2,200.3	594.1	2,200.3	0.00	0.00	
9,800.0	90.00	0.50	7,476.0	2,300.3	595.0	2,300.3	0.00	0.00	
9,900.0	90.00	0.50	7,476.0	2,400.3	595.8	2,400.3	0.00	0.00	
10,000.0	90.00	0.50	7,476.0	2,500.3	596.7	2,500.3	0.00	0.00	
10,100.0	90.00	0.50	7,476.0	2,600.3	597.6	2,600.3	0.00	0.00	
10,200.0	90.00	0.50	7,476.0	2,700.3	598.5	2,700.3	0.00	0.00	
10,300.0	90.00	0.50	7,476.0	2,800.3	599.3	2,800.3	0.00	0.00	
10,400.0	90.00	0.50	7,476.0	2,900.3	600.2	2,900.3	0.00	0.00	
10,500.0	90.00	0.50	7,476.0	3,000.3	601.1	3,000.3	0.00	0.00	
10,550.0	90.00	0.50	7,476.0	3,050.3	601.5	3,050.3	0.00	0.00	Start turn @ 10550' MD
10,600.0	90.00	360.00	7,476.0	3,100.3	601.7	3,100.3	1.00	0.00	
10,700.0	90.00	359.00	7,476.0	3,200.3	600.9	3,200.3	1.00	0.00	End of turn @ 10700' MD
10,800.0	90.00	359.00	7,476.0	3,300.3	599.1	3,300.3	0.00	0.00	
10,900.0	90.00	359.00	7,476.0	3,400.2	597.4	3,400.2	0.00	0.00	
11,000.0	90.00	359.00	7,476.0	3,500.2	595.6	3,500.2	0.00	0.00	
11,100.0	90.00	359.00	7,476.0	3,600.2	593.9	3,600.2	0.00	0.00	
11,200.0	90.00	359.00	7,476.0	3,700.2	592.1	3,700.2	0.00	0.00	
11,300.0	90.00	359.00	7,476.0	3,800.2	590.4	3,800.2	0.00	0.00	
11,400.0	90.00	359.00	7,476.0	3,900.2	588.6	3,900.2	0.00	0.00	
11,500.0	90.00	359.00	7,476.0	4,000.2	586.9	4,000.2	0.00	0.00	
11,600.0	90.00	359.00	7,476.0	4,100.1	585.1	4,100.1	0.00	0.00	
11,700.0	90.00	359.00	7,476.0	4,200.1	583.4	4,200.1	0.00	0.00	Start turn @ 11700' MD
11,800.0	90.00	360.00	7,476.0	4,300.1	582.5	4,300.1	1.00	0.00	
11,900.0	90.00	1.00	7,476.0	4,400.1	583.4	4,400.1	1.00	0.00	
12,000.0	90.00	2.00	7,476.0	4,500.1	586.0	4,500.1	1.00	0.00	
12,023.9	90.00	2.24	7,476.0	4,524.0	586.9	4,524.0	1.00	0.00	End of turn @ 12023' MD
12,057.1	90.00	2.24	7,476.0	4,557.1	588.2	4,557.1	0.00	0.00	TD at 12057.1 - Marcus State 3E-36H PBHL - N

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5052.0ft
Project:	DJ Wattenberg	MD Reference:	KBE @ 5052.0ft
Site:	S36 T2N-R66W (Marcus State)	North Reference:	True
Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #3		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
Marcus State 3E-36H P#	0.00	0.00	7,496.0	4,557.1	588.2	1,280,505.06	3,215,991.35	40.100790	-104.727897
- plan misses target center by 20.0ft at 12057.1ft MD (7476.0 TVD, 4557.1 N, 588.2 E)									
- Point									
Marcus State 3E-36H P#	0.00	0.00	7,476.0	4,557.1	588.2	1,280,505.06	3,215,991.35	40.100790	-104.727897
- plan hits target center									
- Point									
Marcus State 3E-36H V#	0.00	0.00	6,407.0	-290.0	588.2	1,275,658.10	3,216,033.44	40.087484	-104.727898
- plan hits target center									
- Point									
Interp @ 7476.0 (Marcus)	0.00	0.00	7,476.0	1,500.3	588.2	1,277,448.37	3,216,017.90	40.092399	-104.727898
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(ft)	(ft)			(°)	(°)	
1,002.1	1,002.0	Base of Fox Hills		0.00		
4,708.3	4,678.0	Sussex		0.00		
4,884.9	4,853.0	Sussex Marker		0.00		
5,264.2	5,229.0	Shannon		0.00		
6,693.1	6,652.0	Teepee Buttes		0.00		
7,166.8	7,110.0	Sharon Springs		0.00		
7,209.9	7,147.0	Niobrara		0.00		
7,320.5	7,235.0	B Chalk		0.00		
7,707.6	7,443.0	Ft. Hayes		0.00		
7,806.0	7,466.0	Codell		0.00		

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)		
700.0	700.0	0.0	0.0	KOP @ 700'	
1,454.5	1,452.3	-21.9	44.5	EOB; Inc=7.54°	
5,693.6	5,654.7	-268.1	543.7	Start Drop -1.00	
6,448.1	6,407.0	-290.0	588.2	EOD; Inc=0°	
6,800.9	6,759.8	-290.0	588.2	Start Build 8.00	
7,925.9	7,476.0	426.2	588.2	LP @ 7476' TVD; 90°	
9,000.0	7,476.0	1,500.3	588.2	Start turn @ 9000' MD	
9,050.0	7,476.0	1,550.3	588.4	End of turn @ 9050' MD	
10,550.0	7,476.0	3,050.3	601.5	Start turn @ 10550' MD	
10,700.0	7,476.0	3,200.3	600.9	End of turn @ 10700' MD	
11,700.0	7,476.0	4,200.1	583.4	Start turn @ 11700' MD	
12,023.9	7,476.0	4,524.0	586.9	End of turn @ 12023' MD	
12,057.1	7,476.0	4,557.1	588.2	TD at 12057.1	

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S36 T2N-R66W (Marcus State)

Marcus State 3E-36H

HZ

Plan #3

Anticollision Report

15 April, 2013

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference	Plan #3		
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	4/15/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,056.9	Plan #3 (HZ)	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						
S36 T2N-R66W (Marcus State)						
Amato 11-1 (Existing) - VT - Existing						Out of range
Amato USX WW 1-3 (Existing) - VT - Existing						Out of range
Badding 16-35 (Existing) - VT - Existing						Out of range
Badding 9-35 (Existing) - VT - Existing						Out of range
Badding State 1 (Existing) - VT - Existing						Out of range
Badding State 31-36 (Existing) - VT - Existing						Out of range
Badding State 42-36 (Existing) - VT - Existing						Out of range
Badding USX W 35-1 (Existing) - VT - Existing						Out of range
Badding USX W 35-8 (Existing) - VT - Existing						Out of range
Ballantyne 31-1 (Existing) - VT - Existing						Out of range
Ballantyne WW 01-18D (Existing) - DD - Existing						Out of range
Highway 160 1-2 (Existing) - VT - Existing						Out of range
HSR Amato 4-1 (Existing) - VT - Existing						Out of range
Marcus State 1 (Existing) - VT - Existing						Out of range
Marcus State 24-36 (Existing) - VT - Existing	7,694.2	7,439.9	100.1	73.2	3.718	CC, ES, SF
Marcus State 3A-36H - HZ - Plan #2	166.3	167.3	39.2	38.6	72.948	CC
Marcus State 3A-36H - HZ - Plan #2	200.0	201.0	39.2	38.5	59.849	ES
Marcus State 3A-36H - HZ - Plan #2	700.0	696.5	60.4	58.0	24.491	SF
Marcus State 3B-36H - HZ - Plan #2	300.0	300.0	30.8	29.8	30.721	CC, ES
Marcus State 3B-36H - HZ - Plan #2	700.0	697.4	43.9	41.5	18.059	SF
Marcus State 3C-36H - HZ - Plan #2	700.0	700.0	19.6	17.2	8.167	CC, ES
Marcus State 3C-36H - HZ - Plan #2	900.0	900.0	22.8	19.7	7.355	SF
Marcus State 3D-36H - HZ - Plan #2	700.0	700.0	8.4	6.0	3.500	CC, ES
Marcus State 3D-36H - HZ - Plan #2	12,057.1	11,802.8	457.7	312.6	3.154	SF
Marcus State 3F-36H - HZ - Plan #2	400.0	400.0	11.2	9.8	8.285	CC, ES
Marcus State 3F-36H - HZ - Plan #2	500.0	499.8	12.0	10.3	7.080	SF
Marcus State W 36-2J (Existing) - VT - Existing						Out of range
Marcus State W 36-3J (Existing) - VT - Existing	11,662.4	7,477.0	154.2	65.5	1.739	CC, ES, SF
Marcus State W 36-4J (Existing) - VT - Existing						Out of range
Marcus State W 36-6J (Existing) - VT - Existing	10,335.3	7,477.0	157.6	91.4	2.382	CC, ES, SF
Mumby State 1 (Existing) - VT - Existing						Out of range
Mumby State 33-36 (Existing) - VT - Existing						Out of range

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

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S36 T2N-R66W (Marcus State) - Marcus State 24-36 (Existing) - VT - Existing													Offset Site Error:	0.0 ft
Survey Program: 0-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		
4,200.0	4,174.1	4,175.1	4,175.1	10.3	7.3	-76.21	198.5	688.3	497.0	479.6	17.45	28.476		
4,300.0	4,273.2	4,274.2	4,274.2	10.6	7.4	-77.68	198.5	688.3	494.0	476.1	17.94	27.539		
4,400.0	4,372.3	4,373.3	4,373.3	10.9	7.6	-79.16	198.5	688.3	491.4	472.9	18.42	26.670		
4,500.0	4,471.5	4,472.5	4,472.5	11.2	7.8	-80.66	198.5	688.3	489.0	470.1	18.91	25.866		
4,600.0	4,570.6	4,571.6	4,571.6	11.5	8.0	-82.17	198.5	688.3	487.1	467.7	19.39	25.122		
4,700.0	4,669.7	4,670.7	4,670.7	11.8	8.1	-83.69	198.5	688.3	485.4	465.6	19.87	24.435		
4,800.0	4,768.9	4,769.9	4,769.9	12.1	8.3	-85.22	198.5	688.3	484.2	463.8	20.34	23.801		
4,900.0	4,868.0	4,869.0	4,869.0	12.3	8.5	-86.76	198.5	688.3	483.2	462.4	20.81	23.217		
5,000.0	4,967.1	4,968.1	4,968.1	12.6	8.6	-88.31	198.5	688.3	482.7	461.4	21.28	22.679		
5,100.0	5,066.3	5,067.3	5,067.3	12.9	8.8	-89.85	198.5	688.3	482.4	460.7	21.75	22.186		
5,109.7	5,075.9	5,076.9	5,076.9	13.0	8.8	-90.00	198.5	688.3	482.4	460.7	21.79	22.141		
5,200.0	5,165.4	5,166.4	5,166.4	13.2	9.0	-91.40	198.5	688.3	482.6	460.4	22.20	21.735		
5,300.0	5,264.5	5,265.5	5,265.5	13.5	9.2	-92.94	198.5	688.3	483.1	460.4	22.66	21.322		
5,400.0	5,363.7	5,364.7	5,364.7	13.8	9.3	-94.48	198.5	688.3	483.9	460.8	23.10	20.946		
5,500.0	5,462.8	5,463.8	5,463.8	14.1	9.5	-96.01	198.5	688.3	485.2	461.6	23.55	20.604		
5,600.0	5,561.9	5,562.9	5,562.9	14.4	9.7	-97.54	198.5	688.3	486.7	462.7	23.98	20.296		
5,700.0	5,661.1	5,662.1	5,662.1	14.7	9.9	-99.05	198.5	688.3	488.6	464.2	24.41	20.017		
5,800.0	5,760.3	5,761.3	5,761.3	14.9	10.0	-100.46	198.5	688.3	490.7	465.9	24.81	19.777		
5,900.0	5,859.8	5,860.8	5,860.8	15.2	10.2	-101.67	198.5	688.3	492.7	467.5	25.19	19.558		
6,000.0	5,959.4	5,960.4	5,960.4	15.4	10.4	-102.67	198.5	688.3	494.5	469.0	25.55	19.353		
6,100.0	6,059.2	6,060.2	6,060.2	15.6	10.6	-103.46	198.5	688.3	496.1	470.2	25.90	19.157		
6,200.0	6,159.0	6,160.0	6,160.0	15.7	10.7	-104.06	198.5	688.3	497.4	471.1	26.23	18.965		
6,300.0	6,259.0	6,260.0	6,260.0	15.9	10.9	-104.45	198.5	688.3	498.2	471.7	26.54	18.773		
6,400.0	6,358.9	6,359.9	6,359.9	16.0	11.1	-104.64	198.5	688.3	498.6	471.8	26.84	18.579		
6,500.0	6,458.9	6,459.9	6,459.9	16.2	11.3	11.58	198.5	688.3	498.7	471.6	27.14	18.377		
6,600.0	6,558.9	6,559.9	6,559.9	16.3	11.4	11.58	198.5	688.3	498.7	471.3	27.44	18.177		
6,700.0	6,658.9	6,659.9	6,659.9	16.4	11.6	11.58	198.5	688.3	498.7	471.0	27.74	17.980		
6,800.0	6,758.9	6,759.9	6,759.9	16.5	11.8	11.58	198.5	688.3	498.7	470.7	28.04	17.787		
6,900.0	6,858.6	6,859.6	6,859.6	16.6	11.9	11.85	198.5	688.3	492.0	463.9	28.11	17.500		
7,000.0	6,956.4	6,957.4	6,957.4	16.6	12.1	12.72	198.5	688.3	471.8	444.0	27.79	16.979		
7,100.0	7,050.3	7,051.3	7,051.3	16.6	12.3	14.38	198.5	688.3	438.5	411.5	27.08	16.194		
7,200.0	7,138.6	7,139.6	7,139.6	16.5	12.4	17.23	198.5	688.3	393.1	367.1	26.05	15.092		
7,300.0	7,219.5	7,220.5	7,220.5	16.5	12.6	22.09	198.5	688.3	336.8	311.9	24.82	13.568		
7,400.0	7,291.5	7,292.5	7,292.5	16.5	12.7	30.64	198.5	688.3	271.3	247.6	23.74	11.432		
7,500.0	7,353.1	7,354.1	7,354.1	16.7	12.8	45.83	198.5	688.3	200.3	176.7	23.69	8.457		
7,600.0	7,403.1	7,404.1	7,404.1	16.9	12.9	69.08	198.5	688.3	132.7	107.2	25.48	5.207		
7,694.2	7,438.9	7,439.9	7,439.9	17.3	13.0	90.00	198.5	688.3	100.1	73.2	26.92	3.718	CC, ES, SF	
7,700.0	7,440.7	7,441.7	7,441.7	17.4	13.0	90.98	198.5	688.3	100.2	73.3	26.96	3.719		
7,800.0	7,465.0	7,466.0	7,466.0	18.0	13.0	100.15	198.5	688.3	143.2	115.7	27.47	5.214		
7,900.0	7,475.5	7,476.5	7,476.5	18.7	13.0	94.16	198.5	688.3	225.3	196.7	28.58	7.882		
8,000.0	7,476.0	7,477.0	7,477.0	19.6	13.0	90.00	198.5	688.3	318.0	288.2	29.71	10.704		
8,100.0	7,476.0	7,477.0	7,477.0	20.6	13.0	90.00	198.5	688.3	414.1	383.2	30.86	13.417		

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

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S36 T2N-R66W (Marcus State) - Marcus State 3A-36H - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	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)				
0.0	0.0	1.0	1.0	0.0	0.0	-90.00	0.0	-39.2	39.2					
100.0	100.0	101.0	101.0	0.2	0.2	-90.00	0.0	-39.2	39.2	38.9	0.31	128.247		
166.3	166.3	167.3	167.3	0.3	0.3	-90.00	0.0	-39.2	39.2	38.6	0.54	72.948 CC		
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	0.0	-39.2	39.2	38.5	0.65	59.849 ES		
300.0	300.0	300.0	300.0	0.5	0.5	-90.31	-0.2	-40.0	40.0	39.0	1.00	39.921		
400.0	400.0	399.6	399.6	0.7	0.7	-91.17	-0.9	-42.5	42.6	41.2	1.36	31.393		
500.0	500.0	498.7	498.6	0.8	0.9	-92.39	-1.9	-46.7	46.8	45.1	1.72	27.281		
600.0	600.0	597.7	597.4	1.0	1.1	-93.76	-3.5	-52.5	52.8	50.7	2.09	25.298		
700.0	700.0	696.5	695.8	1.2	1.3	-95.13	-5.4	-60.0	60.4	58.0	2.47	24.491 SF		
800.0	800.0	794.8	793.8	1.4	1.5	147.70	-7.7	-69.0	70.6	67.8	2.74	25.753		
900.0	900.0	892.6	891.0	1.6	1.7	147.46	-10.5	-79.7	83.9	80.8	3.09	27.173		
1,000.0	999.9	989.7	987.2	1.7	2.0	147.65	-13.6	-91.8	100.3	96.8	3.43	29.217		
1,100.0	1,099.7	1,086.0	1,082.5	1.9	2.3	148.07	-17.1	-105.4	119.8	116.0	3.78	31.700		
1,200.0	1,199.4	1,181.2	1,176.5	2.1	2.6	148.58	-21.0	-120.3	142.4	138.2	4.13	34.500		
1,300.0	1,298.9	1,275.4	1,269.1	2.3	2.9	149.12	-25.2	-136.6	168.0	163.5	4.48	37.529		
1,400.0	1,398.3	1,368.3	1,360.2	2.6	3.3	149.63	-29.7	-154.1	196.6	191.8	4.83	40.724		
1,500.0	1,497.4	1,459.8	1,449.7	2.8	3.6	150.16	-34.5	-172.7	228.1	222.9	5.19	43.984		
1,600.0	1,596.6	1,550.8	1,538.3	3.1	4.0	150.59	-39.7	-192.6	261.2	255.7	5.55	47.080		
1,700.0	1,695.7	1,644.9	1,629.9	3.3	4.4	150.91	-45.1	-213.7	295.0	289.0	5.92	49.826		
1,800.0	1,794.8	1,739.1	1,721.5	3.6	4.8	151.16	-50.6	-234.9	328.7	322.4	6.29	52.233		
1,900.0	1,894.0	1,833.2	1,813.0	3.9	5.2	151.37	-56.1	-256.0	362.4	355.8	6.67	54.359		
2,000.0	1,993.1	1,927.3	1,904.6	4.1	5.7	151.54	-61.5	-277.1	396.2	389.1	7.04	56.247		
2,100.0	2,092.2	2,021.4	1,996.1	4.4	6.1	151.68	-67.0	-298.3	429.9	422.5	7.42	57.936		
2,200.0	2,191.4	2,115.6	2,087.7	4.7	6.5	151.81	-72.4	-319.4	463.7	455.9	7.80	59.454		
2,300.0	2,290.5	2,209.7	2,179.3	5.0	6.9	151.91	-77.9	-340.5	497.5	489.3	8.18	60.825		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S36 T2N-R66W (Marcus State) - Marcus State 3B-36H - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-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		
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-30.8	30.8					
100.0	100.0	100.0	100.0	0.2	0.2	-90.00	0.0	-30.8	30.8	30.5	0.30	101.344		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-30.8	30.8	30.1	0.65	47.150		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-30.8	30.8	29.8	1.00	30.721	CC, ES	
400.0	400.0	399.5	399.5	0.7	0.7	-90.62	-0.3	-31.6	31.6	30.2	1.35	23.379		
500.0	500.0	498.9	498.9	0.8	0.9	-92.29	-1.4	-34.0	34.0	32.3	1.70	19.965		
600.0	600.0	598.3	598.1	1.0	1.0	-94.59	-3.0	-37.9	38.1	36.0	2.06	18.473		
700.0	700.0	697.4	697.1	1.2	1.2	-97.09	-5.4	-43.4	43.9	41.5	2.43	18.059	SF	
800.0	800.0	796.2	795.6	1.4	1.4	144.80	-8.4	-50.5	52.1	49.4	2.74	18.991		
900.0	900.0	894.6	893.6	1.6	1.7	144.00	-12.1	-59.1	63.5	60.4	3.09	20.523		
1,000.0	999.9	992.4	990.7	1.7	1.9	143.89	-16.4	-69.2	77.9	74.4	3.44	22.626		
1,100.0	1,099.7	1,089.5	1,087.0	1.9	2.2	144.15	-21.3	-80.7	95.3	91.5	3.79	25.126		
1,200.0	1,199.4	1,187.5	1,184.0	2.1	2.4	144.70	-26.6	-93.1	115.0	110.8	4.15	27.705		
1,300.0	1,298.9	1,285.2	1,280.8	2.3	2.7	145.48	-31.9	-105.5	136.1	131.6	4.51	30.160		
1,400.0	1,398.3	1,382.6	1,377.3	2.6	3.0	146.37	-37.2	-117.9	158.6	153.7	4.88	32.513		
1,500.0	1,497.4	1,479.6	1,473.4	2.8	3.3	147.34	-42.4	-130.2	182.5	177.2	5.25	34.743		
1,600.0	1,596.6	1,576.7	1,569.5	3.1	3.5	148.17	-47.6	-142.5	206.6	201.0	5.63	36.683		
1,700.0	1,695.7	1,673.7	1,665.6	3.3	3.8	148.84	-52.9	-154.7	230.7	224.7	6.01	38.372		
1,800.0	1,794.8	1,770.7	1,761.7	3.6	4.1	149.37	-58.1	-167.0	254.9	248.5	6.40	39.855		
1,900.0	1,894.0	1,867.7	1,857.8	3.9	4.4	149.82	-63.4	-179.3	279.1	272.3	6.78	41.166		
2,000.0	1,993.1	1,964.7	1,953.9	4.1	4.7	150.19	-68.6	-191.6	303.3	296.1	7.16	42.333		
2,100.0	2,092.2	2,061.7	2,049.9	4.4	5.0	150.51	-73.9	-203.9	327.5	319.9	7.55	43.377		
2,200.0	2,191.4	2,158.7	2,146.0	4.7	5.2	150.78	-79.1	-216.2	351.7	343.8	7.94	44.318		
2,300.0	2,290.5	2,255.7	2,242.1	5.0	5.5	151.02	-84.3	-228.5	375.9	367.6	8.32	45.169		
2,400.0	2,389.6	2,352.7	2,338.2	5.2	5.8	151.23	-89.6	-240.8	400.2	391.4	8.71	45.942		
2,500.0	2,488.8	2,449.7	2,434.3	5.5	6.1	151.42	-94.8	-253.1	424.4	415.3	9.10	46.649		
2,600.0	2,587.9	2,546.8	2,530.4	5.8	6.4	151.59	-100.1	-265.4	448.6	439.1	9.49	47.295		
2,700.0	2,687.0	2,643.8	2,626.5	6.1	6.7	151.73	-105.3	-277.7	472.9	463.0	9.87	47.890		
2,800.0	2,786.2	2,740.8	2,722.5	6.4	7.0	151.87	-110.6	-290.0	497.1	486.8	10.26	48.439		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S36 T2N-R66W (Marcus State) - Marcus State 3C-36H - HZ - Plan #2													Offset Site Error: 0.0 ft	
Survey Program: 0-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		
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-19.6	19.6					
100.0	100.0	100.0	100.0	0.2	0.2	-90.00	0.0	-19.6	19.6	19.3	0.30	64.492		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-19.6	19.6	18.9	0.65	30.004		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-19.6	19.6	18.6	1.00	19.550		
400.0	400.0	400.0	400.0	0.7	0.7	-90.00	0.0	-19.6	19.6	18.2	1.35	14.498		
500.0	500.0	500.0	500.0	0.8	0.8	-90.00	0.0	-19.6	19.6	17.9	1.70	11.521		
600.0	600.0	600.0	600.0	1.0	1.0	-90.00	0.0	-19.6	19.6	17.5	2.05	9.558		
700.0	700.0	700.0	700.0	1.2	1.2	-90.00	0.0	-19.6	19.6	17.2	2.40	8.167 CC, ES		
800.0	800.0	800.0	800.0	1.4	1.4	154.84	0.0	-19.6	20.4	17.6	2.75	7.416		
900.0	900.0	900.0	900.0	1.6	1.5	157.63	0.0	-19.6	22.8	19.7	3.10	7.355 SF		
1,000.0	999.9	999.9	999.9	1.7	1.7	161.16	0.0	-19.6	26.9	23.4	3.44	7.798		
1,100.0	1,099.7	1,099.4	1,099.4	1.9	1.9	163.28	-0.7	-20.1	33.1	29.3	3.79	8.736		
1,200.0	1,199.4	1,198.7	1,198.6	2.1	2.1	163.27	-2.7	-21.8	41.9	37.8	4.14	10.132		
1,300.0	1,298.9	1,297.6	1,297.5	2.3	2.2	162.18	-5.9	-24.5	53.3	48.8	4.49	11.868		
1,400.0	1,398.3	1,396.1	1,395.8	2.6	2.4	160.68	-10.5	-28.3	67.2	62.3	4.85	13.865		
1,500.0	1,497.4	1,494.5	1,493.9	2.8	2.6	159.28	-16.2	-33.0	83.3	78.1	5.21	15.991		
1,600.0	1,596.6	1,593.1	1,592.2	3.1	2.8	158.35	-21.9	-37.8	99.8	94.2	5.59	17.874		
1,700.0	1,695.7	1,691.7	1,690.6	3.3	3.0	157.68	-27.6	-42.5	116.3	110.4	5.96	19.513		
1,800.0	1,794.8	1,790.4	1,788.9	3.6	3.2	157.18	-33.4	-47.3	132.9	126.5	6.34	20.950		
1,900.0	1,894.0	1,889.0	1,887.3	3.9	3.4	156.79	-39.1	-52.0	149.4	142.7	6.72	22.218		
2,000.0	1,993.1	1,987.6	1,985.6	4.1	3.6	156.47	-44.8	-56.8	165.9	158.8	7.11	23.344		
2,100.0	2,092.2	2,086.2	2,083.9	4.4	3.8	156.22	-50.6	-61.5	182.5	175.0	7.49	24.350		
2,200.0	2,191.4	2,184.8	2,182.3	4.7	4.0	156.00	-56.3	-66.3	199.0	191.1	7.88	25.252		
2,300.0	2,290.5	2,283.5	2,280.6	5.0	4.2	155.82	-62.0	-71.1	215.5	207.3	8.27	26.067		
2,400.0	2,389.6	2,382.1	2,379.0	5.2	4.4	155.67	-67.8	-75.8	232.1	223.4	8.66	26.806		
2,500.0	2,488.8	2,480.7	2,477.3	5.5	4.6	155.53	-73.5	-80.6	248.6	239.6	9.05	27.478		
2,600.0	2,587.9	2,579.3	2,575.6	5.8	4.9	155.42	-79.2	-85.3	265.2	255.7	9.44	28.093		
2,700.0	2,687.0	2,677.9	2,674.0	6.1	5.1	155.31	-85.0	-90.1	281.7	271.9	9.83	28.657		
2,800.0	2,786.2	2,776.6	2,772.3	6.4	5.3	155.22	-90.7	-94.8	298.3	288.0	10.22	29.175		
2,900.0	2,885.3	2,875.2	2,870.7	6.6	5.5	155.14	-96.4	-99.6	314.8	304.2	10.62	29.654		
3,000.0	2,984.4	2,973.8	2,969.0	6.9	5.7	155.06	-102.2	-104.4	331.3	320.3	11.01	30.098		
3,100.0	3,083.6	3,072.4	3,067.3	7.2	5.9	154.99	-107.9	-109.1	347.9	336.5	11.40	30.509		
3,200.0	3,182.7	3,171.0	3,165.7	7.5	6.1	154.93	-113.6	-113.9	364.4	352.6	11.80	30.892		
3,300.0	3,281.8	3,269.7	3,264.0	7.8	6.3	154.88	-119.4	-118.6	381.0	368.8	12.19	31.250		
3,400.0	3,381.0	3,368.3	3,362.3	8.1	6.5	154.83	-125.1	-123.4	397.5	385.0	12.59	31.584		
3,500.0	3,480.1	3,466.9	3,460.7	8.3	6.7	154.78	-130.8	-128.1	414.1	401.1	12.98	31.897		
3,600.0	3,579.2	3,565.5	3,559.0	8.6	7.0	154.74	-136.6	-132.9	430.6	417.3	13.38	32.191		
3,700.0	3,678.4	3,664.1	3,657.4	8.9	7.2	154.70	-142.3	-137.7	447.2	433.4	13.77	32.468		
3,800.0	3,777.5	3,762.8	3,755.7	9.2	7.4	154.66	-148.0	-142.4	463.7	449.6	14.17	32.728		
3,900.0	3,876.6	3,861.4	3,854.0	9.5	7.6	154.62	-153.8	-147.2	480.3	465.7	14.57	32.974		
4,000.0	3,975.8	3,960.0	3,952.4	9.8	7.8	154.59	-159.5	-151.9	496.8	481.9	14.96	33.207		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S36 T2N-R66W (Marcus State) - Marcus State 3D-36H - HZ - Plan #2														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)							
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-8.4	8.4						
100.0	100.0	100.0	100.0	0.2	0.2	-90.00	0.0	-8.4	8.4	8.1	0.30	27.639			
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-8.4	8.4	7.7	0.65	12.859			
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-8.4	8.4	7.4	1.00	8.379			
400.0	400.0	400.0	400.0	0.7	0.7	-90.00	0.0	-8.4	8.4	7.0	1.35	6.214			
500.0	500.0	500.0	500.0	0.8	0.8	-90.00	0.0	-8.4	8.4	6.7	1.70	4.938			
600.0	600.0	600.0	600.0	1.0	1.0	-90.00	0.0	-8.4	8.4	6.3	2.05	4.096			
700.0	700.0	700.0	700.0	1.2	1.2	-90.00	0.0	-8.4	8.4	6.0	2.40	3.500 CC, ES			
800.0	800.0	800.0	800.0	1.4	1.4	156.16	0.0	-8.4	9.2	6.4	2.75	3.344			
900.0	900.0	900.0	900.0	1.6	1.5	161.37	0.0	-8.4	11.6	8.5	3.10	3.756			
1,000.0	999.9	1,000.1	1,000.1	1.7	1.7	164.18	-0.7	-7.9	15.2	11.8	3.44	4.412			
1,100.0	1,099.7	1,100.2	1,100.1	1.9	1.9	163.59	-2.9	-6.4	19.2	15.4	3.79	5.068			
1,200.0	1,199.4	1,200.3	1,200.2	2.1	2.1	161.37	-6.5	-3.9	23.7	19.6	4.15	5.722			
1,300.0	1,298.9	1,300.5	1,300.2	2.3	2.3	158.41	-11.5	-0.5	28.8	24.3	4.51	6.381			
1,400.0	1,398.3	1,400.4	1,399.8	2.6	2.5	155.59	-17.8	3.8	34.6	29.7	4.88	7.089			
1,500.0	1,497.4	1,500.2	1,499.3	2.8	2.7	154.40	-24.1	8.1	41.8	36.5	5.26	7.949			
1,600.0	1,596.6	1,599.9	1,598.7	3.1	2.9	153.70	-30.4	12.4	49.3	43.6	5.65	8.726			
1,700.0	1,695.7	1,699.6	1,698.1	3.3	3.1	153.18	-36.7	16.7	56.7	50.7	6.04	9.397			
1,800.0	1,794.8	1,799.3	1,797.6	3.6	3.3	152.79	-43.0	21.1	64.2	57.8	6.43	9.982			
1,900.0	1,894.0	1,899.1	1,897.0	3.9	3.5	152.48	-49.3	25.4	71.6	64.8	6.83	10.496			
2,000.0	1,993.1	1,998.8	1,996.4	4.1	3.7	152.22	-55.6	29.7	79.1	71.9	7.23	10.949			
2,100.0	2,092.2	2,098.5	2,095.8	4.4	3.9	152.01	-62.0	34.0	86.6	79.0	7.63	11.353			
2,200.0	2,191.4	2,198.2	2,195.3	4.7	4.1	151.84	-68.3	38.4	94.1	86.0	8.03	11.713			
2,300.0	2,290.5	2,297.9	2,294.7	5.0	4.3	151.69	-74.6	42.7	101.5	93.1	8.43	12.038			
2,400.0	2,389.6	2,397.7	2,394.1	5.2	4.5	151.56	-80.9	47.0	109.0	100.2	8.84	12.331			
2,500.0	2,488.8	2,497.4	2,493.5	5.5	4.7	151.44	-87.2	51.3	116.5	107.2	9.25	12.596			
2,600.0	2,587.9	2,597.1	2,593.0	5.8	5.0	151.34	-93.5	55.7	123.9	114.3	9.65	12.838			
2,700.0	2,687.0	2,696.8	2,692.4	6.1	5.2	151.25	-99.8	60.0	131.4	121.4	10.06	13.060			
2,800.0	2,786.2	2,796.5	2,791.8	6.4	5.4	151.18	-106.2	64.3	138.9	128.4	10.47	13.263			
2,900.0	2,885.3	2,896.3	2,891.2	6.6	5.6	151.10	-112.5	68.6	146.4	135.5	10.88	13.450			
3,000.0	2,984.4	2,996.0	2,990.7	6.9	5.8	151.04	-118.8	73.0	153.8	142.5	11.29	13.623			
3,100.0	3,083.6	3,095.7	3,090.1	7.2	6.0	150.98	-125.1	77.3	161.3	149.6	11.70	13.783			
3,200.0	3,182.7	3,195.4	3,189.5	7.5	6.2	150.93	-131.4	81.6	168.8	156.7	12.12	13.931			
3,300.0	3,281.8	3,295.1	3,288.9	7.8	6.5	150.88	-137.7	85.9	176.3	163.7	12.53	14.070			
3,400.0	3,381.0	3,394.9	3,388.4	8.1	6.7	150.84	-144.0	90.2	183.7	170.8	12.94	14.199			
3,500.0	3,480.1	3,494.6	3,487.8	8.3	6.9	150.80	-150.4	94.6	191.2	177.9	13.35	14.320			
3,600.0	3,579.2	3,594.3	3,587.2	8.6	7.1	150.76	-156.7	98.9	198.7	184.9	13.77	14.433			
3,700.0	3,678.4	3,694.0	3,686.7	8.9	7.3	150.72	-163.0	103.2	206.2	192.0	14.18	14.539			
3,800.0	3,777.5	3,793.7	3,786.1	9.2	7.5	150.69	-169.3	107.5	213.6	199.0	14.59	14.640			
3,900.0	3,876.6	3,893.5	3,885.5	9.5	7.8	150.66	-175.6	111.9	221.1	206.1	15.01	14.734			
4,000.0	3,975.8	3,993.2	3,984.9	9.8	8.0	150.63	-181.9	116.2	228.6	213.2	15.42	14.823			
4,100.0	4,074.9	4,092.9	4,084.4	10.1	8.2	150.61	-188.2	120.5	236.1	220.2	15.84	14.907			
4,200.0	4,174.1	4,192.6	4,183.8	10.3	8.4	150.58	-194.5	124.8	243.5	227.3	16.25	14.987			
4,300.0	4,273.2	4,292.3	4,283.2	10.6	8.6	150.56	-200.9	129.2	251.0	234.3	16.66	15.062			
4,400.0	4,372.3	4,392.1	4,382.6	10.9	8.8	150.53	-207.2	133.5	258.5	241.4	17.08	15.134			
4,500.0	4,471.5	4,491.8	4,482.1	11.2	9.1	150.51	-213.5	137.8	266.0	248.5	17.49	15.203			
4,600.0	4,570.6	4,591.5	4,581.5	11.5	9.3	150.49	-219.8	142.1	273.4	255.5	17.91	15.267			
4,700.0	4,669.7	4,691.2	4,680.9	11.8	9.5	150.48	-226.1	146.5	280.9	262.6	18.32	15.329			
4,800.0	4,768.9	4,790.9	4,780.3	12.1	9.7	150.46	-232.4	150.8	288.4	269.6	18.74	15.388			
4,900.0	4,868.0	4,890.7	4,879.8	12.3	9.9	150.44	-238.7	155.1	295.9	276.7	19.16	15.445			
5,000.0	4,967.1	4,990.4	4,979.2	12.6	10.2	150.42	-245.1	159.4	303.3	283.8	19.57	15.499			
5,100.0	5,066.3	5,090.1	5,078.6	12.9	10.4	150.41	-251.4	163.8	310.8	290.8	19.99	15.550			

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

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S36 T2N-R66W (Marcus State) - Marcus State 3D-36H - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-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			
5,200.0	5,165.4	5,189.8	5,178.0	13.2	10.6	150.39	-257.7	168.1	318.3	297.9	20.40	15.600		
5,300.0	5,264.5	5,289.5	5,277.5	13.5	10.8	150.38	-264.0	172.4	325.8	304.9	20.82	15.647		
5,400.0	5,363.7	5,389.3	5,376.9	13.8	11.0	150.37	-270.3	176.7	333.2	312.0	21.23	15.693		
5,500.0	5,462.8	5,488.7	5,476.1	14.1	11.2	150.36	-276.6	181.0	340.7	319.1	21.65	15.737		
5,600.0	5,561.9	5,585.4	5,572.5	14.4	11.4	150.48	-281.9	184.7	348.7	326.7	22.03	15.826		
5,700.0	5,661.1	5,681.9	5,668.9	14.7	11.6	150.82	-285.9	187.4	357.6	335.2	22.38	15.975		
5,800.0	5,760.3	5,778.2	5,765.1	14.9	11.8	151.34	-288.5	189.2	366.5	343.8	22.70	16.141		
5,900.0	5,859.8	5,874.5	5,861.4	15.2	11.9	151.91	-289.8	190.1	374.8	351.8	23.00	16.296		
6,000.0	5,959.4	5,972.5	5,959.4	15.4	12.1	152.52	-290.0	190.2	382.4	359.1	23.28	16.427		
6,100.0	6,059.2	6,072.2	6,059.2	15.6	12.2	153.02	-290.0	190.2	388.5	365.0	23.56	16.491		
6,200.0	6,159.0	6,172.1	6,159.0	15.7	12.4	153.39	-290.0	190.2	393.2	369.3	23.85	16.485		
6,300.0	6,259.0	6,272.0	6,259.0	15.9	12.5	153.63	-290.0	190.2	396.3	372.1	24.14	16.413		
6,400.0	6,358.9	6,372.0	6,358.9	16.0	12.7	153.74	-290.0	190.2	397.8	373.4	24.44	16.275		
6,500.0	6,458.9	6,472.0	6,458.9	16.2	12.8	-90.00	-290.0	190.2	398.0	373.2	24.75	16.078		
6,561.9	6,520.8	6,533.9	6,520.8	16.2	12.9	-90.00	-290.0	190.2	398.0	373.0	24.95	15.951		
6,600.0	6,558.9	6,572.0	6,558.9	16.3	13.0	-89.94	-289.6	190.2	398.0	372.9	25.06	15.885		
6,700.0	6,658.9	6,670.8	6,657.1	16.4	13.0	-88.46	-279.3	190.2	398.1	373.0	25.14	15.836		
6,800.0	6,758.9	6,765.0	6,748.6	16.5	13.0	-85.27	-257.0	190.2	399.5	374.5	25.02	15.968		
6,900.0	6,858.6	6,854.4	6,832.0	16.6	13.0	-81.24	-225.0	190.2	403.1	378.3	24.78	16.269		
7,000.0	6,956.4	6,941.0	6,908.4	16.6	12.9	-77.47	-184.2	190.2	408.4	383.9	24.58	16.618		
7,100.0	7,050.3	7,025.3	6,977.4	16.6	12.9	-74.02	-136.1	190.2	415.0	390.5	24.48	16.954		
7,200.0	7,138.6	7,107.6	7,039.0	16.5	12.9	-70.92	-81.5	190.2	422.3	397.8	24.50	17.241		
7,300.0	7,219.5	7,188.2	7,092.8	16.5	13.0	-68.21	-21.5	190.2	429.8	405.2	24.63	17.452		
7,400.0	7,291.5	7,267.5	7,138.9	16.5	13.2	-65.90	43.0	190.2	437.1	412.2	24.86	17.581		
7,500.0	7,353.1	7,350.0	7,178.9	16.7	13.5	-63.93	115.1	190.2	443.7	418.5	25.22	17.596		
7,600.0	7,403.1	7,423.1	7,207.2	16.9	13.9	-62.50	182.4	190.2	449.2	423.6	25.66	17.508		
7,700.0	7,440.7	7,500.0	7,229.5	17.4	14.4	-61.41	256.0	190.2	453.5	427.3	26.25	17.279		
7,800.0	7,465.0	7,576.1	7,243.6	18.0	15.0	-60.72	330.8	190.2	456.4	429.4	27.01	16.898		
7,900.0	7,475.5	7,650.0	7,249.7	18.7	15.7	-60.42	404.3	190.2	457.6	429.7	27.93	16.385		
8,000.0	7,476.0	7,746.0	7,250.0	19.6	16.7	-60.41	500.3	190.2	457.7	428.0	29.64	15.444		
8,100.0	7,476.0	7,846.0	7,250.0	20.6	17.8	-60.41	600.3	190.2	457.7	426.0	31.68	14.449		
8,200.0	7,476.0	7,946.0	7,250.0	21.7	19.1	-60.41	700.3	190.2	457.7	423.8	33.87	13.513		
8,300.0	7,476.0	8,046.0	7,250.0	22.8	20.4	-60.41	800.3	190.2	457.7	421.5	36.19	12.646		
8,400.0	7,476.0	8,146.0	7,250.0	24.1	21.8	-60.41	900.3	190.2	457.7	419.1	38.61	11.853		
8,500.0	7,476.0	8,246.0	7,250.0	25.4	23.2	-60.41	1,000.3	190.2	457.7	416.6	41.12	11.130		
8,600.0	7,476.0	8,346.0	7,250.0	26.8	24.7	-60.41	1,100.3	190.2	457.7	414.0	43.70	10.474		
8,700.0	7,476.0	8,446.0	7,250.0	28.2	26.2	-60.41	1,200.3	190.2	457.7	411.3	46.33	9.878		
8,800.0	7,476.0	8,546.0	7,250.0	29.6	27.7	-60.41	1,300.3	190.2	457.7	408.7	49.02	9.337		
8,900.0	7,476.0	8,646.0	7,250.0	31.1	29.3	-60.41	1,400.3	190.2	457.7	405.9	51.75	8.845		
9,000.0	7,476.0	8,746.0	7,250.0	32.6	30.9	-60.41	1,500.3	190.2	457.7	403.2	54.51	8.397		
9,000.0	7,476.0	8,746.1	7,250.0	32.6	30.9	-60.41	1,500.4	190.2	457.7	403.2	54.51	8.397		
9,100.0	7,476.0	8,846.0	7,250.0	34.1	32.5	-60.45	1,600.3	190.2	458.2	400.8	57.41	7.982		
9,200.0	7,476.0	8,946.0	7,250.0	35.6	34.1	-60.50	1,700.3	190.2	459.0	398.7	60.26	7.617		
9,300.0	7,476.0	9,046.0	7,250.0	37.2	35.7	-60.56	1,800.3	190.2	459.8	396.6	63.13	7.283		
9,400.0	7,476.0	9,146.0	7,250.0	38.8	37.3	-60.61	1,900.3	190.2	460.5	394.5	66.02	6.975		
9,500.0	7,476.0	9,246.0	7,250.0	40.4	39.0	-60.66	2,000.3	190.2	461.3	392.4	68.94	6.692		
9,600.0	7,476.0	9,346.0	7,250.0	42.0	40.7	-60.72	2,100.3	190.2	462.0	390.2	71.87	6.429		
9,700.0	7,476.0	9,446.0	7,250.0	43.6	42.3	-60.77	2,200.3	190.2	462.8	388.0	74.82	6.186		
9,800.0	7,476.0	9,546.0	7,250.0	45.2	44.0	-60.82	2,300.3	190.2	463.6	385.8	77.78	5.960		
9,900.0	7,476.0	9,646.0	7,250.0	46.9	45.7	-60.87	2,400.3	190.2	464.3	383.6	80.75	5.750		
10,000.0	7,476.0	9,746.0	7,250.0	48.5	47.4	-60.93	2,500.3	190.2	465.1	381.4	83.74	5.554		
10,100.0	7,476.0	9,846.0	7,250.0	50.2	49.0	-60.98	2,600.3	190.2	465.9	379.1	86.74	5.371		

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

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S36 T2N-R66W (Marcus State) - Marcus State 3D-36H - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
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	Warning	
10,200.0	7,476.0	9,946.0	7,250.0	51.8	50.7	-61.03	2,700.3	190.2	466.6	376.9	89.75	5.199		
10,300.0	7,476.0	10,046.0	7,250.0	53.5	52.4	-61.08	2,800.3	190.2	467.4	374.6	92.77	5.038		
10,400.0	7,476.0	10,146.0	7,250.0	55.2	54.1	-61.13	2,900.3	190.2	468.1	372.4	95.79	4.887		
10,500.0	7,476.0	10,246.0	7,250.0	56.9	55.8	-61.19	3,000.3	190.2	468.9	370.1	98.83	4.745		
10,600.0	7,476.0	10,346.0	7,250.0	58.5	57.5	-61.22	3,100.3	190.2	469.5	367.7	101.76	4.614		
10,700.0	7,476.0	10,446.0	7,250.0	60.2	59.3	-61.17	3,200.3	190.2	468.7	364.2	104.48	4.486		
10,800.0	7,476.0	10,545.9	7,250.0	61.9	61.0	-61.07	3,300.3	190.2	467.2	359.8	107.39	4.350		
10,900.0	7,476.0	10,645.9	7,250.0	63.6	62.7	-60.96	3,400.2	190.2	465.7	355.4	110.30	4.222		
11,000.0	7,476.0	10,745.9	7,250.0	65.3	64.4	-60.86	3,500.2	190.2	464.1	350.9	113.20	4.100		
11,100.0	7,476.0	10,845.9	7,250.0	67.0	66.1	-60.75	3,600.2	190.2	462.6	346.5	116.09	3.985		
11,200.0	7,476.0	10,945.9	7,250.0	68.7	67.8	-60.65	3,700.2	190.2	461.1	342.1	118.99	3.875		
11,300.0	7,476.0	11,045.9	7,250.0	70.4	69.6	-60.54	3,800.2	190.2	459.6	337.7	121.88	3.771		
11,400.0	7,476.0	11,145.8	7,250.0	72.1	71.3	-60.43	3,900.2	190.2	458.1	333.3	124.76	3.671		
11,500.0	7,476.0	11,245.8	7,250.0	73.8	73.0	-60.32	4,000.2	190.2	456.5	328.9	127.64	3.577		
11,600.0	7,476.0	11,345.8	7,250.0	75.5	74.7	-60.22	4,100.1	190.2	455.0	324.5	130.51	3.486		
11,700.0	7,476.0	11,445.8	7,250.0	77.2	76.5	-60.11	4,200.1	190.2	453.5	320.1	133.38	3.400		
11,800.0	7,476.0	11,545.8	7,250.0	78.9	78.2	-60.05	4,300.1	190.2	452.7	316.2	136.55	3.316		
11,800.0	7,476.0	11,545.8	7,250.0	78.9	78.2	-60.05	4,300.1	190.2	452.7	316.2	136.55	3.316		
11,900.0	7,476.0	11,645.8	7,250.0	80.6	79.9	-60.11	4,400.1	190.2	453.5	313.7	139.82	3.244		
12,000.0	7,476.0	11,745.8	7,250.0	82.3	81.7	-60.26	4,500.1	190.2	455.8	312.6	143.18	3.183		
12,057.1	7,476.0	11,802.8	7,250.0	83.3	82.6	-60.39	4,557.1	190.2	457.7	312.6	145.11	3.154 SF		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S36 T2N-R66W (Marcus State) - Marcus State 3F-36H - HZ - Plan #2														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance									
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	Warning		
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	11.2	11.2						
100.0	100.0	100.0	100.0	0.2	0.2	90.00	0.0	11.2	11.2	10.9	0.30	36.853			
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	11.2	11.2	10.5	0.65	17.145			
300.0	300.0	300.0	300.0	0.5	0.5	90.00	0.0	11.2	11.2	10.2	1.00	11.171			
400.0	400.0	400.0	400.0	0.7	0.7	90.00	0.0	11.2	11.2	9.8	1.35	8.285 CC, ES			
500.0	500.0	499.8	499.8	0.8	0.9	91.06	-0.2	12.0	12.0	10.3	1.70	7.080 SF			
600.0	600.0	599.5	599.5	1.0	1.0	93.50	-0.9	14.6	14.6	12.5	2.05	7.112			
700.0	700.0	699.2	699.0	1.2	1.2	96.08	-2.0	18.7	18.9	16.5	2.41	7.844			
800.0	800.0	798.7	798.3	1.4	1.4	-18.66	-3.5	24.6	24.1	21.3	2.75	8.770			
900.0	900.0	898.1	897.4	1.6	1.6	-18.36	-5.5	32.1	29.4	26.3	3.09	9.490			
1,000.0	999.9	997.4	996.3	1.7	1.8	-18.70	-8.0	41.3	34.7	31.3	3.44	10.081			
1,100.0	1,099.7	1,096.6	1,094.9	1.9	2.1	-19.43	-10.8	52.1	40.1	36.3	3.79	10.578			
1,200.0	1,199.4	1,195.7	1,193.1	2.1	2.3	-20.40	-14.1	64.5	45.6	41.5	4.15	11.002			
1,300.0	1,298.9	1,294.7	1,291.1	2.3	2.6	-21.53	-17.8	78.6	51.2	46.7	4.50	11.367			
1,400.0	1,398.3	1,393.6	1,388.6	2.6	2.9	-22.76	-22.0	94.3	56.9	52.0	4.87	11.681			
1,500.0	1,497.4	1,492.4	1,485.8	2.8	3.3	-24.01	-26.6	111.6	62.8	57.6	5.24	11.979			
1,600.0	1,596.6	1,591.0	1,582.5	3.1	3.6	-24.81	-31.6	130.4	70.2	64.6	5.63	12.482			
1,700.0	1,695.7	1,689.4	1,678.5	3.3	4.0	-25.16	-37.0	150.9	79.3	73.3	6.01	13.196			
1,800.0	1,794.8	1,787.5	1,774.0	3.6	4.4	-25.17	-42.8	172.8	90.1	83.7	6.40	14.083			
1,900.0	1,894.0	1,886.9	1,870.5	3.9	4.9	-25.09	-48.8	195.7	101.5	94.7	6.78	14.966			
2,000.0	1,993.1	1,986.2	1,967.0	4.1	5.3	-25.02	-54.9	218.6	112.9	105.7	7.17	15.750			
2,100.0	2,092.2	2,085.6	2,063.5	4.4	5.7	-24.96	-60.9	241.4	124.3	116.8	7.56	16.452			
2,200.0	2,191.4	2,184.9	2,159.9	4.7	6.2	-24.92	-67.0	264.3	135.7	127.8	7.95	17.083			
2,300.0	2,290.5	2,284.3	2,256.4	5.0	6.6	-24.88	-73.0	287.2	147.2	138.8	8.34	17.653			
2,400.0	2,389.6	2,383.6	2,352.9	5.2	7.0	-24.84	-79.1	310.1	158.6	149.8	8.73	18.171			
2,500.0	2,488.8	2,482.9	2,449.4	5.5	7.5	-24.81	-85.1	333.0	170.0	160.9	9.12	18.644			
2,600.0	2,587.9	2,582.3	2,545.9	5.8	7.9	-24.79	-91.2	355.8	181.4	171.9	9.51	19.076			
2,700.0	2,687.0	2,681.6	2,642.4	6.1	8.4	-24.77	-97.2	378.7	192.8	182.9	9.90	19.473			
2,800.0	2,786.2	2,781.0	2,738.9	6.4	8.8	-24.75	-103.3	401.6	204.2	193.9	10.29	19.840			
2,900.0	2,885.3	2,880.3	2,835.4	6.6	9.3	-24.73	-109.4	424.5	215.6	205.0	10.69	20.178			
3,000.0	2,984.4	2,979.7	2,931.8	6.9	9.7	-24.71	-115.4	447.4	227.1	216.0	11.08	20.492			
3,100.0	3,083.6	3,079.0	3,028.3	7.2	10.2	-24.70	-121.5	470.2	238.5	227.0	11.47	20.784			
3,200.0	3,182.7	3,178.4	3,124.8	7.5	10.6	-24.69	-127.5	493.1	249.9	238.0	11.87	21.056			
3,300.0	3,281.8	3,277.7	3,221.3	7.8	11.1	-24.67	-133.6	516.0	261.3	249.0	12.26	21.310			
3,400.0	3,381.0	3,377.1	3,317.8	8.1	11.5	-24.66	-139.6	538.9	272.7	260.1	12.66	21.548			
3,500.0	3,480.1	3,476.4	3,414.3	8.3	12.0	-24.65	-145.7	561.7	284.1	271.1	13.05	21.772			
3,600.0	3,579.2	3,575.8	3,510.8	8.6	12.5	-24.64	-151.7	584.6	295.6	282.1	13.45	21.981			
3,700.0	3,678.4	3,675.1	3,607.2	8.9	12.9	-24.64	-157.8	607.5	307.0	293.1	13.84	22.179			
3,800.0	3,777.5	3,774.4	3,703.7	9.2	13.4	-24.63	-163.8	630.4	318.4	304.2	14.24	22.365			
3,900.0	3,876.6	3,873.8	3,800.2	9.5	13.8	-24.62	-169.9	653.3	329.8	315.2	14.63	22.542			
4,000.0	3,975.8	3,973.1	3,896.7	9.8	14.3	-24.61	-175.9	676.1	341.2	326.2	15.03	22.708			
4,100.0	4,074.9	4,072.5	3,993.2	10.1	14.7	-24.61	-182.0	699.0	352.6	337.2	15.42	22.866			
4,200.0	4,174.1	4,171.8	4,089.7	10.3	15.2	-24.60	-188.0	721.9	364.1	348.2	15.82	23.016			
4,300.0	4,273.2	4,271.2	4,186.2	10.6	15.6	-24.59	-194.1	744.8	375.5	359.3	16.21	23.158			
4,400.0	4,372.3	4,370.5	4,282.6	10.9	16.1	-24.59	-200.2	767.7	386.9	370.3	16.61	23.294			
4,500.0	4,471.5	4,469.9	4,379.1	11.2	16.5	-24.58	-206.2	790.5	398.3	381.3	17.00	23.423			
4,600.0	4,570.6	4,569.2	4,475.6	11.5	17.0	-24.58	-212.3	813.4	409.7	392.3	17.40	23.546			
4,700.0	4,669.7	4,668.6	4,572.1	11.8	17.5	-24.57	-218.3	836.3	421.1	403.3	17.80	23.664			
4,800.0	4,768.9	4,767.9	4,668.6	12.1	17.9	-24.57	-224.4	859.2	432.6	414.4	18.19	23.776			
4,900.0	4,868.0	4,867.3	4,765.1	12.3	18.4	-24.57	-230.4	882.0	444.0	425.4	18.59	23.883			
5,000.0	4,967.1	4,966.6	4,861.6	12.6	18.8	-24.56	-236.5	904.9	455.4	436.4	18.99	23.986			
5,100.0	5,066.3	5,065.9	4,958.1	12.9	19.3	-24.56	-242.5	927.8	466.8	447.4	19.38	24.085			

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

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design													S36 T2N-R66W (Marcus State) - Marcus State 3F-36H - HZ - Plan #2		Offset Site Error:		0.0 ft
Survey Program:													0-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					
5,200.0	5,165.4	5,166.4	5,055.6	13.2	19.7	-24.56	-248.6	950.9	478.2	458.4	19.78	24.176					
5,300.0	5,264.5	5,274.8	5,161.2	13.5	20.2	-24.59	-254.9	974.7	488.5	468.3	20.20	24.185					
5,400.0	5,363.7	5,383.5	5,267.5	13.8	20.6	-24.67	-260.7	996.6	496.9	476.3	20.62	24.096					

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design										S36 T2N-R66W (Marcus State) - Marcus State W 36-3J (Existing) - VT - Existing				Offset Site Error:		0.0 ft
Survey Program:				0-MWD								Offset Well Error:		0.0 ft		
Reference		Offset		Semi Major Axis			Distance									
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore	Centre	Between	Between	Total	Separation	Warning			
Depth	Depth	Depth	Depth			Toolface	+N/-S	+E/-W	Centres	Ellipses	Uncertainty	Factor				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	Axis					
11,200.0	7,476.0	7,477.0	7,477.0	68.7	13.0	90.00	4,165.2	738.2	487.4	406.7	80.72	6.038				
11,300.0	7,476.0	7,477.0	7,477.0	70.4	13.0	90.00	4,165.2	738.2	393.8	311.4	82.44	4.777				
11,400.0	7,476.0	7,477.0	7,477.0	72.1	13.0	90.00	4,165.2	738.2	304.3	220.2	84.17	3.616				
11,500.0	7,476.0	7,477.0	7,477.0	73.8	13.0	90.00	4,165.2	738.2	223.9	138.0	85.89	2.607				
11,600.0	7,476.0	7,477.0	7,477.0	75.5	13.0	90.00	4,165.2	738.2	166.3	78.7	87.62	1.898				
11,662.4	7,476.0	7,477.0	7,477.0	76.5	13.0	90.00	4,165.2	738.2	154.2	65.5	88.70	1.739	CC, ES, SF			
11,700.0	7,476.0	7,477.0	7,477.0	77.2	13.0	90.00	4,165.2	738.2	158.7	69.4	89.35	1.777				
11,800.0	7,476.0	7,477.0	7,477.0	78.9	13.0	90.00	4,165.2	738.2	206.1	114.8	91.26	2.258				
11,900.0	7,476.0	7,477.0	7,477.0	80.6	13.0	90.00	4,165.2	738.2	281.4	188.2	93.15	3.021				
12,000.0	7,476.0	7,477.0	7,477.0	82.3	13.0	90.00	4,165.2	738.2	367.9	272.9	95.02	3.872				
12,057.1	7,476.0	7,477.0	7,477.0	83.3	13.0	90.00	4,165.2	738.2	419.7	323.7	96.04	4.370				

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design													S36 T2N-R66W (Marcus State) - Marcus State W 36-6JI (Existing) - VT - Existing		Offset Site Error:		0.0 ft
Survey Program:													0-MWD		Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance										
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor	Warning				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)							
9,900.0	7,476.0	7,477.0	7,477.0	46.9	13.0	-90.00	2,837.0	442.0	463.0	404.2	58.81	7.872					
10,000.0	7,476.0	7,477.0	7,477.0	48.5	13.0	-90.00	2,837.0	442.0	370.5	310.0	60.50	6.125					
10,100.0	7,476.0	7,477.0	7,477.0	50.2	13.0	-90.00	2,837.0	442.0	283.3	221.1	62.19	4.555					
10,200.0	7,476.0	7,477.0	7,477.0	51.8	13.0	-90.00	2,837.0	442.0	207.8	143.9	63.88	3.252					
10,300.0	7,476.0	7,477.0	7,477.0	53.5	13.0	-90.00	2,837.0	442.0	161.5	96.0	65.58	2.463					
10,335.3	7,476.0	7,477.0	7,477.0	54.1	13.0	-90.00	2,837.0	442.0	157.6	91.4	66.18	2.382	CC, ES, SF				
10,400.0	7,476.0	7,477.0	7,477.0	55.2	13.0	-90.00	2,837.0	442.0	170.4	103.1	67.28	2.532					
10,500.0	7,476.0	7,477.0	7,477.0	56.9	13.0	-90.00	2,837.0	442.0	227.9	159.0	68.99	3.304					
10,600.0	7,476.0	7,477.0	7,477.0	58.5	13.0	-90.00	2,837.0	442.0	307.9	237.3	70.61	4.361					
10,700.0	7,476.0	7,477.0	7,477.0	60.2	13.0	-90.00	2,837.0	442.0	396.5	324.3	72.14	5.496					
10,800.0	7,476.0	7,477.0	7,477.0	61.9	13.0	-90.00	2,837.0	442.0	489.2	415.3	73.85	6.624					

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3E-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft
Reference Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft
Site Error:	0.0ft	North Reference:	True
Reference Well:	Marcus State 3E-36H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KBE @ 5052.0ft

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Marcus State 3E-36H

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.50°

