

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Marcus State 3F-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 3F-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

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 3F-36H					
Well Position	+N/-S	0.0 ft	Northing:	1,275,943.08 ft	Latitude:	40.088280
	+E/-W	0.0 ft	Easting:	3,215,453.94 ft	Longitude:	-104.729960
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 #2			
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	359.81

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	
400.0	0.00	0.00	400.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,778.1	13.78	104.82	1,764.9	-42.2	159.5	1.00	1.00	0.00	104.82	
5,152.5	13.78	104.82	5,042.1	-247.8	936.5	0.00	0.00	0.00	0.00	
6,530.6	0.00	0.00	6,407.0	-290.0	1,096.0	1.00	-1.00	0.00	180.00	Marcus State 3F-36H
6,657.4	0.00	0.00	6,533.8	-290.0	1,096.0	0.00	0.00	0.00	0.00	
7,782.4	90.00	359.81	7,250.0	426.2	1,093.6	8.00	8.00	0.00	359.81	
11,913.4	90.00	359.81	7,250.0	4,557.2	1,079.8	0.00	0.00	0.00	0.00	Marcus State 3F-36H

Planning Report

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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 3F-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	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	
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	KOP @ 400'
500.0	1.00	104.82	500.0	-0.2	0.8	-0.2	1.00	1.00	
600.0	2.00	104.82	600.0	-0.9	3.4	-0.9	1.00	1.00	
700.0	3.00	104.82	699.9	-2.0	7.6	-2.0	1.00	1.00	
800.0	4.00	104.82	799.7	-3.6	13.5	-3.6	1.00	1.00	
900.0	5.00	104.82	899.4	-5.6	21.1	-5.6	1.00	1.00	
1,000.0	6.00	104.82	998.9	-8.0	30.3	-8.1	1.00	1.00	
1,003.1	6.03	104.82	1,002.0	-8.1	30.7	-8.2	1.00	1.00	Base of Fox Hills
1,100.0	7.00	104.82	1,098.3	-10.9	41.3	-11.1	1.00	1.00	
1,200.0	8.00	104.82	1,197.4	-14.3	53.9	-14.4	1.00	1.00	
1,300.0	9.00	104.82	1,296.3	-18.0	68.2	-18.3	1.00	1.00	
1,400.0	10.00	104.82	1,394.9	-22.3	84.1	-22.5	1.00	1.00	
1,500.0	11.00	104.82	1,493.3	-26.9	101.8	-27.3	1.00	1.00	
1,600.0	12.00	104.82	1,591.2	-32.0	121.0	-32.4	1.00	1.00	
1,700.0	13.00	104.82	1,688.9	-37.6	142.0	-38.0	1.00	1.00	
1,778.1	13.78	104.82	1,764.9	-42.2	159.5	-42.7	1.00	1.00	EOB; Inc=13.78°
1,800.0	13.78	104.82	1,786.1	-43.5	164.5	-44.1	0.00	0.00	
1,900.0	13.78	104.82	1,883.2	-49.6	187.5	-50.2	0.00	0.00	
2,000.0	13.78	104.82	1,980.4	-55.7	210.5	-56.4	0.00	0.00	
2,100.0	13.78	104.82	2,077.5	-61.8	233.6	-62.6	0.00	0.00	
2,200.0	13.78	104.82	2,174.6	-67.9	256.6	-68.7	0.00	0.00	
2,300.0	13.78	104.82	2,271.7	-74.0	279.6	-74.9	0.00	0.00	
2,400.0	13.78	104.82	2,368.8	-80.1	302.7	-81.1	0.00	0.00	
2,500.0	13.78	104.82	2,466.0	-86.2	325.7	-87.3	0.00	0.00	
2,600.0	13.78	104.82	2,563.1	-92.3	348.7	-93.4	0.00	0.00	
2,700.0	13.78	104.82	2,660.2	-98.4	371.8	-99.6	0.00	0.00	
2,800.0	13.78	104.82	2,757.3	-104.5	394.8	-105.8	0.00	0.00	
2,900.0	13.78	104.82	2,854.5	-110.6	417.8	-111.9	0.00	0.00	
3,000.0	13.78	104.82	2,951.6	-116.6	440.8	-118.1	0.00	0.00	
3,100.0	13.78	104.82	3,048.7	-122.7	463.9	-124.3	0.00	0.00	
3,200.0	13.78	104.82	3,145.8	-128.8	486.9	-130.4	0.00	0.00	
3,300.0	13.78	104.82	3,242.9	-134.9	509.9	-136.6	0.00	0.00	
3,400.0	13.78	104.82	3,340.1	-141.0	533.0	-142.8	0.00	0.00	
3,500.0	13.78	104.82	3,437.2	-147.1	556.0	-149.0	0.00	0.00	
3,600.0	13.78	104.82	3,534.3	-153.2	579.0	-155.1	0.00	0.00	
3,700.0	13.78	104.82	3,631.4	-159.3	602.0	-161.3	0.00	0.00	
3,800.0	13.78	104.82	3,728.5	-165.4	625.1	-167.5	0.00	0.00	
3,900.0	13.78	104.82	3,825.7	-171.5	648.1	-173.6	0.00	0.00	
4,000.0	13.78	104.82	3,922.8	-177.6	671.1	-179.8	0.00	0.00	
4,100.0	13.78	104.82	4,019.9	-183.7	694.2	-186.0	0.00	0.00	
4,200.0	13.78	104.82	4,117.0	-189.8	717.2	-192.1	0.00	0.00	
4,300.0	13.78	104.82	4,214.2	-195.9	740.2	-198.3	0.00	0.00	
4,400.0	13.78	104.82	4,311.3	-202.0	763.2	-204.5	0.00	0.00	
4,500.0	13.78	104.82	4,408.4	-208.0	786.3	-210.7	0.00	0.00	
4,600.0	13.78	104.82	4,505.5	-214.1	809.3	-216.8	0.00	0.00	
4,700.0	13.78	104.82	4,602.6	-220.2	832.3	-223.0	0.00	0.00	
4,777.6	13.78	104.82	4,678.0	-225.0	850.2	-227.8	0.00	0.00	Sussex
4,800.0	13.78	104.82	4,699.8	-226.3	855.4	-229.2	0.00	0.00	

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Site:	S36 T2N-R66W (Marcus State)	North Reference:	True
Well:	Marcus State 3F-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	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	13.78	104.82	4,796.9	-232.4	878.4	-235.3	0.00	0.00	
4,957.8	13.78	104.82	4,853.0	-235.9	891.7	-238.9	0.00	0.00	Sussex Marker
5,000.0	13.78	104.82	4,894.0	-238.5	901.4	-241.5	0.00	0.00	
5,100.0	13.78	104.82	4,991.1	-244.6	924.5	-247.7	0.00	0.00	
5,152.5	13.78	104.82	5,042.1	-247.8	936.5	-250.9	0.00	0.00	Start Drop -1.00
5,200.0	13.31	104.82	5,088.3	-250.6	947.3	-253.8	1.00	-1.00	
5,300.0	12.31	104.82	5,185.8	-256.3	968.7	-259.5	1.00	-1.00	
5,344.2	11.86	104.82	5,229.0	-258.7	977.7	-261.9	1.00	-1.00	Shannon
5,400.0	11.31	104.82	5,283.7	-261.6	988.5	-264.8	1.00	-1.00	
5,500.0	10.31	104.82	5,381.9	-266.3	1,006.6	-269.7	1.00	-1.00	
5,600.0	9.31	104.82	5,480.4	-270.7	1,023.1	-274.1	1.00	-1.00	
5,700.0	8.31	104.82	5,579.3	-274.6	1,037.9	-278.1	1.00	-1.00	
5,800.0	7.31	104.82	5,678.3	-278.1	1,051.0	-281.6	1.00	-1.00	
5,900.0	6.31	104.82	5,777.6	-281.1	1,062.5	-284.6	1.00	-1.00	
6,000.0	5.31	104.82	5,877.1	-283.7	1,072.3	-287.3	1.00	-1.00	
6,100.0	4.31	104.82	5,976.8	-285.9	1,080.4	-289.4	1.00	-1.00	
6,200.0	3.31	104.82	6,076.5	-287.6	1,086.8	-291.2	1.00	-1.00	
6,300.0	2.31	104.82	6,176.4	-288.8	1,091.5	-292.4	1.00	-1.00	
6,400.0	1.31	104.82	6,276.4	-289.6	1,094.6	-293.2	1.00	-1.00	
6,500.0	0.31	104.82	6,376.4	-290.0	1,095.9	-293.6	1.00	-1.00	
6,530.6	0.00	0.00	6,407.0	-290.0	1,096.0	-293.6	1.00	-1.00	EOD; Inc=0° - Marcus State 3F-36H VT
6,600.0	0.00	0.00	6,476.4	-290.0	1,096.0	-293.6	0.00	0.00	
6,657.4	0.00	0.00	6,533.8	-290.0	1,096.0	-293.6	0.00	0.00	Start Build 8.00
6,700.0	3.40	359.81	6,576.3	-288.7	1,096.0	-292.4	8.00	8.00	
6,776.2	9.50	359.81	6,652.0	-280.2	1,096.0	-283.8	8.00	8.00	Teepee Buttes
6,800.0	11.40	359.81	6,675.4	-275.9	1,096.0	-279.5	8.00	8.00	
6,900.0	19.40	359.81	6,771.7	-249.3	1,095.9	-252.9	8.00	8.00	
7,000.0	27.40	359.81	6,863.4	-209.6	1,095.7	-213.3	8.00	8.00	
7,100.0	35.40	359.81	6,948.7	-157.6	1,095.6	-161.2	8.00	8.00	
7,200.0	43.40	359.81	7,025.9	-94.1	1,095.3	-97.8	8.00	8.00	
7,300.0	51.40	359.81	7,093.6	-20.6	1,095.1	-24.2	8.00	8.00	
7,327.0	53.56	359.81	7,110.0	0.8	1,095.0	-2.8	8.00	8.00	Sharon Springs
7,393.6	58.89	359.81	7,147.0	56.2	1,094.8	52.5	8.00	8.00	Niobrara
7,400.0	59.40	359.81	7,150.3	61.7	1,094.8	58.0	8.00	8.00	
7,500.0	67.40	359.81	7,195.0	151.0	1,094.5	147.4	8.00	8.00	
7,600.0	75.40	359.81	7,226.9	245.7	1,094.2	242.1	8.00	8.00	
7,635.6	78.25	359.81	7,235.0	280.4	1,094.1	276.8	8.00	8.00	B Chalk
7,700.0	83.40	359.81	7,245.3	343.9	1,093.9	340.3	8.00	8.00	
7,782.4	90.00	359.81	7,250.0	426.2	1,093.6	422.6	8.00	8.00	LP @ 7250' TVD; 90°
7,800.0	90.00	359.81	7,250.0	443.8	1,093.5	440.1	0.00	0.00	
7,900.0	90.00	359.81	7,250.0	543.8	1,093.2	540.1	0.00	0.00	
8,000.0	90.00	359.81	7,250.0	643.8	1,092.9	640.1	0.00	0.00	
8,100.0	90.00	359.81	7,250.0	743.8	1,092.5	740.1	0.00	0.00	
8,200.0	90.00	359.81	7,250.0	843.8	1,092.2	840.1	0.00	0.00	
8,300.0	90.00	359.81	7,250.0	943.8	1,091.9	940.1	0.00	0.00	
8,400.0	90.00	359.81	7,250.0	1,043.8	1,091.5	1,040.1	0.00	0.00	
8,500.0	90.00	359.81	7,250.0	1,143.7	1,091.2	1,140.1	0.00	0.00	
8,600.0	90.00	359.81	7,250.0	1,243.7	1,090.9	1,240.1	0.00	0.00	
8,700.0	90.00	359.81	7,250.0	1,343.7	1,090.5	1,340.1	0.00	0.00	
8,800.0	90.00	359.81	7,250.0	1,443.7	1,090.2	1,440.1	0.00	0.00	
8,900.0	90.00	359.81	7,250.0	1,543.7	1,089.9	1,540.1	0.00	0.00	
9,000.0	90.00	359.81	7,250.0	1,643.7	1,089.5	1,640.1	0.00	0.00	

Planning Report

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Project:	DJ Wattenberg	MD Reference:	KBE @ 5052.0ft
Site:	S36 T2N-R66W (Marcus State)	North Reference:	True
Well:	Marcus State 3F-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	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
9,100.0	90.00	359.81	7,250.0	1,743.7	1,089.2	1,740.1	0.00	0.00	
9,200.0	90.00	359.81	7,250.0	1,843.7	1,088.9	1,840.1	0.00	0.00	
9,300.0	90.00	359.81	7,250.0	1,943.7	1,088.5	1,940.1	0.00	0.00	
9,400.0	90.00	359.81	7,250.0	2,043.7	1,088.2	2,040.1	0.00	0.00	
9,500.0	90.00	359.81	7,250.0	2,143.7	1,087.9	2,140.1	0.00	0.00	
9,600.0	90.00	359.81	7,250.0	2,243.7	1,087.5	2,240.1	0.00	0.00	
9,700.0	90.00	359.81	7,250.0	2,343.7	1,087.2	2,340.1	0.00	0.00	
9,800.0	90.00	359.81	7,250.0	2,443.7	1,086.9	2,440.1	0.00	0.00	
9,900.0	90.00	359.81	7,250.0	2,543.7	1,086.5	2,540.1	0.00	0.00	
10,000.0	90.00	359.81	7,250.0	2,643.7	1,086.2	2,640.1	0.00	0.00	
10,100.0	90.00	359.81	7,250.0	2,743.7	1,085.9	2,740.1	0.00	0.00	
10,200.0	90.00	359.81	7,250.0	2,843.7	1,085.5	2,840.1	0.00	0.00	
10,300.0	90.00	359.81	7,250.0	2,943.7	1,085.2	2,940.1	0.00	0.00	
10,400.0	90.00	359.81	7,250.0	3,043.7	1,084.9	3,040.1	0.00	0.00	
10,500.0	90.00	359.81	7,250.0	3,143.7	1,084.5	3,140.1	0.00	0.00	
10,600.0	90.00	359.81	7,250.0	3,243.7	1,084.2	3,240.1	0.00	0.00	
10,700.0	90.00	359.81	7,250.0	3,343.7	1,083.9	3,340.1	0.00	0.00	
10,800.0	90.00	359.81	7,250.0	3,443.7	1,083.5	3,440.1	0.00	0.00	
10,900.0	90.00	359.81	7,250.0	3,543.7	1,083.2	3,540.1	0.00	0.00	
11,000.0	90.00	359.81	7,250.0	3,643.7	1,082.9	3,640.1	0.00	0.00	
11,100.0	90.00	359.81	7,250.0	3,743.7	1,082.5	3,740.1	0.00	0.00	
11,200.0	90.00	359.81	7,250.0	3,843.7	1,082.2	3,840.1	0.00	0.00	
11,300.0	90.00	359.81	7,250.0	3,943.7	1,081.8	3,940.1	0.00	0.00	
11,400.0	90.00	359.81	7,250.0	4,043.7	1,081.5	4,040.1	0.00	0.00	
11,500.0	90.00	359.81	7,250.0	4,143.7	1,081.2	4,140.1	0.00	0.00	
11,600.0	90.00	359.81	7,250.0	4,243.7	1,080.8	4,240.1	0.00	0.00	
11,700.0	90.00	359.81	7,250.0	4,343.7	1,080.5	4,340.1	0.00	0.00	
11,800.0	90.00	359.81	7,250.0	4,443.7	1,080.2	4,440.1	0.00	0.00	
11,900.0	90.00	359.81	7,250.0	4,543.7	1,079.8	4,540.1	0.00	0.00	
11,913.4	90.00	359.81	7,250.0	4,557.2	1,079.8	4,553.6	0.00	0.00	TD at 11913.4 - Marcus State 3F-36H PBHL P2

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Marcus State 3F-36H PE - plan hits target center - Point	0.00	0.00	7,250.0	4,557.2	1,079.8	1,280,509.45	3,216,494.12	40.100790	-104.726100
Marcus State 3F-36H V1 - plan hits target center - Point	0.00	0.00	6,407.0	-290.0	1,096.0	1,275,662.61	3,216,552.41	40.087484	-104.726043
Marcus State 3F-36H PE - plan misses target center by 84.0ft at 11913.4ft MD (7250.0 TVD, 4557.2 N, 1079.8 E) - Point	0.00	0.00	7,334.0	4,557.2	1,079.8	1,280,509.45	3,216,494.12	40.100790	-104.726100

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Marcus State 3F-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 3F-36H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #2		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,003.1	1,002.0	Base of Fox Hills		0.00		
4,777.6	4,678.0	Sussex		0.00		
4,957.8	4,853.0	Sussex Marker		0.00		
5,344.2	5,229.0	Shannon		0.00		
6,776.2	6,652.0	Teepee Buttes		0.00		
7,327.0	7,110.0	Sharon Springs		0.00		
7,393.6	7,147.0	Niobrara		0.00		
7,635.6	7,235.0	B Chalk		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
400.0	400.0	0.0	0.0	KOP @ 400'	
1,778.1	1,764.9	-42.2	159.5	EOB; Inc=13.78°	
5,152.5	5,042.1	-247.8	936.5	Start Drop -1.00	
6,530.6	6,407.0	-290.0	1,096.0	EOD; Inc=0°	
6,657.4	6,533.8	-290.0	1,096.0	Start Build 8.00	
7,782.4	7,250.0	426.2	1,093.6	LP @ 7250' TVD; 90°	
11,913.4	7,250.0	4,557.2	1,079.8	TD at 11913.4	

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S36 T2N-R66W (Marcus State)

Marcus State 3F-36H

HZ

Plan #2

Anticollision Report

27 February, 2013

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3F-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 3F-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 #2	Offset TVD Reference:	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	2/27/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,913.4	Plan #2 (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	3,620.3	3,555.0	365.1	346.3	19.384	CC, ES
Marcus State 24-36 (Existing) - VT - Existing	7,600.0	7,227.9	419.8	393.2	15.787	SF
Marcus State 3A-36H - HZ - Plan #2	166.3	167.3	50.4	49.8	93.790	CC
Marcus State 3A-36H - HZ - Plan #2	200.0	201.0	50.4	49.7	76.949	ES
Marcus State 3A-36H - HZ - Plan #2	600.0	596.7	67.2	65.2	32.884	SF
Marcus State 3B-36H - HZ - Plan #2	300.0	300.0	42.0	41.0	41.893	CC, ES
Marcus State 3B-36H - HZ - Plan #2	600.0	597.5	52.6	50.5	25.683	SF
Marcus State 3C-36H - HZ - Plan #2	400.0	400.0	30.8	29.4	22.783	CC, ES
Marcus State 3C-36H - HZ - Plan #2	700.0	699.9	38.4	36.0	16.031	SF
Marcus State 3D-36H - HZ - Plan #2	400.0	400.0	19.6	18.2	14.498	CC, ES
Marcus State 3D-36H - HZ - Plan #2	600.0	600.0	23.0	20.9	11.217	SF
Marcus State 3E-36H - HZ - Plan #2	400.0	493.0	11.2	9.8	8.285	CC, ES
Marcus State 3E-36H - HZ - Plan #2	500.0	593.0	12.0	10.3	7.082	SF
Marcus State W 36-2J (Existing) - VT - Existing						Out of range
Marcus State W 36-3J (Existing) - VT - Existing	11,522.6	7,251.0	354.0	265.6	4.004	CC, ES, SF
Marcus State W 36-4J (Existing) - VT - Existing						Out of range
Marcus State W 36-6J (Existing) - VT - Existing						Out of range
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 3F-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 3F-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 #2	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		
2,200.0	2,174.6	2,175.6	2,175.6	6.2	3.8	-48.02	198.5	677.1	497.8	488.8	9.02	55.158		
2,300.0	2,271.7	2,272.7	2,272.7	6.7	3.9	-50.09	198.5	677.1	481.9	472.3	9.63	50.028		
2,400.0	2,368.8	2,369.8	2,369.8	7.1	4.1	-52.29	198.5	677.1	466.7	456.5	10.26	45.473		
2,500.0	2,466.0	2,467.0	2,467.0	7.6	4.3	-54.63	198.5	677.1	452.3	441.4	10.92	41.427		
2,600.0	2,563.1	2,564.1	2,564.1	8.0	4.5	-57.12	198.5	677.1	438.6	427.0	11.59	37.839		
2,700.0	2,660.2	2,661.2	2,661.2	8.5	4.6	-59.75	198.5	677.1	425.9	413.6	12.29	34.662		
2,800.0	2,757.3	2,758.3	2,758.3	8.9	4.8	-62.54	198.5	677.1	414.1	401.1	13.00	31.858		
2,900.0	2,854.5	2,855.5	2,855.5	9.4	5.0	-65.47	198.5	677.1	403.4	389.7	13.73	29.393		
3,000.0	2,951.6	2,952.6	2,952.6	9.8	5.1	-68.54	198.5	677.1	393.9	379.4	14.46	27.239		
3,100.0	3,048.7	3,049.7	3,049.7	10.3	5.3	-71.75	198.5	677.1	385.6	370.4	15.20	25.368		
3,200.0	3,145.8	3,146.8	3,146.8	10.7	5.5	-75.09	198.5	677.1	378.6	362.7	15.94	23.757		
3,300.0	3,242.9	3,243.9	3,243.9	11.2	5.6	-78.53	198.5	677.1	373.0	356.4	16.66	22.386		
3,400.0	3,340.1	3,341.1	3,341.1	11.6	5.8	-82.05	198.5	677.1	368.9	351.5	17.37	21.234		
3,500.0	3,437.2	3,438.2	3,438.2	12.1	6.0	-85.64	198.5	677.1	366.3	348.2	18.06	20.284		
3,600.0	3,534.3	3,535.3	3,535.3	12.6	6.1	-89.26	198.5	677.1	365.2	346.5	18.71	19.519		
3,620.3	3,554.0	3,555.0	3,555.0	12.7	6.2	-90.00	198.5	677.1	365.1	346.3	18.84	19.384 CC, ES		
3,700.0	3,631.4	3,632.4	3,632.4	13.0	6.3	-92.89	198.5	677.1	365.6	346.3	19.32	18.922		
3,800.0	3,728.5	3,729.5	3,729.5	13.5	6.5	-96.50	198.5	677.1	367.6	347.7	19.90	18.478		
3,900.0	3,825.7	3,826.7	3,826.7	13.9	6.7	-100.05	198.5	677.1	371.2	350.7	20.42	18.174		
4,000.0	3,922.8	3,923.8	3,923.8	14.4	6.8	-103.53	198.5	677.1	376.2	355.3	20.91	17.994		
4,100.0	4,019.9	4,020.9	4,020.9	14.8	7.0	-106.91	198.5	677.1	382.6	361.3	21.34	17.927		
4,200.0	4,117.0	4,118.0	4,118.0	15.3	7.2	-110.17	198.5	677.1	390.4	368.6	21.74	17.959		
4,300.0	4,214.2	4,215.2	4,215.2	15.8	7.3	-113.30	198.5	677.1	399.4	377.3	22.09	18.079		
4,400.0	4,311.3	4,312.3	4,312.3	16.2	7.5	-116.29	198.5	677.1	409.7	387.2	22.41	18.278		
4,500.0	4,408.4	4,409.4	4,409.4	16.7	7.7	-119.14	198.5	677.1	421.0	398.3	22.70	18.543		
4,600.0	4,505.5	4,506.5	4,506.5	17.1	7.8	-121.83	198.5	677.1	433.3	410.4	22.97	18.868		
4,700.0	4,602.6	4,603.6	4,603.6	17.6	8.0	-124.38	198.5	677.1	446.6	423.4	23.21	19.243		
4,800.0	4,699.8	4,700.8	4,700.8	18.1	8.2	-126.78	198.5	677.1	460.8	437.3	23.44	19.660		
4,900.0	4,796.9	4,797.9	4,797.9	18.5	8.4	-129.04	198.5	677.1	475.7	452.0	23.65	20.114		
5,000.0	4,894.0	4,895.0	4,895.0	19.0	8.5	-131.16	198.5	677.1	491.3	467.4	23.85	20.598		
7,300.0	7,093.6	7,094.6	7,094.6	23.3	12.4	-71.75	198.5	677.1	472.0	447.2	24.76	19.065		
7,400.0	7,150.3	7,151.3	7,151.3	23.4	12.5	-80.43	198.5	677.1	439.6	414.3	25.31	17.369		
7,500.0	7,195.0	7,196.0	7,196.0	23.6	12.5	-87.42	198.5	677.1	420.1	394.2	25.92	16.206		
7,552.2	7,213.3	7,214.3	7,214.3	23.8	12.6	-90.00	198.5	677.1	417.3	391.0	26.28	15.878		
7,600.0	7,226.9	7,227.9	7,227.9	24.0	12.6	-91.58	198.5	677.1	419.8	393.2	26.59	15.787 SF		
7,700.0	7,245.3	7,246.3	7,246.3	24.5	12.6	-92.27	198.5	677.1	441.4	414.0	27.45	16.081		
7,800.0	7,250.0	7,251.0	7,251.0	25.0	12.6	-90.00	198.5	677.1	483.3	454.8	28.44	16.992		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3F-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 3F-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 #2	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						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	1.0	1.0	0.0	0.0	-90.00	0.0	-50.4	50.4					
100.0	100.0	101.0	101.0	0.2	0.2	-90.00	0.0	-50.4	50.4	50.1	0.31	164.889		
166.3	166.3	167.3	167.3	0.3	0.3	-90.00	0.0	-50.4	50.4	49.8	0.54	93.790 CC		
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	0.0	-50.4	50.4	49.7	0.65	76.949 ES		
300.0	300.0	300.0	300.0	0.5	0.5	-90.24	-0.2	-51.2	51.2	50.2	1.00	51.077		
400.0	400.0	399.2	399.2	0.7	0.7	-90.92	-0.9	-53.7	53.8	52.4	1.36	39.651		
500.0	500.0	498.1	498.0	0.9	0.9	163.49	-1.9	-57.9	58.8	57.1	1.70	34.650		
600.0	600.0	596.7	596.4	1.0	1.1	162.96	-3.4	-63.7	67.2	65.2	2.04	32.884 SF		
700.0	699.9	694.8	694.2	1.2	1.3	162.65	-5.3	-71.0	79.0	76.6	2.39	33.031		
800.0	799.7	792.2	791.2	1.4	1.5	162.52	-7.7	-80.0	94.0	91.3	2.74	34.354		
900.0	899.4	888.8	887.2	1.6	1.7	162.49	-10.4	-90.4	112.4	109.3	3.08	36.448		
1,000.0	998.9	984.5	982.0	1.8	2.0	162.52	-13.4	-102.3	133.9	130.5	3.43	39.070		
1,100.0	1,098.3	1,079.0	1,075.6	2.1	2.3	162.58	-16.8	-115.5	158.7	154.9	3.77	42.066		
1,200.0	1,197.4	1,172.3	1,167.6	2.3	2.6	162.65	-20.6	-130.0	186.6	182.5	4.12	45.331		
1,300.0	1,296.3	1,264.2	1,258.1	2.6	2.9	162.72	-24.7	-145.8	217.6	213.2	4.46	48.794		
1,400.0	1,394.9	1,354.6	1,346.8	2.9	3.2	162.78	-29.0	-162.6	251.7	246.9	4.80	52.402		
1,500.0	1,493.3	1,443.4	1,433.6	3.3	3.6	162.83	-33.6	-180.5	288.7	283.6	5.15	56.117		
1,600.0	1,591.2	1,530.5	1,518.5	3.7	3.9	162.86	-38.5	-199.2	328.7	323.2	5.49	59.911		
1,700.0	1,688.9	1,620.5	1,606.1	4.1	4.3	162.91	-43.7	-219.4	371.0	365.2	5.84	63.585		
1,800.0	1,786.1	1,710.4	1,693.5	4.5	4.7	163.03	-48.9	-239.6	414.8	408.7	6.19	67.034		
1,900.0	1,883.2	1,800.0	1,780.8	4.9	5.1	163.23	-54.1	-259.8	459.1	452.6	6.56	70.039		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3F-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 3F-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 #2	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		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	-42.0	42.0					
100.0	100.0	100.0	100.0	0.2	0.2	-90.00	0.0	-42.0	42.0	41.7	0.30	138.197		
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-42.0	42.0	41.3	0.65	64.295		
300.0	300.0	300.0	300.0	0.5	0.5	-90.00	0.0	-42.0	42.0	41.0	1.00	41.893 CC, ES		
400.0	400.0	399.3	399.3	0.7	0.7	-90.45	-0.3	-42.8	42.8	41.4	1.35	31.671		
500.0	500.0	498.6	498.5	0.9	0.9	163.76	-1.3	-45.1	46.0	44.3	1.70	27.100		
600.0	600.0	597.5	597.4	1.0	1.0	162.81	-3.0	-49.1	52.6	50.5	2.05	25.683 SF		
700.0	699.9	696.1	695.8	1.2	1.2	162.00	-5.4	-54.6	62.4	60.0	2.39	26.046		
800.0	799.7	794.2	793.5	1.4	1.4	161.38	-8.4	-61.6	75.5	72.7	2.74	27.499		
900.0	899.4	891.5	890.4	1.6	1.7	160.94	-12.0	-70.0	91.8	88.7	3.09	29.661		
1,000.0	998.9	987.9	986.3	1.8	1.9	160.62	-16.2	-79.9	111.3	107.8	3.44	32.303		
1,100.0	1,098.3	1,083.4	1,081.0	2.1	2.1	160.40	-21.0	-91.2	133.9	130.1	3.80	35.278		
1,200.0	1,197.4	1,180.0	1,176.6	2.3	2.4	160.31	-26.2	-103.4	159.1	155.0	4.15	38.308		
1,300.0	1,296.3	1,276.3	1,272.1	2.6	2.7	160.40	-31.4	-115.6	185.9	181.4	4.51	41.195		
1,400.0	1,394.9	1,372.2	1,367.0	2.9	3.0	160.60	-36.6	-127.7	214.2	209.3	4.87	43.969		
1,500.0	1,493.3	1,467.6	1,461.5	3.3	3.2	160.87	-41.7	-139.8	244.1	238.9	5.23	46.651		
1,600.0	1,591.2	1,562.5	1,555.5	3.7	3.5	161.18	-46.9	-151.9	275.6	270.0	5.60	49.261		
1,700.0	1,688.9	1,656.9	1,649.0	4.1	3.8	161.50	-52.0	-163.8	308.7	302.7	5.96	51.812		
1,800.0	1,786.1	1,750.7	1,741.9	4.5	4.0	161.86	-57.0	-175.7	343.3	337.0	6.32	54.284		
1,900.0	1,883.2	1,844.3	1,834.6	4.9	4.3	162.25	-62.1	-187.6	378.4	371.7	6.70	56.461		
2,000.0	1,980.4	1,937.9	1,927.3	5.3	4.6	162.58	-67.2	-199.4	413.5	406.5	7.08	58.402		
2,100.0	2,077.5	2,031.5	2,020.0	5.8	4.9	162.85	-72.2	-211.3	448.7	441.2	7.46	60.143		
2,200.0	2,174.6	2,125.1	2,112.7	6.2	5.1	163.08	-77.3	-223.1	483.8	476.0	7.84	61.714		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3F-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 3F-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 #2	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		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	-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		
400.0	400.0	400.0	400.0	0.7	0.7	-90.00	0.0	-30.8	30.8	29.4	1.35	22.783 CC, ES		
500.0	500.0	500.0	500.0	0.9	0.8	165.58	0.0	-30.8	31.6	29.9	1.70	18.603		
600.0	600.0	600.0	600.0	1.0	1.0	166.67	0.0	-30.8	34.2	32.1	2.05	16.677		
700.0	699.9	699.9	699.9	1.2	1.2	168.16	0.0	-30.8	38.4	36.0	2.40	16.031 SF		
800.0	799.7	799.7	799.7	1.4	1.4	169.77	0.0	-30.8	44.4	41.7	2.74	16.184		
900.0	899.4	899.4	899.4	1.6	1.5	171.29	0.0	-30.8	52.2	49.1	3.09	16.874		
1,000.0	998.9	998.9	998.9	1.8	1.7	172.62	0.0	-30.8	61.6	58.2	3.44	17.940		
1,100.0	1,098.3	1,097.6	1,097.6	2.1	1.9	173.19	-0.6	-31.3	73.3	69.5	3.78	19.400		
1,200.0	1,197.4	1,195.9	1,195.8	2.3	2.1	172.76	-2.6	-32.9	87.6	83.5	4.12	21.250		
1,300.0	1,296.3	1,293.5	1,293.4	2.6	2.2	171.78	-5.8	-35.6	104.5	100.1	4.47	23.391		
1,400.0	1,394.9	1,390.5	1,390.2	2.9	2.4	170.54	-10.2	-39.3	124.1	119.3	4.82	25.753		
1,500.0	1,493.3	1,487.4	1,486.9	3.3	2.6	169.29	-15.8	-43.8	146.2	141.0	5.17	28.253		
1,600.0	1,591.2	1,584.5	1,583.7	3.7	2.8	168.41	-21.4	-48.5	170.1	164.5	5.53	30.738		
1,700.0	1,688.9	1,681.2	1,680.0	4.1	3.0	167.85	-27.0	-53.2	195.6	189.7	5.89	33.197		
1,800.0	1,786.1	1,777.4	1,776.0	4.5	3.2	167.51	-32.6	-57.8	222.8	216.6	6.26	35.611		
1,900.0	1,883.2	1,873.5	1,871.8	4.9	3.4	167.30	-38.2	-62.5	250.5	243.9	6.63	37.768		
2,000.0	1,980.4	1,969.6	1,967.6	5.3	3.6	167.14	-43.8	-67.1	278.2	271.2	7.01	39.684		
2,100.0	2,077.5	2,065.7	2,063.4	5.8	3.8	167.01	-49.4	-71.7	305.9	298.5	7.39	41.394		
2,200.0	2,174.6	2,161.7	2,159.3	6.2	4.0	166.90	-55.0	-76.4	333.6	325.8	7.77	42.929		
2,300.0	2,271.7	2,257.8	2,255.1	6.7	4.2	166.80	-60.5	-81.0	361.3	353.1	8.15	44.315		
2,400.0	2,368.8	2,353.9	2,350.9	7.1	4.4	166.72	-66.1	-85.6	389.0	380.4	8.54	45.570		
2,500.0	2,466.0	2,450.0	2,446.7	7.6	4.6	166.65	-71.7	-90.3	416.7	407.8	8.92	46.713		
2,600.0	2,563.1	2,546.1	2,542.5	8.0	4.8	166.59	-77.3	-94.9	444.4	435.1	9.30	47.757		
2,700.0	2,660.2	2,642.2	2,638.3	8.5	5.0	166.54	-82.9	-99.5	472.1	462.4	9.69	48.715		
2,800.0	2,757.3	2,738.3	2,734.1	8.9	5.2	166.49	-88.5	-104.2	499.8	489.7	10.08	49.596		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3F-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 3F-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 #2	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	-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 CC, ES		
500.0	500.0	500.0	500.0	0.9	0.8	165.80	0.0	-19.6	20.4	18.7	1.70	12.019		
600.0	600.0	600.0	600.0	1.0	1.0	167.40	0.0	-19.6	23.0	20.9	2.05	11.217 SF		
700.0	699.9	699.9	699.9	1.2	1.2	169.39	0.0	-19.6	27.3	24.9	2.40	11.371		
800.0	799.7	799.7	799.7	1.4	1.4	171.32	0.0	-19.6	33.3	30.5	2.74	12.125		
900.0	899.4	899.4	899.4	1.6	1.5	172.96	0.0	-19.6	41.0	38.0	3.09	13.282		
1,000.0	998.9	999.5	999.5	1.8	1.7	173.57	-0.7	-19.1	50.0	46.5	3.44	14.543		
1,100.0	1,098.3	1,099.7	1,099.7	2.1	1.9	172.93	-2.9	-17.6	59.5	55.7	3.78	15.713		
1,200.0	1,197.4	1,199.9	1,199.8	2.3	2.1	171.57	-6.5	-15.2	69.5	65.4	4.14	16.811		
1,300.0	1,296.3	1,300.2	1,299.8	2.6	2.3	169.79	-11.5	-11.7	80.2	75.7	4.49	17.850		
1,400.0	1,394.9	1,399.8	1,399.2	2.9	2.5	167.94	-17.7	-7.5	91.8	87.0	4.86	18.886		
1,500.0	1,493.3	1,498.9	1,498.0	3.3	2.7	166.66	-24.0	-3.2	105.1	99.8	5.23	20.078		
1,600.0	1,591.2	1,597.8	1,596.6	3.7	2.9	165.86	-30.3	1.1	120.0	114.4	5.61	21.403		
1,700.0	1,688.9	1,696.4	1,694.9	4.1	3.1	165.41	-36.5	5.4	136.7	130.7	5.99	22.834		
1,800.0	1,786.1	1,794.7	1,792.9	4.5	3.3	165.22	-42.7	9.7	155.0	148.6	6.37	24.339		
1,900.0	1,883.2	1,892.9	1,890.8	4.9	3.5	165.15	-48.9	13.9	173.8	167.0	6.76	25.709		
2,000.0	1,980.4	1,991.1	1,988.8	5.3	3.7	165.09	-55.2	18.2	192.5	185.4	7.15	26.922		
2,100.0	2,077.5	2,089.3	2,086.7	5.8	3.9	165.04	-61.4	22.4	211.3	203.8	7.55	28.001		
2,200.0	2,174.6	2,187.6	2,184.6	6.2	4.1	165.00	-67.6	26.7	230.1	222.2	7.94	28.968		
2,300.0	2,271.7	2,285.8	2,282.6	6.7	4.3	164.96	-73.8	31.0	248.9	240.6	8.34	29.839		
2,400.0	2,368.8	2,384.0	2,380.5	7.1	4.5	164.93	-80.0	35.2	267.7	259.0	8.74	30.626		
2,500.0	2,466.0	2,482.2	2,478.4	7.6	4.7	164.90	-86.3	39.5	286.5	277.3	9.14	31.341		
2,600.0	2,563.1	2,580.4	2,576.3	8.0	4.9	164.88	-92.5	43.7	305.3	295.7	9.54	31.994		
2,700.0	2,660.2	2,678.7	2,674.3	8.5	5.1	164.86	-98.7	48.0	324.1	314.1	9.94	32.592		
2,800.0	2,757.3	2,776.9	2,772.2	8.9	5.3	164.84	-104.9	52.3	342.8	332.5	10.35	33.141		
2,900.0	2,854.5	2,875.1	2,870.1	9.4	5.5	164.83	-111.1	56.5	361.6	350.9	10.75	33.647		
3,000.0	2,951.6	2,973.3	2,968.1	9.8	5.8	164.81	-117.3	60.8	380.4	369.3	11.15	34.115		
3,100.0	3,048.7	3,071.5	3,066.0	10.3	6.0	164.80	-123.6	65.0	399.2	387.7	11.55	34.549		
3,200.0	3,145.8	3,169.7	3,163.9	10.7	6.2	164.79	-129.8	69.3	418.0	406.0	11.96	34.953		
3,300.0	3,242.9	3,268.0	3,261.8	11.2	6.4	164.77	-136.0	73.6	436.8	424.4	12.36	35.329		
3,400.0	3,340.1	3,366.2	3,359.8	11.6	6.6	164.76	-142.2	77.8	455.6	442.8	12.77	35.680		
3,500.0	3,437.2	3,464.4	3,457.7	12.1	6.8	164.76	-148.4	82.1	474.4	461.2	13.17	36.009		
3,600.0	3,534.3	3,562.6	3,555.6	12.6	7.0	164.75	-154.7	86.3	493.1	479.6	13.58	36.318		

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 3F-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 3F-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 #2	Offset TVD Reference:	Offset Datum

Offset Design S36 T2N-R66W (Marcus State) - Marcus State 3E-36H - HZ - Plan #2													Offset Site Error:	0.0 ft
Survey Program: O-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	93.0	93.0	0.0	0.0	-90.00	0.0	-11.2	11.2					
100.0	100.0	193.0	193.0	0.2	0.2	-90.00	0.0	-11.2	11.2	10.9	0.30	36.764		
200.0	200.0	293.0	293.0	0.3	0.3	-90.00	0.0	-11.2	11.2	10.5	0.65	17.145		
300.0	300.0	393.0	393.0	0.5	0.5	-90.00	0.0	-11.2	11.2	10.2	1.00	11.171		
400.0	400.0	493.0	493.0	0.7	0.7	-90.00	0.0	-11.2	11.2	9.8	1.35	8.285 CC, ES		
500.0	500.0	593.0	593.0	0.9	0.8	166.24	0.0	-11.2	12.0	10.3	1.70	7.082 SF		
600.0	600.0	693.0	693.0	1.0	1.0	168.68	0.0	-11.2	14.6	12.5	2.05	7.124		
700.0	699.9	793.1	793.1	1.2	1.2	170.46	-0.3	-10.5	18.2	15.8	2.40	7.586		
800.0	799.7	893.4	893.4	1.4	1.4	170.76	-1.4	-8.3	21.9	19.1	2.75	7.965		
900.0	899.4	993.7	993.6	1.6	1.6	170.22	-3.3	-4.4	25.6	22.6	3.10	8.285		
1,000.0	998.9	1,094.1	1,093.8	1.8	1.8	169.16	-6.0	1.0	29.5	26.1	3.45	8.561		
1,100.0	1,098.3	1,194.5	1,193.9	2.1	2.0	167.77	-9.4	7.9	33.5	29.7	3.80	8.804		
1,200.0	1,197.4	1,295.0	1,293.9	2.3	2.2	166.17	-13.6	16.5	37.6	33.4	4.17	9.019		
1,300.0	1,296.3	1,395.5	1,393.8	2.6	2.4	164.43	-18.6	26.6	41.8	37.3	4.54	9.208		
1,400.0	1,394.9	1,495.7	1,493.2	2.9	2.7	162.78	-24.3	38.0	46.5	41.5	4.93	9.428		
1,500.0	1,493.3	1,595.5	1,592.2	3.3	2.9	161.95	-29.9	49.5	52.7	47.3	5.32	9.900		
1,600.0	1,591.2	1,695.2	1,691.0	3.7	3.2	161.82	-35.6	61.0	60.5	54.8	5.71	10.601		
1,700.0	1,688.9	1,794.7	1,789.7	4.1	3.4	162.15	-41.3	72.5	70.0	63.9	6.09	11.492		
1,800.0	1,786.1	1,894.1	1,888.3	4.5	3.7	162.77	-46.9	84.0	81.1	74.7	6.47	12.536		
1,900.0	1,883.2	1,993.4	1,986.8	4.9	4.0	163.35	-52.6	95.4	92.8	85.9	6.86	13.527		
2,000.0	1,980.4	2,092.7	2,085.3	5.3	4.2	163.80	-58.2	106.8	104.4	97.2	7.24	14.412		
2,100.0	2,077.5	2,192.1	2,183.8	5.8	4.5	164.16	-63.8	118.3	116.1	108.4	7.63	15.206		
2,200.0	2,174.6	2,291.4	2,282.3	6.2	4.8	164.46	-69.5	129.7	127.7	119.7	8.02	15.923		
2,300.0	2,271.7	2,390.7	2,380.8	6.7	5.0	164.71	-75.1	141.2	139.4	131.0	8.41	16.572		
2,400.0	2,368.8	2,490.0	2,479.2	7.1	5.3	164.91	-80.8	152.6	151.0	142.2	8.80	17.164		
2,500.0	2,466.0	2,589.3	2,577.7	7.6	5.6	165.09	-86.4	164.1	162.7	153.5	9.19	17.705		
2,600.0	2,563.1	2,688.6	2,676.2	8.0	5.9	165.25	-92.1	175.5	174.4	164.8	9.58	18.201		
2,700.0	2,660.2	2,788.0	2,774.7	8.5	6.1	165.38	-97.7	187.0	186.0	176.0	9.97	18.658		
2,800.0	2,757.3	2,887.3	2,873.2	8.9	6.4	165.50	-103.3	198.4	197.7	187.3	10.36	19.080		
2,900.0	2,854.5	2,986.6	2,971.7	9.4	6.7	165.61	-109.0	209.9	209.3	198.6	10.75	19.471		
3,000.0	2,951.6	3,085.9	3,070.2	9.8	7.0	165.70	-114.6	221.3	221.0	209.9	11.14	19.835		
3,100.0	3,048.7	3,185.2	3,168.7	10.3	7.3	165.79	-120.3	232.8	232.7	221.1	11.53	20.173		
3,200.0	3,145.8	3,284.5	3,267.2	10.7	7.5	165.86	-125.9	244.2	244.3	232.4	11.93	20.489		
3,300.0	3,242.9	3,383.9	3,365.7	11.2	7.8	165.93	-131.6	255.7	256.0	243.7	12.32	20.785		
3,400.0	3,340.1	3,483.2	3,464.2	11.6	8.1	166.00	-137.2	267.1	267.7	255.0	12.71	21.062		
3,500.0	3,437.2	3,582.5	3,562.7	12.1	8.4	166.06	-142.9	278.6	279.3	266.2	13.10	21.323		
3,600.0	3,534.3	3,681.8	3,661.2	12.6	8.7	166.11	-148.5	290.0	291.0	277.5	13.49	21.568		
3,700.0	3,631.4	3,781.1	3,759.7	13.0	8.9	166.16	-154.1	301.5	302.7	288.8	13.88	21.799		
3,800.0	3,728.5	3,880.4	3,858.1	13.5	9.2	166.21	-159.8	312.9	314.3	300.1	14.28	22.018		
3,900.0	3,825.7	3,979.8	3,956.6	13.9	9.5	166.25	-165.4	324.4	326.0	311.3	14.67	22.224		
4,000.0	3,922.8	4,079.1	4,055.1	14.4	9.8	166.29	-171.1	335.8	337.7	322.6	15.06	22.420		
4,100.0	4,019.9	4,178.4	4,153.6	14.8	10.1	166.33	-176.7	347.3	349.4	333.9	15.45	22.606		
4,200.0	4,117.0	4,277.7	4,252.1	15.3	10.3	166.36	-182.4	358.7	361.0	345.2	15.85	22.782		
4,300.0	4,214.2	4,377.0	4,350.6	15.8	10.6	166.39	-188.0	370.2	372.7	356.5	16.24	22.950		
4,400.0	4,311.3	4,476.3	4,449.1	16.2	10.9	166.42	-193.7	381.6	384.4	367.7	16.63	23.110		
4,500.0	4,408.4	4,575.7	4,547.6	16.7	11.2	166.45	-199.3	393.0	396.0	379.0	17.02	23.263		
4,600.0	4,505.5	4,675.0	4,646.1	17.1	11.5	166.48	-204.9	404.5	407.7	390.3	17.42	23.408		
4,700.0	4,602.6	4,774.3	4,744.6	17.6	11.8	166.51	-210.6	415.9	419.4	401.6	17.81	23.547		
4,800.0	4,699.8	4,873.6	4,843.1	18.1	12.0	166.53	-216.2	427.4	431.0	412.8	18.20	23.680		
4,900.0	4,796.9	4,972.9	4,941.6	18.5	12.3	166.55	-221.9	438.8	442.7	424.1	18.60	23.807		
5,000.0	4,894.0	5,072.2	5,040.1	19.0	12.6	166.58	-227.5	450.3	454.4	435.4	18.99	23.929		
5,100.0	4,991.1	5,171.6	5,138.6	19.4	12.9	166.60	-233.2	461.7	466.0	446.7	19.38	24.046		

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 3F-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 3F-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 #2	Offset TVD Reference:	Offset Datum

Offset Design S36 T2N-R66W (Marcus State) - Marcus State 3E-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	5,088.3	5,270.9	5,237.1	19.9	13.2	166.62	-238.8	473.2	477.5	457.7	19.78	24.140	
5,300.0	5,185.8	5,370.4	5,335.7	20.3	13.4	166.62	-244.5	484.7	487.6	467.4	20.19	24.145	
5,400.0	5,283.7	5,470.0	5,434.6	20.7	13.7	166.56	-250.1	496.1	495.9	475.3	20.61	24.064	

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3F-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 3F-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 #2	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						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		
11,200.0	7,250.0	7,251.0	7,251.0	72.8	12.6	-90.00	4,165.2	727.1	479.0	396.2	82.84	5.782		
11,300.0	7,250.0	7,251.0	7,251.0	74.4	12.6	-90.00	4,165.2	727.1	418.2	333.7	84.57	4.945		
11,400.0	7,250.0	7,251.0	7,251.0	76.1	12.6	-90.00	4,165.2	727.1	374.7	288.4	86.30	4.342		
11,500.0	7,250.0	7,251.0	7,251.0	77.8	12.6	-90.00	4,165.2	727.1	354.8	266.7	88.03	4.030		
11,522.6	7,250.0	7,251.0	7,251.0	78.2	12.6	-90.00	4,165.2	727.1	354.0	265.6	88.42	4.004	CC, ES, SF	
11,600.0	7,250.0	7,251.0	7,251.0	79.5	12.6	-90.00	4,165.2	727.1	362.4	272.6	89.76	4.038		
11,700.0	7,250.0	7,251.0	7,251.0	81.1	12.6	-90.00	4,165.2	727.1	396.0	304.5	91.49	4.328		
11,800.0	7,250.0	7,251.0	7,251.0	82.8	12.6	-90.00	4,165.2	727.1	449.8	356.5	93.22	4.825		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3F-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 3F-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 #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KBE @ 5052.0ft

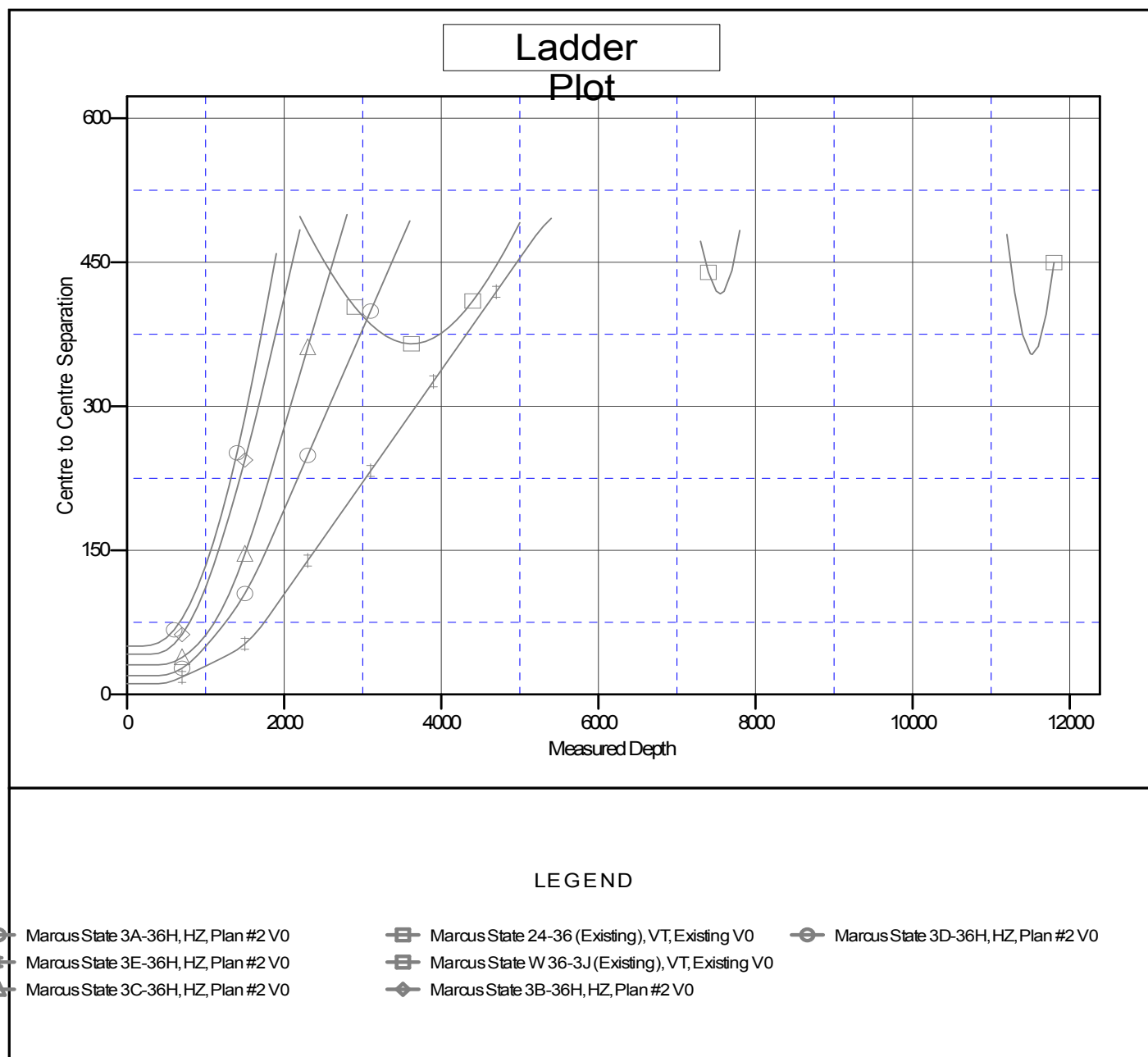
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

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

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.50°



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