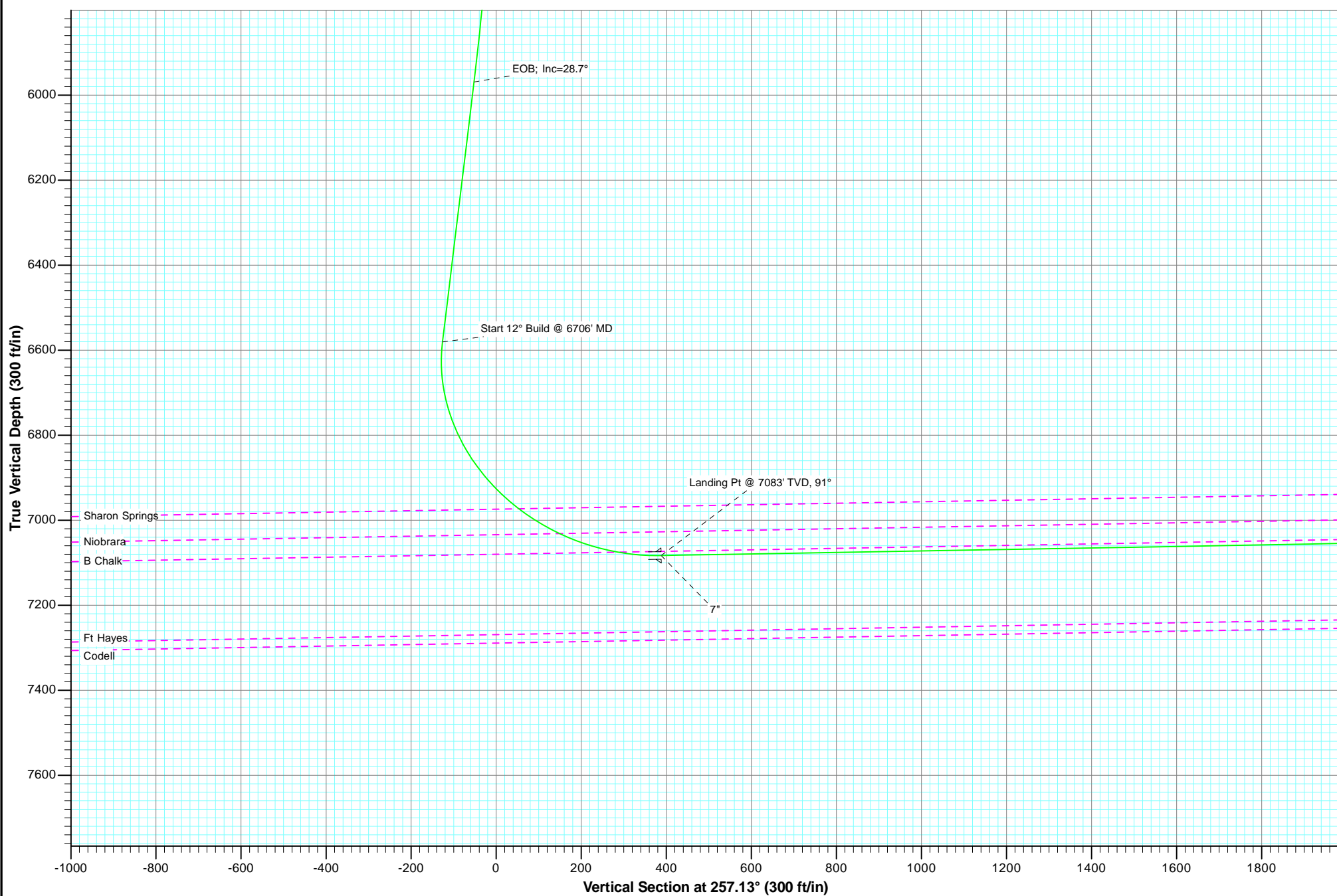




Project: DJ Wattenberg
Site: NENE S33-T3N-R67W (Herren)
Well: Herren 1A-33H
Wellbore: HZ
Design: Plan #6



Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Herren 1A-33H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 4836.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	KBE @ 4836.0ft (Original Well Elev)
Site:	NENE S33-T3N-R67W (Herren)	North Reference:	True
Well:	Herren 1A-33H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #6		

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		NENE S33-T3N-R67W (Herren)			
Site Position:		Northing:	1,312,217.66 ft	Latitude:	40.188800
From:	Lat/Long	Easting:	3,171,350.30 ft	Longitude:	-104.886690
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.40 °

Well	Herren 1A-33H					
Well Position	+N/-S	0.0 ft	Northing:	1,312,217.66 ft	Latitude:	40.188800
	+E/-W	0.0 ft	Easting:	3,171,350.30 ft	Longitude:	-104.886690
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,824.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2/23/2011	8.91	66.88	53,062

Design	Plan #6			
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	257.13

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	
5,049.7	0.00	0.00	5,049.7	0.0	0.0	0.00	0.00	0.00	0.00	
6,008.7	28.77	154.37	5,968.9	-212.6	102.0	3.00	3.00	0.00	154.37	
6,706.3	28.77	154.37	6,580.4	-515.3	247.2	0.00	0.00	0.00	0.00	
7,552.7	91.00	267.00	7,083.0	-799.8	-215.1	12.00	7.35	13.31	109.61	
11,822.7	91.00	267.00	7,008.5	-1,023.2	-4,478.6	0.00	0.00	0.00	0.00	Herren 1A-33H Begin

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Herren 1A-33H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 4836.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	KBE @ 4836.0ft (Original Well Elev)
Site:	NENE S33-T3N-R67W (Herren)	North Reference:	True
Well:	Herren 1A-33H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #6		

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	Herren 1A-33H (460' FEL)
2.0	0.00	0.00	2.0	0.0	0.0	0.0	0.00	0.00	Parker 21-33 - Parker 4-2-33 - Parker 11-33 - H
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	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,194.0	0.00	0.00	4,194.0	0.0	0.0	0.0	0.00	0.00	Sussex
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,424.0	0.00	0.00	4,424.0	0.0	0.0	0.0	0.00	0.00	Sussex Marker
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	
4,714.0	0.00	0.00	4,714.0	0.0	0.0	0.0	0.00	0.00	Shannon

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Herren 1A-33H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 4836.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	KBE @ 4836.0ft (Original Well Elev)
Site:	NENE S33-T3N-R67W (Herren)	North Reference:	True
Well:	Herren 1A-33H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #6		

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
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	
5,049.7	0.00	0.00	5,049.7	0.0	0.0	0.0	0.00	0.00	KOP @ 5049'
5,100.0	1.51	154.37	5,100.0	-0.6	0.3	-0.1	3.00	3.00	
5,200.0	4.51	154.37	5,199.8	-5.3	2.6	-1.3	3.00	3.00	
5,300.0	7.51	154.37	5,299.3	-14.8	7.1	-3.6	3.00	3.00	
5,400.0	10.51	154.37	5,398.0	-28.9	13.9	-7.1	3.00	3.00	
5,500.0	13.51	154.37	5,495.8	-47.6	22.9	-11.7	3.00	3.00	
5,600.0	16.51	154.37	5,592.4	-71.0	34.1	-17.4	3.00	3.00	
5,700.0	19.51	154.37	5,687.5	-98.9	47.4	-24.2	3.00	3.00	
5,800.0	22.51	154.37	5,780.8	-131.2	62.9	-32.1	3.00	3.00	
5,900.0	25.51	154.37	5,872.2	-167.9	80.5	-41.1	3.00	3.00	
6,000.0	28.51	154.37	5,961.3	-208.8	100.2	-51.2	3.00	3.00	
6,008.7	28.77	154.37	5,968.9	-212.6	102.0	-52.1	3.00	3.00	EOB; Inc=28.7°
6,100.0	28.77	154.37	6,048.9	-252.2	121.0	-61.8	0.00	0.00	
6,200.0	28.77	154.37	6,136.6	-295.6	141.8	-72.4	0.00	0.00	
6,300.0	28.77	154.37	6,224.2	-339.0	162.6	-83.1	0.00	0.00	
6,400.0	28.77	154.37	6,311.9	-382.4	183.5	-93.7	0.00	0.00	
6,500.0	28.77	154.37	6,399.6	-425.8	204.3	-104.3	0.00	0.00	
6,600.0	28.77	154.37	6,487.2	-469.2	225.1	-115.0	0.00	0.00	
6,700.0	28.77	154.37	6,574.9	-512.5	245.9	-125.6	0.00	0.00	
6,706.3	28.77	154.37	6,580.4	-515.3	247.2	-126.3	0.00	0.00	Start 12° Build @ 6706' MD
6,800.0	26.97	178.25	6,663.5	-557.0	257.7	-127.1	12.00	-1.92	
6,900.0	29.64	203.11	6,751.8	-602.6	248.6	-108.2	12.00	2.67	
7,000.0	35.99	222.03	6,836.0	-647.3	219.1	-69.5	12.00	6.35	
7,100.0	44.46	235.27	6,912.5	-689.2	170.5	-12.7	12.00	8.47	
7,192.1	53.27	244.18	6,973.1	-723.8	110.6	53.4	12.00	9.56	Sharon Springs
7,200.0	54.05	244.84	6,977.7	-726.5	104.8	59.6	12.00	9.92	
7,300.0	64.22	252.27	7,029.0	-757.5	25.0	144.3	12.00	10.18	
7,305.5	64.80	252.64	7,031.4	-759.0	20.3	149.3	12.00	10.38	Niobrara
7,400.0	74.72	258.50	7,064.1	-781.0	-65.5	237.8	12.00	10.50	
7,450.0	80.03	261.36	7,075.0	-789.5	-113.5	286.5	12.00	10.62	B Chalk
7,500.0	85.37	264.13	7,081.4	-795.7	-162.6	335.8	12.00	10.67	
7,552.7	91.00	267.00	7,083.0	-799.8	-215.1	387.9	12.00	10.69	Landing Pt @ 7083' TVD, 91° - 7"
7,600.0	91.00	267.00	7,082.2	-802.3	-262.4	434.5	0.00	0.00	
7,700.0	91.00	267.00	7,080.5	-807.5	-362.2	533.0	0.00	0.00	
7,800.0	91.00	267.00	7,078.7	-812.7	-462.1	631.5	0.00	0.00	
7,900.0	91.00	267.00	7,077.0	-818.0	-561.9	730.0	0.00	0.00	
8,000.0	91.00	267.00	7,075.2	-823.2	-661.8	828.5	0.00	0.00	
8,100.0	91.00	267.00	7,073.5	-828.4	-761.6	927.0	0.00	0.00	
8,200.0	91.00	267.00	7,071.7	-833.7	-861.5	1,025.5	0.00	0.00	
8,300.0	91.00	267.00	7,070.0	-838.9	-961.3	1,124.0	0.00	0.00	
8,400.0	91.00	267.00	7,068.2	-844.1	-1,061.1	1,222.5	0.00	0.00	
8,500.0	91.00	267.00	7,066.5	-849.4	-1,161.0	1,321.0	0.00	0.00	
8,600.0	91.00	267.00	7,064.7	-854.6	-1,260.8	1,419.5	0.00	0.00	
8,700.0	91.00	267.00	7,063.0	-859.8	-1,360.7	1,518.0	0.00	0.00	
8,800.0	91.00	267.00	7,061.3	-865.1	-1,460.5	1,616.5	0.00	0.00	
8,900.0	91.00	267.00	7,059.5	-870.3	-1,560.4	1,715.0	0.00	0.00	
9,000.0	91.00	267.00	7,057.8	-875.5	-1,660.2	1,813.5	0.00	0.00	
9,100.0	91.00	267.00	7,056.0	-880.8	-1,760.1	1,912.0	0.00	0.00	
9,200.0	91.00	267.00	7,054.3	-886.0	-1,859.9	2,010.5	0.00	0.00	

Planning Report

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Project:	DJ Wattenberg	MD Reference:	KBE @ 4836.0ft (Original Well Elev)
Site:	NENE S33-T3N-R67W (Herren)	North Reference:	True
Well:	Herren 1A-33H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #6		

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
9,300.0	91.00	267.00	7,052.5	-891.2	-1,959.8	2,109.0	0.00	0.00	
9,400.0	91.00	267.00	7,050.8	-896.5	-2,059.6	2,207.6	0.00	0.00	
9,500.0	91.00	267.00	7,049.0	-901.7	-2,159.5	2,306.1	0.00	0.00	
9,600.0	91.00	267.00	7,047.3	-906.9	-2,259.3	2,404.6	0.00	0.00	
9,700.0	91.00	267.00	7,045.5	-912.2	-2,359.2	2,503.1	0.00	0.00	
9,800.0	91.00	267.00	7,043.8	-917.4	-2,459.0	2,601.6	0.00	0.00	
9,900.0	91.00	267.00	7,042.1	-922.6	-2,558.9	2,700.1	0.00	0.00	
10,000.0	91.00	267.00	7,040.3	-927.9	-2,658.7	2,798.6	0.00	0.00	
10,100.0	91.00	267.00	7,038.6	-933.1	-2,758.6	2,897.1	0.00	0.00	
10,200.0	91.00	267.00	7,036.8	-938.3	-2,858.4	2,995.6	0.00	0.00	
10,300.0	91.00	267.00	7,035.1	-943.6	-2,958.3	3,094.1	0.00	0.00	
10,400.0	91.00	267.00	7,033.3	-948.8	-3,058.1	3,192.6	0.00	0.00	
10,500.0	91.00	267.00	7,031.6	-954.0	-3,157.9	3,291.1	0.00	0.00	
10,600.0	91.00	267.00	7,029.8	-959.3	-3,257.8	3,389.6	0.00	0.00	
10,700.0	91.00	267.00	7,028.1	-964.5	-3,357.6	3,488.1	0.00	0.00	
10,800.0	91.00	267.00	7,026.3	-969.7	-3,457.5	3,586.6	0.00	0.00	
10,900.0	91.00	267.00	7,024.6	-974.9	-3,557.3	3,685.1	0.00	0.00	
11,000.0	91.00	267.00	7,022.9	-980.2	-3,657.2	3,783.6	0.00	0.00	
11,100.0	91.00	267.00	7,021.1	-985.4	-3,757.0	3,882.1	0.00	0.00	
11,200.0	91.00	267.00	7,019.4	-990.6	-3,856.9	3,980.6	0.00	0.00	
11,300.0	91.00	267.00	7,017.6	-995.9	-3,956.7	4,079.2	0.00	0.00	
11,400.0	91.00	267.00	7,015.9	-1,001.1	-4,056.6	4,177.7	0.00	0.00	
11,500.0	91.00	267.00	7,014.1	-1,006.3	-4,156.4	4,276.2	0.00	0.00	
11,600.0	91.00	267.00	7,012.4	-1,011.6	-4,256.3	4,374.7	0.00	0.00	
11,700.0	91.00	267.00	7,010.6	-1,016.8	-4,356.1	4,473.2	0.00	0.00	
11,800.0	91.00	267.00	7,008.9	-1,022.0	-4,456.0	4,571.7	0.00	0.00	
11,822.7	91.00	267.00	7,008.5	-1,023.2	-4,478.6	4,594.0	0.00	0.00	TD at 11822.7 - Herren 1A-33H Begin BHL

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Herren 1A-33H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 4836.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	KBE @ 4836.0ft (Original Well Elev)
Site:	NENE S33-T3N-R67W (Herren)	North Reference:	True
Well:	Herren 1A-33H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #6		

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)		
Parker 21-33	0.00	0.00	2.0	-559.7	-2,908.4	1,311,637.83	3,168,445.84	40.187263	-104.897100
- plan misses target center by 2961.8ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Parker 4-2-33	0.00	0.00	2.0	-555.4	-2,879.3	1,311,642.39	3,168,474.87	40.187275	-104.896996
- plan misses target center by 2932.4ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Parker 11-33	0.00	0.00	2.0	-157.3	-4,479.6	1,312,029.35	3,166,871.91	40.188367	-104.902724
- plan misses target center by 4482.3ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Herren 32-33	0.00	0.00	2.0	-1,913.5	-1,951.3	1,310,290.71	3,169,412.25	40.183547	-104.893674
- plan misses target center by 2733.0ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Herren 1A-33H Begin Bl	0.00	0.00	7,008.5	-1,023.2	-4,478.6	1,311,163.48	3,166,878.86	40.185990	-104.902720
- plan hits target center									
- Point									
Herren 42-33	0.00	0.00	2.0	-1,929.2	-200.6	1,310,287.08	3,171,163.03	40.183504	-104.887408
- plan misses target center by 1939.6ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Parker 12-33	0.00	0.00	2.0	-1,686.2	-4,474.8	1,310,500.52	3,166,887.23	40.184170	-104.902706
- plan misses target center by 4782.0ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Herren 1	0.00	0.00	2.0	-1,325.2	-854.1	1,310,886.54	3,170,505.38	40.185162	-104.889747
- plan misses target center by 1576.6ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Herren 31-33	0.00	0.00	2.0	-203.2	-1,880.2	1,312,001.46	3,169,471.51	40.188242	-104.893420
- plan misses target center by 1891.2ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Parker 1	0.00	0.00	2.0	-775.3	-3,678.7	1,311,416.95	3,167,677.05	40.186671	-104.899857
- plan misses target center by 3759.5ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Herren 41-33	0.00	0.00	2.0	-262.3	-261.5	1,311,953.58	3,171,090.62	40.188080	-104.887626
- plan misses target center by 370.4ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Herren 1A-33H (460' FE	0.00	0.00	-7,004.5	0.0	0.0	1,312,217.66	3,171,350.30	40.188800	-104.886690
- plan misses target center by 7004.5ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Point									
Parker 2-4-33	0.00	0.00	2.0	-1,748.4	-3,104.1	1,310,447.87	3,168,258.35	40.184000	-104.897800
- plan misses target center by 3562.6ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Parker 22-33	0.00	0.00	2.0	-1,708.3	-3,062.2	1,310,488.22	3,168,299.98	40.184110	-104.897650
- plan misses target center by 3506.5ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									
Parker 2-0-33	0.00	0.00	2.0	-564.5	-2,941.9	1,311,632.86	3,168,412.35	40.187250	-104.897220
- plan misses target center by 2995.6ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Point									

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Herren 1A-33H
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 4836.0ft (Original Well Elev)
Project:	DJ Wattenberg	MD Reference:	KBE @ 4836.0ft (Original Well Elev)
Site:	NENE S33-T3N-R67W (Herren)	North Reference:	True
Well:	Herren 1A-33H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #6		

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
7,552.7	7,083.0	7"	7.000	7.500

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,194.0	4,194.0	Sussex		-1.00	257.13
4,424.0	4,424.0	Sussex Marker		-1.00	257.13
4,714.0	4,714.0	Shannon		-1.00	257.13
7,192.1	6,974.0	Sharon Springs		-1.00	257.13
7,305.5	7,034.0	Niobrara		-1.00	257.13
7,450.0	7,080.0	B Chalk		-1.00	257.13

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,049.7	5,049.7	0.0	0.0	KOP @ 5049'
6,008.7	5,968.9	-212.6	102.0	EOB; Inc=28.7°
6,706.3	6,580.4	-515.3	247.2	Start 12° Build @ 6706' MD
7,552.7	7,083.0	-799.8	-215.1	Landing Pt @ 7083' TVD, 91°
11,822.7	7,008.5	-1,023.2	-4,478.6	TD at 11822.7

EnCana Oil & Gas (USA) Inc

DJ Wattenberg

NENE S33-T3N-R67W (Herren)

Herren 1A-33H

HZ

Plan #6 (12/100)

Anticollision Report

09 March, 2011

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Site NENE S33-T3N-R67W (Herren)
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4836.0ft (Original Well Elev)
Reference Site:	NENE S33-T3N-R67W (Herren)	MD Reference:	KBE @ 4836.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Herren 1A-33H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #6 (12/100)	Offset TVD Reference:	Offset Datum

Reference	Plan #6 (12/100)		
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 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	3/9/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,822.7	Plan #6 (12/100) (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						
NENE S33-T3N-R67W (Herren)						
Parker 1 (Existing) - VH - VH	11,010.8	7,259.7	205.7	98.3	1.915	CC, ES, SF
Parker 2-4-33 (Existing) - DD - DD						Out of range
Parker 4-2-33 (Existing) - DD - DD	9,622.3	7,131.6	250.5	173.6	3.256	CC, ES, SF

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Site NENE S33-T3N-R67W (Herren)
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4836.0ft (Original Well Elev)
Reference Site:	NENE S33-T3N-R67W (Herren)	MD Reference:	KBE @ 4836.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Herren 1A-33H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #6 (12/100)	Offset TVD Reference:	Offset Datum

Offset Design NENE S33-T3N-R67W (Herren) - Parker 1 (Existing) - VH - VH												Offset Site Error:	0.0 ft
Survey Program: 8000-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		
10,100.0	7,038.6	7,275.6	7,275.6	73.6	12.7	94.42	-775.3	-3,678.7	933.6	848.6	84.97	10.987	
10,200.0	7,036.8	7,273.8	7,273.8	76.0	12.7	93.93	-775.3	-3,678.7	836.3	748.9	87.44	9.564	
10,300.0	7,035.1	7,272.1	7,272.1	78.4	12.7	93.45	-775.3	-3,678.7	739.8	649.9	89.91	8.228	
10,400.0	7,033.3	7,270.3	7,270.3	80.8	12.7	92.97	-775.3	-3,678.7	644.4	552.0	92.38	6.975	
10,500.0	7,031.6	7,268.6	7,268.6	83.2	12.7	92.48	-775.3	-3,678.7	550.6	455.7	94.85	5.804	
10,600.0	7,029.8	7,266.8	7,266.8	85.6	12.7	92.00	-775.3	-3,678.7	459.3	362.0	97.32	4.720	
10,700.0	7,028.1	7,265.1	7,265.1	88.0	12.7	91.51	-775.3	-3,678.7	372.6	272.9	99.78	3.735	
10,800.0	7,026.3	7,263.3	7,263.3	90.5	12.7	91.02	-775.3	-3,678.7	294.5	192.3	102.24	2.881	
10,900.0	7,024.6	7,261.6	7,261.6	92.9	12.7	90.54	-775.3	-3,678.7	233.6	128.9	104.69	2.232	
11,000.0	7,022.9	7,259.9	7,259.9	95.3	12.7	90.05	-775.3	-3,678.7	206.0	98.9	107.14	1.923	
11,010.8	7,022.7	7,259.7	7,259.7	95.6	12.7	90.00	-775.3	-3,678.7	205.7	98.3	107.40	1.915 CC, ES, SF	
11,100.0	7,021.1	7,258.1	7,258.1	97.7	12.6	89.57	-775.3	-3,678.7	224.2	114.7	109.58	2.046	
11,200.0	7,019.4	7,256.4	7,256.4	100.2	12.6	89.08	-775.3	-3,678.7	279.5	167.5	112.01	2.495	
11,300.0	7,017.6	7,254.6	7,254.6	102.6	12.6	88.59	-775.3	-3,678.7	354.9	240.5	114.44	3.101	
11,400.0	7,015.9	7,252.9	7,252.9	105.0	12.6	88.11	-775.3	-3,678.7	440.2	323.4	116.86	3.767	
11,500.0	7,014.1	7,251.1	7,251.1	107.5	12.6	87.62	-775.3	-3,678.7	530.7	411.4	119.27	4.449	
11,600.0	7,012.4	7,249.4	7,249.4	109.9	12.6	87.14	-775.3	-3,678.7	624.0	502.4	121.68	5.129	
11,700.0	7,010.6	7,247.6	7,247.6	112.4	12.6	86.65	-775.3	-3,678.7	719.2	595.1	124.07	5.797	
11,800.0	7,008.9	7,245.9	7,245.9	114.8	12.6	86.17	-775.3	-3,678.7	815.5	689.0	126.45	6.449	
11,822.7	7,008.5	7,245.5	7,245.5	115.4	12.6	86.06	-775.3	-3,678.7	837.5	710.5	126.99	6.595	

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Site NENE S33-T3N-R67W (Herren)
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4836.0ft (Original Well Elev)
Reference Site:	NENE S33-T3N-R67W (Herren)	MD Reference:	KBE @ 4836.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Herren 1A-33H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #6 (12/100)	Offset TVD Reference:	Offset Datum

Offset Design NENE S33-T3N-R67W (Herren) - Parker 4-2-33 (Existing) - DD - DD													Offset Site Error:	0.0 ft
Survey Program: 583-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			
8,700.0	7,063.0	7,141.5	7,051.7	40.9	19.6	-91.56	-1,158.3	-2,268.4	955.6	900.7	54.89	17.411		
8,800.0	7,061.3	7,140.4	7,050.7	43.1	19.6	-91.31	-1,158.3	-2,268.4	859.5	802.3	57.24	15.016		
8,900.0	7,059.5	7,139.3	7,049.6	45.4	19.6	-91.06	-1,158.3	-2,268.4	764.4	704.8	59.61	12.824		
9,000.0	7,057.8	7,138.2	7,048.5	47.6	19.6	-90.82	-1,158.3	-2,268.4	670.8	608.8	61.99	10.821		
9,100.0	7,056.0	7,137.1	7,047.4	49.9	19.6	-90.57	-1,158.3	-2,268.4	579.2	514.8	64.37	8.997		
9,200.0	7,054.3	7,136.0	7,046.3	52.3	19.6	-90.33	-1,158.3	-2,268.4	490.9	424.2	66.77	7.353		
9,300.0	7,052.5	7,135.0	7,045.3	54.6	19.6	-90.08	-1,158.3	-2,268.4	408.2	339.0	69.17	5.901		
9,400.0	7,050.8	7,133.9	7,044.2	56.9	19.6	-89.84	-1,158.2	-2,268.4	334.9	263.3	71.58	4.678		
9,500.0	7,049.0	7,132.9	7,043.1	59.3	19.6	-89.60	-1,158.2	-2,268.4	278.7	204.7	73.99	3.767		
9,600.0	7,047.3	7,131.8	7,042.1	61.6	19.6	-89.36	-1,158.2	-2,268.4	251.5	175.1	76.40	3.291		
9,622.3	7,046.9	7,131.6	7,041.9	62.2	19.6	-89.30	-1,158.2	-2,268.4	250.5	173.6	76.94	3.256 CC, ES, SF		
9,700.0	7,045.5	7,130.8	7,041.1	64.0	19.6	-89.12	-1,158.2	-2,268.4	262.3	183.5	78.82	3.327		
9,800.0	7,043.8	7,129.7	7,040.0	66.4	19.6	-88.88	-1,158.2	-2,268.4	307.1	225.9	81.24	3.781		
9,900.0	7,042.1	7,128.7	7,039.0	68.8	19.6	-88.65	-1,158.2	-2,268.4	374.0	290.3	83.66	4.470		
10,000.0	7,040.3	7,127.7	7,038.0	71.2	19.6	-88.41	-1,158.2	-2,268.4	453.2	367.1	86.09	5.265		
10,100.0	7,038.6	7,126.7	7,036.9	73.6	19.6	-88.18	-1,158.2	-2,268.4	539.4	450.9	88.51	6.094		
10,200.0	7,036.8	7,125.6	7,035.9	76.0	19.6	-87.95	-1,158.1	-2,268.3	629.7	538.7	90.94	6.924		
10,300.0	7,035.1	7,124.6	7,034.9	78.4	19.6	-87.71	-1,158.1	-2,268.3	722.5	629.2	93.36	7.739		
10,400.0	7,033.3	7,123.6	7,033.9	80.8	19.6	-87.48	-1,158.1	-2,268.3	817.0	721.3	95.79	8.530		
10,500.0	7,031.6	7,122.6	7,032.9	83.2	19.6	-87.26	-1,158.1	-2,268.3	912.7	814.5	98.21	9.294		

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Site NENE S33-T3N-R67W (Herren)
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4836.0ft (Original Well Elev)
Reference Site:	NENE S33-T3N-R67W (Herren)	MD Reference:	KBE @ 4836.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Herren 1A-33H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	EDM 5000.1 US Multi Users DB
Reference Design:	Plan #6 (12/100)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KBE @ 4836.0ft (Original Well Elev)

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: NENE S33-T3N-R67W (Herren)

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.40°

