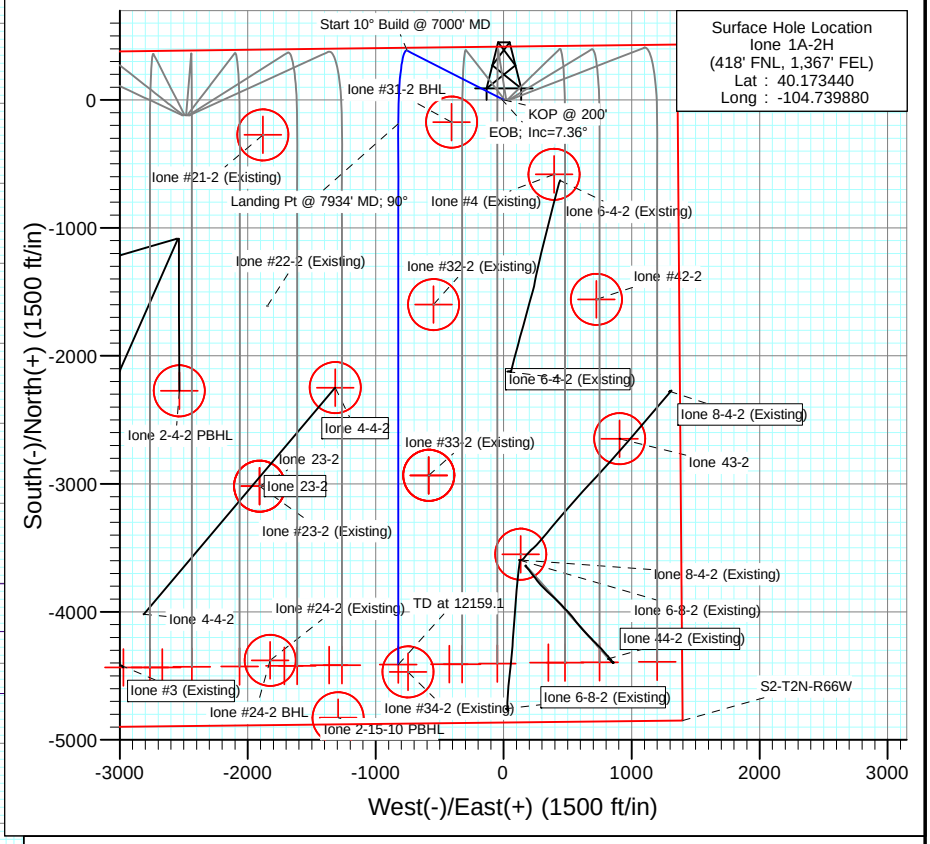
encana natural gas

Project: DJ Wattenberg
Site: NWNE S2-T2N-R66W (Ione)
Well: Ione 1A-2H
Wellbore: HZ
Design: Plan #1

CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	568.1	7.36	297.05	567.1	10.7	-21.0	2.00	297.05	-10.7	
4	7000.7	7.36	297.05	6946.6	385.6	-755.2	0.00	0.00	-385.6	
5	7934.1	90.00	180.00	7549.0	-186.4	-824.5	10.00	-116.85	186.4	
6	12159.1	90.00	180.00	7549.0	-4411.4	-824.5	0.00	0.00	4411.4	Ione 1A-2H PBHL (460' FSL, 2,225' FEL)



Surface Hole Location
Ione 1A-2H
(418' FNL, 1,367' FEL)
Lat : 40.173440
Long : -104.739880

DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Ione 1A-2H PBHL (460' FSL, 2,225' FEL)	-4411.4	-824.5	1302521.76	3211625.94	40.161330	-104.742830

T M Azimuths to True North
Magnetic North: 8.63°

Magnetic Field
Strength: 52916.9snT
Dip Angle: 66.84°
Date: 8/8/2012
Model: IGRF200510

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4503.0	4536.7	Sussex
4801.0	4837.2	Sussex Marker
5189.0	5228.4	Shannon
6530.0	6580.6	Teepee Buttes
7225.0	7289.3	Sharon Springs
7237.0	7302.7	Niobrara
7297.0	7372.8	B Chalk
7523.0	7760.2	Ft. Hayes
7544.0	7858.1	Codell

Plan #1
Ione 1A-2H
125XXX; LR
KB=13' @ 5091.0ft (Original Well Elev)
Ground Elevation @ 5078.0
North American Datum 1983
Well Ione 1A-2H, True North

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site:	NWNE S2-T2N-R66W (Ione)	**North Reference:**	True
Well:	Ione 1A-2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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	NWNE S2-T2N-R66W (Ione)				
Site Position:		**Northing:**	1,306,798.50 ft	**Latitude:**	40.173110
From:	Lat/Long	**Easting:**	3,209,901.52 ft	**Longitude:**	-104.748870
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.49 °

Well	Ione 1A-2H				
Well Position	**+N/-S**	0.0 ft	**Northing:**	1,306,940.10 ft	**Latitude:** 40.173440
	+E/-W	0.0 ft	**Easting:**	3,212,412.59 ft	**Longitude:** -104.739880
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:** 5,078.0 ft

Wellbore	HZ			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	8/8/2012	8.63	66.84	52,917

Design	Plan #1				
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	180.00	

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
568.1	7.36	297.05	567.1	10.7	-21.0	2.00	2.00	0.00	297.05	
7,000.7	7.36	297.05	6,946.6	385.6	-755.2	0.00	0.00	0.00	0.00	
7,934.1	90.00	180.00	7,549.0	-186.4	-824.5	10.00	8.85	-12.54	-116.85	
12,159.1	90.00	180.00	7,549.0	-4,411.4	-824.5	0.00	0.00	0.00	0.00	Ione 1A-2H PBHL (46

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Ione 1A-2H
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Project:	DJ Wattenberg	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site:	NWNE S2-T2N-R66W (Ione)	**North Reference:**	True
Well:	Ione 1A-2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	2.00	297.05	300.0	0.8	-1.6	-0.8	2.00	2.00	
400.0	4.00	297.05	399.8	3.2	-6.2	-3.2	2.00	2.00	
500.0	6.00	297.05	499.5	7.1	-14.0	-7.1	2.00	2.00	
568.1	7.36	297.05	567.1	10.7	-21.0	-10.7	2.00	2.00	EOB; Inc=7.36°
600.0	7.36	297.05	598.7	12.6	-24.7	-12.6	0.00	0.00	
700.0	7.36	297.05	697.9	18.4	-36.1	-18.4	0.00	0.00	
800.0	7.36	297.05	797.1	24.3	-47.5	-24.3	0.00	0.00	
900.0	7.36	297.05	896.3	30.1	-58.9	-30.1	0.00	0.00	
1,000.0	7.36	297.05	995.4	35.9	-70.3	-35.9	0.00	0.00	
1,100.0	7.36	297.05	1,094.6	41.7	-81.7	-41.7	0.00	0.00	
1,200.0	7.36	297.05	1,193.8	47.6	-93.2	-47.6	0.00	0.00	
1,300.0	7.36	297.05	1,293.0	53.4	-104.6	-53.4	0.00	0.00	
1,400.0	7.36	297.05	1,392.1	59.2	-116.0	-59.2	0.00	0.00	
1,500.0	7.36	297.05	1,491.3	65.0	-127.4	-65.0	0.00	0.00	
1,600.0	7.36	297.05	1,590.5	70.9	-138.8	-70.9	0.00	0.00	
1,700.0	7.36	297.05	1,689.7	76.7	-150.2	-76.7	0.00	0.00	
1,800.0	7.36	297.05	1,788.8	82.5	-161.6	-82.5	0.00	0.00	
1,900.0	7.36	297.05	1,888.0	88.3	-173.0	-88.3	0.00	0.00	
2,000.0	7.36	297.05	1,987.2	94.2	-184.5	-94.2	0.00	0.00	
2,100.0	7.36	297.05	2,086.4	100.0	-195.9	-100.0	0.00	0.00	
2,200.0	7.36	297.05	2,185.5	105.8	-207.3	-105.8	0.00	0.00	
2,300.0	7.36	297.05	2,284.7	111.7	-218.7	-111.7	0.00	0.00	
2,400.0	7.36	297.05	2,383.9	117.5	-230.1	-117.5	0.00	0.00	
2,500.0	7.36	297.05	2,483.1	123.3	-241.5	-123.3	0.00	0.00	
2,600.0	7.36	297.05	2,582.2	129.1	-252.9	-129.1	0.00	0.00	
2,700.0	7.36	297.05	2,681.4	135.0	-264.3	-135.0	0.00	0.00	
2,800.0	7.36	297.05	2,780.6	140.8	-275.8	-140.8	0.00	0.00	
2,900.0	7.36	297.05	2,879.8	146.6	-287.2	-146.6	0.00	0.00	
3,000.0	7.36	297.05	2,978.9	152.4	-298.6	-152.4	0.00	0.00	
3,100.0	7.36	297.05	3,078.1	158.3	-310.0	-158.3	0.00	0.00	
3,200.0	7.36	297.05	3,177.3	164.1	-321.4	-164.1	0.00	0.00	
3,300.0	7.36	297.05	3,276.5	169.9	-332.8	-169.9	0.00	0.00	
3,400.0	7.36	297.05	3,375.6	175.7	-344.2	-175.7	0.00	0.00	
3,500.0	7.36	297.05	3,474.8	181.6	-355.6	-181.6	0.00	0.00	
3,600.0	7.36	297.05	3,574.0	187.4	-367.1	-187.4	0.00	0.00	
3,700.0	7.36	297.05	3,673.2	193.2	-378.5	-193.2	0.00	0.00	
3,800.0	7.36	297.05	3,772.3	199.1	-389.9	-199.1	0.00	0.00	
3,900.0	7.36	297.05	3,871.5	204.9	-401.3	-204.9	0.00	0.00	
4,000.0	7.36	297.05	3,970.7	210.7	-412.7	-210.7	0.00	0.00	
4,100.0	7.36	297.05	4,069.9	216.5	-424.1	-216.5	0.00	0.00	
4,200.0	7.36	297.05	4,169.0	222.4	-435.5	-222.4	0.00	0.00	
4,300.0	7.36	297.05	4,268.2	228.2	-447.0	-228.2	0.00	0.00	
4,400.0	7.36	297.05	4,367.4	234.0	-458.4	-234.0	0.00	0.00	
4,500.0	7.36	297.05	4,466.6	239.8	-469.8	-239.8	0.00	0.00	
4,536.7	7.36	297.05	4,503.0	242.0	-474.0	-242.0	0.00	0.00	Sussex
4,600.0	7.36	297.05	4,565.7	245.7	-481.2	-245.7	0.00	0.00	
4,700.0	7.36	297.05	4,664.9	251.5	-492.6	-251.5	0.00	0.00	
4,800.0	7.36	297.05	4,764.1	257.3	-504.0	-257.3	0.00	0.00	
4,837.2	7.36	297.05	4,801.0	259.5	-508.3	-259.5	0.00	0.00	Sussex Marker

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Site:	NWNE S2-T2N-R66W (Ione)	**North Reference:**	True
Well:	Ione 1A-2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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	7.36	297.05	4,863.3	263.1	-515.4	-263.1	0.00	0.00	
5,000.0	7.36	297.05	4,962.4	269.0	-526.8	-269.0	0.00	0.00	
5,100.0	7.36	297.05	5,061.6	274.8	-538.3	-274.8	0.00	0.00	
5,200.0	7.36	297.05	5,160.8	280.6	-549.7	-280.6	0.00	0.00	
5,228.4	7.36	297.05	5,189.0	282.3	-552.9	-282.3	0.00	0.00	Shannon
5,300.0	7.36	297.05	5,260.0	286.5	-561.1	-286.5	0.00	0.00	
5,400.0	7.36	297.05	5,359.2	292.3	-572.5	-292.3	0.00	0.00	
5,500.0	7.36	297.05	5,458.3	298.1	-583.9	-298.1	0.00	0.00	
5,600.0	7.36	297.05	5,557.5	303.9	-595.3	-303.9	0.00	0.00	
5,700.0	7.36	297.05	5,656.7	309.8	-606.7	-309.8	0.00	0.00	
5,800.0	7.36	297.05	5,755.9	315.6	-618.1	-315.6	0.00	0.00	
5,900.0	7.36	297.05	5,855.0	321.4	-629.6	-321.4	0.00	0.00	
6,000.0	7.36	297.05	5,954.2	327.2	-641.0	-327.2	0.00	0.00	
6,100.0	7.36	297.05	6,053.4	333.1	-652.4	-333.1	0.00	0.00	
6,200.0	7.36	297.05	6,152.6	338.9	-663.8	-338.9	0.00	0.00	
6,300.0	7.36	297.05	6,251.7	344.7	-675.2	-344.7	0.00	0.00	
6,400.0	7.36	297.05	6,350.9	350.6	-686.6	-350.6	0.00	0.00	
6,500.0	7.36	297.05	6,450.1	356.4	-698.0	-356.4	0.00	0.00	
6,580.6	7.36	297.05	6,530.0	361.1	-707.2	-361.1	0.00	0.00	Teepee Buttes
6,600.0	7.36	297.05	6,549.3	362.2	-709.5	-362.2	0.00	0.00	
6,700.0	7.36	297.05	6,648.4	368.0	-720.9	-368.0	0.00	0.00	
6,800.0	7.36	297.05	6,747.6	373.9	-732.3	-373.9	0.00	0.00	
6,900.0	7.36	297.05	6,846.8	379.7	-743.7	-379.7	0.00	0.00	
7,000.0	7.36	297.05	6,946.0	385.5	-755.1	-385.5	0.00	0.00	
7,000.7	7.36	297.05	6,946.6	385.6	-755.2	-385.6	0.00	0.00	Start 10° Build @ 7000' MD
7,100.0	9.29	224.69	7,045.1	382.7	-766.5	-382.7	10.00	1.94	
7,200.0	17.81	200.99	7,142.3	362.7	-777.7	-362.7	10.00	8.52	
7,289.3	26.29	193.47	7,225.0	330.6	-787.2	-330.6	10.00	9.51	Sharon Springs
7,300.0	27.33	192.86	7,234.6	325.9	-788.3	-325.9	10.00	9.67	
7,302.7	27.60	192.72	7,237.0	324.7	-788.6	-324.7	10.00	9.69	Niobrara
7,372.8	34.42	189.67	7,297.0	289.3	-795.5	-289.3	10.00	9.75	B Chalk
7,400.0	37.09	188.75	7,319.1	273.6	-798.0	-273.6	10.00	9.81	
7,500.0	46.95	186.17	7,393.3	207.3	-806.6	-207.3	10.00	9.85	
7,600.0	56.84	184.31	7,455.0	129.0	-813.7	-129.0	10.00	9.89	
7,700.0	66.75	182.83	7,502.2	41.2	-819.1	-41.2	10.00	9.92	
7,760.2	72.73	182.05	7,523.0	-15.2	-821.5	15.2	10.00	9.93	Ft. Hayes
7,800.0	76.68	181.56	7,533.5	-53.6	-822.7	53.6	10.00	9.93	
7,858.1	82.45	180.87	7,544.0	-110.7	-823.9	110.7	10.00	9.93	Codell
7,900.0	86.61	180.39	7,548.0	-152.4	-824.4	152.4	10.00	9.93	
7,934.1	90.00	180.00	7,549.0	-186.4	-824.5	186.4	10.00	9.93	Landing Pt @ 7934' MD; 90°
8,000.0	90.00	180.00	7,549.0	-252.4	-824.5	252.4	0.00	0.00	
8,100.0	90.00	180.00	7,549.0	-352.4	-824.5	352.4	0.00	0.00	
8,200.0	90.00	180.00	7,549.0	-452.4	-824.5	452.4	0.00	0.00	
8,300.0	90.00	180.00	7,549.0	-552.4	-824.5	552.4	0.00	0.00	
8,400.0	90.00	180.00	7,549.0	-652.4	-824.5	652.4	0.00	0.00	
8,500.0	90.00	180.00	7,549.0	-752.4	-824.5	752.4	0.00	0.00	
8,600.0	90.00	180.00	7,549.0	-852.4	-824.5	852.4	0.00	0.00	
8,700.0	90.00	180.00	7,549.0	-952.4	-824.5	952.4	0.00	0.00	
8,800.0	90.00	180.00	7,549.0	-1,052.4	-824.5	1,052.4	0.00	0.00	
8,900.0	90.00	180.00	7,549.0	-1,152.4	-824.5	1,152.4	0.00	0.00	
9,000.0	90.00	180.00	7,549.0	-1,252.4	-824.5	1,252.4	0.00	0.00	
9,100.0	90.00	180.00	7,549.0	-1,352.4	-824.5	1,352.4	0.00	0.00	

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Site:	NWNE S2-T2N-R66W (Ione)	**North Reference:**	True
Well:	Ione 1A-2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

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
9,200.0	90.00	180.00	7,549.0	-1,452.4	-824.5	1,452.4	0.00	0.00	
9,300.0	90.00	180.00	7,549.0	-1,552.4	-824.5	1,552.4	0.00	0.00	
9,400.0	90.00	180.00	7,549.0	-1,652.4	-824.5	1,652.4	0.00	0.00	
9,500.0	90.00	180.00	7,549.0	-1,752.4	-824.5	1,752.4	0.00	0.00	
9,600.0	90.00	180.00	7,549.0	-1,852.4	-824.5	1,852.4	0.00	0.00	
9,700.0	90.00	180.00	7,549.0	-1,952.4	-824.5	1,952.4	0.00	0.00	
9,800.0	90.00	180.00	7,549.0	-2,052.4	-824.5	2,052.4	0.00	0.00	
9,900.0	90.00	180.00	7,549.0	-2,152.4	-824.5	2,152.4	0.00	0.00	
10,000.0	90.00	180.00	7,549.0	-2,252.4	-824.5	2,252.4	0.00	0.00	
10,100.0	90.00	180.00	7,549.0	-2,352.4	-824.5	2,352.4	0.00	0.00	
10,200.0	90.00	180.00	7,549.0	-2,452.4	-824.5	2,452.4	0.00	0.00	
10,300.0	90.00	180.00	7,549.0	-2,552.4	-824.5	2,552.4	0.00	0.00	
10,400.0	90.00	180.00	7,549.0	-2,652.4	-824.5	2,652.4	0.00	0.00	
10,500.0	90.00	180.00	7,549.0	-2,752.4	-824.5	2,752.4	0.00	0.00	
10,600.0	90.00	180.00	7,549.0	-2,852.4	-824.5	2,852.4	0.00	0.00	
10,700.0	90.00	180.00	7,549.0	-2,952.4	-824.5	2,952.4	0.00	0.00	
10,800.0	90.00	180.00	7,549.0	-3,052.4	-824.5	3,052.4	0.00	0.00	
10,900.0	90.00	180.00	7,549.0	-3,152.4	-824.5	3,152.4	0.00	0.00	
11,000.0	90.00	180.00	7,549.0	-3,252.4	-824.5	3,252.4	0.00	0.00	
11,100.0	90.00	180.00	7,549.0	-3,352.4	-824.5	3,352.4	0.00	0.00	
11,200.0	90.00	180.00	7,549.0	-3,452.4	-824.5	3,452.4	0.00	0.00	
11,300.0	90.00	180.00	7,549.0	-3,552.4	-824.5	3,552.4	0.00	0.00	
11,400.0	90.00	180.00	7,549.0	-3,652.4	-824.5	3,652.4	0.00	0.00	
11,500.0	90.00	180.00	7,549.0	-3,752.4	-824.5	3,752.4	0.00	0.00	
11,600.0	90.00	180.00	7,549.0	-3,852.4	-824.5	3,852.4	0.00	0.00	
11,700.0	90.00	180.00	7,549.0	-3,952.4	-824.5	3,952.4	0.00	0.00	
11,800.0	90.00	180.00	7,549.0	-4,052.4	-824.5	4,052.4	0.00	0.00	
11,900.0	90.00	180.00	7,549.0	-4,152.4	-824.5	4,152.4	0.00	0.00	
12,000.0	90.00	180.00	7,549.0	-4,252.4	-824.5	4,252.4	0.00	0.00	
12,100.0	90.00	180.00	7,549.0	-4,352.4	-824.5	4,352.4	0.00	0.00	
12,159.1	90.00	180.00	7,549.0	-4,411.4	-824.5	4,411.4	0.00	0.00	TD at 12159.1 - Ione 1A-2H PBHL (460' FSL, 2,

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Ione 1A-2H PBHL (460' I - plan hits target center - Point	0.00	0.00	7,549.0	-4,411.4	-824.5	1,302,521.76	3,211,625.94	40.161330	-104.742830

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site:	NWNE S2-T2N-R66W (Ione)	**North Reference:**	True
Well:	Ione 1A-2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,536.7	4,503.0	Sussex			
4,837.2	4,801.0	Sussex Marker			
5,228.4	5,189.0	Shannon			
6,580.6	6,530.0	Teepee Buttes			
7,289.3	7,225.0	Sharon Springs			
7,302.7	7,237.0	Niobrara			
7,372.8	7,297.0	B Chalk			
7,760.2	7,523.0	Ft. Hayes			
7,858.1	7,544.0	Codell			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
200.0	200.0	0.0	0.0	KOP @ 200'
568.1	567.1	10.7	-21.0	EOB; Inc=7.36°
7,000.7	6,946.6	385.6	-755.2	Start 10° Build @ 7000' MD
7,934.1	7,549.0	-186.4	-824.5	Landing Pt @ 7934' MD; 90°
12,159.1	7,549.0	-4,411.4	-824.5	TD at 12159.1

EnCana Oil & Gas (USA) Inc

DJ Wattenberg
NWNE S2-T2N-R66W (Ione)
Ione 1A-2H
HZ
Plan #1

Anticollision Report

15 August, 2012

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Reference	Plan #1

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** 8/15/2012

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,159.1	Plan #1 (HZ)	MWD	Geolink MWD

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
NWNE S2-T2N-R66W (Ione)						
Ione 1B-2H - HZ - Plan #1	200.0	200.0	8.4	7.7	12.843	CC, ES
Ione 1B-2H - HZ - Plan #1	300.0	300.0	10.0	9.0	9.950	SF
Ione 1C-2H - HZ - Plan #1	200.0	200.0	19.6	18.9	29.967	CC, ES
Ione 1C-2H - HZ - Plan #1	400.0	399.8	26.0	24.6	19.211	SF
Ione 1D-2H - HZ - Plan #1	200.0	200.0	27.9	27.3	42.810	CC, ES
Ione 1D-2H - HZ - Plan #1	500.0	499.5	42.5	40.8	24.990	SF
Ione 1E-2H - HZ - Plan #1	200.0	200.0	39.1	38.5	59.934	CC, ES
Ione 1E-2H - HZ - Plan #1	500.0	498.0	54.9	53.2	32.247	SF
Ione 1F-2H - HZ - Plan #1	200.0	200.0	47.5	46.9	72.776	CC, ES
Ione 1F-2H - HZ - Plan #1	500.0	492.8	75.8	74.1	44.364	SF
Ione 2A-2H - HZ - Plan #1						Out of range
Ione 2B-2H - HZ - Plan #1						Out of range
Ione 2C-2H - HZ - Plan #1						Out of range
Ione 2D-2H - HZ - Plan #1						Out of range
Ione 2E-2H - HZ - Plan #1						Out of range
Ione 2F-2H - HZ - Plan #1						Out of range
Ione 2G-2H - HZ - Plan #1						Out of range
NWSW S2-T2N-R66W (Ione)						
Ione #11-2 (Existing) - DD - Plan #1						Out of range
Ione #12-2B - DD - Plan #1						Out of range
Ione #13 (Existing) - HZ - Plan #1						Out of range
Ione #13-2 - DD - Plan #1						Out of range
Ione #21-2 (Existing) - DD - Plan #1						Out of range
Ione #22-2 (Existing) - DD - Plan #1						Out of range
Ione #23-2 (Existing) - DD - Plan #1						Out of range
Ione #24-2 (Existing) - DD - Plan #1						Out of range
Ione #3 (Existing) - DD - DD						Out of range
Ione #31-2 (Existing) - DD - Plan #1	2,599.0	2,586.2	340.0	328.7	30.115	CC
Ione #31-2 (Existing) - DD - Plan #1	2,700.0	2,686.4	340.3	328.5	28.959	ES
Ione #31-2 (Existing) - DD - Plan #1	8,000.0	7,554.0	424.4	396.5	15.225	SF
Ione #32-2 (Existing) - DD - Plan #1	9,346.9	7,554.0	276.5	230.7	6.034	CC, ES
Ione #32-2 (Existing) - DD - Plan #1	9,400.0	7,554.0	281.5	234.9	6.033	SF
Ione #33-2 (Existing) - DD - Plan #1	10,680.9	7,534.0	239.0	171.0	3.516	CC, ES
Ione #33-2 (Existing) - DD - Plan #1	10,700.0	7,534.0	239.8	171.5	3.511	SF
Ione #34-2 (Existing) - DD - Plan #1	12,159.1	7,525.0	96.0	2.7	1.029	Level 2, CC, ES, SF
Ione #4 (Existing) - DD - Plan #1						Out of range
Ione #42-2 - DD - Plan #1						Out of range
Ione 0-2-2 - DD - Plan #1						Out of range
Ione 0-4-2 - DD - Plan #1						Out of range
Ione 0-6-2 - Wellbore #1 - Plan #1						Out of range
Ione 13-2 - Wellbore #1 - Wellbore #1						Out of range
Ione 23-2 - Wellbore #1 - Wellbore #1						Out of range
Ione 2-4-2 - DD - Plan #1						Out of range
Ione 33-2 - Wellbore #1 - Wellbore #1	10,680.8	7,504.0	239.1	177.7	3.895	CC, ES
Ione 33-2 - Wellbore #1 - Wellbore #1	10,700.0	7,504.0	239.9	178.2	3.887	SF
Ione 43-2 - Wellbore #1 - Wellbore #1						Out of range
Ione 4-4-2 - Wellbore #1 - Plan #1	9,995.2	7,982.7	491.8	413.9	6.307	CC
Ione 4-4-2 - Wellbore #1 - Plan #1	10,000.0	7,982.7	491.9	413.8	6.301	ES, SF
Ione 6-4-2 (Existing) - Existing - Existing						Out of range
Ione 6-8-2 (Existing) - Existing - Existing						Out of range
Ione 8-4-2 (Existing) - Existing - Existing						Out of range

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
S2-T2N-R67W (Echevarria)						
Ione 44-2 (Existing) - DD - DD						Out of range
Ione 44-2 (Existing) - DD - Plan #1						Out of range
Ione 44-2 (Existing) - DD - Plan #2						Out of range

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWNE S2-T2N-R66W (Ione) - Ione 1B-2H - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.06	0.0	8.4	8.4				
100.0	100.0	100.0	100.0	0.2	0.2	90.06	0.0	8.4	8.4	8.1	0.30	27.605	
200.0	200.0	200.0	200.0	0.3	0.3	90.06	0.0	8.4	8.4	7.7	0.65	12.843	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	157.55	0.0	8.4	10.0	9.0	1.00	9.950	SF
400.0	399.8	399.8	399.8	0.7	0.7	165.21	0.0	8.4	14.9	13.6	1.35	11.063	
500.0	499.5	500.1	500.1	0.9	0.9	168.08	1.4	7.3	22.1	20.4	1.70	12.978	
600.0	598.7	600.5	600.4	1.2	1.0	166.77	5.5	4.1	29.6	27.6	2.06	14.403	
700.0	697.9	700.5	700.1	1.5	1.2	163.72	11.7	-0.7	36.0	33.6	2.43	14.812	
800.0	797.1	800.3	799.5	1.7	1.4	161.48	18.0	-5.6	42.4	39.6	2.82	15.051	
900.0	896.3	900.1	899.0	2.0	1.7	159.82	24.2	-10.5	48.8	45.6	3.21	15.214	
1,000.0	995.4	999.9	998.5	2.3	1.9	158.55	30.5	-15.4	55.3	51.7	3.61	15.328	
1,100.0	1,094.6	1,099.7	1,097.9	2.6	2.1	157.55	36.8	-20.3	61.7	57.7	4.01	15.410	
1,200.0	1,193.8	1,199.5	1,197.4	2.8	2.3	156.73	43.0	-25.2	68.2	63.8	4.41	15.470	
1,300.0	1,293.0	1,299.2	1,296.9	3.1	2.5	156.06	49.3	-30.1	74.7	69.9	4.82	15.514	
1,400.0	1,392.1	1,399.0	1,396.3	3.4	2.7	155.50	55.6	-35.0	81.2	76.0	5.22	15.549	
1,500.0	1,491.3	1,498.8	1,495.8	3.7	3.0	155.02	61.9	-39.8	87.7	82.1	5.63	15.575	
1,600.0	1,590.5	1,598.6	1,595.3	4.0	3.2	154.60	68.1	-44.7	94.2	88.2	6.04	15.596	
1,700.0	1,689.7	1,698.4	1,694.7	4.3	3.4	154.24	74.4	-49.6	100.7	94.3	6.45	15.612	
1,800.0	1,788.8	1,798.2	1,794.2	4.5	3.6	153.92	80.7	-54.5	107.3	100.4	6.87	15.625	
1,900.0	1,888.0	1,898.0	1,893.7	4.8	3.8	153.64	86.9	-59.4	113.8	106.5	7.28	15.636	
2,000.0	1,987.2	1,997.7	1,993.1	5.1	4.1	153.39	93.2	-64.3	120.3	112.6	7.69	15.644	
2,100.0	2,086.4	2,097.5	2,092.6	5.4	4.3	153.17	99.5	-69.2	126.8	118.7	8.10	15.651	
2,200.0	2,185.5	2,197.3	2,192.1	5.7	4.5	152.96	105.7	-74.1	133.4	124.9	8.52	15.657	
2,300.0	2,284.7	2,297.1	2,291.6	6.0	4.7	152.78	112.0	-79.0	139.9	131.0	8.93	15.662	
2,400.0	2,383.9	2,396.9	2,391.0	6.2	5.0	152.61	118.3	-83.8	146.4	137.1	9.35	15.666	
2,500.0	2,483.1	2,496.7	2,490.5	6.5	5.2	152.46	124.5	-88.7	153.0	143.2	9.76	15.669	
2,600.0	2,582.2	2,596.5	2,590.0	6.8	5.4	152.32	130.8	-93.6	159.5	149.3	10.18	15.672	
2,700.0	2,681.4	2,696.2	2,689.4	7.1	5.6	152.19	137.1	-98.5	166.1	155.5	10.59	15.674	
2,800.0	2,780.6	2,796.0	2,788.9	7.4	5.8	152.07	143.4	-103.4	172.6	161.6	11.01	15.676	
2,900.0	2,879.8	2,895.8	2,888.4	7.7	6.1	151.96	149.6	-108.3	179.1	167.7	11.43	15.678	
3,000.0	2,978.9	2,995.6	2,987.8	7.9	6.3	151.86	155.9	-113.2	185.7	173.8	11.84	15.679	
3,100.0	3,078.1	3,095.4	3,087.3	8.2	6.5	151.76	162.2	-118.1	192.2	179.9	12.26	15.681	
3,200.0	3,177.3	3,195.2	3,186.8	8.5	6.7	151.67	168.4	-122.9	198.7	186.1	12.67	15.682	
3,300.0	3,276.5	3,295.0	3,286.2	8.8	6.9	151.59	174.7	-127.8	205.3	192.2	13.09	15.682	
3,400.0	3,375.6	3,394.7	3,385.7	9.1	7.2	151.51	181.0	-132.7	211.8	198.3	13.51	15.683	
3,500.0	3,474.8	3,494.5	3,485.2	9.4	7.4	151.43	187.2	-137.6	218.4	204.4	13.92	15.684	
3,600.0	3,574.0	3,594.3	3,584.6	9.7	7.6	151.36	193.5	-142.5	224.9	210.6	14.34	15.684	
3,700.0	3,673.2	3,694.1	3,684.1	9.9	7.8	151.30	199.8	-147.4	231.4	216.7	14.76	15.684	
3,800.0	3,772.3	3,793.9	3,783.6	10.2	8.1	151.24	206.0	-152.3	238.0	222.8	15.17	15.685	
3,900.0	3,871.5	3,893.7	3,883.0	10.5	8.3	151.18	212.3	-157.2	244.5	228.9	15.59	15.685	
4,000.0	3,970.7	3,993.5	3,982.5	10.8	8.5	151.12	218.6	-162.0	251.1	235.1	16.01	15.685	
4,100.0	4,069.9	4,093.2	4,082.0	11.1	8.7	151.07	224.9	-166.9	257.6	241.2	16.42	15.685	
4,200.0	4,169.0	4,193.0	4,181.5	11.4	9.0	151.02	231.1	-171.8	264.2	247.3	16.84	15.685	
4,300.0	4,268.2	4,292.8	4,280.9	11.6	9.2	150.97	237.4	-176.7	270.7	253.4	17.26	15.685	
4,400.0	4,367.4	4,392.6	4,380.4	11.9	9.4	150.92	243.7	-181.6	277.2	259.6	17.68	15.685	
4,500.0	4,466.6	4,492.4	4,479.9	12.2	9.6	150.88	249.9	-186.5	283.8	265.7	18.09	15.685	
4,600.0	4,565.7	4,592.2	4,579.3	12.5	9.8	150.84	256.2	-191.4	290.3	271.8	18.51	15.685	
4,700.0	4,664.9	4,692.0	4,678.8	12.8	10.1	150.80	262.5	-196.3	296.9	277.9	18.93	15.685	
4,800.0	4,764.1	4,791.7	4,778.3	13.1	10.3	150.76	268.7	-201.1	303.4	284.1	19.34	15.685	
4,900.0	4,863.3	4,891.5	4,877.7	13.4	10.5	150.73	275.0	-206.0	310.0	290.2	19.76	15.685	
5,000.0	4,962.4	4,991.3	4,977.2	13.6	10.7	150.69	281.3	-210.9	316.5	296.3	20.18	15.685	
5,100.0	5,061.6	5,091.1	5,076.7	13.9	11.0	150.66	287.5	-215.8	323.0	302.5	20.60	15.685	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWNE S2-T2N-R66W (Ione) - Ione 1B-2H - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,160.8	5,190.9	5,176.1	14.2	11.2	150.62	293.8	-220.7	329.6	308.6	21.01	15.685	
5,300.0	5,260.0	5,290.7	5,275.6	14.5	11.4	150.59	300.1	-225.6	336.1	314.7	21.43	15.685	
5,400.0	5,359.2	5,390.4	5,375.1	14.8	11.6	150.56	306.4	-230.5	342.7	320.8	21.85	15.684	
5,500.0	5,458.3	5,490.2	5,474.5	15.1	11.8	150.54	312.6	-235.4	349.2	327.0	22.27	15.684	
5,600.0	5,557.5	5,590.0	5,574.0	15.3	12.1	150.51	318.9	-240.2	355.8	333.1	22.68	15.684	
5,700.0	5,656.7	5,689.8	5,673.5	15.6	12.3	150.48	325.2	-245.1	362.3	339.2	23.10	15.684	
5,800.0	5,755.9	5,789.6	5,772.9	15.9	12.5	150.46	331.4	-250.0	368.9	345.3	23.52	15.684	
5,900.0	5,855.0	5,889.4	5,872.4	16.2	12.7	150.43	337.7	-254.9	375.4	351.5	23.94	15.684	
6,000.0	5,954.2	5,989.2	5,971.9	16.5	13.0	150.41	344.0	-259.8	381.9	357.6	24.35	15.683	
6,100.0	6,053.4	6,088.9	6,071.4	16.8	13.2	150.38	350.2	-264.7	388.5	363.7	24.77	15.683	
6,200.0	6,152.6	6,188.7	6,170.8	17.1	13.4	150.36	356.5	-269.6	395.0	369.9	25.19	15.683	
6,300.0	6,251.7	6,288.5	6,270.3	17.3	13.6	150.34	362.8	-274.5	401.6	376.0	25.61	15.683	
6,400.0	6,350.9	6,388.3	6,369.8	17.6	13.8	150.32	369.0	-279.4	408.1	382.1	26.02	15.683	
6,500.0	6,450.1	6,488.1	6,469.2	17.9	14.1	150.30	375.3	-284.2	414.7	388.2	26.44	15.683	
6,600.0	6,549.3	6,587.9	6,568.7	18.2	14.3	150.28	381.6	-289.1	421.2	394.4	26.86	15.682	
6,700.0	6,648.4	6,687.7	6,668.2	18.5	14.5	150.26	387.9	-294.0	427.8	400.5	27.28	15.682	
6,800.0	6,747.6	6,789.8	6,770.1	18.8	14.7	151.04	388.2	-299.0	434.1	406.6	27.48	15.793	
6,900.0	6,846.8	6,887.7	6,866.4	19.0	14.7	153.94	371.8	-303.8	440.4	413.2	27.21	16.187	
7,000.0	6,946.0	6,976.0	6,949.6	19.3	14.6	158.22	343.2	-307.8	449.3	422.6	26.66	16.851	
7,100.0	7,045.1	7,056.3	7,020.8	19.5	14.5	-124.40	306.3	-311.3	462.2	436.2	25.96	17.801	
7,200.0	7,142.3	7,133.0	7,083.4	19.6	14.3	-96.16	262.1	-314.4	477.7	452.2	25.50	18.738	
7,300.0	7,234.6	7,207.0	7,137.6	19.7	14.2	-84.10	211.9	-317.1	494.5	469.2	25.27	19.569	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWNE S2-T2N-R66W (Ione) - Ione 1C-2H - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.05	0.0	19.6	19.6				
100.0	100.0	100.0	100.0	0.2	0.2	90.05	0.0	19.6	19.6	19.3	0.30	64.411	
200.0	200.0	200.0	200.0	0.3	0.3	90.05	0.0	19.6	19.6	18.9	0.65	29.967	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	155.14	0.0	19.6	21.1	20.1	1.00	21.086	
400.0	399.8	399.8	399.8	0.7	0.7	159.96	0.0	19.6	26.0	24.6	1.35	19.211	SF
500.0	499.5	499.5	499.5	0.9	0.8	164.91	0.0	19.6	34.3	32.6	1.70	20.172	
600.0	598.7	598.7	598.7	1.2	1.0	168.78	0.0	19.6	46.0	44.0	2.05	22.485	
700.0	697.9	697.9	697.9	1.5	1.2	171.22	0.0	19.6	58.6	56.2	2.39	24.498	
800.0	797.1	797.1	797.1	1.7	1.4	172.79	0.0	19.6	71.3	68.6	2.74	26.029	
900.0	896.3	896.3	896.3	2.0	1.5	173.89	0.0	19.6	84.0	81.0	3.09	27.228	
1,000.0	995.4	995.4	995.4	2.3	1.7	174.69	0.0	19.6	96.8	93.4	3.43	28.192	
1,100.0	1,094.6	1,094.6	1,094.6	2.6	1.9	175.31	0.0	19.6	109.6	105.8	3.78	28.983	
1,200.0	1,193.8	1,195.9	1,195.9	2.8	2.1	175.17	1.6	19.3	121.5	117.4	4.13	29.401	
1,300.0	1,293.0	1,297.6	1,297.5	3.1	2.2	173.70	6.7	18.5	131.7	127.2	4.50	29.289	
1,400.0	1,392.1	1,397.2	1,396.8	3.4	2.4	171.82	13.6	17.4	141.0	136.2	4.86	28.993	
1,500.0	1,491.3	1,496.6	1,496.0	3.7	2.6	170.17	20.4	16.3	150.5	145.3	5.24	28.727	
1,600.0	1,590.5	1,596.1	1,595.2	4.0	2.8	168.72	27.3	15.2	160.1	154.5	5.62	28.487	
1,700.0	1,689.7	1,695.5	1,694.4	4.3	3.0	167.43	34.1	14.1	169.8	163.8	6.01	28.268	
1,800.0	1,788.8	1,795.0	1,793.6	4.5	3.2	166.28	41.0	13.0	179.6	173.2	6.40	28.069	
1,900.0	1,888.0	1,894.5	1,892.9	4.8	3.4	165.25	47.8	11.9	189.4	182.6	6.79	27.887	
2,000.0	1,987.2	1,993.9	1,992.1	5.1	3.6	164.32	54.7	10.8	199.3	192.1	7.19	27.720	
2,100.0	2,086.4	2,093.4	2,091.3	5.4	3.8	163.48	61.5	9.7	209.2	201.6	7.59	27.566	
2,200.0	2,185.5	2,192.8	2,190.5	5.7	4.0	162.72	68.3	8.6	219.2	211.2	7.99	27.425	
2,300.0	2,284.7	2,292.3	2,289.7	6.0	4.2	162.02	75.2	7.5	229.2	220.8	8.40	27.295	
2,400.0	2,383.9	2,391.8	2,388.9	6.2	4.4	161.38	82.0	6.4	239.2	230.4	8.80	27.175	
2,500.0	2,483.1	2,491.2	2,488.2	6.5	4.6	160.79	88.9	5.3	249.3	240.1	9.21	27.064	
2,600.0	2,582.2	2,590.7	2,587.4	6.8	4.8	160.25	95.7	4.2	259.3	249.7	9.62	26.961	
2,700.0	2,681.4	2,690.2	2,686.6	7.1	5.0	159.75	102.6	3.1	269.5	259.4	10.03	26.865	
2,800.0	2,780.6	2,789.6	2,785.8	7.4	5.2	159.29	109.4	2.0	279.6	269.1	10.44	26.775	
2,900.0	2,879.8	2,889.1	2,885.0	7.7	5.4	158.85	116.3	0.9	289.7	278.9	10.85	26.692	
3,000.0	2,978.9	2,988.5	2,984.3	7.9	5.7	158.45	123.1	-0.2	299.9	288.6	11.27	26.614	
3,100.0	3,078.1	3,088.0	3,083.5	8.2	5.9	158.07	130.0	-1.3	310.1	298.4	11.68	26.541	
3,200.0	3,177.3	3,187.5	3,182.7	8.5	6.1	157.72	136.8	-2.4	320.2	308.1	12.10	26.472	
3,300.0	3,276.5	3,286.9	3,281.9	8.8	6.3	157.39	143.7	-3.5	330.4	317.9	12.51	26.408	
3,400.0	3,375.6	3,386.4	3,381.1	9.1	6.5	157.08	150.5	-4.6	340.6	327.7	12.93	26.347	
3,500.0	3,474.8	3,485.8	3,480.4	9.4	6.7	156.78	157.4	-5.7	350.9	337.5	13.35	26.290	
3,600.0	3,574.0	3,585.3	3,579.6	9.7	6.9	156.51	164.2	-6.8	361.1	347.3	13.76	26.236	
3,700.0	3,673.2	3,684.8	3,678.8	9.9	7.1	156.25	171.1	-7.9	371.3	357.1	14.18	26.185	
3,800.0	3,772.3	3,784.2	3,778.0	10.2	7.3	156.00	177.9	-9.0	381.5	366.9	14.60	26.137	
3,900.0	3,871.5	3,883.7	3,877.2	10.5	7.5	155.76	184.8	-10.1	391.8	376.8	15.02	26.091	
4,000.0	3,970.7	3,983.2	3,976.5	10.8	7.7	155.54	191.6	-11.2	402.0	386.6	15.43	26.048	
4,100.0	4,069.9	4,082.6	4,075.7	11.1	7.9	155.33	198.5	-12.3	412.3	396.4	15.85	26.007	
4,200.0	4,169.0	4,182.1	4,174.9	11.4	8.2	155.13	205.3	-13.4	422.6	406.3	16.27	25.967	
4,300.0	4,268.2	4,281.5	4,274.1	11.6	8.4	154.94	212.2	-14.5	432.8	416.1	16.69	25.930	
4,400.0	4,367.4	4,381.0	4,373.3	11.9	8.6	154.75	219.0	-15.6	443.1	426.0	17.11	25.895	
4,500.0	4,466.6	4,480.5	4,472.6	12.2	8.8	154.58	225.9	-16.7	453.4	435.8	17.53	25.861	
4,600.0	4,565.7	4,579.9	4,571.8	12.5	9.0	154.41	232.7	-17.8	463.7	445.7	17.95	25.828	
4,700.0	4,664.9	4,679.4	4,671.0	12.8	9.2	154.25	239.5	-18.9	473.9	455.6	18.37	25.797	
4,800.0	4,764.1	4,778.8	4,770.2	13.1	9.4	154.10	246.4	-20.0	484.2	465.4	18.79	25.767	
4,900.0	4,863.3	4,878.3	4,869.4	13.4	9.6	153.96	253.2	-21.1	494.5	475.3	19.21	25.739	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWNE S2-T2N-R66W (Ione) - Ione 1D-2H - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.05	0.0	27.9	27.9				
100.0	100.0	100.0	100.0	0.2	0.2	90.05	0.0	27.9	27.9	27.6	0.30	92.016	
200.0	200.0	200.0	200.0	0.3	0.3	90.05	0.0	27.9	27.9	27.3	0.65	42.810	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	154.53	0.0	27.9	29.5	28.5	1.00	29.446	
400.0	399.8	399.8	399.8	0.7	0.7	158.25	0.0	27.9	34.3	33.0	1.35	25.367	
500.0	499.5	499.5	499.5	0.9	0.8	162.56	0.0	27.9	42.5	40.8	1.70	24.990	SF
600.0	598.7	598.7	598.7	1.2	1.0	166.33	0.0	27.9	54.1	52.1	2.05	26.409	
700.0	697.9	696.7	696.7	1.5	1.2	167.70	1.1	29.1	67.5	65.1	2.40	28.133	
800.0	797.1	794.3	794.1	1.7	1.4	166.58	4.6	32.7	82.6	79.8	2.76	29.948	
900.0	896.3	891.4	890.9	2.0	1.6	164.22	10.3	38.5	99.6	96.4	3.13	31.767	
1,000.0	995.4	989.7	988.8	2.3	1.8	162.08	16.8	45.2	117.3	113.8	3.52	33.296	
1,100.0	1,094.6	1,088.1	1,086.7	2.6	2.0	160.50	23.3	51.9	135.2	131.2	3.92	34.508	
1,200.0	1,193.8	1,186.4	1,184.6	2.8	2.2	159.29	29.9	58.6	153.1	148.8	4.31	35.490	
1,300.0	1,293.0	1,284.7	1,282.4	3.1	2.4	158.34	36.4	65.3	171.1	166.4	4.71	36.299	
1,400.0	1,392.1	1,383.1	1,380.3	3.4	2.7	157.56	42.9	72.1	189.1	184.0	5.11	36.977	
1,500.0	1,491.3	1,481.4	1,478.2	3.7	2.9	156.92	49.5	78.8	207.2	201.6	5.52	37.553	
1,600.0	1,590.5	1,579.7	1,576.1	4.0	3.1	156.39	56.0	85.5	225.2	219.3	5.92	38.048	
1,700.0	1,689.7	1,678.1	1,674.0	4.3	3.3	155.93	62.5	92.2	243.3	237.0	6.32	38.478	
1,800.0	1,788.8	1,776.4	1,771.9	4.5	3.6	155.54	69.0	98.9	261.4	254.7	6.73	38.855	
1,900.0	1,888.0	1,874.7	1,869.8	4.8	3.8	155.20	75.6	105.6	279.5	272.4	7.13	39.187	
2,000.0	1,987.2	1,973.1	1,967.7	5.1	4.0	154.90	82.1	112.3	297.6	290.1	7.54	39.483	
2,100.0	2,086.4	2,071.4	2,065.5	5.4	4.3	154.63	88.6	119.0	315.8	307.8	7.94	39.748	
2,200.0	2,185.5	2,169.7	2,163.4	5.7	4.5	154.39	95.2	125.7	333.9	325.5	8.35	39.987	
2,300.0	2,284.7	2,268.1	2,261.3	6.0	4.7	154.18	101.7	132.4	352.0	343.3	8.76	40.203	
2,400.0	2,383.9	2,366.4	2,359.2	6.2	5.0	153.99	108.2	139.1	370.2	361.0	9.16	40.399	
2,500.0	2,483.1	2,464.7	2,457.1	6.5	5.2	153.81	114.8	145.8	388.3	378.8	9.57	40.579	
2,600.0	2,582.2	2,563.1	2,555.0	6.8	5.4	153.65	121.3	152.5	406.5	396.5	9.98	40.743	
2,700.0	2,681.4	2,661.4	2,652.9	7.1	5.7	153.51	127.8	159.3	424.6	414.2	10.38	40.895	
2,800.0	2,780.6	2,759.7	2,750.7	7.4	5.9	153.38	134.4	166.0	442.8	432.0	10.79	41.034	
2,900.0	2,879.8	2,858.1	2,848.6	7.7	6.1	153.25	140.9	172.7	460.9	449.7	11.20	41.163	
3,000.0	2,978.9	2,956.4	2,946.5	7.9	6.4	153.14	147.4	179.4	479.1	467.5	11.60	41.284	
3,100.0	3,078.1	3,054.7	3,044.4	8.2	6.6	153.03	153.9	186.1	497.2	485.2	12.01	41.395	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWNE S2-T2N-R66W (Ione) - Ione 1E-2H - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.05	0.0	39.1	39.1				
100.0	100.0	100.0	100.0	0.2	0.2	90.05	0.0	39.1	39.1	38.8	0.30	128.823	
200.0	200.0	200.0	200.0	0.3	0.3	90.05	0.0	39.1	39.1	38.5	0.65	59.934	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	154.10	0.0	39.1	40.7	39.7	1.00	40.595	
400.0	399.8	399.8	399.8	0.7	0.7	156.95	0.0	39.1	45.5	44.1	1.35	33.594	
500.0	499.5	498.0	498.0	0.9	0.8	159.38	0.8	40.6	54.9	53.2	1.70	32.247	SF
600.0	598.7	595.2	595.0	1.2	1.0	160.19	3.4	44.8	70.2	68.1	2.06	34.087	
700.0	697.9	691.3	690.8	1.5	1.2	159.57	7.7	51.8	88.8	86.4	2.43	36.577	
800.0	797.1	787.9	786.8	1.7	1.5	158.24	13.4	61.1	109.7	106.9	2.81	39.056	
900.0	896.3	885.6	883.8	2.0	1.7	157.23	19.4	70.9	130.9	127.7	3.20	40.957	
1,000.0	995.4	983.3	980.8	2.3	1.9	156.49	25.4	80.7	152.1	148.6	3.59	42.420	
1,100.0	1,094.6	1,081.0	1,077.8	2.6	2.2	155.94	31.3	90.6	173.4	169.4	3.98	43.579	
1,200.0	1,193.8	1,178.7	1,174.8	2.8	2.4	155.51	37.3	100.4	194.7	190.3	4.37	44.517	
1,300.0	1,293.0	1,276.4	1,271.9	3.1	2.7	155.16	43.3	110.2	216.0	211.2	4.77	45.292	
1,400.0	1,392.1	1,374.1	1,368.9	3.4	3.0	154.87	49.3	120.0	237.3	232.1	5.17	45.943	
1,500.0	1,491.3	1,471.8	1,465.9	3.7	3.2	154.64	55.3	129.8	258.6	253.0	5.56	46.496	
1,600.0	1,590.5	1,569.5	1,562.9	4.0	3.5	154.43	61.2	139.6	279.9	274.0	5.96	46.973	
1,700.0	1,689.7	1,667.2	1,660.0	4.3	3.7	154.26	67.2	149.4	301.2	294.9	6.36	47.387	
1,800.0	1,788.8	1,764.9	1,757.0	4.5	4.0	154.11	73.2	159.2	322.5	315.8	6.75	47.751	
1,900.0	1,888.0	1,862.6	1,854.0	4.8	4.2	153.98	79.2	169.0	343.9	336.7	7.15	48.073	
2,000.0	1,987.2	1,960.3	1,951.0	5.1	4.5	153.86	85.2	178.8	365.2	357.6	7.55	48.359	
2,100.0	2,086.4	2,058.0	2,048.0	5.4	4.8	153.76	91.2	188.6	386.5	378.6	7.95	48.616	
2,200.0	2,185.5	2,155.7	2,145.1	5.7	5.0	153.67	97.1	198.4	407.8	399.5	8.35	48.848	
2,300.0	2,284.7	2,253.4	2,242.1	6.0	5.3	153.58	103.1	208.2	429.1	420.4	8.75	49.057	
2,400.0	2,383.9	2,351.1	2,339.1	6.2	5.6	153.51	109.1	218.0	450.5	441.3	9.15	49.248	
2,500.0	2,483.1	2,448.8	2,436.1	6.5	5.8	153.44	115.1	227.9	471.8	462.2	9.55	49.423	
2,600.0	2,582.2	2,546.5	2,533.1	6.8	6.1	153.38	121.1	237.7	493.1	483.2	9.95	49.583	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWNE S2-T2N-R66W (Ione) - Ione 1F-2H - HZ - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance 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	47.5	47.5				
100.0	100.0	100.0	100.0	0.2	0.2	90.00	0.0	47.5	47.5	47.2	0.30	156.427	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	47.5	47.5	46.9	0.65	72.776	CC, ES
300.0	300.0	298.4	298.4	0.5	0.5	153.12	0.6	49.1	50.7	49.7	1.00	50.664	
400.0	399.8	396.2	396.0	0.7	0.7	153.49	2.4	53.8	60.1	58.8	1.35	44.499	
500.0	499.5	492.8	492.3	0.9	0.9	153.89	5.4	61.4	75.8	74.1	1.71	44.364	SF
600.0	598.7	587.8	586.6	1.2	1.2	154.21	9.5	71.9	97.4	95.3	2.07	46.961	
700.0	697.9	681.2	679.0	1.5	1.5	154.07	14.6	85.1	122.7	120.3	2.45	50.075	
800.0	797.1	776.2	772.4	1.7	1.8	153.62	20.6	100.6	150.2	147.4	2.83	52.997	
900.0	896.3	872.3	867.0	2.0	2.1	153.28	26.8	116.5	177.9	174.6	3.22	55.181	
1,000.0	995.4	968.4	961.6	2.3	2.4	153.03	33.0	132.4	205.5	201.9	3.61	56.867	
1,100.0	1,094.6	1,064.5	1,056.2	2.6	2.8	152.84	39.1	148.3	233.2	229.2	4.01	58.206	
1,200.0	1,193.8	1,160.6	1,150.7	2.8	3.1	152.70	45.3	164.1	260.9	256.5	4.40	59.294	
1,300.0	1,293.0	1,256.7	1,245.3	3.1	3.4	152.58	51.5	180.0	288.5	283.7	4.79	60.195	
1,400.0	1,392.1	1,352.8	1,339.9	3.4	3.8	152.48	57.7	195.9	316.2	311.0	5.19	60.953	
1,500.0	1,491.3	1,448.9	1,434.5	3.7	4.1	152.39	63.8	211.7	343.9	338.3	5.58	61.599	
1,600.0	1,590.5	1,544.9	1,529.0	4.0	4.5	152.32	70.0	227.6	371.5	365.6	5.98	62.156	
1,700.0	1,689.7	1,641.0	1,623.6	4.3	4.8	152.26	76.2	243.5	399.2	392.8	6.37	62.642	
1,800.0	1,788.8	1,737.1	1,718.2	4.5	5.1	152.21	82.3	259.4	426.9	420.1	6.77	63.069	
1,900.0	1,888.0	1,833.2	1,812.8	4.8	5.5	152.16	88.5	275.2	454.5	447.4	7.16	63.447	
2,000.0	1,987.2	1,929.3	1,907.3	5.1	5.8	152.12	94.7	291.1	482.2	474.7	7.56	63.784	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWSW S2-T2N-R66W (Ione) - Ione #31-2 (Existing) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	5.0	5.0	0.0	0.0	-113.10	-173.8	-407.4	442.9				
100.0	100.0	105.0	105.0	0.2	0.2	-113.10	-173.8	-407.4	442.9	442.6	0.31	1,433.808	
200.0	200.0	205.0	205.0	0.3	0.3	-113.10	-173.8	-407.4	442.9	442.3	0.66	673.168	
300.0	300.0	305.0	305.0	0.5	0.5	-50.34	-173.8	-407.4	441.8	440.8	1.01	437.852	
400.0	399.8	404.8	404.8	0.7	0.7	-50.91	-173.8	-407.4	438.5	437.1	1.37	320.094	
500.0	499.5	504.5	504.5	0.9	0.9	-51.89	-173.8	-407.4	433.0	431.3	1.75	247.460	
600.0	598.7	603.7	603.7	1.2	1.0	-53.24	-173.8	-407.4	425.7	423.6	2.15	197.691	
700.0	697.9	702.9	702.9	1.5	1.2	-54.63	-173.8	-407.4	418.1	415.6	2.57	162.740	
800.0	797.1	802.1	802.1	1.7	1.4	-56.08	-173.8	-407.4	410.8	407.8	2.99	137.217	
900.0	896.3	901.3	901.3	2.0	1.5	-57.58	-173.8	-407.4	403.8	400.3	3.43	117.865	
1,000.0	995.4	1,000.4	1,000.4	2.3	1.7	-59.14	-173.8	-407.4	397.0	393.1	3.86	102.750	
1,100.0	1,094.6	1,099.6	1,099.6	2.6	1.9	-60.74	-173.8	-407.4	390.5	386.2	4.31	90.662	
1,200.0	1,193.8	1,198.8	1,198.8	2.8	2.1	-62.40	-173.8	-407.4	384.4	379.6	4.76	80.809	
1,300.0	1,293.0	1,298.0	1,298.0	3.1	2.2	-64.10	-173.8	-407.4	378.6	373.4	5.21	72.651	
1,400.0	1,392.1	1,397.1	1,397.1	3.4	2.4	-65.86	-173.8	-407.4	373.1	367.5	5.67	65.811	
1,500.0	1,491.3	1,496.3	1,496.3	3.7	2.6	-67.67	-173.8	-407.4	368.0	361.9	6.13	60.014	
1,600.0	1,590.5	1,595.5	1,595.5	4.0	2.8	-69.53	-173.8	-407.4	363.3	356.7	6.60	55.060	
1,700.0	1,689.7	1,694.7	1,694.7	4.3	2.9	-71.43	-173.8	-407.4	359.0	351.9	7.07	50.794	
1,800.0	1,788.8	1,793.8	1,793.8	4.5	3.1	-73.37	-173.8	-407.4	355.1	347.6	7.54	47.100	
1,900.0	1,888.0	1,893.0	1,893.0	4.8	3.3	-75.36	-173.8	-407.4	351.6	343.6	8.01	43.885	
2,000.0	1,987.2	1,992.2	1,992.2	5.1	3.5	-77.38	-173.8	-407.4	348.6	340.1	8.49	41.076	
2,100.0	2,086.4	2,091.4	2,091.4	5.4	3.6	-79.44	-173.8	-407.4	346.0	337.0	8.96	38.615	
2,200.0	2,185.5	2,190.5	2,190.5	5.7	3.8	-81.52	-173.8	-407.4	343.8	334.4	9.43	36.453	
2,300.0	2,284.7	2,289.7	2,289.7	6.0	4.0	-83.62	-173.8	-407.4	342.2	332.3	9.90	34.551	
2,400.0	2,383.9	2,388.9	2,388.9	6.2	4.1	-85.75	-173.8	-407.4	341.0	330.6	10.37	32.877	
2,500.0	2,483.1	2,488.1	2,488.1	6.5	4.3	-87.88	-173.8	-407.4	340.3	329.4	10.84	31.402	
2,599.0	2,581.2	2,586.2	2,586.2	6.8	4.5	-90.00	-173.8	-407.4	340.0	328.7	11.29	30.115 CC	
2,600.0	2,582.2	2,587.2	2,587.2	6.8	4.5	-90.02	-173.8	-407.4	340.0	328.7	11.30	30.102	
2,700.0	2,681.4	2,686.4	2,686.4	7.1	4.7	-92.16	-173.8	-407.4	340.3	328.5	11.75	28.959 ES	
2,800.0	2,780.6	2,785.6	2,785.6	7.4	4.8	-94.30	-173.8	-407.4	341.0	328.8	12.20	27.954	
2,900.0	2,879.8	2,884.8	2,884.8	7.7	5.0	-96.42	-173.8	-407.4	342.2	329.6	12.64	27.073	
3,000.0	2,978.9	2,983.9	2,983.9	7.9	5.2	-98.52	-173.8	-407.4	343.9	330.8	13.07	26.301	
3,100.0	3,078.1	3,083.1	3,083.1	8.2	5.4	-100.61	-173.8	-407.4	346.0	332.5	13.50	25.628	
3,200.0	3,177.3	3,182.3	3,182.3	8.5	5.5	-102.66	-173.8	-407.4	348.6	334.7	13.92	25.044	
3,300.0	3,276.5	3,281.5	3,281.5	8.8	5.7	-104.68	-173.8	-407.4	351.7	337.4	14.33	24.538	
3,400.0	3,375.6	3,380.6	3,380.6	9.1	5.9	-106.67	-173.8	-407.4	355.2	340.4	14.74	24.104	
3,500.0	3,474.8	3,479.8	3,479.8	9.4	6.0	-108.61	-173.8	-407.4	359.1	344.0	15.13	23.733	
3,600.0	3,574.0	3,579.0	3,579.0	9.7	6.2	-110.51	-173.8	-407.4	363.4	347.9	15.52	23.419	
3,700.0	3,673.2	3,678.2	3,678.2	9.9	6.4	-112.37	-173.8	-407.4	368.1	352.2	15.90	23.157	
3,800.0	3,772.3	3,777.3	3,777.3	10.2	6.6	-114.17	-173.8	-407.4	373.2	357.0	16.27	22.940	
3,900.0	3,871.5	3,876.5	3,876.5	10.5	6.7	-115.93	-173.8	-407.4	378.7	362.1	16.64	22.765	
4,000.0	3,970.7	3,975.7	3,975.7	10.8	6.9	-117.64	-173.8	-407.4	384.5	367.5	16.99	22.626	
4,100.0	4,069.9	4,074.9	4,074.9	11.1	7.1	-119.29	-173.8	-407.4	390.7	373.3	17.35	22.520	
4,200.0	4,169.0	4,174.0	4,174.0	11.4	7.3	-120.90	-173.8	-407.4	397.1	379.4	17.69	22.444	
4,300.0	4,268.2	4,273.2	4,273.2	11.6	7.4	-122.45	-173.8	-407.4	403.9	385.9	18.04	22.394	
4,400.0	4,367.4	4,372.4	4,372.4	11.9	7.6	-123.95	-173.8	-407.4	411.0	392.6	18.37	22.367	
4,500.0	4,466.6	4,471.6	4,471.6	12.2	7.8	-125.39	-173.8	-407.4	418.3	399.6	18.71	22.360	
4,600.0	4,565.7	4,570.7	4,570.7	12.5	8.0	-126.79	-173.8	-407.4	425.9	406.8	19.04	22.372	
4,700.0	4,664.9	4,669.9	4,669.9	12.8	8.1	-128.14	-173.8	-407.4	433.7	414.3	19.36	22.401	
4,800.0	4,764.1	4,769.1	4,769.1	13.1	8.3	-129.44	-173.8	-407.4	441.8	422.1	19.68	22.443	
4,900.0	4,863.3	4,868.3	4,868.3	13.4	8.5	-130.70	-173.8	-407.4	450.1	430.1	20.00	22.498	
5,000.0	4,962.4	4,967.4	4,967.4	13.6	8.6	-131.90	-173.8	-407.4	458.6	438.2	20.32	22.564	

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

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWSW S2-T2N-R66W (Ione) - Ione #31-2 (Existing) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,100.0	5,061.6	5,066.6	5,066.6	13.9	8.8	-133.07	-173.8	-407.4	467.3	446.6	20.64	22.640	
5,200.0	5,160.8	5,165.8	5,165.8	14.2	9.0	-134.19	-173.8	-407.4	476.1	455.2	20.95	22.724	
5,300.0	5,260.0	5,265.0	5,265.0	14.5	9.2	-135.27	-173.8	-407.4	485.2	463.9	21.27	22.816	
5,400.0	5,359.2	5,364.2	5,364.2	14.8	9.3	-136.31	-173.8	-407.4	494.4	472.8	21.58	22.913	
7,700.0	7,502.2	7,507.2	7,507.2	19.7	13.1	-79.69	-173.8	-407.4	464.4	438.3	26.14	17.766	
7,800.0	7,533.5	7,538.5	7,538.5	19.9	13.1	-86.57	-173.8	-407.4	432.3	405.6	26.74	16.167	
7,900.0	7,548.0	7,553.0	7,553.0	20.2	13.2	-89.85	-173.8	-407.4	417.5	390.3	27.25	15.322	
7,919.1	7,549.0	7,554.0	7,554.0	20.3	13.2	-90.00	-173.8	-407.4	417.1	389.7	27.37	15.237	
8,000.0	7,549.0	7,554.0	7,554.0	20.7	13.2	-90.00	-173.8	-407.4	424.4	396.5	27.88	15.225	SF
8,100.0	7,549.0	7,554.0	7,554.0	21.3	13.2	-90.00	-173.8	-407.4	453.7	425.0	28.69	15.812	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWSW S2-T2N-R66W (Ione) - Ione #32-2 (Existing) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,000.0	7,549.0	7,554.0	7,554.0	30.8	13.2	-90.00	-1,599.2	-548.0	443.6	403.2	40.38	10.985	
9,100.0	7,549.0	7,554.0	7,554.0	32.2	13.2	-90.00	-1,599.2	-548.0	370.6	328.7	41.92	8.842	
9,200.0	7,549.0	7,554.0	7,554.0	33.6	13.2	-90.00	-1,599.2	-548.0	313.1	269.6	43.48	7.200	
9,300.0	7,549.0	7,554.0	7,554.0	35.0	13.2	-90.00	-1,599.2	-548.0	280.4	235.4	45.07	6.222	
9,346.9	7,549.0	7,554.0	7,554.0	35.7	13.2	-90.00	-1,599.2	-548.0	276.5	230.7	45.82	6.034	CC, ES
9,400.0	7,549.0	7,554.0	7,554.0	36.5	13.2	-90.00	-1,599.2	-548.0	281.5	234.9	46.67	6.033	SF
9,500.0	7,549.0	7,554.0	7,554.0	38.0	13.2	-90.00	-1,599.2	-548.0	316.1	267.8	48.28	6.546	
9,600.0	7,549.0	7,554.0	7,554.0	39.5	13.2	-90.00	-1,599.2	-548.0	374.9	325.0	49.91	7.511	
9,700.0	7,549.0	7,554.0	7,554.0	41.0	13.2	-90.00	-1,599.2	-548.0	448.5	397.0	51.55	8.700	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWSW S2-T2N-R66W (Ione) - Ione #33-2 (Existing) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	7,549.0	7,534.0	7,534.0	50.5	13.1	-90.00	-2,933.2	-585.5	449.6	388.1	61.52	7.309	
10,400.0	7,549.0	7,534.0	7,534.0	52.1	13.1	-90.00	-2,933.2	-585.5	368.8	305.6	63.21	5.834	
10,500.0	7,549.0	7,534.0	7,534.0	53.8	13.1	-90.00	-2,933.2	-585.5	299.7	234.8	64.90	4.618	
10,600.0	7,549.0	7,534.0	7,534.0	55.4	13.1	-90.00	-2,933.2	-585.5	252.3	185.7	66.60	3.788	
10,680.9	7,549.0	7,534.0	7,534.0	56.7	13.1	-90.00	-2,933.2	-585.5	239.0	171.0	67.97	3.516	CC, ES
10,700.0	7,549.0	7,534.0	7,534.0	57.0	13.1	-90.00	-2,933.2	-585.5	239.8	171.5	68.30	3.511	SF
10,800.0	7,549.0	7,534.0	7,534.0	58.7	13.1	-90.00	-2,933.2	-585.5	267.1	197.1	70.00	3.815	
10,900.0	7,549.0	7,534.0	7,534.0	60.3	13.1	-90.00	-2,933.2	-585.5	324.3	252.6	71.71	4.522	
11,000.0	7,549.0	7,534.0	7,534.0	62.0	13.1	-90.00	-2,933.2	-585.5	398.7	325.3	73.42	5.431	
11,100.0	7,549.0	7,534.0	7,534.0	63.7	13.1	-90.00	-2,933.2	-585.5	482.5	407.4	75.13	6.422	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWSW S2-T2N-R66W (Ione) - Ione #34-2 (Existing) - DD - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
11,800.0	7,549.0	7,525.0	7,525.0	75.4	13.1	-90.00	-4,469.0	-747.6	423.7	336.5	87.15	4.862	
11,900.0	7,549.0	7,525.0	7,525.0	77.1	13.1	-90.00	-4,469.0	-747.6	325.9	237.0	88.88	3.666	
12,000.0	7,549.0	7,525.0	7,525.0	78.8	13.1	-90.00	-4,469.0	-747.6	229.9	139.3	90.60	2.537	
12,100.0	7,549.0	7,525.0	7,525.0	80.5	13.1	-90.00	-4,469.0	-747.6	139.7	47.4	92.33	1.513	
12,159.1	7,549.0	7,525.0	7,525.0	81.5	13.1	-90.00	-4,469.0	-747.6	96.0	2.7	93.35	1.029	Level 2, CC, ES, SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWSW S2-T2N-R66W (Ione) - Ione 33-2 - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 8083-Gyro

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
10,300.0	7,549.0	7,504.0	7,504.0	50.5	6.5	-90.00	-2,933.2	-585.4	449.7	394.7	54.94	8.186	
10,400.0	7,549.0	7,504.0	7,504.0	52.1	6.5	-90.00	-2,933.2	-585.4	368.8	312.2	56.62	6.514	
10,500.0	7,549.0	7,504.0	7,504.0	53.8	6.5	-90.00	-2,933.2	-585.4	299.8	241.5	58.32	5.141	
10,600.0	7,549.0	7,504.0	7,504.0	55.4	6.5	-90.00	-2,933.2	-585.4	252.4	192.4	60.01	4.206	
10,680.8	7,549.0	7,504.0	7,504.0	56.7	6.5	-90.00	-2,933.2	-585.4	239.1	177.7	61.39	3.895	CC, ES
10,700.0	7,549.0	7,504.0	7,504.0	57.0	6.5	-90.00	-2,933.2	-585.4	239.9	178.2	61.71	3.887	SF
10,800.0	7,549.0	7,504.0	7,504.0	58.7	6.5	-90.00	-2,933.2	-585.4	267.2	203.8	63.42	4.213	
10,900.0	7,549.0	7,504.0	7,504.0	60.3	6.5	-90.00	-2,933.2	-585.4	324.4	259.3	65.12	4.981	
11,000.0	7,549.0	7,504.0	7,504.0	62.0	6.5	-90.00	-2,933.2	-585.4	398.8	332.0	66.83	5.967	
11,100.0	7,549.0	7,504.0	7,504.0	63.7	6.5	-90.00	-2,933.2	-585.4	482.6	414.0	68.54	7.041	

Cathedral Energy Services

Anticollision Report

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Offset Design NWSW S2-T2N-R66W (Ione) - Ione 4-4-2 - Wellbore #1 - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

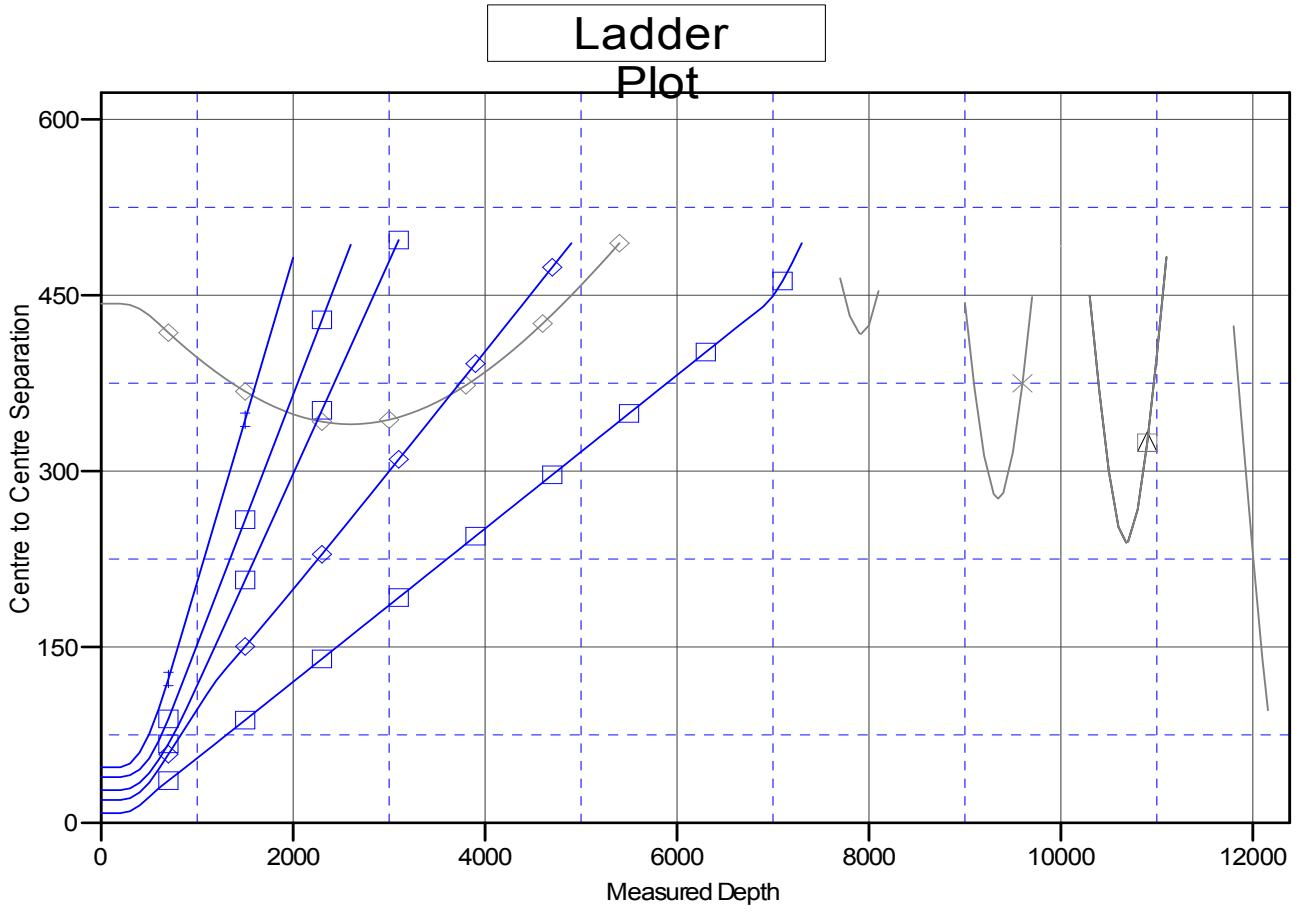
Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,995.2	7,549.0	7,982.7	7,518.0	45.6	43.9	90.00	-2,247.5	-1,316.3	491.8	413.9	77.98	6.307	CC
10,000.0	7,549.0	7,982.7	7,518.0	45.7	43.9	90.00	-2,247.5	-1,316.3	491.9	413.8	78.06	6.301	ES, SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Ione 1A-2H
Project:	DJ Wattenberg	**TVD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Reference Site:	NWNE S2-T2N-R66W (Ione)	**MD Reference:**	KB=13' @ 5091.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Ione 1A-2H	**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 #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to KB=13' @ 5091.0ft (Original Well Elev
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Ione 1A-2H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.49°



LEGEND

- Ione #34-2 (Existing), DD, Plan #1 V0
- Ione #32-2 (Existing), DD, Plan #1 V0
- Ione #31-2 (Existing), DD, Plan #1 V0
- Ione 33-2, Wellbore #1, Wellbore #1 V0
- Ione #33-2 (Existing), DD, Plan #1 V0
- Ione 1B-2H, HZ, Plan #1 V0
- Ione 1F-2H, HZ, Plan #1 V0
- Ione 1C-2H, HZ, Plan #1 V0
- Ione 1D-2H, HZ, Plan #1 V0
- Ione 1E-2H, HZ, Plan #1 V0
- Ione 4-4-2, Wellbore #1, Plan #1 V0