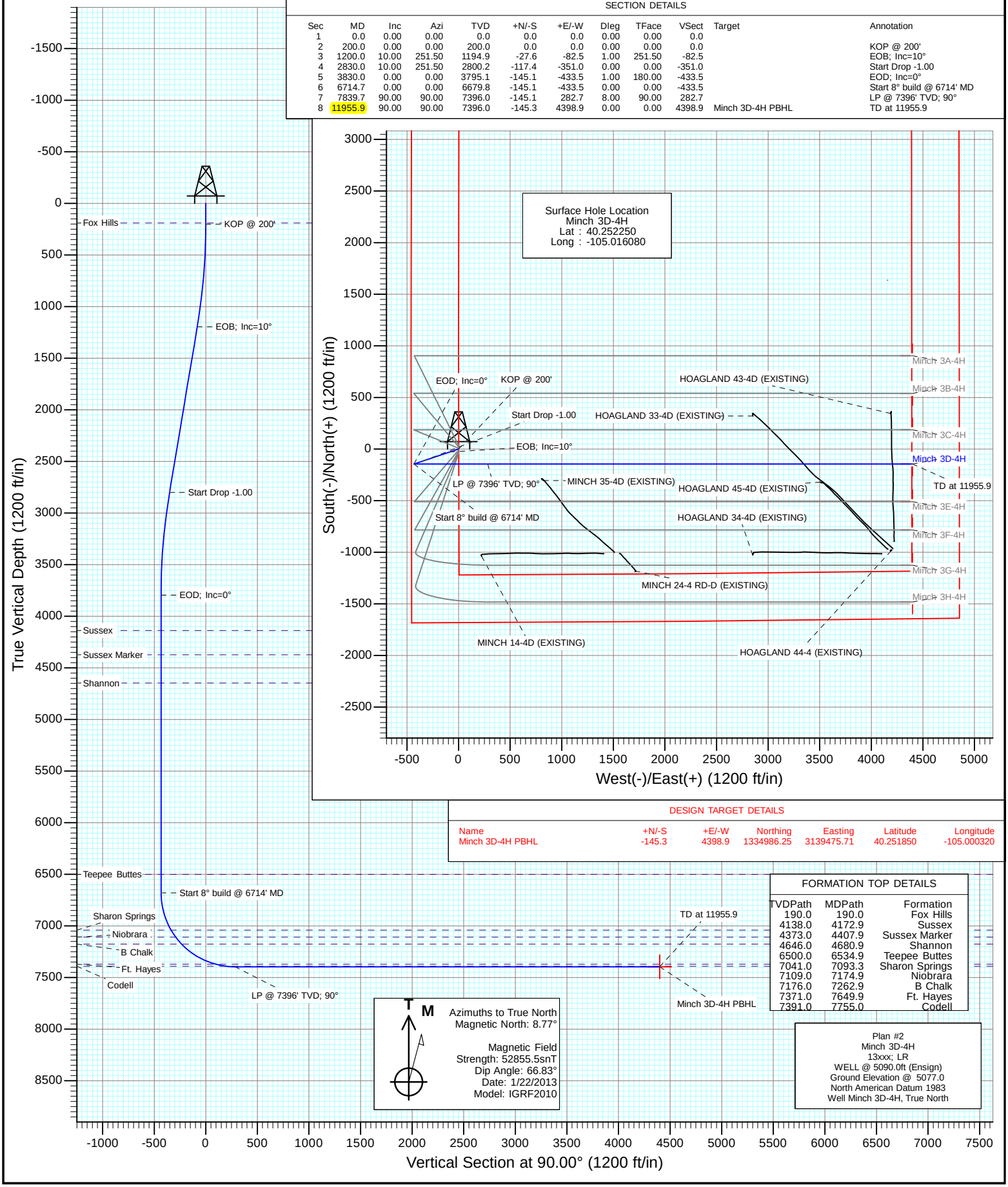
encana natural gas

Project: DJ Wattenberg
Site: S4-T3N-R68W (Minch)
Well: Minch 3D-4H
Wellbore: Hz
Design: Plan #2

CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
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		KOP @ 200'
3	1200.0	10.00	251.50	1194.9	-27.6	-82.5	1.00	251.50	-82.5		EOB; Inc=10°
4	2830.0	10.00	251.50	2800.2	-117.4	-351.0	0.00	0.00	-351.0		Start Drop -1.00
5	3830.0	0.00	0.00	3795.1	-145.1	-433.5	1.00	180.00	-433.5		EOD; Inc=0°
6	6714.7	0.00	0.00	6679.8	-145.1	-433.5	0.00	0.00	-433.5		Start 8° build @ 6714' MD
7	7839.7	90.00	90.00	7396.0	-145.1	282.7	8.00	90.00	282.7		LP @ 7396' TVD; 90°
8	11955.9	90.00	90.00	7396.0	-145.3	4398.9	0.00	0.00	4398.9	Minch 3D-4H PBHL	TD at 11955.9



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Minch 3D-4H PBHL	-145.3	4398.9	1334986.25	3139475.71	40.251850	-105.000320

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
190.0	190.0	Fox Hills
4138.0	4172.9	Sussex
4373.0	4407.9	Sussex Marker
4646.0	4680.9	Shannon
6500.0	6534.9	Teepee Buttes
7041.0	7093.3	Sharon Springs
7109.0	7174.9	Niobrara
7176.0	7262.9	B Chalk
7371.0	7649.9	Ft. Hayes
7391.0	7755.0	Codell

T M

Azimuths to True North
Magnetic North: 8.77°

Magnetic Field
Strength: 52855.5snT
Dip Angle: 66.83°
Date: 1/22/2013
Model: IGRF2010

Plan #2
Minch 3D-4H
13xxx; LR
WELL @ 5090.0ft (Ensign)
Ground Elevation @ 5077.0
North American Datum 1983
Well Minch 3D-4H, True North

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site:	S4-T3N-R68W (Minch)	**North Reference:**	True
Well:	Minch 3D-4H	**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	S4-T3N-R68W (Minch)				
Site Position:		**Northing:**	1,334,165.55 ft	**Latitude:**	40.249600
From:	Lat/Long	**Easting:**	3,139,290.53 ft	**Longitude:**	-105.001000
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.32 °

Well	Minch 3D-4H				
Well Position	**+N/-S**	0.0 ft	**Northing:**	1,335,107.55 ft	**Latitude:**	40.252250
	+E/-W	0.0 ft	**Easting:**	3,135,076.06 ft	**Longitude:**	-105.016080
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	5,077.0 ft

Wellbore	Hz				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	1/22/2013	8.77	66.83	52,856

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	90.00	

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	
1,200.0	10.00	251.50	1,194.9	-27.6	-82.5	1.00	1.00	0.00	251.50	
2,830.0	10.00	251.50	2,800.2	-117.4	-351.0	0.00	0.00	0.00	0.00	
3,830.0	0.00	0.00	3,795.1	-145.1	-433.5	1.00	-1.00	0.00	180.00	
6,714.7	0.00	0.00	6,679.8	-145.1	-433.5	0.00	0.00	0.00	0.00	
7,839.7	90.00	90.00	7,396.0	-145.1	282.7	8.00	8.00	0.00	90.00	
11,955.9	90.00	90.00	7,396.0	-145.3	4,398.9	0.00	0.00	0.00	0.00	Minch 3D-4H PBHL

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Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site:	S4-T3N-R68W (Minch)	**North Reference:**	True
Well:	Minch 3D-4H	**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	
190.0	0.00	0.00	190.0	0.0	0.0	0.0	0.00	0.00	Fox Hills
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	1.00	251.50	300.0	-0.3	-0.8	-0.8	1.00	1.00	
400.0	2.00	251.50	400.0	-1.1	-3.3	-3.3	1.00	1.00	
500.0	3.00	251.50	499.9	-2.5	-7.4	-7.4	1.00	1.00	
600.0	4.00	251.50	599.7	-4.4	-13.2	-13.2	1.00	1.00	
700.0	5.00	251.50	699.4	-6.9	-20.7	-20.7	1.00	1.00	
800.0	6.00	251.50	798.9	-10.0	-29.8	-29.8	1.00	1.00	
900.0	7.00	251.50	898.3	-13.6	-40.5	-40.5	1.00	1.00	
1,000.0	8.00	251.50	997.4	-17.7	-52.9	-52.9	1.00	1.00	
1,100.0	9.00	251.50	1,096.3	-22.4	-66.9	-66.9	1.00	1.00	
1,200.0	10.00	251.50	1,194.9	-27.6	-82.5	-82.5	1.00	1.00	EOB; Inc=10°
1,300.0	10.00	251.50	1,293.4	-33.1	-99.0	-99.0	0.00	0.00	
1,400.0	10.00	251.50	1,391.9	-38.6	-115.5	-115.5	0.00	0.00	
1,500.0	10.00	251.50	1,490.4	-44.1	-131.9	-131.9	0.00	0.00	
1,600.0	10.00	251.50	1,588.9	-49.7	-148.4	-148.4	0.00	0.00	
1,700.0	10.00	251.50	1,687.3	-55.2	-164.9	-164.9	0.00	0.00	
1,800.0	10.00	251.50	1,785.8	-60.7	-181.4	-181.4	0.00	0.00	
1,900.0	10.00	251.50	1,884.3	-66.2	-197.8	-197.8	0.00	0.00	
2,000.0	10.00	251.50	1,982.8	-71.7	-214.3	-214.3	0.00	0.00	
2,100.0	10.00	251.50	2,081.3	-77.2	-230.8	-230.8	0.00	0.00	
2,200.0	10.00	251.50	2,179.7	-82.7	-247.2	-247.2	0.00	0.00	
2,300.0	10.00	251.50	2,278.2	-88.2	-263.7	-263.7	0.00	0.00	
2,400.0	10.00	251.50	2,376.7	-93.7	-280.2	-280.2	0.00	0.00	
2,500.0	10.00	251.50	2,475.2	-99.2	-296.6	-296.6	0.00	0.00	
2,600.0	10.00	251.50	2,573.7	-104.8	-313.1	-313.1	0.00	0.00	
2,700.0	10.00	251.50	2,672.1	-110.3	-329.6	-329.6	0.00	0.00	
2,800.0	10.00	251.50	2,770.6	-115.8	-346.0	-346.0	0.00	0.00	
2,830.0	10.00	251.50	2,800.2	-117.4	-351.0	-351.0	0.00	0.00	Start Drop -1.00
2,900.0	9.30	251.50	2,869.2	-121.2	-362.1	-362.1	1.00	-1.00	
3,000.0	8.30	251.50	2,968.0	-126.0	-376.6	-376.6	1.00	-1.00	
3,100.0	7.30	251.50	3,067.1	-130.3	-389.5	-389.5	1.00	-1.00	
3,200.0	6.30	251.50	3,166.4	-134.1	-400.7	-400.7	1.00	-1.00	
3,300.0	5.30	251.50	3,265.9	-137.3	-410.3	-410.3	1.00	-1.00	
3,400.0	4.30	251.50	3,365.5	-139.9	-418.2	-418.2	1.00	-1.00	
3,500.0	3.30	251.50	3,465.3	-142.0	-424.5	-424.5	1.00	-1.00	
3,600.0	2.30	251.50	3,565.2	-143.6	-429.1	-429.1	1.00	-1.00	
3,700.0	1.30	251.50	3,665.1	-144.6	-432.1	-432.1	1.00	-1.00	
3,800.0	0.30	251.50	3,765.1	-145.0	-433.4	-433.4	1.00	-1.00	
3,830.0	0.00	0.00	3,795.1	-145.1	-433.5	-433.5	1.00	-1.00	EOD; Inc=0°
3,900.0	0.00	0.00	3,865.1	-145.1	-433.5	-433.5	0.00	0.00	
4,000.0	0.00	0.00	3,965.1	-145.1	-433.5	-433.5	0.00	0.00	
4,100.0	0.00	0.00	4,065.1	-145.1	-433.5	-433.5	0.00	0.00	
4,172.9	0.00	0.00	4,138.0	-145.1	-433.5	-433.5	0.00	0.00	Sussex
4,200.0	0.00	0.00	4,165.1	-145.1	-433.5	-433.5	0.00	0.00	
4,300.0	0.00	0.00	4,265.1	-145.1	-433.5	-433.5	0.00	0.00	
4,400.0	0.00	0.00	4,365.1	-145.1	-433.5	-433.5	0.00	0.00	
4,407.9	0.00	0.00	4,373.0	-145.1	-433.5	-433.5	0.00	0.00	Sussex Marker
4,500.0	0.00	0.00	4,465.1	-145.1	-433.5	-433.5	0.00	0.00	
4,600.0	0.00	0.00	4,565.1	-145.1	-433.5	-433.5	0.00	0.00	

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Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site:	S4-T3N-R68W (Minch)	**North Reference:**	True
Well:	Minch 3D-4H	**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
4,680.9	0.00	0.00	4,646.0	-145.1	-433.5	-433.5	0.00	0.00	Shannon
4,700.0	0.00	0.00	4,665.1	-145.1	-433.5	-433.5	0.00	0.00	
4,800.0	0.00	0.00	4,765.1	-145.1	-433.5	-433.5	0.00	0.00	
4,900.0	0.00	0.00	4,865.1	-145.1	-433.5	-433.5	0.00	0.00	
5,000.0	0.00	0.00	4,965.1	-145.1	-433.5	-433.5	0.00	0.00	
5,100.0	0.00	0.00	5,065.1	-145.1	-433.5	-433.5	0.00	0.00	
5,200.0	0.00	0.00	5,165.1	-145.1	-433.5	-433.5	0.00	0.00	
5,300.0	0.00	0.00	5,265.1	-145.1	-433.5	-433.5	0.00	0.00	
5,400.0	0.00	0.00	5,365.1	-145.1	-433.5	-433.5	0.00	0.00	
5,500.0	0.00	0.00	5,465.1	-145.1	-433.5	-433.5	0.00	0.00	
5,600.0	0.00	0.00	5,565.1	-145.1	-433.5	-433.5	0.00	0.00	
5,700.0	0.00	0.00	5,665.1	-145.1	-433.5	-433.5	0.00	0.00	
5,800.0	0.00	0.00	5,765.1	-145.1	-433.5	-433.5	0.00	0.00	
5,900.0	0.00	0.00	5,865.1	-145.1	-433.5	-433.5	0.00	0.00	
6,000.0	0.00	0.00	5,965.1	-145.1	-433.5	-433.5	0.00	0.00	
6,100.0	0.00	0.00	6,065.1	-145.1	-433.5	-433.5	0.00	0.00	
6,200.0	0.00	0.00	6,165.1	-145.1	-433.5	-433.5	0.00	0.00	
6,300.0	0.00	0.00	6,265.1	-145.1	-433.5	-433.5	0.00	0.00	
6,400.0	0.00	0.00	6,365.1	-145.1	-433.5	-433.5	0.00	0.00	
6,500.0	0.00	0.00	6,465.1	-145.1	-433.5	-433.5	0.00	0.00	
6,534.9	0.00	0.00	6,500.0	-145.1	-433.5	-433.5	0.00	0.00	Teepee Buttes
6,600.0	0.00	0.00	6,565.1	-145.1	-433.5	-433.5	0.00	0.00	
6,700.0	0.00	0.00	6,665.1	-145.1	-433.5	-433.5	0.00	0.00	
6,714.7	0.00	0.00	6,679.8	-145.1	-433.5	-433.5	0.00	0.00	Start 8° build @ 6714' MD
6,800.0	6.82	90.00	6,764.9	-145.1	-428.4	-428.4	8.00	8.00	
6,900.0	14.82	90.00	6,863.0	-145.1	-409.7	-409.7	8.00	8.00	
7,000.0	22.82	90.00	6,957.6	-145.1	-377.4	-377.4	8.00	8.00	
7,093.3	30.29	90.00	7,041.0	-145.1	-335.8	-335.8	8.00	8.00	Sharon Springs
7,100.0	30.82	90.00	7,046.8	-145.1	-332.3	-332.3	8.00	8.00	
7,174.9	36.82	90.00	7,109.0	-145.1	-290.7	-290.7	8.00	8.00	Niobrara
7,200.0	38.82	90.00	7,128.8	-145.1	-275.3	-275.3	8.00	8.00	
7,262.9	43.85	90.00	7,176.0	-145.1	-233.8	-233.8	8.00	8.00	B Chalk
7,300.0	46.82	90.00	7,202.1	-145.1	-207.4	-207.4	8.00	8.00	
7,400.0	54.82	90.00	7,265.2	-145.1	-129.9	-129.9	8.00	8.00	
7,500.0	62.82	90.00	7,316.9	-145.1	-44.4	-44.4	8.00	8.00	
7,600.0	70.82	90.00	7,356.3	-145.1	47.4	47.4	8.00	8.00	
7,649.9	74.82	90.00	7,371.0	-145.1	95.1	95.1	8.00	8.00	Ft. Hayes
7,700.0	78.82	90.00	7,382.4	-145.1	143.9	143.9	8.00	8.00	
7,755.0	83.23	90.00	7,391.0	-145.1	198.2	198.2	8.00	8.00	Codell
7,800.0	86.82	90.00	7,394.9	-145.1	243.0	243.0	8.00	8.00	
7,839.7	90.00	90.00	7,396.0	-145.1	282.7	282.7	8.00	8.00	LP @ 7396' TVD; 90°
7,900.0	90.00	90.00	7,396.0	-145.1	343.0	343.0	0.00	0.00	
8,000.0	90.00	90.00	7,396.0	-145.1	443.0	443.0	0.00	0.00	
8,100.0	90.00	90.00	7,396.0	-145.1	543.0	543.0	0.00	0.00	
8,200.0	90.00	90.00	7,396.0	-145.1	643.0	643.0	0.00	0.00	
8,300.0	90.00	90.00	7,396.0	-145.1	743.0	743.0	0.00	0.00	
8,400.0	90.00	90.00	7,396.0	-145.1	843.0	843.0	0.00	0.00	
8,500.0	90.00	90.00	7,396.0	-145.1	943.0	943.0	0.00	0.00	
8,600.0	90.00	90.00	7,396.0	-145.1	1,043.0	1,043.0	0.00	0.00	
8,700.0	90.00	90.00	7,396.0	-145.1	1,143.0	1,143.0	0.00	0.00	
8,800.0	90.00	90.00	7,396.0	-145.1	1,243.0	1,243.0	0.00	0.00	
8,900.0	90.00	90.00	7,396.0	-145.1	1,343.0	1,343.0	0.00	0.00	

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Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site:	S4-T3N-R68W (Minch)	**North Reference:**	True
Well:	Minch 3D-4H	**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
9,000.0	90.00	90.00	7,396.0	-145.2	1,443.0	1,443.0	0.00	0.00	
9,100.0	90.00	90.00	7,396.0	-145.2	1,543.0	1,543.0	0.00	0.00	
9,200.0	90.00	90.00	7,396.0	-145.2	1,643.0	1,643.0	0.00	0.00	
9,300.0	90.00	90.00	7,396.0	-145.2	1,743.0	1,743.0	0.00	0.00	
9,400.0	90.00	90.00	7,396.0	-145.2	1,843.0	1,843.0	0.00	0.00	
9,500.0	90.00	90.00	7,396.0	-145.2	1,943.0	1,943.0	0.00	0.00	
9,600.0	90.00	90.00	7,396.0	-145.2	2,043.0	2,043.0	0.00	0.00	
9,700.0	90.00	90.00	7,396.0	-145.2	2,143.0	2,143.0	0.00	0.00	
9,800.0	90.00	90.00	7,396.0	-145.2	2,243.0	2,243.0	0.00	0.00	
9,900.0	90.00	90.00	7,396.0	-145.2	2,343.0	2,343.0	0.00	0.00	
10,000.0	90.00	90.00	7,396.0	-145.2	2,443.0	2,443.0	0.00	0.00	
10,100.0	90.00	90.00	7,396.0	-145.2	2,543.0	2,543.0	0.00	0.00	
10,200.0	90.00	90.00	7,396.0	-145.2	2,643.0	2,643.0	0.00	0.00	
10,300.0	90.00	90.00	7,396.0	-145.2	2,743.0	2,743.0	0.00	0.00	
10,400.0	90.00	90.00	7,396.0	-145.2	2,843.0	2,843.0	0.00	0.00	
10,500.0	90.00	90.00	7,396.0	-145.2	2,943.0	2,943.0	0.00	0.00	
10,600.0	90.00	90.00	7,396.0	-145.2	3,043.0	3,043.0	0.00	0.00	
10,700.0	90.00	90.00	7,396.0	-145.2	3,143.0	3,143.0	0.00	0.00	
10,800.0	90.00	90.00	7,396.0	-145.2	3,243.0	3,243.0	0.00	0.00	
10,900.0	90.00	90.00	7,396.0	-145.3	3,343.0	3,343.0	0.00	0.00	
11,000.0	90.00	90.00	7,396.0	-145.3	3,443.0	3,443.0	0.00	0.00	
11,100.0	90.00	90.00	7,396.0	-145.3	3,543.0	3,543.0	0.00	0.00	
11,200.0	90.00	90.00	7,396.0	-145.3	3,643.0	3,643.0	0.00	0.00	
11,300.0	90.00	90.00	7,396.0	-145.3	3,743.0	3,743.0	0.00	0.00	
11,400.0	90.00	90.00	7,396.0	-145.3	3,843.0	3,843.0	0.00	0.00	
11,500.0	90.00	90.00	7,396.0	-145.3	3,943.0	3,943.0	0.00	0.00	
11,600.0	90.00	90.00	7,396.0	-145.3	4,043.0	4,043.0	0.00	0.00	
11,700.0	90.00	90.00	7,396.0	-145.3	4,143.0	4,143.0	0.00	0.00	
11,800.0	90.00	90.00	7,396.0	-145.3	4,243.0	4,243.0	0.00	0.00	
11,900.0	90.00	90.00	7,396.0	-145.3	4,343.0	4,343.0	0.00	0.00	
11,955.9	90.00	90.00	7,396.0	-145.3	4,398.9	4,398.9	0.00	0.00	TD at 11955.9 - Minch 3D-4H PBHL

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
Minch 3D-4H PBHL - plan hits target center - Point	0.00	0.00	7,396.0	-145.3	4,398.9	1,334,986.25	3,139,475.71	40.251850	-105.000320

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site:	S4-T3N-R68W (Minch)	**North Reference:**	True
Well:	Minch 3D-4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #2		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
190.0	190.0	Fox Hills			
4,172.9	4,138.0	Sussex			
4,407.9	4,373.0	Sussex Marker			
4,680.9	4,646.0	Shannon			
6,534.9	6,500.0	Teepee Buttes			
7,093.3	7,041.0	Sharon Springs			
7,174.9	7,109.0	Niobrara			
7,262.9	7,176.0	B Chalk			
7,649.9	7,371.0	Ft. Hayes			
7,755.0	7,391.0	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'
1,200.0	1,194.9	-27.6	-82.5	EOB; Inc=10°
2,830.0	2,800.2	-117.4	-351.0	Start Drop -1.00
3,830.0	3,795.1	-145.1	-433.5	EOD; Inc=0°
6,714.7	6,679.8	-145.1	-433.5	Start 8° build @ 6714' MD
7,839.7	7,396.0	-145.1	282.7	LP @ 7396' TVD; 90°
11,955.9	7,396.0	-145.3	4,398.9	TD at 11955.9

EnCana Oil & Gas (USA) Inc

DJ Wattenberg
S4-T3N-R68W (Minch)
Minch 3D-4H
Hz
Plan #2

Anticollision Report

28 January, 2013

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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** 1/28/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,955.9	Plan #2 (Hz)	MWD	Geolink MWD

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
S4-T3N-R68W (Minch)						
HOAGLAND 33-4D (EXISTING) - Existing - Existing	10,407.3	7,695.9	477.4	370.8	4.480	CC, ES
HOAGLAND 33-4D (EXISTING) - Existing - Existing	10,500.0	7,696.5	486.3	377.5	4.469	SF
HOAGLAND 34-4D (EXISTING) - Existing - Existing						Out of range
HOAGLAND 43-4D (EXISTING) - Existing - Existing	11,746.7	7,532.3	494.5	375.4	4.154	CC, ES
HOAGLAND 43-4D (EXISTING) - Existing - Existing	11,800.0	7,532.3	497.4	377.0	4.133	SF
HOAGLAND 44-4 (EXISTING) - Existing - Existing						Out of range
HOAGLAND 45-4D (EXISTING) - Existing - Existing	11,068.9	7,434.0	178.5	71.0	1.660	CC, ES, SF
MINCH 14-4D (EXISTING) - Existing - Existing						Out of range
MINCH 24-4 RD-D (EXISTING) - Existing - Existing						Out of range
MINCH 35-4D (EXISTING) - Existing - Existing	8,375.1	7,481.1	155.5	111.6	3.543	CC, ES, SF
Minch 3A-4H - Hz - Plan #1	200.0	200.0	29.3	28.6	44.851	CC, ES
Minch 3A-4H - Hz - Plan #1	600.0	597.4	47.1	45.0	22.475	SF
Minch 3B-4H - Hz - Plan #2	200.0	200.0	18.4	17.8	28.230	CC, ES
Minch 3B-4H - Hz - Plan #2	500.0	499.7	23.5	21.8	13.721	SF
Minch 3C-4H - Hz - Plan #1	200.0	200.0	7.8	7.1	11.953	CC, ES
Minch 3C-4H - Hz - Plan #1	11,955.9	11,744.6	393.5	200.8	2.042	SF
Minch 3E-4H - Hz - Plan #1	399.3	399.3	10.4	9.0	7.651	CC
Minch 3E-4H - Hz - Plan #1	400.0	400.0	10.4	9.0	7.638	ES
Minch 3E-4H - Hz - Plan #1	11,955.9	11,747.9	421.5	223.7	2.130	SF
Minch 3F-4H - Hz - Plan #2	481.9	481.8	20.7	19.1	12.534	CC
Minch 3F-4H - Hz - Plan #2	500.0	499.9	20.7	19.0	12.069	ES
Minch 3F-4H - Hz - Plan #2	700.0	699.3	25.6	23.2	10.437	SF
Minch 3G-4H - Hz - Plan #1	443.6	443.4	28.1	26.6	18.537	CC, ES
Minch 3G-4H - Hz - Plan #1	700.0	698.5	34.2	31.8	13.784	SF
Minch 3H-4H - Hz - Plan #2	200.0	200.0	40.1	39.4	61.389	CC, ES
Minch 3H-4H - Hz - Plan #2	900.0	893.3	72.2	68.8	21.256	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - HOAGLAND 33-4D (EXISTING) - Existing - Existing

Offset Site Error: 0.0 ft

Survey Program: 1516-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	7,396.0	7,695.3	7,355.5	73.3	40.5	-92.82	331.5	2,850.3	489.3	385.3	103.96	4.706	
10,400.0	7,396.0	7,695.9	7,356.1	75.7	40.5	-92.89	331.5	2,850.3	477.4	371.0	106.38	4.488	
10,407.3	7,396.0	7,695.9	7,356.1	75.9	40.5	-92.90	331.5	2,850.3	477.4	370.8	106.56	4.480	CC, ES
10,500.0	7,396.0	7,696.5	7,356.7	78.2	40.5	-92.97	331.5	2,850.3	486.3	377.5	108.81	4.469	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - HOAGLAND 43-4D (EXISTING) - Existing - Existing

Offset Site Error: 0.0 ft

Survey Program: 1641-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
11,700.0	7,396.0	7,532.4	7,341.7	107.6	23.9	-91.12	349.1	4,189.7	496.7	378.8	117.90	4.213	
11,746.7	7,396.0	7,532.3	7,341.7	108.7	23.9	-91.12	349.1	4,189.7	494.5	375.4	119.04	4.154	CC, ES
11,800.0	7,396.0	7,532.3	7,341.7	110.0	23.9	-91.12	349.1	4,189.7	497.4	377.0	120.35	4.133	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - HOAGLAND 45-4D (EXISTING) - Existing - Existing

Offset Site Error: 0.0 ft

Survey Program: 1388-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
10,700.0	7,396.0	7,451.3	7,353.7	83.1	19.2	96.95	-323.3	3,511.1	409.5	311.6	97.91	4.182	
10,800.0	7,396.0	7,446.6	7,349.0	85.5	19.2	95.46	-323.4	3,511.3	322.5	221.9	100.58	3.207	
10,900.0	7,396.0	7,441.9	7,344.4	87.9	19.2	93.97	-323.5	3,511.5	245.6	142.4	103.21	2.380	
11,000.0	7,396.0	7,437.2	7,339.7	90.4	19.2	92.46	-323.6	3,511.7	191.3	85.5	105.77	1.809	
11,068.9	7,396.0	7,434.0	7,336.4	92.1	19.2	91.42	-323.7	3,511.9	178.5	71.0	107.51	1.660	CC, ES, SF
11,100.0	7,396.0	7,432.5	7,335.0	92.8	19.2	90.95	-323.7	3,512.0	181.2	72.9	108.28	1.673	
11,200.0	7,396.0	7,427.8	7,330.2	95.3	19.2	89.44	-323.9	3,512.2	221.4	110.6	110.72	1.999	
11,300.0	7,396.0	7,423.1	7,325.5	97.7	19.2	87.92	-324.0	3,512.4	291.8	178.7	113.08	2.580	
11,400.0	7,396.0	7,418.3	7,320.8	100.2	19.2	86.41	-324.1	3,512.6	375.8	260.4	115.37	3.257	
11,500.0	7,396.0	7,413.6	7,316.0	102.6	19.2	84.90	-324.2	3,512.9	466.1	348.5	117.57	3.965	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - MINCH 35-4D (EXISTING) - Existing - Existing

Offset Site Error: 0.0 ft

Survey Program: 1512-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
7,900.0	7,396.0	7,462.4	7,350.2	18.4	20.3	82.01	-300.2	817.4	499.6	465.5	34.08	14.660	
8,000.0	7,396.0	7,466.3	7,354.1	20.2	20.3	83.41	-300.2	817.5	405.8	369.8	35.96	11.286	
8,100.0	7,396.0	7,470.2	7,358.0	22.1	20.3	84.84	-300.3	817.7	315.8	277.9	37.96	8.319	
8,200.0	7,396.0	7,474.1	7,361.9	24.1	20.3	86.28	-300.4	817.8	234.1	194.0	40.06	5.843	
8,300.0	7,396.0	7,478.1	7,365.9	26.2	20.3	87.74	-300.5	818.0	172.6	130.4	42.22	4.089	
8,375.1	7,396.0	7,481.1	7,368.9	27.8	20.3	88.84	-300.5	818.1	155.5	111.6	43.88	3.543	CC, ES, SF
8,400.0	7,396.0	7,482.1	7,369.9	28.4	20.3	89.21	-300.6	818.1	157.4	113.0	44.43	3.544	
8,500.0	7,396.0	7,486.1	7,373.9	30.6	20.3	90.70	-300.6	818.3	199.3	152.7	46.65	4.273	
8,600.0	7,396.0	7,490.2	7,378.0	32.8	20.3	92.20	-300.7	818.5	273.2	224.3	48.89	5.589	
8,700.0	7,396.0	7,494.3	7,382.1	35.1	20.3	93.71	-300.8	818.6	359.9	308.8	51.12	7.040	
8,800.0	7,396.0	7,498.5	7,386.3	37.4	20.3	95.23	-300.9	818.8	452.1	398.7	53.34	8.476	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3A-4H - 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	5.47	29.1	2.8	29.3				
100.0	100.0	100.0	100.0	0.2	0.2	5.47	29.1	2.8	29.3	29.0	0.30	96.403	
200.0	200.0	200.0	200.0	0.3	0.3	5.47	29.1	2.8	29.3	28.6	0.65	44.851	CC, ES
300.0	300.0	299.6	299.5	0.5	0.5	114.60	29.9	2.4	30.4	29.4	1.00	30.309	
400.0	400.0	399.0	399.0	0.7	0.7	116.24	32.2	1.3	33.7	32.3	1.36	24.835	
500.0	499.9	498.4	498.2	0.9	0.9	118.34	36.1	-0.6	39.2	37.5	1.72	22.826	
600.0	599.7	597.4	597.1	1.1	1.1	120.44	41.5	-3.3	47.1	45.0	2.09	22.475	SF
700.0	699.4	696.2	695.6	1.3	1.3	122.28	48.4	-6.7	57.2	54.7	2.48	23.006	
800.0	798.9	794.6	793.5	1.5	1.5	123.78	56.8	-10.9	69.6	66.7	2.90	24.023	
900.0	898.3	892.5	890.9	1.8	1.7	124.96	66.6	-15.7	84.2	80.9	3.33	25.301	
1,000.0	997.4	990.0	987.5	2.0	2.0	125.87	77.9	-21.3	101.2	97.4	3.79	26.706	
1,100.0	1,096.3	1,086.8	1,083.2	2.3	2.3	126.58	90.5	-27.6	120.3	116.0	4.27	28.153	
1,200.0	1,194.9	1,182.9	1,178.1	2.7	2.6	127.11	104.5	-34.5	141.6	136.8	4.79	29.590	
1,300.0	1,293.4	1,278.5	1,272.1	3.0	2.9	127.46	119.9	-42.0	164.6	159.3	5.32	30.941	
1,400.0	1,391.9	1,373.5	1,365.3	3.3	3.3	127.36	136.5	-50.3	188.8	182.9	5.87	32.144	
1,500.0	1,490.4	1,467.9	1,457.6	3.7	3.7	126.98	154.4	-59.1	214.0	207.6	6.44	33.235	
1,600.0	1,588.9	1,561.7	1,549.0	4.0	4.1	126.40	173.5	-68.6	240.4	233.4	7.02	34.243	
1,700.0	1,687.3	1,654.9	1,639.3	4.4	4.5	125.70	193.9	-78.6	267.9	260.3	7.61	35.191	
1,800.0	1,785.8	1,749.1	1,730.4	4.7	4.9	124.94	215.6	-89.3	296.4	288.2	8.21	36.081	
1,900.0	1,884.3	1,844.9	1,822.9	5.1	5.4	124.28	237.8	-100.3	325.1	316.3	8.82	36.842	
2,000.0	1,982.8	1,940.6	1,915.3	5.4	5.8	123.72	260.0	-111.3	353.8	344.4	9.43	37.502	
2,100.0	2,081.3	2,036.3	2,007.8	5.7	6.3	123.25	282.2	-122.3	382.5	372.5	10.05	38.080	
2,200.0	2,179.7	2,132.1	2,100.3	6.1	6.7	122.84	304.4	-133.3	411.3	400.7	10.66	38.590	
2,300.0	2,278.2	2,227.8	2,192.7	6.4	7.2	122.48	326.6	-144.2	440.1	428.8	11.27	39.042	
2,400.0	2,376.7	2,323.5	2,285.2	6.8	7.6	122.17	348.8	-155.2	468.9	457.0	11.89	39.447	
2,500.0	2,475.2	2,419.3	2,377.7	7.1	8.1	121.90	371.1	-166.2	497.7	485.2	12.50	39.811	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3B-4H - Hz - Plan #2

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	8.71	18.2	2.8	18.4				
100.0	100.0	100.0	100.0	0.2	0.2	8.71	18.2	2.8	18.4	18.1	0.30	60.677	
200.0	200.0	200.0	200.0	0.3	0.3	8.71	18.2	2.8	18.4	17.8	0.65	28.230	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	119.57	18.2	2.8	18.8	17.8	1.00	18.795	
400.0	400.0	400.0	400.0	0.7	0.7	126.01	18.2	2.8	20.3	18.9	1.35	14.957	
500.0	499.9	499.7	499.7	0.9	0.8	132.81	18.9	2.2	23.5	21.8	1.71	13.721	SF
600.0	599.7	599.3	599.3	1.1	1.0	137.00	20.9	0.6	28.8	26.7	2.07	13.916	
700.0	699.4	698.9	698.7	1.3	1.2	139.02	24.2	-2.2	36.2	33.7	2.44	14.808	
800.0	798.9	798.2	797.9	1.5	1.4	139.66	28.8	-6.1	45.4	42.6	2.83	16.052	
900.0	898.3	897.3	896.7	1.8	1.6	139.52	34.7	-11.1	56.6	53.3	3.24	17.464	
1,000.0	997.4	996.1	995.0	2.0	1.8	138.99	41.9	-17.1	69.6	65.9	3.67	18.939	
1,100.0	1,096.3	1,094.5	1,092.8	2.3	2.1	138.27	50.4	-24.2	84.5	80.3	4.14	20.410	
1,200.0	1,194.9	1,192.6	1,190.1	2.7	2.3	137.49	60.1	-32.4	101.2	96.6	4.63	21.836	
1,300.0	1,293.4	1,290.3	1,286.7	3.0	2.6	136.53	71.1	-41.6	119.2	114.0	5.16	23.090	
1,400.0	1,391.9	1,387.6	1,382.8	3.3	2.9	135.18	83.3	-51.8	137.8	132.1	5.72	24.102	
1,500.0	1,490.4	1,484.7	1,478.2	3.7	3.2	133.59	96.6	-63.0	157.2	150.9	6.30	24.939	
1,600.0	1,588.9	1,581.3	1,572.9	4.0	3.6	131.87	111.2	-75.2	177.4	170.5	6.92	25.657	
1,700.0	1,687.3	1,678.7	1,668.2	4.4	3.9	130.19	126.7	-88.2	198.3	190.7	7.54	26.299	
1,800.0	1,785.8	1,776.3	1,763.7	4.7	4.3	128.82	142.2	-101.3	219.2	211.1	8.17	26.850	
1,900.0	1,884.3	1,874.0	1,859.2	5.1	4.7	127.69	157.8	-114.3	240.3	231.5	8.79	27.328	
2,000.0	1,982.8	1,971.6	1,954.8	5.4	5.1	126.75	173.3	-127.4	261.5	252.1	9.42	27.746	
2,100.0	2,081.3	2,069.3	2,050.3	5.7	5.4	125.94	188.9	-140.4	282.7	272.6	10.06	28.114	
2,200.0	2,179.7	2,166.9	2,145.8	6.1	5.8	125.25	204.4	-153.5	304.0	293.3	10.69	28.441	
2,300.0	2,278.2	2,264.6	2,241.3	6.4	6.2	124.65	220.0	-166.5	325.3	313.9	11.32	28.733	
2,400.0	2,376.7	2,362.2	2,336.8	6.8	6.6	124.12	235.5	-179.6	346.6	334.6	11.95	28.995	
2,500.0	2,475.2	2,459.9	2,432.3	7.1	7.0	123.65	251.1	-192.6	367.9	355.4	12.59	29.232	
2,600.0	2,573.7	2,557.5	2,527.9	7.5	7.4	123.23	266.6	-205.7	389.3	376.1	13.22	29.447	
2,700.0	2,672.1	2,655.2	2,623.4	7.8	7.8	122.86	282.2	-218.7	410.7	396.9	13.86	29.643	
2,800.0	2,770.6	2,752.8	2,718.9	8.2	8.1	122.53	297.7	-231.8	432.1	417.6	14.49	29.822	
2,900.0	2,869.2	2,850.5	2,814.5	8.5	8.5	122.30	313.3	-244.8	453.3	438.2	15.12	29.974	
3,000.0	2,968.0	2,948.4	2,910.1	8.8	8.9	121.98	328.9	-257.9	473.7	457.9	15.74	30.101	
3,100.0	3,067.1	3,046.3	3,006.0	9.1	9.3	121.53	344.5	-271.0	493.2	476.8	16.33	30.205	

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 Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3C-4H - 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	20.96	7.3	2.8	7.8				
100.0	100.0	100.0	100.0	0.2	0.2	20.96	7.3	2.8	7.8	7.5	0.30	25.691	
200.0	200.0	200.0	200.0	0.3	0.3	20.96	7.3	2.8	7.8	7.1	0.65	11.953	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	134.07	7.3	2.8	8.4	7.4	1.00	8.365	
400.0	400.0	400.0	400.0	0.7	0.7	144.50	7.3	2.8	10.4	9.0	1.35	7.671	
500.0	499.9	499.9	499.9	0.9	0.8	154.79	7.3	2.8	14.2	12.5	1.70	8.316	
600.0	599.7	599.7	599.7	1.1	1.0	162.30	7.3	2.8	19.9	17.8	2.05	9.681	
700.0	699.4	699.6	699.6	1.3	1.2	165.79	7.6	2.0	26.9	24.5	2.40	11.224	
800.0	798.9	799.6	799.6	1.5	1.4	166.13	8.6	-0.4	34.7	32.0	2.75	12.624	
900.0	898.3	899.7	899.5	1.8	1.6	165.00	10.3	-4.5	43.2	40.1	3.11	13.897	
1,000.0	997.4	999.7	999.4	2.0	1.7	163.15	12.6	-10.1	52.4	49.0	3.48	15.066	
1,100.0	1,096.3	1,099.7	1,099.1	2.3	2.0	160.97	15.5	-17.4	62.5	58.6	3.87	16.138	
1,200.0	1,194.9	1,199.6	1,198.5	2.7	2.2	158.66	19.2	-26.2	73.3	69.0	4.29	17.111	
1,300.0	1,293.4	1,299.6	1,297.9	3.0	2.4	156.15	23.5	-36.7	84.3	79.6	4.74	17.794	
1,400.0	1,391.9	1,399.6	1,397.0	3.3	2.7	153.25	28.4	-48.7	94.7	89.5	5.23	18.099	
1,500.0	1,490.4	1,499.6	1,495.9	3.7	2.9	150.04	34.0	-62.4	104.8	99.0	5.78	18.122	
1,600.0	1,588.9	1,599.4	1,594.4	4.0	3.2	146.56	40.3	-77.7	114.6	108.2	6.38	17.945	
1,700.0	1,687.3	1,698.7	1,692.1	4.4	3.5	143.26	46.8	-93.6	124.5	117.5	7.02	17.744	
1,800.0	1,785.8	1,798.0	1,789.9	4.7	3.9	140.46	53.4	-109.6	134.8	127.2	7.67	17.589	
1,900.0	1,884.3	1,897.2	1,887.7	5.1	4.2	138.06	59.9	-125.5	145.4	137.1	8.32	17.470	
2,000.0	1,982.8	1,996.5	1,985.4	5.4	4.5	135.98	66.4	-141.4	156.2	147.2	8.99	17.380	
2,100.0	2,081.3	2,095.8	2,083.2	5.7	4.8	134.18	73.0	-157.4	167.2	157.5	9.66	17.313	
2,200.0	2,179.7	2,195.0	2,180.9	6.1	5.2	132.59	79.5	-173.3	178.3	167.9	10.33	17.264	
2,300.0	2,278.2	2,294.3	2,278.7	6.4	5.5	131.20	86.1	-189.3	189.5	178.5	11.00	17.229	
2,400.0	2,376.7	2,393.6	2,376.5	6.8	5.8	129.96	92.6	-205.2	200.8	189.2	11.67	17.205	
2,500.0	2,475.2	2,492.8	2,474.2	7.1	6.2	128.85	99.1	-221.2	212.3	199.9	12.35	17.190	
2,600.0	2,573.7	2,592.1	2,572.0	7.5	6.5	127.86	105.7	-237.1	223.7	210.7	13.02	17.181	
2,700.0	2,672.1	2,691.4	2,669.7	7.8	6.9	126.96	112.2	-253.1	235.3	221.6	13.70	17.177	
2,800.0	2,770.6	2,790.6	2,767.5	8.2	7.2	126.15	118.8	-269.0	246.9	232.5	14.37	17.177	
2,900.0	2,869.2	2,889.9	2,865.3	8.5	7.6	125.40	125.3	-285.0	258.3	243.2	15.04	17.167	
3,000.0	2,968.0	2,989.3	2,963.1	8.8	7.9	124.44	131.9	-300.9	268.8	253.1	15.71	17.112	
3,100.0	3,067.1	3,088.6	3,060.9	9.1	8.2	123.26	138.4	-316.9	278.4	262.1	16.36	17.018	
3,200.0	3,166.4	3,188.0	3,158.8	9.4	8.6	121.87	144.9	-332.9	287.2	270.2	17.00	16.897	
3,300.0	3,265.9	3,287.3	3,256.6	9.6	8.9	120.26	151.5	-348.8	295.4	277.8	17.62	16.761	
3,400.0	3,365.5	3,387.4	3,355.2	9.8	9.3	118.54	157.9	-364.4	302.8	284.6	18.21	16.631	
3,500.0	3,465.3	3,488.0	3,454.7	10.0	9.6	116.91	163.7	-378.5	309.3	290.6	18.74	16.510	
3,600.0	3,565.2	3,588.8	3,554.6	10.2	9.9	115.36	168.8	-391.1	314.9	295.7	19.21	16.392	
3,700.0	3,665.1	3,689.9	3,655.0	10.3	10.1	113.87	173.3	-402.0	319.5	299.8	19.63	16.274	
3,800.0	3,765.1	3,791.3	3,755.9	10.4	10.3	112.42	177.1	-411.3	323.0	303.0	20.00	16.153	
3,900.0	3,865.1	3,892.8	3,857.1	10.5	10.6	2.56	180.3	-419.0	325.7	311.1	14.65	22.236	
4,000.0	3,965.1	3,994.6	3,958.7	10.7	10.7	1.49	182.7	-425.0	328.0	313.0	14.99	21.880	
4,100.0	4,065.1	4,096.7	4,060.6	10.8	10.9	0.73	184.5	-429.3	329.6	314.3	15.33	21.504	
4,200.0	4,165.1	4,198.8	4,162.7	10.9	11.1	0.26	185.6	-432.0	330.7	315.0	15.67	21.109	
4,300.0	4,265.1	4,301.0	4,264.9	11.0	11.2	0.09	186.0	-433.0	331.1	315.1	16.00	20.696	
4,400.0	4,365.1	4,401.2	4,365.1	11.1	11.3	0.09	186.0	-433.0	331.1	314.7	16.32	20.281	
4,500.0	4,465.1	4,501.2	4,465.1	11.2	11.4	0.09	186.0	-433.0	331.1	314.4	16.65	19.882	
4,600.0	4,565.1	4,601.2	4,565.1	11.4	11.5	0.09	186.0	-433.0	331.1	314.1	16.98	19.497	
4,700.0	4,665.1	4,701.2	4,665.1	11.5	11.7	0.09	186.0	-433.0	331.1	313.8	17.31	19.126	
4,800.0	4,765.1	4,801.2	4,765.1	11.6	11.8	0.09	186.0	-433.0	331.1	313.4	17.64	18.767	
4,900.0	4,865.1	4,901.2	4,865.1	11.7	11.9	0.09	186.0	-433.0	331.1	313.1	17.97	18.422	
5,000.0	4,965.1	5,001.2	4,965.1	11.9	12.0	0.09	186.0	-433.0	331.1	312.8	18.30	18.088	
5,100.0	5,065.1	5,101.2	5,065.1	12.0	12.2	0.09	186.0	-433.0	331.1	312.4	18.64	17.765	

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 Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3C-4H - 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	5,165.1	5,201.2	5,165.1	12.1	12.3	0.09	186.0	-433.0	331.1	312.1	18.97	17.453	
5,300.0	5,265.1	5,301.2	5,265.1	12.3	12.4	0.09	186.0	-433.0	331.1	311.8	19.30	17.152	
5,400.0	5,365.1	5,401.2	5,365.1	12.4	12.5	0.09	186.0	-433.0	331.1	311.4	19.64	16.860	
5,500.0	5,465.1	5,501.2	5,465.1	12.5	12.7	0.09	186.0	-433.0	331.1	311.1	19.97	16.578	
5,600.0	5,565.1	5,601.2	5,565.1	12.7	12.8	0.09	186.0	-433.0	331.1	310.8	20.31	16.304	
5,700.0	5,665.1	5,701.2	5,665.1	12.8	12.9	0.09	186.0	-433.0	331.1	310.4	20.64	16.039	
5,800.0	5,765.1	5,801.2	5,765.1	12.9	13.1	0.09	186.0	-433.0	331.1	310.1	20.98	15.782	
5,900.0	5,865.1	5,901.2	5,865.1	13.1	13.2	0.09	186.0	-433.0	331.1	309.8	21.31	15.533	
6,000.0	5,965.1	6,001.2	5,965.1	13.2	13.3	0.09	186.0	-433.0	331.1	309.4	21.65	15.291	
6,100.0	6,065.1	6,101.2	6,065.1	13.3	13.5	0.09	186.0	-433.0	331.1	309.1	21.99	15.057	
6,200.0	6,165.1	6,201.2	6,165.1	13.5	13.6	0.09	186.0	-433.0	331.1	308.7	22.33	14.829	
6,300.0	6,265.1	6,301.2	6,265.1	13.6	13.8	0.09	186.0	-433.0	331.1	308.4	22.66	14.608	
6,400.0	6,365.1	6,401.2	6,365.1	13.8	13.9	0.09	186.0	-433.0	331.1	308.1	23.00	14.393	
6,500.0	6,465.1	6,501.2	6,465.1	13.9	14.0	0.09	186.0	-433.0	331.1	307.7	23.34	14.185	
6,524.4	6,489.5	6,525.6	6,489.4	13.9	14.1	0.14	186.0	-432.7	331.1	307.7	23.42	14.135	
6,600.0	6,565.1	6,600.6	6,564.1	14.0	14.1	1.21	186.0	-426.5	331.1	307.5	23.67	13.988	
6,700.0	6,665.1	6,696.3	6,657.9	14.2	14.0	4.52	186.0	-407.3	332.2	308.2	24.02	13.831	
6,800.0	6,764.9	6,787.2	6,743.7	14.3	13.9	-80.93	186.0	-377.7	335.6	308.1	27.47	12.219	
6,900.0	6,863.0	6,875.2	6,822.7	14.2	13.7	-76.63	186.0	-338.9	341.0	313.9	27.10	12.583	
7,000.0	6,957.6	6,960.8	6,894.4	14.0	13.4	-72.70	186.0	-292.1	347.7	321.1	26.58	13.083	
7,100.0	7,046.8	7,044.5	6,958.5	13.8	13.3	-69.19	186.0	-238.5	355.3	329.3	25.98	13.673	
7,200.0	7,128.8	7,126.5	7,014.9	13.6	13.1	-66.15	186.0	-179.0	363.1	337.7	25.43	14.279	
7,300.0	7,202.1	7,207.1	7,063.3	13.4	13.1	-63.56	186.0	-114.7	370.8	345.7	25.03	14.812	
7,400.0	7,265.2	7,286.6	7,103.7	13.3	13.2	-61.45	186.0	-46.3	377.8	352.8	24.94	15.150	
7,500.0	7,316.9	7,365.2	7,136.0	13.6	13.8	-59.78	186.0	25.4	383.7	358.5	25.26	15.192	
7,600.0	7,356.3	7,443.1	7,160.0	14.3	14.5	-58.56	186.0	99.5	388.4	362.3	26.10	14.883	
7,700.0	7,382.4	7,520.6	7,175.8	15.4	15.5	-57.77	186.0	175.3	391.5	364.0	27.50	14.238	
7,800.0	7,394.9	7,600.0	7,183.4	16.8	16.7	-57.40	186.0	254.3	393.1	363.6	29.46	13.343	
7,900.0	7,396.0	7,688.7	7,184.0	18.4	18.1	-57.37	186.0	343.0	393.2	361.2	32.01	12.282	
8,000.0	7,396.0	7,788.7	7,184.0	20.2	20.0	-57.37	186.1	443.0	393.2	358.2	35.01	11.230	
8,100.0	7,396.0	7,888.7	7,184.0	22.1	21.9	-57.37	186.1	543.0	393.2	355.0	38.23	10.285	
8,200.0	7,396.0	7,988.7	7,184.0	24.1	23.9	-57.37	186.1	643.0	393.2	351.6	41.62	9.447	
8,300.0	7,396.0	8,088.7	7,184.0	26.2	26.0	-57.37	186.1	743.0	393.2	348.1	45.14	8.711	
8,400.0	7,396.0	8,188.7	7,184.0	28.4	28.2	-57.38	186.1	843.0	393.2	344.5	48.77	8.064	
8,500.0	7,396.0	8,288.7	7,184.0	30.6	30.4	-57.38	186.1	943.0	393.2	340.8	52.47	7.494	
8,600.0	7,396.0	8,388.7	7,184.0	32.8	32.7	-57.38	186.1	1,043.0	393.2	337.0	56.24	6.992	
8,700.0	7,396.0	8,488.7	7,184.0	35.1	35.0	-57.38	186.1	1,143.0	393.2	333.2	60.07	6.547	
8,800.0	7,396.0	8,588.7	7,184.0	37.4	37.3	-57.38	186.1	1,243.0	393.3	329.3	63.94	6.151	
8,900.0	7,396.0	8,688.7	7,184.0	39.7	39.6	-57.38	186.1	1,343.0	393.3	325.4	67.84	5.797	
9,000.0	7,396.0	8,788.7	7,184.0	42.1	41.9	-57.38	186.1	1,443.0	393.3	321.5	71.78	5.479	
9,100.0	7,396.0	8,888.7	7,184.0	44.4	44.3	-57.38	186.1	1,543.0	393.3	317.5	75.74	5.193	
9,200.0	7,396.0	8,988.7	7,184.0	46.8	46.7	-57.38	186.1	1,643.0	393.3	313.6	79.72	4.933	
9,300.0	7,396.0	9,088.7	7,184.0	49.2	49.1	-57.38	186.1	1,743.0	393.3	309.6	83.72	4.698	
9,400.0	7,396.0	9,188.7	7,184.0	51.6	51.4	-57.38	186.1	1,843.0	393.3	305.6	87.74	4.483	
9,500.0	7,396.0	9,288.7	7,184.0	54.0	53.8	-57.38	186.1	1,943.0	393.3	301.5	91.77	4.286	
9,600.0	7,396.0	9,388.7	7,184.0	56.4	56.2	-57.38	186.1	2,043.0	393.3	297.5	95.81	4.105	
9,700.0	7,396.0	9,488.7	7,184.0	58.8	58.7	-57.38	186.1	2,143.0	393.3	293.5	99.87	3.938	
9,800.0	7,396.0	9,588.7	7,184.0	61.2	61.1	-57.39	186.1	2,243.0	393.3	289.4	103.93	3.785	
9,900.0	7,396.0	9,688.7	7,184.0	63.6	63.5	-57.39	186.1	2,343.0	393.3	285.3	108.00	3.642	
10,000.0	7,396.0	9,788.7	7,184.0	66.0	65.9	-57.39	186.1	2,443.0	393.3	281.3	112.09	3.509	
10,100.0	7,396.0	9,888.7	7,184.0	68.4	68.3	-57.39	186.1	2,543.0	393.4	277.2	116.17	3.386	
10,200.0	7,396.0	9,988.7	7,184.0	70.9	70.8	-57.39	186.1	2,643.0	393.4	273.1	120.27	3.271	

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 Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3C-4H - 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
10,300.0	7,396.0	10,088.7	7,184.0	73.3	73.2	-57.39	186.1	2,743.0	393.4	269.0	124.36	3.163	
10,400.0	7,396.0	10,188.7	7,184.0	75.7	75.6	-57.39	186.1	2,843.0	393.4	264.9	128.47	3.062	
10,500.0	7,396.0	10,288.7	7,184.0	78.2	78.1	-57.39	186.1	2,943.0	393.4	260.8	132.58	2.967	
10,600.0	7,396.0	10,388.7	7,184.0	80.6	80.5	-57.39	186.1	3,043.0	393.4	256.7	136.69	2.878	
10,700.0	7,396.0	10,488.7	7,184.0	83.1	83.0	-57.39	186.1	3,143.0	393.4	252.6	140.80	2.794	
10,800.0	7,396.0	10,588.7	7,184.0	85.5	85.4	-57.39	186.1	3,243.0	393.4	248.5	144.92	2.715	
10,900.0	7,396.0	10,688.7	7,184.0	87.9	87.9	-57.39	186.2	3,343.0	393.4	244.4	149.05	2.640	
11,000.0	7,396.0	10,788.7	7,184.0	90.4	90.3	-57.39	186.2	3,443.0	393.4	240.3	153.17	2.569	
11,100.0	7,396.0	10,888.7	7,184.0	92.8	92.8	-57.39	186.2	3,543.0	393.4	236.1	157.30	2.501	
11,200.0	7,396.0	10,988.7	7,184.0	95.3	95.2	-57.40	186.2	3,643.0	393.4	232.0	161.43	2.437	
11,300.0	7,396.0	11,088.7	7,184.0	97.7	97.7	-57.40	186.2	3,743.0	393.4	227.9	165.56	2.376	
11,400.0	7,396.0	11,188.7	7,184.0	100.2	100.1	-57.40	186.2	3,843.0	393.5	223.8	169.70	2.319	
11,500.0	7,396.0	11,288.7	7,184.0	102.6	102.6	-57.40	186.2	3,943.0	393.5	219.6	173.84	2.263	
11,600.0	7,396.0	11,388.7	7,184.0	105.1	105.0	-57.40	186.2	4,043.0	393.5	215.5	177.97	2.211	
11,700.0	7,396.0	11,488.7	7,184.0	107.6	107.5	-57.40	186.2	4,143.0	393.5	211.4	182.12	2.161	
11,800.0	7,396.0	11,588.7	7,184.0	110.0	109.9	-57.40	186.2	4,243.0	393.5	207.2	186.26	2.113	
11,900.0	7,396.0	11,688.7	7,184.0	112.5	112.4	-57.40	186.2	4,343.0	393.5	203.1	190.40	2.067	
11,955.9	7,396.0	11,744.6	7,184.0	113.8	113.8	-57.40	186.2	4,398.9	393.5	200.8	192.72	2.042	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3E-4H - 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	-180.00	-10.9	0.0	10.9				
100.0	100.0	100.0	100.0	0.2	0.2	-180.00	-10.9	0.0	10.9	10.6	0.30	35.986	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-10.9	0.0	10.9	10.3	0.65	16.742	
300.0	300.0	300.0	300.0	0.5	0.5	-75.94	-10.9	0.0	10.7	9.7	1.00	10.655	
399.3	399.3	399.3	399.3	0.7	0.7	-90.00	-10.9	0.0	10.4	9.0	1.35	7.651	CC
400.0	400.0	400.0	400.0	0.7	0.7	-90.12	-10.9	0.0	10.4	9.0	1.36	7.638	ES
500.0	499.9	499.9	499.9	0.9	0.8	-112.90	-10.9	0.0	11.3	9.5	1.72	6.558	
600.0	599.7	599.7	599.7	1.1	1.0	-135.27	-10.9	0.0	14.7	12.7	2.07	7.125	
700.0	699.4	699.4	699.4	1.3	1.2	-150.43	-10.9	0.0	21.1	18.6	2.41	8.722	
800.0	798.9	798.9	798.9	1.5	1.4	-159.53	-10.9	0.0	29.8	27.0	2.76	10.800	
900.0	898.3	898.7	898.7	1.8	1.5	-164.25	-11.6	-0.6	40.0	36.9	3.10	12.894	
1,000.0	997.4	998.7	998.7	2.0	1.7	-166.11	-13.5	-2.2	50.8	47.4	3.45	14.726	
1,100.0	1,096.3	1,098.8	1,098.6	2.3	1.9	-166.55	-16.8	-5.1	62.1	58.3	3.80	16.323	
1,200.0	1,194.9	1,198.9	1,198.6	2.7	2.1	-166.21	-21.5	-9.1	73.8	69.7	4.17	17.721	
1,300.0	1,293.4	1,299.3	1,298.6	3.0	2.3	-165.30	-27.4	-14.2	85.2	80.6	4.55	18.735	
1,400.0	1,391.9	1,399.8	1,398.7	3.3	2.5	-163.83	-34.7	-20.5	95.4	90.4	4.95	19.279	
1,500.0	1,490.4	1,500.5	1,498.8	3.7	2.7	-161.93	-43.4	-27.9	104.4	99.0	5.37	19.440	
1,600.0	1,588.9	1,601.3	1,598.7	4.0	3.0	-159.64	-53.3	-36.5	112.4	106.6	5.83	19.288	
1,700.0	1,687.3	1,700.9	1,697.3	4.4	3.2	-157.35	-63.9	-45.5	120.1	113.8	6.31	19.032	
1,800.0	1,785.8	1,800.5	1,796.0	4.7	3.5	-155.34	-74.4	-54.6	127.9	121.1	6.81	18.788	
1,900.0	1,884.3	1,900.1	1,894.6	5.1	3.8	-153.57	-84.9	-63.6	135.9	128.6	7.32	18.560	
2,000.0	1,982.8	1,999.7	1,993.2	5.4	4.0	-151.99	-95.4	-72.6	144.0	136.1	7.85	18.348	
2,100.0	2,081.3	2,099.3	2,091.9	5.7	4.3	-150.58	-105.9	-81.7	152.2	143.8	8.38	18.152	
2,200.0	2,179.7	2,198.9	2,190.5	6.1	4.6	-149.32	-116.4	-90.7	160.4	151.5	8.93	17.972	
2,300.0	2,278.2	2,298.5	2,289.1	6.4	4.9	-148.18	-126.9	-99.8	168.8	159.3	9.48	17.807	
2,400.0	2,376.7	2,398.1	2,387.8	6.8	5.2	-147.14	-137.4	-108.8	177.2	167.1	10.04	17.655	
2,500.0	2,475.2	2,497.7	2,486.4	7.1	5.4	-146.20	-147.9	-117.8	185.6	175.0	10.60	17.516	
2,600.0	2,573.7	2,597.3	2,585.0	7.5	5.7	-145.35	-158.4	-126.9	194.1	183.0	11.16	17.389	
2,700.0	2,672.1	2,696.9	2,683.6	7.8	6.0	-144.56	-168.9	-135.9	202.7	190.9	11.73	17.272	
2,800.0	2,770.6	2,796.5	2,782.3	8.2	6.3	-143.84	-179.4	-144.9	211.2	198.9	12.31	17.165	
2,900.0	2,869.2	2,896.1	2,880.9	8.5	6.6	-143.14	-190.0	-154.0	219.5	206.6	12.88	17.036	
3,000.0	2,968.0	2,995.8	2,979.6	8.8	6.9	-142.25	-200.5	-163.0	226.5	213.0	13.47	16.812	
3,100.0	3,067.1	3,095.5	3,078.4	9.1	7.2	-141.13	-211.0	-172.1	232.2	218.1	14.07	16.501	
3,200.0	3,166.4	3,195.3	3,177.2	9.4	7.5	-139.80	-221.5	-181.1	236.6	221.9	14.68	16.118	
3,300.0	3,265.9	3,295.0	3,275.9	9.6	7.8	-138.23	-232.0	-190.2	239.8	224.5	15.30	15.679	
3,400.0	3,365.5	3,394.7	3,374.6	9.8	8.0	-136.42	-242.6	-199.2	242.0	226.1	15.93	15.197	
3,500.0	3,465.3	3,494.3	3,473.3	10.0	8.3	-134.35	-253.1	-208.3	243.2	226.6	16.56	14.686	
3,600.0	3,565.2	3,593.8	3,571.8	10.2	8.6	-132.00	-263.6	-217.3	243.5	226.3	17.20	14.160	
3,700.0	3,665.1	3,693.1	3,670.2	10.3	8.9	-129.34	-274.1	-226.3	243.2	225.3	17.84	13.634	
3,800.0	3,765.1	3,792.3	3,768.4	10.4	9.2	-126.35	-284.5	-235.3	242.3	223.9	18.46	13.124	
3,900.0	3,865.1	3,891.4	3,866.5	10.5	9.5	128.39	-295.0	-244.3	241.4	226.6	14.84	16.267	
3,970.5	3,935.6	3,961.2	3,935.6	10.6	9.7	130.70	-302.3	-250.7	241.2	226.3	14.91	16.173	
4,000.0	3,965.1	3,990.4	3,964.5	10.7	9.8	131.66	-305.4	-253.3	241.2	226.3	14.95	16.136	
4,100.0	4,065.1	4,089.4	4,062.6	10.8	10.1	134.93	-315.9	-262.3	241.9	226.8	15.10	16.017	
4,200.0	4,165.1	4,188.4	4,160.7	10.9	10.4	138.17	-326.3	-271.3	243.3	228.0	15.30	15.905	
4,300.0	4,265.1	4,287.5	4,258.7	11.0	10.7	141.36	-336.8	-280.3	245.5	230.0	15.55	15.794	
4,400.0	4,365.1	4,386.5	4,356.8	11.1	11.0	144.49	-347.2	-289.2	248.5	232.7	15.84	15.684	
4,500.0	4,465.1	4,485.5	4,454.8	11.2	11.3	147.53	-357.7	-298.2	252.2	236.0	16.19	15.575	
4,600.0	4,565.1	4,584.5	4,552.9	11.4	11.6	150.48	-368.1	-307.2	256.6	240.0	16.59	15.468	
4,700.0	4,665.1	4,683.6	4,651.0	11.5	11.9	153.33	-378.6	-316.2	261.7	244.7	17.03	15.367	
4,800.0	4,765.1	4,782.6	4,749.0	11.6	12.2	156.06	-389.0	-325.2	267.4	249.9	17.51	15.273	
4,900.0	4,865.1	4,881.6	4,847.1	11.7	12.5	158.67	-399.5	-334.2	273.7	255.7	18.02	15.190	

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 Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3E-4H - 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
5,000.0	4,965.1	4,980.7	4,945.2	11.9	12.7	161.16	-409.9	-343.2	280.5	262.0	18.55	15.120	
5,100.0	5,065.1	5,079.7	5,043.2	12.0	13.0	163.54	-420.3	-352.2	287.9	268.8	19.11	15.064	
5,200.0	5,165.1	5,178.7	5,141.3	12.1	13.3	165.79	-430.8	-361.1	295.7	276.0	19.68	15.023	
5,300.0	5,265.1	5,277.7	5,239.3	12.3	13.6	167.92	-441.2	-370.1	304.0	283.7	20.27	14.998	
5,400.0	5,365.1	5,376.8	5,337.4	12.4	13.9	169.94	-451.7	-379.1	312.7	291.8	20.86	14.989	
5,500.0	5,465.1	5,475.8	5,435.5	12.5	14.2	171.85	-462.1	-388.1	321.7	300.2	21.46	14.994	
5,600.0	5,565.1	5,576.9	5,535.6	12.7	14.5	173.66	-472.6	-397.1	330.9	308.9	22.05	15.005	
5,700.0	5,665.1	5,680.3	5,638.3	12.8	14.8	175.22	-482.1	-405.3	339.3	316.7	22.62	14.999	
5,800.0	5,765.1	5,784.2	5,741.6	12.9	15.0	176.48	-490.3	-412.3	346.7	323.5	23.15	14.973	
5,900.0	5,865.1	5,888.5	5,845.5	13.1	15.3	177.49	-497.0	-418.1	352.8	329.2	23.64	14.923	
6,000.0	5,965.1	5,993.0	5,949.8	13.2	15.5	178.26	-502.3	-422.7	357.8	333.7	24.09	14.849	
6,100.0	6,065.1	6,097.8	6,054.4	13.3	15.6	178.81	-506.2	-426.0	361.4	336.9	24.50	14.749	
6,200.0	6,165.1	6,202.7	6,159.3	13.5	15.8	179.14	-508.6	-428.1	363.7	338.8	24.87	14.621	
6,300.0	6,265.1	6,307.7	6,264.3	13.6	15.9	179.28	-509.6	-428.9	364.6	339.4	25.21	14.464	
6,400.0	6,365.1	6,408.5	6,365.1	13.8	16.0	179.28	-509.6	-428.9	364.6	339.1	25.51	14.289	
6,500.0	6,465.1	6,508.5	6,465.1	13.9	16.2	179.28	-509.6	-428.9	364.6	338.8	25.82	14.118	
6,600.0	6,565.1	6,607.3	6,563.6	14.0	16.2	178.27	-509.6	-422.5	364.7	338.7	26.03	14.014	
6,700.0	6,665.1	6,702.5	6,656.9	14.2	16.2	175.30	-509.6	-403.5	365.9	339.8	26.04	14.050	
6,800.0	6,764.9	6,793.0	6,742.4	14.3	16.0	81.18	-509.6	-374.2	369.3	341.0	28.27	13.061	
6,900.0	6,863.0	6,880.7	6,821.1	14.2	15.9	77.29	-509.6	-335.7	374.3	346.1	28.23	13.261	
7,000.0	6,957.6	6,966.0	6,892.7	14.0	15.7	73.72	-509.6	-289.3	380.6	352.7	27.90	13.642	
7,100.0	7,046.8	7,050.0	6,957.2	13.8	15.5	70.52	-509.6	-235.6	387.7	360.3	27.35	14.173	
7,200.0	7,128.8	7,131.2	7,013.2	13.6	15.4	67.75	-509.6	-176.9	394.9	368.2	26.70	14.788	
7,300.0	7,202.1	7,211.6	7,061.8	13.4	15.4	65.39	-509.6	-112.9	401.9	375.8	26.11	15.393	
7,400.0	7,265.2	7,291.0	7,102.4	13.3	15.4	63.45	-509.6	-44.7	408.2	382.5	25.76	15.845	
7,500.0	7,316.9	7,369.5	7,134.9	13.6	15.6	61.93	-509.6	26.7	413.6	387.7	25.91	15.964	
7,600.0	7,356.3	7,450.0	7,159.9	14.3	16.1	60.80	-509.6	103.2	417.8	391.1	26.67	15.662	
7,700.0	7,382.4	7,524.8	7,175.4	15.4	16.8	60.12	-509.6	176.3	420.5	392.3	28.14	14.942	
7,800.0	7,394.9	7,600.0	7,183.1	16.8	17.8	59.83	-509.6	251.1	421.7	391.4	30.27	13.928	
7,900.0	7,396.0	7,691.9	7,184.0	18.4	19.2	59.82	-509.6	343.0	421.7	388.6	33.04	12.763	
8,000.0	7,396.0	7,791.9	7,184.0	20.2	21.0	59.82	-509.6	443.0	421.7	385.6	36.12	11.675	
8,100.0	7,396.0	7,891.9	7,184.0	22.1	22.8	59.82	-509.6	543.0	421.7	382.3	39.42	10.697	
8,200.0	7,396.0	7,991.9	7,184.0	24.1	24.8	59.82	-509.6	643.0	421.7	378.8	42.90	9.830	
8,300.0	7,396.0	8,091.9	7,184.0	26.2	26.9	59.82	-509.6	743.0	421.7	375.2	46.51	9.067	
8,400.0	7,396.0	8,191.9	7,184.0	28.4	29.0	59.82	-509.6	843.0	421.7	371.4	50.22	8.396	
8,500.0	7,396.0	8,291.9	7,184.0	30.6	31.2	59.82	-509.6	943.0	421.7	367.6	54.02	7.805	
8,600.0	7,396.0	8,391.9	7,184.0	32.8	33.5	59.82	-509.6	1,043.0	421.6	363.8	57.89	7.283	
8,700.0	7,396.0	8,491.9	7,184.0	35.1	35.7	59.81	-509.6	1,143.0	421.6	359.8	61.81	6.821	
8,800.0	7,396.0	8,591.9	7,184.0	37.4	38.0	59.81	-509.6	1,243.0	421.6	355.9	65.78	6.410	
8,900.0	7,396.0	8,691.9	7,184.0	39.7	40.3	59.81	-509.6	1,343.0	421.6	351.8	69.79	6.042	
9,000.0	7,396.0	8,791.9	7,184.0	42.1	42.6	59.81	-509.6	1,443.0	421.6	347.8	73.82	5.711	
9,100.0	7,396.0	8,891.9	7,184.0	44.4	45.0	59.81	-509.6	1,543.0	421.6	343.7	77.88	5.413	
9,200.0	7,396.0	8,991.9	7,184.0	46.8	47.3	59.81	-509.6	1,643.0	421.6	339.6	81.97	5.144	
9,300.0	7,396.0	9,091.9	7,184.0	49.2	49.7	59.81	-509.6	1,743.0	421.6	335.5	86.07	4.898	
9,400.0	7,396.0	9,191.9	7,184.0	51.6	52.1	59.81	-509.6	1,843.0	421.6	331.4	90.19	4.675	
9,500.0	7,396.0	9,291.9	7,184.0	54.0	54.5	59.81	-509.6	1,943.0	421.6	327.3	94.33	4.470	
9,600.0	7,396.0	9,391.9	7,184.0	56.4	56.8	59.81	-509.6	2,043.0	421.6	323.1	98.47	4.281	
9,700.0	7,396.0	9,491.9	7,184.0	58.8	59.2	59.81	-509.6	2,143.0	421.6	319.0	102.63	4.108	
9,800.0	7,396.0	9,591.9	7,184.0	61.2	61.6	59.81	-509.6	2,243.0	421.6	314.8	106.80	3.948	
9,900.0	7,396.0	9,691.9	7,184.0	63.6	64.1	59.81	-509.6	2,343.0	421.6	310.6	110.98	3.799	
10,000.0	7,396.0	9,791.9	7,184.0	66.0	66.5	59.81	-509.6	2,443.0	421.6	306.4	115.16	3.661	
10,100.0	7,396.0	9,891.9	7,184.0	68.4	68.9	59.81	-509.6	2,543.0	421.6	302.2	119.35	3.532	

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 Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3E-4H - 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
10,200.0	7,396.0	9,991.9	7,184.0	70.9	71.3	59.81	-509.6	2,643.0	421.6	298.0	123.55	3.412	
10,300.0	7,396.0	10,091.9	7,184.0	73.3	73.7	59.81	-509.6	2,743.0	421.6	293.8	127.75	3.300	
10,400.0	7,396.0	10,191.9	7,184.0	75.7	76.2	59.81	-509.6	2,843.0	421.6	289.6	131.96	3.195	
10,500.0	7,396.0	10,291.9	7,184.0	78.2	78.6	59.81	-509.6	2,943.0	421.6	285.4	136.17	3.096	
10,600.0	7,396.0	10,391.9	7,184.0	80.6	81.0	59.81	-509.6	3,043.0	421.6	281.2	140.39	3.003	
10,700.0	7,396.0	10,491.9	7,184.0	83.1	83.5	59.81	-509.6	3,143.0	421.5	276.9	144.61	2.915	
10,800.0	7,396.0	10,591.9	7,184.0	85.5	85.9	59.81	-509.6	3,243.0	421.5	272.7	148.83	2.832	
10,900.0	7,396.0	10,691.9	7,184.0	87.9	88.3	59.81	-509.6	3,343.0	421.5	268.5	153.06	2.754	
11,000.0	7,396.0	10,791.9	7,184.0	90.4	90.8	59.81	-509.6	3,443.0	421.5	264.2	157.29	2.680	
11,100.0	7,396.0	10,891.9	7,184.0	92.8	93.2	59.81	-509.6	3,543.0	421.5	260.0	161.52	2.610	
11,200.0	7,396.0	10,991.9	7,184.0	95.3	95.7	59.81	-509.6	3,643.0	421.5	255.8	165.76	2.543	
11,300.0	7,396.0	11,091.9	7,184.0	97.7	98.1	59.80	-509.6	3,743.0	421.5	251.5	169.99	2.480	
11,400.0	7,396.0	11,191.9	7,184.0	100.2	100.6	59.80	-509.6	3,843.0	421.5	247.3	174.23	2.419	
11,500.0	7,396.0	11,291.9	7,184.0	102.6	103.0	59.80	-509.6	3,943.0	421.5	243.0	178.47	2.362	
11,600.0	7,396.0	11,391.9	7,184.0	105.1	105.5	59.80	-509.6	4,043.0	421.5	238.8	182.72	2.307	
11,700.0	7,396.0	11,491.9	7,184.0	107.6	107.9	59.80	-509.6	4,143.0	421.5	234.5	186.96	2.254	
11,800.0	7,396.0	11,591.9	7,184.0	110.0	110.4	59.80	-509.6	4,243.0	421.5	230.3	191.21	2.204	
11,900.0	7,396.0	11,691.9	7,184.0	112.5	112.8	59.80	-509.6	4,343.0	421.5	226.0	195.46	2.156	
11,955.9	7,396.0	11,747.9	7,184.0	113.8	114.2	59.80	-509.6	4,398.9	421.5	223.7	197.83	2.130	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3F-4H - Hz - Plan #2

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	180.00	-21.9	0.0	21.9				
100.0	100.0	100.0	100.0	0.2	0.2	180.00	-21.9	0.0	21.9	21.6	0.30	71.973	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-21.9	0.0	21.9	21.2	0.65	33.485	
300.0	300.0	300.0	300.0	0.5	0.5	-73.70	-21.9	0.0	21.6	20.6	1.00	21.539	
400.0	400.0	400.0	400.0	0.7	0.7	-80.57	-21.9	0.0	21.0	19.7	1.36	15.487	
481.9	481.8	481.8	481.8	0.8	0.8	-90.00	-21.9	0.0	20.7	19.1	1.65	12.534	CC
500.0	499.9	499.9	499.9	0.9	0.8	-92.53	-21.9	0.0	20.7	19.0	1.72	12.069	ES
600.0	599.7	599.7	599.7	1.1	1.0	-108.67	-21.9	0.0	21.9	19.8	2.09	10.481	
700.0	699.4	699.3	699.3	1.3	1.2	-123.63	-22.6	-0.4	25.6	23.2	2.46	10.437	SF
800.0	798.9	799.0	798.9	1.5	1.4	-133.37	-24.9	-1.7	31.8	29.0	2.82	11.267	
900.0	898.3	898.6	898.5	1.8	1.6	-138.96	-28.6	-3.8	39.7	36.5	3.20	12.414	
1,000.0	997.4	998.3	998.0	2.0	1.7	-141.89	-33.9	-6.8	48.9	45.3	3.59	13.631	
1,100.0	1,096.3	1,097.9	1,097.3	2.3	1.9	-143.21	-40.7	-10.5	59.3	55.3	4.00	14.814	
1,200.0	1,194.9	1,197.5	1,196.4	2.7	2.2	-143.58	-49.0	-15.2	70.7	66.3	4.44	15.916	
1,300.0	1,293.4	1,297.1	1,295.3	3.0	2.4	-143.06	-58.8	-20.7	82.5	77.6	4.92	16.774	
1,400.0	1,391.9	1,396.7	1,394.1	3.3	2.6	-141.64	-70.1	-27.0	94.0	88.5	5.43	17.293	
1,500.0	1,490.4	1,496.2	1,492.6	3.7	2.9	-139.58	-82.9	-34.1	105.2	99.3	6.00	17.554	
1,600.0	1,588.9	1,595.7	1,590.7	4.0	3.2	-137.08	-97.2	-42.1	116.5	109.9	6.61	17.630	
1,700.0	1,687.3	1,694.9	1,688.4	4.4	3.5	-134.61	-112.2	-50.5	127.8	120.6	7.24	17.655	
1,800.0	1,785.8	1,794.1	1,786.1	4.7	3.8	-132.54	-127.3	-58.9	139.4	131.5	7.88	17.680	
1,900.0	1,884.3	1,893.3	1,883.8	5.1	4.2	-130.79	-142.3	-67.3	151.1	142.5	8.53	17.708	
2,000.0	1,982.8	1,992.5	1,981.5	5.4	4.5	-129.29	-157.3	-75.7	162.9	153.7	9.18	17.736	
2,100.0	2,081.3	2,091.8	2,079.2	5.7	4.8	-127.99	-172.4	-84.1	174.8	165.0	9.84	17.765	
2,200.0	2,179.7	2,191.0	2,176.9	6.1	5.1	-126.87	-187.4	-92.5	186.8	176.3	10.50	17.793	
2,300.0	2,278.2	2,290.2	2,274.6	6.4	5.5	-125.87	-202.5	-100.9	198.9	187.7	11.16	17.822	
2,400.0	2,376.7	2,389.4	2,372.3	6.8	5.8	-124.99	-217.5	-109.3	211.0	199.2	11.82	17.850	
2,500.0	2,475.2	2,488.6	2,470.1	7.1	6.1	-124.21	-232.5	-117.7	223.1	210.7	12.48	17.877	
2,600.0	2,573.7	2,587.8	2,567.8	7.5	6.5	-123.51	-247.6	-126.2	235.3	222.2	13.14	17.904	
2,700.0	2,672.1	2,687.1	2,665.5	7.8	6.8	-122.87	-262.6	-134.6	247.5	233.7	13.81	17.929	
2,800.0	2,770.6	2,786.3	2,763.2	8.2	7.2	-122.30	-277.7	-143.0	259.8	245.3	14.47	17.954	
2,900.0	2,869.2	2,885.5	2,860.9	8.5	7.5	-121.77	-292.7	-151.4	271.8	256.7	15.13	17.969	
3,000.0	2,968.0	2,984.8	2,958.7	8.8	7.8	-121.03	-307.7	-159.8	283.1	267.3	15.77	17.945	
3,100.0	3,067.1	3,084.1	3,056.5	9.1	8.2	-120.05	-322.8	-168.2	293.5	277.1	16.41	17.887	
3,200.0	3,166.4	3,183.4	3,154.3	9.4	8.5	-118.85	-337.9	-176.6	303.1	286.1	17.02	17.806	
3,300.0	3,265.9	3,282.7	3,252.0	9.6	8.9	-117.44	-352.9	-185.0	312.1	294.5	17.62	17.714	
3,400.0	3,365.5	3,381.9	3,349.7	9.8	9.2	-115.84	-367.9	-193.4	320.6	302.4	18.19	17.620	
3,500.0	3,465.3	3,481.0	3,447.4	10.0	9.6	-114.05	-383.0	-201.8	328.6	309.8	18.74	17.535	
3,600.0	3,565.2	3,580.0	3,544.8	10.2	9.9	-112.07	-398.0	-210.2	336.2	317.0	19.25	17.470	
3,700.0	3,665.1	3,678.8	3,642.2	10.3	10.2	-109.92	-413.0	-218.6	343.7	324.0	19.71	17.436	
3,800.0	3,765.1	3,777.5	3,739.3	10.4	10.6	-107.61	-427.9	-226.9	351.2	331.0	20.14	17.441	
3,900.0	3,865.1	3,876.0	3,836.3	10.5	10.9	146.35	-442.8	-235.3	358.9	344.0	14.87	24.132	
4,000.0	3,965.1	3,974.4	3,933.3	10.7	11.3	148.73	-457.8	-243.6	367.2	351.9	15.34	23.943	
4,100.0	4,065.1	4,072.9	4,030.3	10.8	11.6	151.01	-472.7	-252.0	376.2	360.4	15.84	23.756	
4,200.0	4,165.1	4,171.4	4,127.3	10.9	12.0	153.18	-487.6	-260.3	385.7	369.4	16.36	23.578	
4,300.0	4,265.1	4,269.9	4,224.3	11.0	12.3	155.24	-502.5	-268.6	395.8	378.9	16.90	23.413	
4,400.0	4,365.1	4,368.4	4,321.2	11.1	12.6	157.20	-517.5	-277.0	406.4	388.9	17.47	23.262	
4,500.0	4,465.1	4,466.8	4,418.2	11.2	13.0	159.07	-532.4	-285.3	417.4	399.3	18.05	23.127	
4,600.0	4,565.1	4,565.3	4,515.2	11.4	13.3	160.83	-547.3	-293.7	428.8	410.2	18.63	23.011	
4,700.0	4,665.1	4,663.8	4,612.2	11.5	13.7	162.51	-562.3	-302.0	440.6	421.4	19.23	22.911	
4,800.0	4,765.1	4,762.3	4,709.2	11.6	14.0	164.09	-577.2	-310.4	452.8	433.0	19.83	22.830	
4,900.0	4,865.1	4,860.8	4,806.2	11.7	14.4	165.60	-592.1	-318.7	465.3	444.9	20.44	22.765	
5,000.0	4,965.1	4,959.3	4,903.1	11.9	14.7	167.02	-607.0	-327.0	478.1	457.1	21.05	22.716	

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 Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3F-4H - Hz - Plan #2

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	5,065.1	5,057.7	5,000.1	12.0	15.0	168.37	-622.0	-335.4	491.2	469.6	21.66	22.681	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3G-4H - 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	180.00	-29.1	0.0	29.1				
100.0	100.0	100.0	100.0	0.2	0.2	180.00	-29.1	0.0	29.1	28.8	0.30	95.964	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-29.1	0.0	29.1	28.5	0.65	44.646	
300.0	300.0	300.0	300.0	0.5	0.5	-73.14	-29.1	0.0	28.9	27.9	1.00	28.802	
400.0	400.0	400.0	400.0	0.7	0.7	-78.24	-29.1	0.0	28.2	26.9	1.36	20.808	
443.6	443.6	443.4	443.4	0.8	0.8	-81.43	-29.3	-0.1	28.1	26.6	1.51	18.537	CC, ES
500.0	499.9	499.5	499.5	0.9	0.8	-85.98	-29.9	-0.3	28.4	26.6	1.72	16.497	
600.0	599.7	599.0	598.9	1.1	1.0	-94.45	-32.3	-1.4	30.3	28.2	2.09	14.481	
700.0	699.4	698.5	698.3	1.3	1.2	-102.24	-36.3	-3.1	34.2	31.8	2.48	13.784	SF
800.0	798.9	797.9	797.5	1.5	1.4	-108.54	-41.8	-5.5	40.1	37.2	2.90	13.847	
900.0	898.3	897.2	896.5	1.8	1.6	-113.20	-48.9	-8.5	47.7	44.4	3.33	14.328	
1,000.0	997.4	996.3	995.3	2.0	1.8	-116.49	-57.6	-12.3	57.0	53.2	3.79	15.020	
1,100.0	1,096.3	1,095.3	1,093.6	2.3	2.1	-118.73	-67.8	-16.7	67.8	63.5	4.29	15.799	
1,200.0	1,194.9	1,194.2	1,191.6	2.7	2.3	-120.22	-79.6	-21.8	80.1	75.2	4.82	16.595	
1,300.0	1,293.4	1,292.8	1,289.2	3.0	2.6	-120.85	-92.9	-27.5	93.3	87.9	5.39	17.317	
1,400.0	1,391.9	1,391.4	1,386.5	3.3	2.9	-120.43	-107.7	-33.9	107.1	101.1	5.99	17.886	
1,500.0	1,490.4	1,489.8	1,483.2	3.7	3.2	-119.35	-124.0	-40.9	121.3	114.7	6.61	18.349	
1,600.0	1,588.9	1,588.7	1,580.4	4.0	3.6	-118.19	-141.1	-48.3	135.9	128.6	7.25	18.735	
1,700.0	1,687.3	1,687.6	1,677.5	4.4	3.9	-117.25	-158.2	-55.6	150.5	142.6	7.90	19.052	
1,800.0	1,785.8	1,786.5	1,774.7	4.7	4.3	-116.49	-175.2	-63.0	165.1	156.6	8.55	19.316	
1,900.0	1,884.3	1,885.4	1,871.8	5.1	4.6	-115.84	-192.3	-70.3	179.7	170.5	9.20	19.539	
2,000.0	1,982.8	1,984.3	1,968.9	5.4	5.0	-115.30	-209.3	-77.7	194.4	184.6	9.85	19.729	
2,100.0	2,081.3	2,083.2	2,066.1	5.7	5.3	-114.83	-226.4	-85.0	209.1	198.6	10.51	19.894	
2,200.0	2,179.7	2,182.1	2,163.2	6.1	5.7	-114.42	-243.5	-92.4	223.8	212.6	11.17	20.037	
2,300.0	2,278.2	2,281.0	2,260.4	6.4	6.0	-114.06	-260.5	-99.7	238.5	226.7	11.83	20.163	
2,400.0	2,376.7	2,379.9	2,357.5	6.8	6.4	-113.75	-277.6	-107.1	253.2	240.7	12.49	20.275	
2,500.0	2,475.2	2,478.8	2,454.7	7.1	6.8	-113.46	-294.6	-114.4	267.9	254.8	13.15	20.374	
2,600.0	2,573.7	2,577.7	2,551.8	7.5	7.1	-113.21	-311.7	-121.8	282.7	268.8	13.81	20.463	
2,700.0	2,672.1	2,676.6	2,648.9	7.8	7.5	-112.98	-328.8	-129.2	297.4	282.9	14.48	20.544	
2,800.0	2,770.6	2,775.5	2,746.1	8.2	7.8	-112.78	-345.8	-136.5	312.1	297.0	15.14	20.617	
2,900.0	2,869.2	2,874.5	2,843.2	8.5	8.2	-112.62	-362.9	-143.9	326.7	310.9	15.80	20.682	
3,000.0	2,968.0	2,973.4	2,940.5	8.8	8.6	-112.25	-380.0	-151.2	340.7	324.2	16.43	20.736	
3,100.0	3,067.1	3,072.4	3,037.7	9.1	8.9	-111.65	-397.0	-158.6	354.0	337.0	17.04	20.780	
3,200.0	3,166.4	3,171.5	3,135.0	9.4	9.3	-110.85	-414.1	-165.9	366.8	349.2	17.62	20.820	
3,300.0	3,265.9	3,270.4	3,232.2	9.6	9.7	-109.85	-431.2	-173.3	379.0	360.9	18.17	20.865	
3,400.0	3,365.5	3,369.4	3,329.3	9.8	10.0	-108.69	-448.3	-180.7	390.9	372.2	18.68	20.921	
3,500.0	3,465.3	3,468.2	3,426.4	10.0	10.4	-107.35	-465.3	-188.0	402.4	383.3	19.17	20.996	
3,600.0	3,565.2	3,566.9	3,523.4	10.2	10.8	-105.87	-482.3	-195.4	413.7	394.1	19.61	21.098	
3,700.0	3,665.1	3,665.5	3,620.2	10.3	11.1	-104.25	-499.3	-202.7	424.9	404.9	20.01	21.235	
3,800.0	3,765.1	3,763.8	3,716.8	10.4	11.5	-102.51	-516.3	-210.0	436.0	415.7	20.36	21.415	
3,900.0	3,865.1	3,862.1	3,813.3	10.5	11.9	150.88	-533.3	-217.3	447.4	431.5	15.89	28.154	
4,000.0	3,965.1	3,960.3	3,909.8	10.7	12.2	152.72	-550.2	-224.6	459.2	442.7	16.44	27.928	
4,100.0	4,065.1	4,058.5	4,006.2	10.8	12.6	154.47	-567.1	-231.9	471.5	454.4	17.01	27.718	
4,200.0	4,165.1	4,156.7	4,102.7	10.9	12.9	156.13	-584.1	-239.2	484.1	466.6	17.59	27.526	
4,300.0	4,265.1	4,255.0	4,199.2	11.0	13.3	157.70	-601.0	-246.5	497.2	479.0	18.18	27.352	

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 Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 S4-T3N-R68W (Minch) - Minch 3H-4H - Hz - Plan #2

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	-180.00	-40.1	0.0	40.1				
100.0	100.0	100.0	100.0	0.2	0.2	-180.00	-40.1	0.0	40.1	39.8	0.30	131.950	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-40.1	0.0	40.1	39.4	0.65	61.389	CC, ES
300.0	300.0	299.3	299.3	0.5	0.5	-72.28	-40.9	-0.3	40.6	39.6	1.00	40.558	
400.0	400.0	398.6	398.6	0.7	0.7	-74.49	-43.3	-1.1	42.3	41.0	1.35	31.232	
500.0	499.9	497.9	497.7	0.9	0.9	-77.79	-47.4	-2.4	45.3	43.6	1.72	26.352	
600.0	599.7	597.0	596.7	1.1	1.1	-81.73	-53.1	-4.3	49.6	47.5	2.10	23.665	
700.0	699.4	695.9	695.3	1.3	1.3	-85.84	-60.5	-6.6	55.5	53.0	2.50	22.213	
800.0	798.9	794.7	793.7	1.5	1.5	-89.79	-69.4	-9.5	63.0	60.1	2.93	21.504	
900.0	898.3	893.3	891.6	1.8	1.8	-93.37	-79.9	-13.0	72.2	68.8	3.39	21.256	SF
1,000.0	997.4	991.6	989.1	2.0	2.0	-96.48	-92.0	-16.9	83.0	79.1	3.90	21.293	
1,100.0	1,096.3	1,089.7	1,086.1	2.3	2.3	-99.13	-105.6	-21.3	95.5	91.0	4.44	21.501	
1,200.0	1,194.9	1,187.4	1,182.5	2.7	2.6	-101.35	-120.8	-26.2	109.6	104.5	5.02	21.809	
1,300.0	1,293.4	1,284.9	1,278.4	3.0	3.0	-102.96	-137.5	-31.7	125.1	119.4	5.63	22.213	
1,400.0	1,391.9	1,382.0	1,373.7	3.3	3.3	-103.69	-155.6	-37.6	141.7	135.5	6.26	22.653	
1,500.0	1,490.4	1,478.8	1,468.3	3.7	3.7	-103.80	-175.2	-43.9	159.4	152.5	6.90	23.110	
1,600.0	1,588.9	1,576.7	1,563.5	4.0	4.1	-103.57	-196.2	-50.8	177.9	170.3	7.55	23.564	
1,700.0	1,687.3	1,674.9	1,659.3	4.4	4.5	-103.37	-217.3	-57.6	196.4	188.2	8.21	23.932	
1,800.0	1,785.8	1,773.2	1,755.0	4.7	4.9	-103.21	-238.4	-64.5	214.9	206.1	8.87	24.236	
1,900.0	1,884.3	1,871.5	1,850.7	5.1	5.3	-103.07	-259.5	-71.4	233.4	223.9	9.53	24.490	
2,000.0	1,982.8	1,969.7	1,946.5	5.4	5.7	-102.95	-280.6	-78.2	252.0	241.8	10.20	24.705	
2,100.0	2,081.3	2,068.0	2,042.2	5.7	6.2	-102.85	-301.7	-85.1	270.5	259.6	10.87	24.890	
2,200.0	2,179.7	2,166.3	2,137.9	6.1	6.6	-102.76	-322.8	-91.9	289.0	277.5	11.54	25.049	
2,300.0	2,278.2	2,264.5	2,233.7	6.4	7.0	-102.68	-343.9	-98.8	307.5	295.3	12.21	25.189	
2,400.0	2,376.7	2,362.8	2,329.4	6.8	7.4	-102.61	-365.1	-105.7	326.0	313.1	12.88	25.312	
2,500.0	2,475.2	2,461.1	2,425.1	7.1	7.8	-102.55	-386.2	-112.5	344.6	331.0	13.55	25.420	
2,600.0	2,573.7	2,559.3	2,520.8	7.5	8.2	-102.49	-407.3	-119.4	363.1	348.8	14.23	25.517	
2,700.0	2,672.1	2,657.6	2,616.6	7.8	8.7	-102.44	-428.4	-126.3	381.6	366.7	14.90	25.604	
2,800.0	2,770.6	2,755.9	2,712.3	8.2	9.1	-102.40	-449.5	-133.1	400.1	384.5	15.58	25.683	
2,900.0	2,869.2	2,854.2	2,808.0	8.5	9.5	-102.43	-470.6	-140.0	418.5	402.3	16.25	25.757	
3,000.0	2,968.0	2,952.5	2,903.8	8.8	9.9	-102.30	-491.7	-146.9	436.6	419.7	16.88	25.859	
3,100.0	3,067.1	3,050.8	2,999.6	9.1	10.4	-101.97	-512.8	-153.7	454.4	436.9	17.48	25.989	
3,200.0	3,166.4	3,149.2	3,095.4	9.4	10.8	-101.47	-534.0	-160.6	471.8	453.8	18.04	26.147	
3,300.0	3,265.9	3,247.4	3,191.1	9.6	11.2	-100.81	-555.1	-167.5	489.0	470.4	18.57	26.337	

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 Minch 3D-4H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 5090.0ft (Ensign)
Reference Site:	S4-T3N-R68W (Minch)	**MD Reference:**	WELL @ 5090.0ft (Ensign)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Minch 3D-4H	**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 WELL @ 5090.0ft (Ensign)	Coordinates are relative to: Minch 3D-4H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 °	Grid Convergence at Surface is: 0.31°