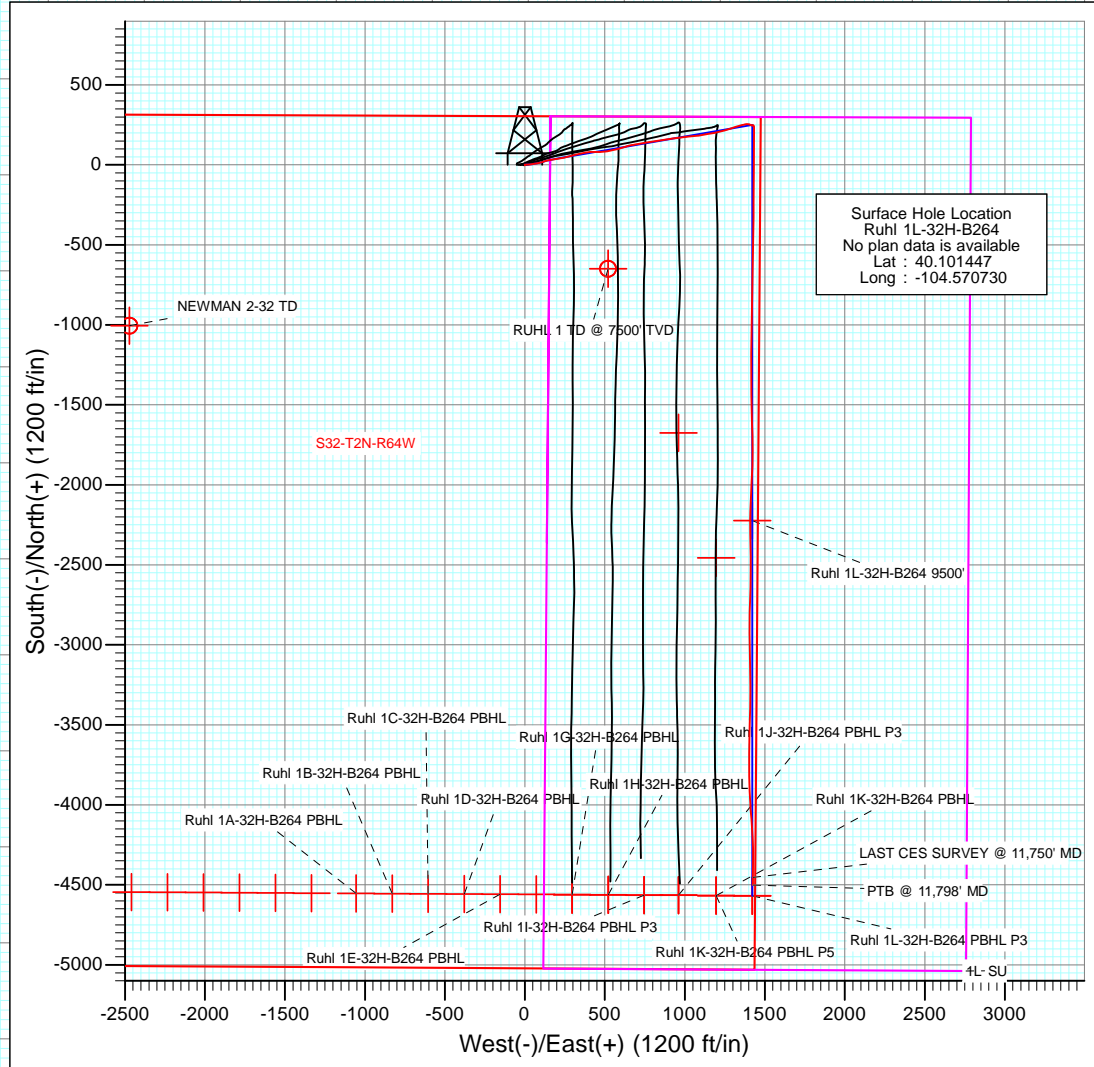
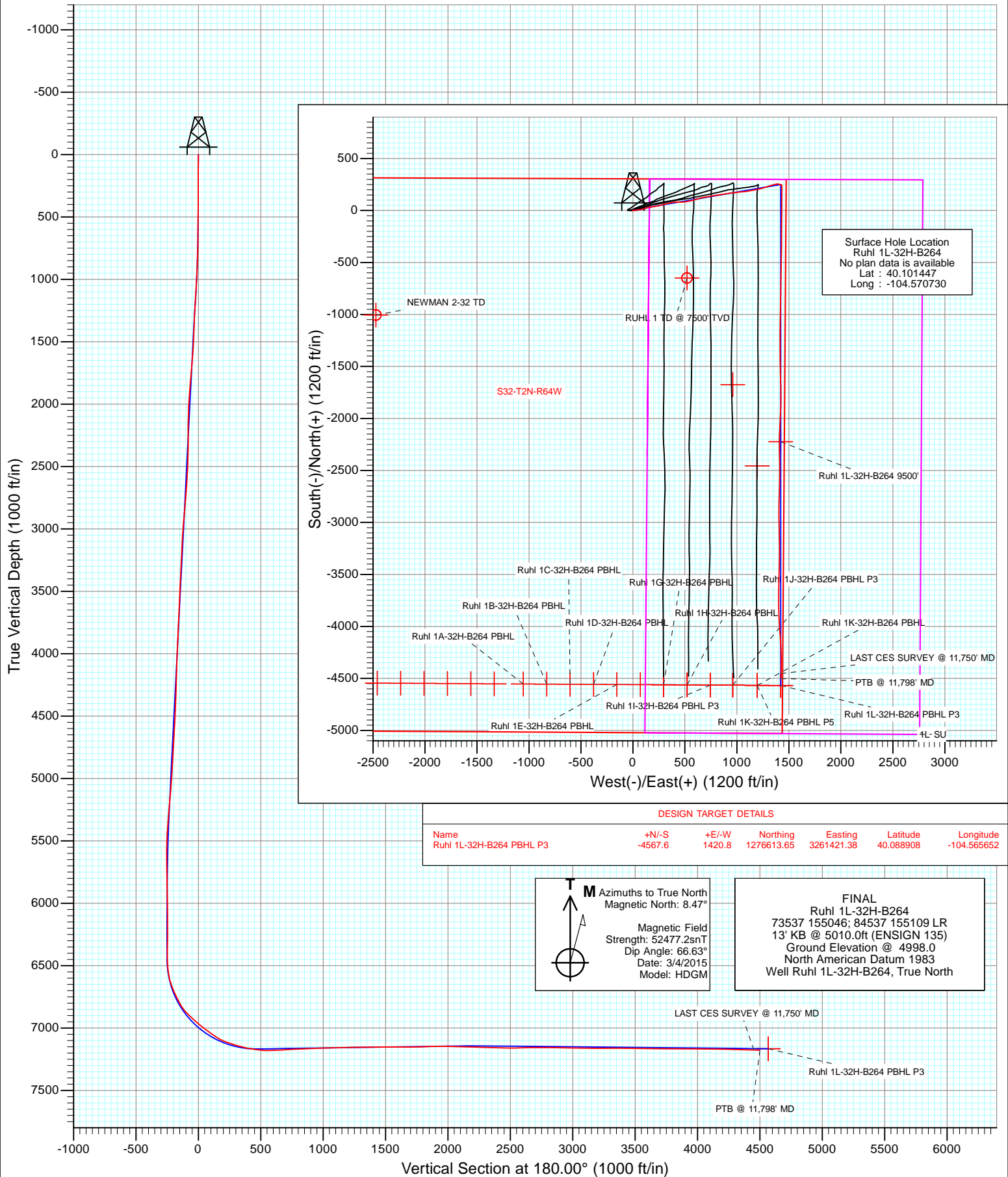


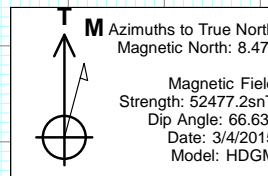


Project: DJ Wattenberg
 Site: S32-T2N-R64W (Newman/Ruhl)
 Well: Ruhl 1L-32H-B264
 Wellbore: Hz
 Design: FINAL



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Ruhl 1L-32H-B264 PBHL P3	-4567.6	1420.8	1276613.65	3261421.38	40.088908	-104.565652



FINAL
 Ruhl 1L-32H-B264
 73537 155046; 84537 155109 LR
 13' KB @ 5010.0ft (ENSIGN 135)
 Ground Elevation @ 4998.0
 North American Datum 1983
 Well Ruhl 1L-32H-B264, True North

LAST CES SURVEY @ 11,750' MD
 Ruhl 1L-32H-B264 PBHL P3
 PTB @ 11,798' MD

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Ruhl 1L-32H-B264
Project:	DJ Wattenberg	TVD Reference:	13' KB @ 5010.0ft (ENSIGN 135)
Site:	S32-T2N-R64W (Newman/Ruhl)	MD Reference:	13' KB @ 5010.0ft (ENSIGN 135)
Well:	Ruhl 1L-32H-B264	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

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		S32-T2N-R64W (Newman/Ruhl)			
Site Position:		Northing:	1,281,150.65 ft	Latitude:	40.101468
From:	Lat/Long	Easting:	3,257,734.55 ft	Longitude:	-104.578660
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.60 °

Well	Ruhl 1L-32H-B264					
Well Position	+N/-S	0.0 ft	Northing:	1,281,166.13 ft	Latitude:	40.101447
	+E/-W	0.0 ft	Easting:	3,259,952.82 ft	Longitude:	-104.570730
Position Uncertainty		0.0 ft	Wellhead Elevation:	0.0 ft	Ground Level:	4,998.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	3/4/2015	8.47	66.63	52,477

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	180.00	

Survey Program	Date	3/13/2015			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
174.0	11,798.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
174.0	0.40	302.60	174.0	0.3	-0.5	-0.3	0.23	0.23		
235.0	0.60	38.70	235.0	0.7	-0.5	-0.7	1.24	0.33		
327.0	1.60	94.70	327.0	1.0	1.1	-1.0	1.48	1.09		
419.0	2.90	86.70	418.9	1.0	4.7	-1.0	1.45	1.41		
510.0	4.60	80.80	509.7	1.7	10.6	-1.7	1.91	1.87		
602.0	6.10	85.40	601.3	2.7	19.1	-2.7	1.69	1.63		
694.0	8.10	85.50	692.6	3.6	30.4	-3.6	2.17	2.17		
785.0	9.80	85.00	782.5	4.8	44.6	-4.8	1.87	1.87		
877.0	12.00	78.70	872.8	7.3	61.7	-7.3	2.72	2.39		
969.0	13.60	78.70	962.5	11.3	81.7	-11.3	1.74	1.74		
1,061.0	13.40	75.30	1,052.0	16.1	102.6	-16.1	0.89	-0.22		
1,112.0	12.10	72.50	1,101.7	19.2	113.5	-19.2	2.82	-2.55		

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Ruhl 1L-32H-B264
Project:	DJ Wattenberg	TVD Reference:	13' KB @ 5010.0ft (ENSIGN 135)
Site:	S32-T2N-R64W (Newman/Ruhl)	MD Reference:	13' KB @ 5010.0ft (ENSIGN 135)
Well:	Ruhl 1L-32H-B264	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
1,224.0	11.70	73.70	1,211.3	26.0	135.5	-26.0	0.42	-0.36	
1,316.0	13.50	79.70	1,301.1	30.5	155.1	-30.5	2.42	1.96	
1,408.0	15.60	82.00	1,390.2	34.1	177.9	-34.1	2.37	2.28	
1,500.0	16.40	81.30	1,478.6	37.8	203.0	-37.8	0.89	0.87	
1,592.0	18.90	80.60	1,566.3	42.2	230.5	-42.2	2.73	2.72	
1,684.0	19.00	76.20	1,653.3	48.2	259.8	-48.2	1.56	0.11	
1,776.0	18.90	75.40	1,740.3	55.6	288.7	-55.6	0.30	-0.11	
1,868.0	18.50	73.50	1,827.4	63.5	317.1	-63.5	0.79	-0.43	
1,960.0	17.20	78.00	1,915.0	70.4	344.4	-70.4	2.06	-1.41	
2,052.0	16.50	81.90	2,003.1	75.1	370.7	-75.1	1.44	-0.76	
2,144.0	15.70	79.50	2,091.5	79.2	395.9	-79.2	1.13	-0.87	
2,235.0	15.40	91.70	2,179.1	81.1	420.0	-81.1	3.60	-0.33	
2,327.0	15.40	89.60	2,267.8	80.8	444.5	-80.8	0.61	0.00	
2,419.0	15.00	87.00	2,356.6	81.5	468.6	-81.5	0.86	-0.43	
2,514.0	17.10	87.00	2,447.9	82.9	494.8	-82.9	2.21	2.21	
2,608.0	17.40	78.30	2,537.7	86.5	522.4	-86.5	2.76	0.32	
2,703.0	16.80	78.60	2,628.5	92.1	549.7	-92.1	0.64	-0.63	
2,797.0	16.70	74.80	2,718.5	98.3	576.1	-98.3	1.17	-0.11	
2,892.0	16.00	73.00	2,809.7	105.7	601.8	-105.7	0.91	-0.74	
2,987.0	17.90	72.50	2,900.5	113.9	628.2	-113.9	2.01	2.00	
3,081.0	19.00	77.60	2,989.7	121.6	657.0	-121.6	2.08	1.17	
3,176.0	16.90	81.10	3,080.1	127.0	685.7	-127.0	2.48	-2.21	
3,270.0	16.90	79.80	3,170.0	131.6	712.7	-131.6	0.40	0.00	
3,365.0	15.70	79.00	3,261.2	136.5	738.9	-136.5	1.29	-1.26	
3,459.0	16.60	83.10	3,351.5	140.5	764.7	-140.5	1.54	0.96	
3,554.0	15.60	80.90	3,442.8	144.1	790.8	-144.1	1.23	-1.05	
3,648.0	14.90	78.50	3,533.5	148.6	815.1	-148.6	1.00	-0.74	
3,743.0	16.60	81.20	3,624.9	153.1	840.5	-153.1	1.95	1.79	
3,837.0	16.70	83.00	3,715.0	156.8	867.1	-156.8	0.56	0.11	
3,932.0	16.00	81.90	3,806.1	160.3	893.7	-160.3	0.81	-0.74	
4,026.0	17.50	82.60	3,896.1	163.9	920.5	-163.9	1.61	1.60	
4,121.0	16.90	81.30	3,986.9	167.8	948.3	-167.8	0.75	-0.63	
4,216.0	16.00	79.00	4,078.0	172.4	974.8	-172.4	1.17	-0.95	
4,310.0	16.70	88.40	4,168.2	175.3	1,001.0	-175.3	2.91	0.74	
4,405.0	18.40	84.60	4,258.8	177.1	1,029.6	-177.1	2.16	1.79	
4,499.0	17.50	84.10	4,348.2	179.9	1,058.4	-179.9	0.97	-0.96	
4,594.0	16.90	81.10	4,439.0	183.5	1,086.3	-183.5	1.13	-0.63	
4,688.0	16.70	80.50	4,528.9	187.9	1,113.1	-187.9	0.28	-0.21	
4,783.0	16.40	80.00	4,620.0	192.5	1,139.8	-192.5	0.35	-0.32	
4,877.0	16.30	78.30	4,710.2	197.4	1,165.8	-197.4	0.52	-0.11	
4,972.0	16.00	79.70	4,801.5	202.5	1,191.7	-202.5	0.52	-0.32	
5,067.0	15.30	78.10	4,892.9	207.4	1,216.8	-207.4	0.87	-0.74	
5,161.0	14.50	73.90	4,983.8	213.2	1,240.3	-213.2	1.43	-0.85	
5,256.0	14.80	74.50	5,075.7	219.8	1,263.4	-219.8	0.35	0.32	
5,351.0	15.60	70.70	5,167.4	227.2	1,287.2	-227.2	1.34	0.84	
5,445.0	15.20	71.00	5,258.0	235.4	1,310.7	-235.4	0.43	-0.43	
5,540.0	14.80	73.30	5,349.8	243.0	1,334.1	-243.0	0.75	-0.42	
5,635.0	12.50	77.50	5,442.1	248.7	1,355.8	-248.7	2.63	-2.42	
5,729.0	10.20	76.30	5,534.2	252.8	1,373.8	-252.8	2.46	-2.45	
5,824.0	8.30	90.50	5,628.0	254.8	1,388.9	-254.8	3.11	-2.00	
5,919.0	7.20	102.20	5,722.1	253.5	1,401.5	-253.5	2.02	-1.16	
6,013.0	3.10	124.20	5,815.7	250.8	1,409.4	-250.8	4.76	-4.36	
6,108.0	2.70	114.60	5,910.6	248.4	1,413.6	-248.4	0.66	-0.42	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Ruhl 1L-32H-B264
Project:	DJ Wattenberg	TVD Reference:	13' KB @ 5010.0ft (ENSIGN 135)
Site:	S32-T2N-R64W (Newman/Ruhl)	MD Reference:	13' KB @ 5010.0ft (ENSIGN 135)
Well:	Ruhl 1L-32H-B264	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
6,202.0	2.40	104.90	6,004.5	247.0	1,417.5	-247.0	0.56	-0.32	
6,297.0	1.90	107.90	6,099.5	246.0	1,420.9	-246.0	0.54	-0.53	
6,391.0	1.50	50.50	6,193.4	246.3	1,423.3	-246.3	1.78	-0.43	
6,486.0	1.50	46.70	6,288.4	247.9	1,425.2	-247.9	0.10	0.00	
6,580.0	0.70	68.30	6,382.4	249.0	1,426.6	-249.0	0.94	-0.85	
6,627.0	1.60	113.10	6,429.4	248.8	1,427.5	-248.8	2.57	1.91	
6,675.0	4.10	167.60	6,477.3	246.9	1,428.5	-246.9	7.14	5.21	
6,722.0	6.00	150.40	6,524.1	243.1	1,430.0	-243.1	5.13	4.04	
6,770.0	7.60	166.40	6,571.8	237.9	1,432.0	-237.9	5.14	3.33	
6,817.0	15.10	179.20	6,617.8	228.7	1,432.8	-228.7	16.74	15.96	
6,864.0	21.50	179.00	6,662.4	214.0	1,433.1	-214.0	13.62	13.62	
6,911.0	23.70	182.20	6,705.8	195.9	1,432.9	-195.9	5.36	4.68	
6,959.0	25.90	184.10	6,749.4	175.8	1,431.8	-175.8	4.87	4.58	
7,006.0	27.70	182.20	6,791.4	154.6	1,430.6	-154.6	4.24	3.83	
7,053.0	32.30	179.70	6,832.1	131.2	1,430.2	-131.2	10.14	9.79	
7,100.0	41.60	178.80	6,869.6	102.9	1,430.6	-102.9	19.82	19.79	
7,148.0	46.80	179.30	6,904.0	69.5	1,431.2	-69.5	10.86	10.83	
7,195.0	48.60	180.40	6,935.6	34.7	1,431.3	-34.7	4.20	3.83	
7,243.0	50.30	180.30	6,966.8	-1.7	1,431.0	1.7	3.55	3.54	
7,290.0	51.60	180.80	6,996.4	-38.2	1,430.7	38.2	2.89	2.77	
7,337.0	53.60	180.60	7,025.0	-75.6	1,430.2	75.6	4.27	4.26	
7,384.0	55.60	180.20	7,052.2	-113.9	1,430.0	113.9	4.31	4.26	
7,432.0	56.90	180.60	7,078.9	-153.8	1,429.7	153.8	2.80	2.71	
7,479.0	66.00	180.10	7,101.3	-195.0	1,429.5	195.0	19.38	19.36	
7,526.0	71.20	179.50	7,118.4	-238.8	1,429.6	238.8	11.13	11.06	
7,573.0	73.00	180.10	7,132.9	-283.5	1,429.8	283.5	4.02	3.83	
7,621.0	74.50	180.10	7,146.3	-329.6	1,429.7	329.6	3.12	3.12	
7,759.0	82.20	182.10	7,174.2	-464.6	1,427.1	464.6	5.76	5.58	
7,853.0	90.00	180.80	7,180.6	-558.3	1,424.7	558.3	8.41	8.30	
7,947.0	93.70	181.20	7,177.5	-652.2	1,423.1	652.2	3.96	3.94	
8,042.0	93.00	181.70	7,172.0	-747.0	1,420.7	747.0	0.90	-0.74	
8,137.0	92.60	181.00	7,167.3	-841.9	1,418.4	841.9	0.85	-0.42	
8,231.0	93.00	180.10	7,162.7	-935.7	1,417.5	935.7	1.05	0.43	
8,326.0	91.20	180.60	7,159.3	-1,030.7	1,416.9	1,030.7	1.97	-1.89	
8,421.0	90.90	180.60	7,157.5	-1,125.7	1,415.9	1,125.7	0.32	-0.32	
8,515.0	91.10	180.70	7,155.9	-1,219.6	1,414.9	1,219.6	0.24	0.21	
8,610.0	91.10	179.50	7,154.0	-1,314.6	1,414.7	1,314.6	1.26	0.00	
8,704.0	89.80	180.40	7,153.3	-1,408.6	1,414.8	1,408.6	1.68	-1.38	
8,799.0	90.80	178.50	7,152.8	-1,503.6	1,415.7	1,503.6	2.26	1.05	
8,893.0	89.50	178.00	7,152.6	-1,597.5	1,418.6	1,597.5	1.48	-1.38	
8,987.0	89.90	178.30	7,153.1	-1,691.5	1,421.6	1,691.5	0.53	0.43	
9,082.0	92.10	178.90	7,151.4	-1,786.4	1,423.9	1,786.4	2.40	2.32	
9,177.0	92.00	182.80	7,148.0	-1,881.4	1,422.5	1,881.4	4.10	-0.11	
9,271.0	88.70	182.80	7,147.4	-1,975.2	1,417.9	1,975.2	3.51	-3.51	
9,366.0	89.70	183.10	7,148.8	-2,070.1	1,413.0	2,070.1	1.10	1.05	
9,460.0	87.70	181.90	7,150.9	-2,164.0	1,408.9	2,164.0	2.48	-2.13	
9,555.0	87.50	179.50	7,154.9	-2,258.9	1,407.8	2,258.9	2.53	-0.21	
9,650.0	89.20	178.40	7,157.6	-2,353.8	1,409.5	2,353.8	2.13	1.79	
9,745.0	88.60	179.40	7,159.4	-2,448.8	1,411.3	2,448.8	1.23	-0.63	
9,839.0	90.60	180.20	7,160.1	-2,542.8	1,411.7	2,542.8	2.29	2.13	
9,934.0	92.20	182.00	7,157.8	-2,637.7	1,409.9	2,637.7	2.53	1.68	
10,028.0	89.90	182.10	7,156.0	-2,731.6	1,406.5	2,731.6	2.45	-2.45	
10,123.0	88.50	180.10	7,157.4	-2,826.6	1,404.7	2,826.6	2.57	-1.47	

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Ruhl 1L-32H-B264
Project:	DJ Wattenberg	TVD Reference:	13' KB @ 5010.0ft (ENSIGN 135)
Site:	S32-T2N-R64W (Newman/Ruhl)	MD Reference:	13' KB @ 5010.0ft (ENSIGN 135)
Well:	Ruhl 1L-32H-B264	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
10,217.0	89.20	179.90	7,159.2	-2,920.6	1,404.7	2,920.6	0.77	0.74	
10,312.0	89.20	179.20	7,160.6	-3,015.6	1,405.4	3,015.6	0.74	0.00	
10,407.0	89.40	179.20	7,161.7	-3,110.6	1,406.7	3,110.6	0.21	0.21	
10,501.0	90.00	178.80	7,162.2	-3,204.5	1,408.4	3,204.5	0.77	0.64	
10,596.0	90.20	179.90	7,162.1	-3,299.5	1,409.5	3,299.5	1.18	0.21	
10,691.0	89.40	181.40	7,162.4	-3,394.5	1,408.4	3,394.5	1.79	-0.84	
10,785.0	88.90	181.80	7,163.8	-3,488.5	1,405.8	3,488.5	0.68	-0.53	
10,880.0	89.60	180.90	7,165.0	-3,583.4	1,403.5	3,583.4	1.20	0.74	
10,975.0	90.10	181.10	7,165.3	-3,678.4	1,401.9	3,678.4	0.57	0.53	
11,069.0	89.60	179.90	7,165.5	-3,772.4	1,401.0	3,772.4	1.38	-0.53	
11,164.0	88.70	177.80	7,166.9	-3,867.4	1,402.9	3,867.4	2.40	-0.95	
11,259.0	89.90	177.40	7,168.1	-3,962.3	1,406.9	3,962.3	1.33	1.26	
11,353.0	90.00	175.00	7,168.2	-4,056.1	1,413.2	4,056.1	2.56	0.11	
11,448.0	89.40	176.30	7,168.7	-4,150.8	1,420.4	4,150.8	1.51	-0.63	
11,542.0	88.10	178.00	7,170.7	-4,244.7	1,425.0	4,244.7	2.28	-1.38	
11,637.0	88.60	180.90	7,173.5	-4,339.6	1,425.9	4,339.6	3.10	0.53	
11,731.0	88.00	180.60	7,176.3	-4,433.5	1,424.7	4,433.5	0.71	-0.64	
11,750.0	88.40	180.30	7,176.8	-4,452.5	1,424.6	4,452.5	2.63	2.11	LAST CES SURVEY @ 11,750' MD
11,798.0	88.40	180.30	7,178.2	-4,500.5	1,424.3	4,500.5	0.00	0.00	PTB @ 11,798' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Ruhl 1L-32H-B264 PBHI	0.00	0.00	7,166.7	-4,567.6	1,420.8	1,276,613.65	3,261,421.38	40.088908	-104.565652
- actual wellpath misses target center by 68.2ft at 11798.0ft MD (7178.2 TVD, -4500.5 N, 1424.3 E)									
- Point									
Ruhl 1L-32H-B264 PBHI	0.00	0.00	7,173.0	-4,567.6	1,420.8	1,276,613.65	3,261,421.38	40.088908	-104.565652
- actual wellpath misses target center by 67.4ft at 11798.0ft MD (7178.2 TVD, -4500.5 N, 1424.3 E)									
- Point									
Ruhl 1L-32H-B264 9500	0.00	0.00	7,143.0	-2,222.9	1,420.8	1,278,958.20	3,261,396.81	40.095345	-104.565652
- actual wellpath misses target center by 16.6ft at 9518.4ft MD (7153.3 TVD, -2222.4 N, 1407.8 E)									
- Point									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,750.0	7,176.8	-4,452.5	1,424.6	LAST CES SURVEY @ 11,750' MD
11,798.0	7,178.2	-4,500.5	1,424.3	PTB @ 11,798' MD

Checked By: _____	Approved By: _____	Date: _____
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