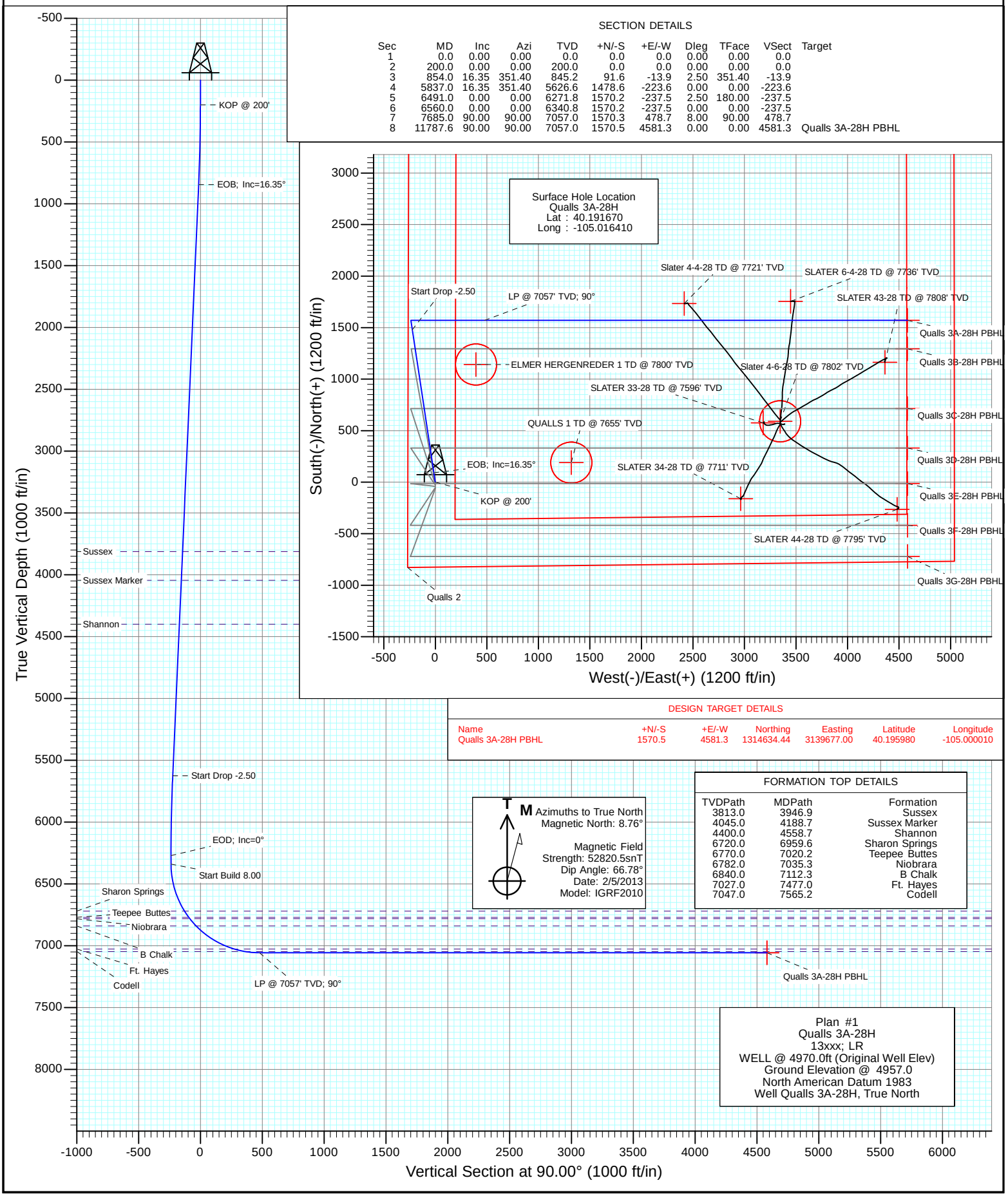
Project: DJ Wattenberg
Site: S28-T3N-R68W (Qualls)
Well: Qualls 3A-28H
Wellbore: Hz
Design: Plan #1

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	854.0	16.35	351.40	845.2	91.6	-13.9	2.50	351.40	-13.9	
4	5837.0	16.35	351.40	5626.6	1478.6	-223.6	0.00	0.00	-223.6	
5	6491.0	0.00	0.00	6271.8	1570.2	-237.5	2.50	180.00	-237.5	
6	6560.0	0.00	0.00	6340.8	1570.2	-237.5	0.00	0.00	-237.5	
7	7685.0	90.00	90.00	7057.0	1570.3	478.7	8.00	90.00	478.7	
8	11787.6	90.00	90.00	7057.0	1570.5	4581.3	0.00	0.00	4581.3	Qualls 3A-28H PBHL



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Qualls 3A-28H PBHL	1570.5	4581.3	1314634.44	3139677.00	40.195980	-105.000010

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3813.0	3946.9	Sussex
4045.0	4188.7	Sussex Marker
4400.0	4558.7	Shannon
6720.0	6959.6	Sharon Springs
6770.0	7020.2	Teepee Buttes
6782.0	7035.3	Niobrara
6840.0	7112.3	B Chalk
7027.0	7477.0	Ft. Hayes
7047.0	7565.2	Codell

T
M Azimuths to True North
Magnetic North: 8.76°

Magnetic Field
Strength: 52820.5snT
Dip Angle: 66.78°
Date: 2/5/2013
Model: IGRF2010

Plan #1
Qualls 3A-28H
13xxx; LR
WELL @ 4970.0ft (Original Well Elev)
Ground Elevation @ 4957.0
North American Datum 1983
Well Qualls 3A-28H, True North

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site:	S28-T3N-R68W (Qualls)	**North Reference:**	True
Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls)

Site Position:		**Northing:**	1,313,038.99 ft	**Latitude:**	40.191670
From:	Lat/Long	**Easting:**	3,135,104.30 ft	**Longitude:**	-105.016410
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.31 °

Well Qualls 3A-28H

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,313,038.99 ft	**Latitude:**	40.191670
	+E/-W	0.0 ft	**Easting:**	3,135,104.30 ft	**Longitude:**	-105.016410
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,957.0 ft

Wellbore Hz

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/5/2013	8.76	66.78	52,821

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	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	
854.0	16.35	351.40	845.2	91.6	-13.9	2.50	2.50	0.00	351.40	
5,837.0	16.35	351.40	5,626.6	1,478.6	-223.6	0.00	0.00	0.00	0.00	
6,491.0	0.00	0.00	6,271.8	1,570.2	-237.5	2.50	-2.50	0.00	180.00	
6,560.0	0.00	0.00	6,340.8	1,570.2	-237.5	0.00	0.00	0.00	0.00	
7,685.0	90.00	90.00	7,057.0	1,570.3	478.7	8.00	8.00	0.00	90.00	
11,787.6	90.00	90.00	7,057.0	1,570.5	4,581.3	0.00	0.00	0.00	0.00	Qualls 3A-28H PBHL

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
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Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site:	S28-T3N-R68W (Qualls)	**North Reference:**	True
Well:	Qualls 3A-28H	**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	2.50	351.40	300.0	2.2	-0.3	-0.3	2.50	2.50	
400.0	5.00	351.40	399.7	8.6	-1.3	-1.3	2.50	2.50	
500.0	7.50	351.40	499.1	19.4	-2.9	-2.9	2.50	2.50	
600.0	10.00	351.40	598.0	34.4	-5.2	-5.2	2.50	2.50	
700.0	12.50	351.40	696.0	53.7	-8.1	-8.1	2.50	2.50	
800.0	15.00	351.40	793.2	77.2	-11.7	-11.7	2.50	2.50	
854.0	16.35	351.40	845.2	91.6	-13.9	-13.9	2.50	2.50	EOB; Inc=16.35°
900.0	16.35	351.40	889.3	104.4	-15.8	-15.8	0.00	0.00	
1,000.0	16.35	351.40	985.3	132.3	-20.0	-20.0	0.00	0.00	
1,100.0	16.35	351.40	1,081.2	160.1	-24.2	-24.2	0.00	0.00	
1,200.0	16.35	351.40	1,177.2	187.9	-28.4	-28.4	0.00	0.00	
1,300.0	16.35	351.40	1,273.1	215.8	-32.6	-32.6	0.00	0.00	
1,400.0	16.35	351.40	1,369.1	243.6	-36.8	-36.8	0.00	0.00	
1,500.0	16.35	351.40	1,465.0	271.4	-41.1	-41.1	0.00	0.00	
1,600.0	16.35	351.40	1,561.0	299.3	-45.3	-45.3	0.00	0.00	
1,700.0	16.35	351.40	1,656.9	327.1	-49.5	-49.5	0.00	0.00	
1,800.0	16.35	351.40	1,752.9	354.9	-53.7	-53.7	0.00	0.00	
1,900.0	16.35	351.40	1,848.9	382.8	-57.9	-57.9	0.00	0.00	
2,000.0	16.35	351.40	1,944.8	410.6	-62.1	-62.1	0.00	0.00	
2,100.0	16.35	351.40	2,040.8	438.5	-66.3	-66.3	0.00	0.00	
2,200.0	16.35	351.40	2,136.7	466.3	-70.5	-70.5	0.00	0.00	
2,300.0	16.35	351.40	2,232.7	494.1	-74.7	-74.7	0.00	0.00	
2,400.0	16.35	351.40	2,328.6	522.0	-78.9	-78.9	0.00	0.00	
2,500.0	16.35	351.40	2,424.6	549.8	-83.1	-83.1	0.00	0.00	
2,600.0	16.35	351.40	2,520.6	577.6	-87.4	-87.4	0.00	0.00	
2,700.0	16.35	351.40	2,616.5	605.5	-91.6	-91.6	0.00	0.00	
2,800.0	16.35	351.40	2,712.5	633.3	-95.8	-95.8	0.00	0.00	
2,900.0	16.35	351.40	2,808.4	661.1	-100.0	-100.0	0.00	0.00	
3,000.0	16.35	351.40	2,904.4	689.0	-104.2	-104.2	0.00	0.00	
3,100.0	16.35	351.40	3,000.3	716.8	-108.4	-108.4	0.00	0.00	
3,200.0	16.35	351.40	3,096.3	744.6	-112.6	-112.6	0.00	0.00	
3,300.0	16.35	351.40	3,192.2	772.5	-116.8	-116.8	0.00	0.00	
3,400.0	16.35	351.40	3,288.2	800.3	-121.0	-121.0	0.00	0.00	
3,500.0	16.35	351.40	3,384.2	828.1	-125.2	-125.2	0.00	0.00	
3,600.0	16.35	351.40	3,480.1	856.0	-129.5	-129.5	0.00	0.00	
3,700.0	16.35	351.40	3,576.1	883.8	-133.7	-133.7	0.00	0.00	
3,800.0	16.35	351.40	3,672.0	911.6	-137.9	-137.9	0.00	0.00	
3,900.0	16.35	351.40	3,768.0	939.5	-142.1	-142.1	0.00	0.00	
3,946.9	16.35	351.40	3,813.0	952.5	-144.1	-144.1	0.00	0.00	Sussex
4,000.0	16.35	351.40	3,863.9	967.3	-146.3	-146.3	0.00	0.00	
4,100.0	16.35	351.40	3,959.9	995.1	-150.5	-150.5	0.00	0.00	
4,188.7	16.35	351.40	4,045.0	1,019.8	-154.2	-154.2	0.00	0.00	Sussex Marker
4,200.0	16.35	351.40	4,055.8	1,023.0	-154.7	-154.7	0.00	0.00	
4,300.0	16.35	351.40	4,151.8	1,050.8	-158.9	-158.9	0.00	0.00	
4,400.0	16.35	351.40	4,247.8	1,078.6	-163.1	-163.1	0.00	0.00	
4,500.0	16.35	351.40	4,343.7	1,106.5	-167.3	-167.3	0.00	0.00	
4,558.7	16.35	351.40	4,400.0	1,122.8	-169.8	-169.8	0.00	0.00	Shannon
4,600.0	16.35	351.40	4,439.7	1,134.3	-171.5	-171.5	0.00	0.00	
4,700.0	16.35	351.40	4,535.6	1,162.1	-175.8	-175.8	0.00	0.00	

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Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site:	S28-T3N-R68W (Qualls)	**North Reference:**	True
Well:	Qualls 3A-28H	**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
4,800.0	16.35	351.40	4,631.6	1,190.0	-180.0	-180.0	0.00	0.00	
4,900.0	16.35	351.40	4,727.5	1,217.8	-184.2	-184.2	0.00	0.00	
5,000.0	16.35	351.40	4,823.5	1,245.6	-188.4	-188.4	0.00	0.00	
5,100.0	16.35	351.40	4,919.5	1,273.5	-192.6	-192.6	0.00	0.00	
5,200.0	16.35	351.40	5,015.4	1,301.3	-196.8	-196.8	0.00	0.00	
5,300.0	16.35	351.40	5,111.4	1,329.1	-201.0	-201.0	0.00	0.00	
5,400.0	16.35	351.40	5,207.3	1,357.0	-205.2	-205.2	0.00	0.00	
5,500.0	16.35	351.40	5,303.3	1,384.8	-209.4	-209.4	0.00	0.00	
5,600.0	16.35	351.40	5,399.2	1,412.6	-213.6	-213.6	0.00	0.00	
5,700.0	16.35	351.40	5,495.2	1,440.5	-217.9	-217.9	0.00	0.00	
5,800.0	16.35	351.40	5,591.1	1,468.3	-222.1	-222.1	0.00	0.00	
5,837.0	16.35	351.40	5,626.6	1,478.6	-223.6	-223.6	0.00	0.00	Start Drop -2.50
5,900.0	14.77	351.40	5,687.3	1,495.3	-226.1	-226.1	2.50	-2.50	
6,000.0	12.27	351.40	5,784.6	1,518.4	-229.6	-229.6	2.50	-2.50	
6,100.0	9.77	351.40	5,882.7	1,537.3	-232.5	-232.5	2.50	-2.50	
6,200.0	7.27	351.40	5,981.6	1,552.0	-234.7	-234.7	2.50	-2.50	
6,300.0	4.77	351.40	6,081.0	1,562.4	-236.3	-236.3	2.50	-2.50	
6,400.0	2.27	351.40	6,180.8	1,568.5	-237.2	-237.2	2.50	-2.50	
6,491.0	0.00	0.00	6,271.8	1,570.2	-237.5	-237.5	2.50	-2.50	EOD; Inc=0°
6,500.0	0.00	0.00	6,280.8	1,570.2	-237.5	-237.5	0.00	0.00	
6,560.0	0.00	0.00	6,340.8	1,570.2	-237.5	-237.5	0.00	0.00	Start Build 8.00
6,600.0	3.20	90.00	6,380.8	1,570.2	-236.4	-236.4	8.00	8.00	
6,700.0	11.20	90.00	6,479.9	1,570.2	-223.8	-223.8	8.00	8.00	
6,800.0	19.20	90.00	6,576.3	1,570.2	-197.6	-197.6	8.00	8.00	
6,900.0	27.20	90.00	6,668.2	1,570.2	-158.3	-158.3	8.00	8.00	
6,959.6	31.97	90.00	6,720.0	1,570.2	-128.9	-128.9	8.00	8.00	Sharon Springs
7,000.0	35.20	90.00	6,753.6	1,570.2	-106.5	-106.5	8.00	8.00	
7,020.2	36.82	90.00	6,770.0	1,570.3	-94.6	-94.6	8.00	8.00	Teepee Buttes
7,035.3	38.03	90.00	6,782.0	1,570.3	-85.4	-85.4	8.00	8.00	Niobrara
7,100.0	43.20	90.00	6,831.1	1,570.3	-43.4	-43.4	8.00	8.00	
7,112.3	44.19	90.00	6,840.0	1,570.3	-34.8	-34.8	8.00	8.00	B Chalk
7,200.0	51.20	90.00	6,899.0	1,570.3	30.0	30.0	8.00	8.00	
7,300.0	59.20	90.00	6,956.0	1,570.3	112.0	112.0	8.00	8.00	
7,400.0	67.20	90.00	7,001.0	1,570.3	201.2	201.2	8.00	8.00	
7,477.0	73.36	90.00	7,027.0	1,570.3	273.6	273.6	8.00	8.00	Ft. Hayes
7,500.0	75.20	90.00	7,033.2	1,570.3	295.8	295.8	8.00	8.00	
7,565.2	80.41	90.00	7,047.0	1,570.3	359.5	359.5	8.00	8.00	Codell
7,600.0	83.20	90.00	7,052.0	1,570.3	393.9	393.9	8.00	8.00	
7,685.0	90.00	90.00	7,057.0	1,570.3	478.7	478.7	8.00	8.00	LP @ 7057' TVD; 90°
7,700.0	90.00	90.00	7,057.0	1,570.3	493.7	493.7	0.00	0.00	
7,800.0	90.00	90.00	7,057.0	1,570.3	593.7	593.7	0.00	0.00	
7,900.0	90.00	90.00	7,057.0	1,570.3	693.7	693.7	0.00	0.00	
8,000.0	90.00	90.00	7,057.0	1,570.3	793.7	793.7	0.00	0.00	
8,100.0	90.00	90.00	7,057.0	1,570.3	893.7	893.7	0.00	0.00	
8,200.0	90.00	90.00	7,057.0	1,570.3	993.7	993.7	0.00	0.00	
8,300.0	90.00	90.00	7,057.0	1,570.3	1,093.7	1,093.7	0.00	0.00	
8,400.0	90.00	90.00	7,057.0	1,570.3	1,193.7	1,193.7	0.00	0.00	
8,500.0	90.00	90.00	7,057.0	1,570.3	1,293.7	1,293.7	0.00	0.00	
8,600.0	90.00	90.00	7,057.0	1,570.3	1,393.7	1,393.7	0.00	0.00	
8,700.0	90.00	90.00	7,057.0	1,570.3	1,493.7	1,493.7	0.00	0.00	
8,800.0	90.00	90.00	7,057.0	1,570.3	1,593.7	1,593.7	0.00	0.00	
8,900.0	90.00	90.00	7,057.0	1,570.3	1,693.7	1,693.7	0.00	0.00	

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Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site:	S28-T3N-R68W (Qualls)	**North Reference:**	True
Well:	Qualls 3A-28H	**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
9,000.0	90.00	90.00	7,057.0	1,570.3	1,793.7	1,793.7	0.00	0.00	
9,100.0	90.00	90.00	7,057.0	1,570.4	1,893.7	1,893.7	0.00	0.00	
9,200.0	90.00	90.00	7,057.0	1,570.4	1,993.7	1,993.7	0.00	0.00	
9,300.0	90.00	90.00	7,057.0	1,570.4	2,093.7	2,093.7	0.00	0.00	
9,400.0	90.00	90.00	7,057.0	1,570.4	2,193.7	2,193.7	0.00	0.00	
9,500.0	90.00	90.00	7,057.0	1,570.4	2,293.7	2,293.7	0.00	0.00	
9,600.0	90.00	90.00	7,057.0	1,570.4	2,393.7	2,393.7	0.00	0.00	
9,700.0	90.00	90.00	7,057.0	1,570.4	2,493.7	2,493.7	0.00	0.00	
9,800.0	90.00	90.00	7,057.0	1,570.4	2,593.7	2,593.7	0.00	0.00	
9,900.0	90.00	90.00	7,057.0	1,570.4	2,693.7	2,693.7	0.00	0.00	
10,000.0	90.00	90.00	7,057.0	1,570.4	2,793.7	2,793.7	0.00	0.00	
10,100.0	90.00	90.00	7,057.0	1,570.4	2,893.7	2,893.7	0.00	0.00	
10,200.0	90.00	90.00	7,057.0	1,570.4	2,993.7	2,993.7	0.00	0.00	
10,300.0	90.00	90.00	7,057.0	1,570.4	3,093.7	3,093.7	0.00	0.00	
10,400.0	90.00	90.00	7,057.0	1,570.4	3,193.7	3,193.7	0.00	0.00	
10,500.0	90.00	90.00	7,057.0	1,570.4	3,293.7	3,293.7	0.00	0.00	
10,600.0	90.00	90.00	7,057.0	1,570.4	3,393.7	3,393.7	0.00	0.00	
10,700.0	90.00	90.00	7,057.0	1,570.4	3,493.7	3,493.7	0.00	0.00	
10,800.0	90.00	90.00	7,057.0	1,570.4	3,593.7	3,593.7	0.00	0.00	
10,900.0	90.00	90.00	7,057.0	1,570.4	3,693.7	3,693.7	0.00	0.00	
11,000.0	90.00	90.00	7,057.0	1,570.4	3,793.7	3,793.7	0.00	0.00	
11,100.0	90.00	90.00	7,057.0	1,570.5	3,893.7	3,893.7	0.00	0.00	
11,200.0	90.00	90.00	7,057.0	1,570.5	3,993.7	3,993.7	0.00	0.00	
11,300.0	90.00	90.00	7,057.0	1,570.5	4,093.7	4,093.7	0.00	0.00	
11,400.0	90.00	90.00	7,057.0	1,570.5	4,193.7	4,193.7	0.00	0.00	
11,500.0	90.00	90.00	7,057.0	1,570.5	4,293.7	4,293.7	0.00	0.00	
11,600.0	90.00	90.00	7,057.0	1,570.5	4,393.7	4,393.7	0.00	0.00	
11,700.0	90.00	90.00	7,057.0	1,570.5	4,493.7	4,493.7	0.00	0.00	
11,787.6	90.00	90.00	7,057.0	1,570.5	4,581.3	4,581.3	0.00	0.00	TD at 11787.6 - Qualls 3A-28H 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
Qualls 3A-28H PBHL - plan hits target center - Point	0.00	0.00	7,057.0	1,570.5	4,581.3	1,314,634.44	3,139,677.00	40.195980	-105.000010

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site:	S28-T3N-R68W (Qualls)	**North Reference:**	True
Well:	Qualls 3A-28H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,946.9	3,813.0	Sussex			
4,188.7	4,045.0	Sussex Marker			
4,558.7	4,400.0	Shannon			
6,959.6	6,720.0	Sharon Springs			
7,020.2	6,770.0	Teepee Buttes			
7,035.3	6,782.0	Niobrara			
7,112.3	6,840.0	B Chalk			
7,477.0	7,027.0	Ft. Hayes			
7,565.2	7,047.0	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'
854.0	845.2	91.6	-13.9	EOB; Inc=16.35°
5,837.0	5,626.6	1,478.6	-223.6	Start Drop -2.50
6,491.0	6,271.8	1,570.2	-237.5	EOD; Inc=0°
6,560.0	6,340.8	1,570.2	-237.5	Start Build 8.00
7,685.0	7,057.0	1,570.3	478.7	LP @ 7057' TVD; 90°
11,787.6	7,057.0	1,570.5	4,581.3	TD at 11787.6

EnCana Oil & Gas (USA) Inc

DJ Wattenberg
S28-T3N-R68W (Qualls)
Qualls 3A-28H
Hz
Plan #1

Anticollision Report

12 February, 2013

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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** 2/12/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,787.4	Plan #1 (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
S28-T3N-R68W (Qualls)						
ANDERSON FAMILY TRUST 1 (EXISTING) - EXISTING						Out of range
ELMER HERGENREDER 1 (EXISTING) - EXISTING - N	7,600.5	7,031.0	427.9	398.3	14.464	CC, ES
ELMER HERGENREDER 1 (EXISTING) - EXISTING - N	7,700.0	7,036.0	439.3	407.9	13.989	SF
QUALLS 1 (EXISTING) - EXISTING - NO SURVEYS						Out of range
Qualls 3B-28H - Hz - Plan #1	200.0	200.0	10.9	10.3	16.749	CC, ES
Qualls 3B-28H - Hz - Plan #1	11,787.6	11,523.4	345.7	158.3	1.845	SF
Qualls 3C-28H - Hz - Plan #1	200.0	200.0	21.9	21.2	33.491	CC, ES
Qualls 3C-28H - Hz - Plan #1	400.0	399.7	30.5	29.2	22.632	SF
Qualls 3D-28H - Hz - Plan #1	200.0	200.0	29.1	28.5	44.652	CC, ES
Qualls 3D-28H - Hz - Plan #1	400.0	399.7	37.8	36.4	28.030	SF
Qualls 3E-28H - Hz - Plan #1	200.0	200.0	40.1	39.4	61.394	CC, ES
Qualls 3E-28H - Hz - Plan #1	500.0	499.3	59.4	57.7	35.073	SF
Qualls 3F-28H - Hz - Plan #1	200.0	200.0	51.0	50.4	78.136	CC, ES
Qualls 3F-28H - Hz - Plan #1	500.0	497.1	73.3	71.6	43.312	SF
Qualls 3G-28H - Hz - Plan #1	200.0	200.0	58.3	57.6	89.298	CC, ES
Qualls 3G-28H - Hz - Plan #1	500.0	495.2	84.9	83.2	50.293	SF
SLATER 33-28 (EXISTING) - EXISTING - GYRO						Out of range
SLATER 34-28 (EXISTING) - EXISTING - SURVEYS						Out of range
SLATER 43-28 (EXISTING) - EXISTING - SURVEYS	11,572.4	7,203.8	385.2	252.0	2.893	CC, ES
SLATER 43-28 (EXISTING) - EXISTING - SURVEYS	11,600.0	7,203.2	386.2	252.4	2.886	SF
SLATER 44-28 (EXISTING) - EXISTING - SURVEYS						Out of range
SLATER 4-4-28 (EXISTING) - Existing - SURVEYS	9,646.7	7,281.4	166.3	81.9	1.970	CC, ES, SF
SLATER 4-6-28 (EXISTING) - Existing - NO SURVEYS						Out of range
SLATER 6-4-28 (EXISTING) - EXISTING - SURVEYS	10,666.4	7,201.8	186.1	84.5	1.833	CC, ES, SF
WATERFRONT 11-27 (EXISTING) - EXISTING - NO SU						Out of range
WATERFRONT 12-27 (EXISTING) - EXISTING - NO SU						Out of range
WATERFRONT 13-27 (EXISTING) - EXISTING - NO SU						Out of range
WATERFRONT 14-27 (EXISTING) - EXISTING - NO SU						Out of range
WATERFRONT 33-27 (EXISTING) - EXISTING - NO SU						Out of range

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - ELMER HERGENREDER 1 (EXISTING) - EXISTING - NO SURVEYS

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
7,400.0	7,001.0	6,980.0	6,980.0	30.6	12.2	80.07	1,142.4	394.4	469.5	442.8	26.70	17.588	
7,500.0	7,033.2	7,012.2	7,012.2	31.0	12.2	86.63	1,142.4	394.4	439.1	411.1	27.97	15.699	
7,600.0	7,052.0	7,031.0	7,031.0	31.5	12.3	89.99	1,142.4	394.4	427.9	398.3	29.57	14.469	
7,600.5	7,052.0	7,031.0	7,031.0	31.5	12.3	90.00	1,142.4	394.4	427.9	398.3	29.58	14.464	CC, ES
7,700.0	7,057.0	7,036.0	7,036.0	32.2	12.3	90.00	1,142.4	394.4	439.3	407.9	31.40	13.989	SF
7,800.0	7,057.0	7,036.0	7,036.0	33.0	12.3	90.00	1,142.4	394.4	472.0	438.7	33.35	14.153	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - Qualls 3B-28H - 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	36.000	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-10.9	0.0	10.9	10.3	0.65	16.749	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-172.82	-10.9	0.0	13.1	12.1	1.00	13.077	
400.0	399.7	400.4	400.4	0.7	0.7	-174.58	-9.2	-0.3	17.9	16.5	1.35	13.238	
500.0	499.1	500.9	500.8	1.0	0.9	-175.52	-4.0	-1.2	23.5	21.8	1.70	13.856	
600.0	598.0	601.7	601.1	1.3	1.1	-176.02	4.7	-2.8	30.0	28.0	2.04	14.694	
700.0	696.0	702.6	701.3	1.7	1.4	-176.27	16.9	-5.0	37.4	35.0	2.39	15.653	
800.0	793.2	803.7	801.1	2.1	1.7	-176.38	32.5	-7.8	45.5	42.8	2.73	16.685	
900.0	889.3	905.1	900.6	2.6	2.0	-176.37	51.7	-11.3	54.1	51.0	3.08	17.566	
1,000.0	985.3	1,006.9	999.8	3.1	2.4	-176.10	74.5	-15.4	59.8	56.3	3.44	17.359	
1,100.0	1,081.2	1,107.6	1,097.1	3.6	2.9	-175.64	99.6	-19.9	62.7	58.9	3.81	16.463	
1,200.0	1,177.2	1,207.6	1,193.8	4.1	3.4	-175.19	124.7	-24.4	65.5	61.3	4.18	15.675	
1,300.0	1,273.1	1,307.5	1,290.4	4.6	3.8	-174.79	149.9	-28.9	68.3	63.7	4.55	15.006	
1,400.0	1,369.1	1,407.5	1,387.1	5.1	4.3	-174.41	175.0	-33.5	71.0	66.1	4.92	14.430	
1,500.0	1,465.0	1,507.4	1,483.7	5.7	4.7	-174.07	200.1	-38.0	73.8	68.5	5.30	13.928	
1,600.0	1,561.0	1,607.4	1,580.4	6.2	5.2	-173.75	225.3	-42.5	76.6	70.9	5.68	13.487	
1,700.0	1,656.9	1,707.4	1,677.0	6.7	5.7	-173.45	250.4	-47.0	79.3	73.3	6.06	13.096	
1,800.0	1,752.9	1,807.3	1,773.7	7.2	6.2	-173.17	275.5	-51.5	82.1	75.7	6.44	12.747	
1,900.0	1,848.9	1,907.3	1,870.3	7.7	6.6	-172.91	300.7	-56.1	84.9	78.1	6.83	12.433	
2,000.0	1,944.8	2,007.2	1,966.9	8.3	7.1	-172.67	325.8	-60.6	87.7	80.5	7.22	12.149	
2,100.0	2,040.8	2,107.2	2,063.6	8.8	7.6	-172.44	350.9	-65.1	90.5	82.9	7.61	11.892	
2,200.0	2,136.7	2,207.2	2,160.2	9.3	8.1	-172.22	376.0	-69.6	93.3	85.3	8.00	11.656	
2,300.0	2,232.7	2,307.1	2,256.9	9.8	8.5	-172.02	401.2	-74.1	96.0	87.6	8.39	11.441	
2,400.0	2,328.6	2,407.1	2,353.5	10.3	9.0	-171.83	426.3	-78.7	98.8	90.0	8.79	11.242	
2,500.0	2,424.6	2,507.0	2,450.2	10.9	9.5	-171.65	451.4	-83.2	101.6	92.4	9.19	11.059	
2,600.0	2,520.6	2,607.0	2,546.8	11.4	10.0	-171.48	476.6	-87.7	104.4	94.8	9.59	10.890	
2,700.0	2,616.5	2,707.0	2,643.5	11.9	10.4	-171.32	501.7	-92.2	107.2	97.2	9.99	10.732	
2,800.0	2,712.5	2,806.9	2,740.1	12.4	10.9	-171.16	526.8	-96.8	110.0	99.6	10.39	10.586	
2,900.0	2,808.4	2,906.9	2,836.7	12.9	11.4	-171.02	552.0	-101.3	112.8	102.0	10.79	10.449	
3,000.0	2,904.4	3,006.8	2,933.4	13.5	11.9	-170.88	577.1	-105.8	115.6	104.4	11.20	10.321	
3,100.0	3,000.3	3,106.8	3,030.0	14.0	12.3	-170.74	602.2	-110.3	118.4	106.8	11.60	10.201	
3,200.0	3,096.3	3,206.8	3,126.7	14.5	12.8	-170.62	627.4	-114.8	121.2	109.2	12.01	10.088	
3,300.0	3,192.2	3,306.7	3,223.3	15.0	13.3	-170.50	652.5	-119.4	124.0	111.5	12.42	9.982	
3,400.0	3,288.2	3,406.7	3,320.0	15.5	13.8	-170.38	677.6	-123.9	126.8	113.9	12.83	9.882	
3,500.0	3,384.2	3,506.6	3,416.6	16.1	14.3	-170.27	702.7	-128.4	129.6	116.3	13.24	9.787	
3,600.0	3,480.1	3,606.6	3,513.3	16.6	14.7	-170.17	727.9	-132.9	132.3	118.7	13.65	9.698	
3,700.0	3,576.1	3,706.6	3,609.9	17.1	15.2	-170.06	753.0	-137.5	135.1	121.1	14.06	9.613	
3,800.0	3,672.0	3,806.5	3,706.5	17.6	15.7	-169.97	778.1	-142.0	137.9	123.5	14.47	9.533	
3,900.0	3,768.0	3,906.5	3,803.2	18.1	16.2	-169.87	803.3	-146.5	140.7	125.9	14.88	9.457	
4,000.0	3,863.9	4,006.5	3,899.8	18.7	16.6	-169.78	828.4	-151.0	143.5	128.2	15.30	9.384	
4,100.0	3,959.9	4,106.4	3,996.5	19.2	17.1	-169.70	853.5	-155.5	146.3	130.6	15.71	9.315	
4,200.0	4,055.8	4,206.4	4,093.1	19.7	17.6	-169.61	878.7	-160.1	149.1	133.0	16.12	9.249	
4,300.0	4,151.8	4,306.3	4,189.8	20.2	18.1	-169.53	903.8	-164.6	151.9	135.4	16.54	9.186	
4,400.0	4,247.8	4,406.3	4,286.4	20.8	18.6	-169.46	928.9	-169.1	154.7	137.8	16.96	9.126	
4,500.0	4,343.7	4,506.3	4,383.1	21.3	19.0	-169.38	954.1	-173.6	157.5	140.2	17.37	9.068	
4,600.0	4,439.7	4,606.2	4,479.7	21.8	19.5	-169.31	979.2	-178.2	160.3	142.5	17.79	9.013	
4,700.0	4,535.6	4,706.2	4,576.3	22.3	20.0	-169.24	1,004.3	-182.7	163.1	144.9	18.21	8.961	
4,800.0	4,631.6	4,806.1	4,673.0	22.8	20.5	-169.18	1,029.4	-187.2	165.9	147.3	18.62	8.910	
4,900.0	4,727.5	4,906.1	4,769.6	23.4	20.9	-169.11	1,054.6	-191.7	168.7	149.7	19.04	8.861	
5,000.0	4,823.5	5,006.1	4,866.3	23.9	21.4	-169.05	1,079.7	-196.2	171.5	152.1	19.46	8.815	
5,100.0	4,919.5	5,106.0	4,962.9	24.4	21.9	-168.99	1,104.8	-200.8	174.3	154.5	19.88	8.770	

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 Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - Qualls 3B-28H - 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	5,015.4	5,206.0	5,059.6	24.9	22.4	-168.93	1,130.0	-205.3	177.1	156.8	20.30	8.727	
5,300.0	5,111.4	5,305.9	5,156.2	25.4	22.9	-168.87	1,155.1	-209.8	179.9	159.2	20.72	8.685	
5,400.0	5,207.3	5,405.9	5,252.9	26.0	23.3	-168.82	1,180.2	-214.3	182.7	161.6	21.14	8.645	
5,500.0	5,303.3	5,505.9	5,349.5	26.5	23.8	-168.76	1,205.4	-218.8	185.5	164.0	21.56	8.607	
5,600.0	5,399.2	5,600.0	5,440.6	27.0	24.3	-168.74	1,228.7	-223.0	188.8	166.8	21.96	8.598	
5,700.0	5,495.2	5,694.7	5,533.0	27.5	24.6	-168.93	1,249.0	-226.7	195.3	173.0	22.27	8.771	
5,800.0	5,591.1	5,786.3	5,623.1	28.1	24.9	-169.32	1,265.2	-229.6	205.8	183.3	22.49	9.150	
5,900.0	5,687.3	5,877.1	5,713.0	28.6	25.1	-169.88	1,277.6	-231.8	219.3	196.6	22.66	9.678	
6,000.0	5,784.6	5,967.4	5,802.9	29.0	25.3	-170.41	1,286.5	-233.4	232.7	209.9	22.82	10.198	
6,100.0	5,882.7	6,057.4	5,892.7	29.3	25.4	-170.89	1,291.9	-234.4	245.7	222.7	22.96	10.699	
6,200.0	5,981.6	6,146.9	5,982.2	29.6	25.5	-171.32	1,293.8	-234.8	258.2	235.1	23.10	11.180	
6,300.0	6,081.0	6,245.8	6,081.0	29.8	25.6	-171.70	1,293.8	-234.8	268.6	245.3	23.24	11.557	
6,400.0	6,180.8	6,345.3	6,180.6	29.9	25.7	-172.22	1,293.8	-233.2	274.7	251.4	23.30	11.789	
6,500.0	6,280.8	6,443.0	6,277.3	30.0	25.7	176.43	1,293.8	-220.2	277.0	221.5	55.45	4.995	
6,600.0	6,380.8	6,535.9	6,366.8	30.0	25.7	81.51	1,293.8	-195.8	279.7	257.1	22.61	12.375	
6,700.0	6,479.9	6,625.3	6,449.3	30.1	25.7	76.36	1,293.8	-161.5	285.0	261.6	23.43	12.164	
6,800.0	6,576.3	6,712.2	6,524.8	30.1	25.7	71.67	1,293.8	-118.6	292.1	267.1	25.03	11.670	
6,900.0	6,668.2	6,800.0	6,595.3	30.1	25.7	67.39	1,293.8	-66.3	300.3	273.4	26.89	11.169	
7,000.0	6,753.6	6,879.9	6,653.4	30.1	25.8	63.90	1,293.8	-11.5	309.0	280.7	28.31	10.917	
7,100.0	6,831.1	6,961.4	6,706.0	30.1	25.9	60.85	1,293.8	50.7	317.7	288.2	29.45	10.786	
7,200.0	6,899.0	7,041.7	6,750.6	30.2	26.0	58.35	1,293.8	117.5	325.7	295.7	30.01	10.855	
7,300.0	6,956.0	7,121.1	6,787.1	30.3	26.3	56.36	1,293.8	187.9	332.8	302.6	30.13	11.043	
7,400.0	7,001.0	7,200.0	6,815.4	30.6	26.6	54.87	1,293.8	261.5	338.4	308.4	30.01	11.277	
7,500.0	7,033.2	7,277.7	6,835.2	31.0	27.0	53.86	1,293.8	336.6	342.5	312.7	29.87	11.467	
7,600.0	7,052.0	7,350.0	6,846.2	31.5	27.5	53.32	1,293.8	408.0	344.9	315.1	29.87	11.549	
7,700.0	7,057.0	7,435.8	6,850.0	32.2	28.2	53.18	1,293.8	493.7	345.4	314.6	30.79	11.219	
7,800.0	7,057.0	7,535.8	6,850.0	33.0	29.2	53.18	1,293.8	593.7	345.4	311.4	33.99	10.162	
7,900.0	7,057.0	7,635.8	6,850.0	33.9	30.4	53.18	1,293.8	693.7	345.4	308.1	37.34	9.251	
8,000.0	7,057.0	7,735.8	6,850.0	35.1	31.7	53.18	1,293.8	793.7	345.4	304.6	40.79	8.467	
8,100.0	7,057.0	7,835.8	6,850.0	36.4	33.3	53.18	1,293.8	893.7	345.4	301.1	44.34	7.791	
8,200.0	7,057.0	7,935.8	6,850.0	37.8	34.9	53.18	1,293.8	993.7	345.4	297.5	47.95	7.204	
8,300.0	7,057.0	8,035.8	6,850.0	39.4	36.7	53.18	1,293.8	1,093.7	345.4	293.8	51.61	6.693	
8,400.0	7,057.0	8,135.8	6,850.0	41.1	38.6	53.19	1,293.8	1,193.7	345.4	290.1	55.32	6.245	
8,500.0	7,057.0	8,235.8	6,850.0	42.9	40.6	53.19	1,293.8	1,293.7	345.5	286.4	59.06	5.849	
8,600.0	7,057.0	8,335.8	6,850.0	44.8	42.7	53.19	1,293.8	1,393.7	345.5	282.6	62.83	5.498	
8,700.0	7,057.0	8,435.8	6,850.0	46.7	44.8	53.19	1,293.7	1,493.7	345.5	278.8	66.62	5.186	
8,800.0	7,057.0	8,535.8	6,850.0	48.7	46.9	53.19	1,293.7	1,593.7	345.5	275.0	70.43	4.905	
8,900.0	7,057.0	8,635.8	6,850.0	50.8	49.1	53.19	1,293.7	1,693.7	345.5	271.2	74.26	4.652	
9,000.0	7,057.0	8,735.8	6,850.0	52.9	51.3	53.19	1,293.7	1,793.7	345.5	267.4	78.10	4.423	
9,100.0	7,057.0	8,835.8	6,850.0	55.1	53.5	53.19	1,293.7	1,893.7	345.5	263.5	81.96	4.215	
9,200.0	7,057.0	8,935.8	6,850.0	57.3	55.8	53.19	1,293.7	1,993.7	345.5	259.7	85.82	4.026	
9,300.0	7,057.0	9,035.8	6,850.0	59.5	58.1	53.19	1,293.7	2,093.7	345.5	255.8	89.70	3.852	
9,400.0	7,057.0	9,135.8	6,850.0	61.7	60.4	53.19	1,293.7	2,193.7	345.5	251.9	93.58	3.692	
9,500.0	7,057.0	9,235.8	6,850.0	64.0	62.7	53.20	1,293.7	2,293.7	345.5	248.1	97.47	3.545	
9,600.0	7,057.0	9,335.8	6,850.0	66.2	65.0	53.20	1,293.7	2,393.7	345.5	244.2	101.37	3.409	
9,700.0	7,057.0	9,435.8	6,850.0	68.5	67.4	53.20	1,293.7	2,493.7	345.5	240.3	105.27	3.282	
9,800.0	7,057.0	9,535.8	6,850.0	70.8	69.7	53.20	1,293.7	2,593.7	345.5	236.4	109.18	3.165	
9,900.0	7,057.0	9,635.8	6,850.0	73.2	72.1	53.20	1,293.7	2,693.7	345.6	232.5	113.09	3.056	
10,000.0	7,057.0	9,735.8	6,850.0	75.5	74.4	53.20	1,293.7	2,793.7	345.6	228.6	117.00	2.953	
10,100.0	7,057.0	9,835.8	6,850.0	77.8	76.8	53.20	1,293.7	2,893.7	345.6	224.6	120.92	2.858	
10,200.0	7,057.0	9,935.8	6,850.0	80.2	79.2	53.20	1,293.7	2,993.7	345.6	220.7	124.85	2.768	
10,300.0	7,057.0	10,035.8	6,850.0	82.5	81.6	53.20	1,293.7	3,093.7	345.6	216.8	128.77	2.684	

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 Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - Qualls 3B-28H - 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
10,400.0	7,057.0	10,135.8	6,850.0	84.9	84.0	53.20	1,293.7	3,193.7	345.6	212.9	132.70	2.604	
10,500.0	7,057.0	10,235.8	6,850.0	87.3	86.4	53.20	1,293.7	3,293.7	345.6	209.0	136.63	2.529	
10,600.0	7,057.0	10,335.8	6,850.0	89.6	88.8	53.20	1,293.7	3,393.7	345.6	205.0	140.56	2.459	
10,700.0	7,057.0	10,435.8	6,850.0	92.0	91.2	53.21	1,293.7	3,493.7	345.6	201.1	144.50	2.392	
10,800.0	7,057.0	10,535.8	6,850.0	94.4	93.6	53.21	1,293.7	3,593.7	345.6	197.2	148.44	2.328	
10,900.0	7,057.0	10,635.8	6,850.0	96.8	96.0	53.21	1,293.7	3,693.7	345.6	193.2	152.38	2.268	
11,000.0	7,057.0	10,735.8	6,850.0	99.2	98.4	53.21	1,293.7	3,793.7	345.6	189.3	156.32	2.211	
11,100.0	7,057.0	10,835.8	6,850.0	101.6	100.8	53.21	1,293.7	3,893.7	345.6	185.4	160.26	2.157	
11,200.0	7,057.0	10,935.8	6,850.0	104.0	103.3	53.21	1,293.7	3,993.7	345.6	181.4	164.20	2.105	
11,300.0	7,057.0	11,035.8	6,850.0	106.4	105.7	53.21	1,293.7	4,093.7	345.7	177.5	168.15	2.056	
11,400.0	7,057.0	11,135.8	6,850.0	108.8	108.1	53.21	1,293.6	4,193.7	345.7	173.6	172.10	2.009	
11,500.0	7,057.0	11,235.8	6,850.0	111.2	110.5	53.21	1,293.6	4,293.7	345.7	169.6	176.05	1.963	
11,600.0	7,057.0	11,335.8	6,850.0	113.7	113.0	53.21	1,293.6	4,393.7	345.7	165.7	179.99	1.920	
11,700.0	7,057.0	11,435.8	6,850.0	116.1	115.4	53.21	1,293.6	4,493.7	345.7	161.7	183.95	1.879	
11,787.6	7,057.0	11,523.4	6,850.0	118.2	117.5	53.22	1,293.6	4,581.3	345.7	158.3	187.41	1.845 SF	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - Qualls 3C-28H - 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	-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	71.986	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-21.9	0.0	21.9	21.2	0.65	33.491	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-172.17	-21.9	0.0	24.0	23.0	1.00	23.989	
400.0	399.7	399.7	399.7	0.7	0.7	-173.83	-21.9	0.0	30.5	29.2	1.35	22.632	SF
500.0	499.1	499.8	499.8	1.0	0.9	-175.14	-21.0	-0.3	40.5	38.8	1.69	23.924	
600.0	598.0	599.8	599.8	1.3	1.0	-175.82	-18.5	-1.1	53.2	51.1	2.04	26.110	
700.0	696.0	699.7	699.5	1.7	1.2	-176.14	-14.4	-2.4	68.5	66.1	2.38	28.807	
800.0	793.2	799.4	799.0	2.1	1.4	-176.25	-8.6	-4.3	86.4	83.6	2.71	31.828	
900.0	889.3	898.9	898.3	2.6	1.6	-176.25	-1.2	-6.7	106.4	103.4	3.06	34.819	
1,000.0	985.3	999.1	998.0	3.1	1.8	-176.10	7.9	-9.7	125.5	122.0	3.41	36.763	
1,100.0	1,081.2	1,099.9	1,098.1	3.6	2.1	-175.83	18.7	-13.2	142.8	139.0	3.77	37.854	
1,200.0	1,177.2	1,201.2	1,198.6	4.1	2.3	-175.46	31.3	-17.3	158.5	154.3	4.14	38.299	
1,300.0	1,273.1	1,303.1	1,299.4	4.6	2.6	-175.01	45.7	-21.9	172.4	167.9	4.51	38.241	
1,400.0	1,369.1	1,405.4	1,400.3	5.1	3.0	-174.48	61.8	-27.2	184.7	179.8	4.89	37.783	
1,500.0	1,465.0	1,508.1	1,501.2	5.7	3.3	-173.88	79.7	-33.0	195.3	190.0	5.28	36.997	
1,600.0	1,561.0	1,610.8	1,601.8	6.2	3.7	-173.20	99.3	-39.4	204.1	198.5	5.68	35.949	
1,700.0	1,656.9	1,710.4	1,699.3	6.7	4.1	-172.54	119.0	-45.8	212.4	206.3	6.08	34.915	
1,800.0	1,752.9	1,810.1	1,796.7	7.2	4.4	-171.93	138.8	-52.2	220.6	214.1	6.49	33.977	
1,900.0	1,848.9	1,909.7	1,894.2	7.7	4.8	-171.37	158.5	-58.6	228.9	222.0	6.91	33.122	
2,000.0	1,944.8	2,009.3	1,991.6	8.3	5.2	-170.84	178.2	-65.0	237.1	229.8	7.33	32.339	
2,100.0	2,040.8	2,109.0	2,089.1	8.8	5.6	-170.35	197.9	-71.4	245.4	237.7	7.76	31.621	
2,200.0	2,136.7	2,208.6	2,186.5	9.3	6.0	-169.89	217.6	-77.8	253.8	245.6	8.20	30.959	
2,300.0	2,232.7	2,308.2	2,284.0	9.8	6.4	-169.46	237.3	-84.2	262.1	253.5	8.64	30.348	
2,400.0	2,328.6	2,407.9	2,381.4	10.3	6.8	-169.06	257.0	-90.6	270.5	261.4	9.08	29.782	
2,500.0	2,424.6	2,507.5	2,478.9	10.9	7.1	-168.68	276.7	-97.0	278.8	269.3	9.53	29.256	
2,600.0	2,520.6	2,607.1	2,576.4	11.4	7.5	-168.32	296.4	-103.4	287.2	277.2	9.98	28.768	
2,700.0	2,616.5	2,706.8	2,673.8	11.9	7.9	-167.99	316.1	-109.8	295.6	285.1	10.44	28.312	
2,800.0	2,712.5	2,806.4	2,771.3	12.4	8.3	-167.67	335.8	-116.2	304.0	293.1	10.90	27.886	
2,900.0	2,808.4	2,906.0	2,868.7	12.9	8.7	-167.37	355.5	-122.6	312.4	301.0	11.36	27.488	
3,000.0	2,904.4	3,005.7	2,966.2	13.5	9.1	-167.08	375.2	-129.0	320.8	309.0	11.83	27.115	
3,100.0	3,000.3	3,105.3	3,063.6	14.0	9.5	-166.81	394.9	-135.4	329.2	316.9	12.30	26.764	
3,200.0	3,096.3	3,204.9	3,161.1	14.5	9.9	-166.56	414.6	-141.8	337.6	324.9	12.77	26.434	
3,300.0	3,192.2	3,304.6	3,258.5	15.0	10.3	-166.31	434.3	-148.2	346.1	332.8	13.25	26.124	
3,400.0	3,288.2	3,404.2	3,356.0	15.5	10.7	-166.08	454.0	-154.6	354.5	340.8	13.72	25.831	
3,500.0	3,384.2	3,503.8	3,453.5	16.1	11.1	-165.86	473.7	-161.0	362.9	348.7	14.20	25.554	
3,600.0	3,480.1	3,603.5	3,550.9	16.6	11.5	-165.64	493.4	-167.4	371.4	356.7	14.68	25.292	
3,700.0	3,576.1	3,703.1	3,648.4	17.1	11.9	-165.44	513.1	-173.8	379.8	364.7	15.17	25.044	
3,800.0	3,672.0	3,802.7	3,745.8	17.6	12.3	-165.25	532.8	-180.2	388.3	372.6	15.65	24.808	
3,900.0	3,768.0	3,902.4	3,843.3	18.1	12.7	-165.06	552.5	-186.6	396.8	380.6	16.14	24.585	
4,000.0	3,863.9	4,002.0	3,940.7	18.7	13.1	-164.89	572.2	-193.0	405.2	388.6	16.63	24.372	
4,100.0	3,959.9	4,101.6	4,038.2	19.2	13.5	-164.71	591.9	-199.4	413.7	396.6	17.12	24.170	
4,200.0	4,055.8	4,196.1	4,130.8	19.7	13.9	-164.59	610.1	-205.3	422.7	405.1	17.58	24.041	
4,300.0	4,151.8	4,289.3	4,222.3	20.2	14.2	-164.55	626.7	-210.7	433.1	415.1	18.01	24.044	
4,400.0	4,247.8	4,382.1	4,313.7	20.8	14.5	-164.60	641.7	-215.6	444.9	426.5	18.41	24.166	
4,500.0	4,343.7	4,474.6	4,405.1	21.3	14.8	-164.72	655.4	-220.0	458.3	439.5	18.78	24.399	
4,600.0	4,439.7	4,566.6	4,496.2	21.8	15.1	-164.91	667.6	-224.0	473.1	454.0	19.12	24.736	
4,700.0	4,535.6	4,658.3	4,587.2	22.3	15.3	-165.16	678.3	-227.5	489.3	469.9	19.44	25.171	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - Qualls 3D-28H - 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	95.976	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-29.1	0.0	29.1	28.5	0.65	44.652	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-171.99	-29.1	0.0	31.3	30.3	1.00	31.264	
400.0	399.7	399.7	399.7	0.7	0.7	-173.35	-29.1	0.0	37.8	36.4	1.35	28.030	SF
500.0	499.1	499.1	499.1	1.0	0.8	-174.81	-29.1	0.0	48.6	46.9	1.69	28.731	
600.0	598.0	598.9	598.9	1.3	1.0	-175.65	-28.4	-0.5	63.0	61.0	2.03	30.992	
700.0	696.0	698.5	698.5	1.7	1.2	-175.78	-26.3	-1.9	80.3	77.9	2.37	33.816	
800.0	793.2	797.9	797.7	2.1	1.4	-175.54	-22.7	-4.3	100.3	97.6	2.71	36.982	
900.0	889.3	897.0	896.7	2.6	1.6	-175.13	-17.7	-7.6	122.6	119.6	3.06	40.094	
1,000.0	985.3	996.7	996.0	3.1	1.8	-174.54	-11.2	-11.9	144.1	140.7	3.42	42.115	
1,100.0	1,081.2	1,096.9	1,095.9	3.6	2.0	-173.78	-3.2	-17.1	164.2	160.4	3.80	43.244	
1,200.0	1,177.2	1,197.8	1,196.1	4.1	2.2	-172.90	6.2	-23.4	182.8	178.6	4.18	43.678	
1,300.0	1,273.1	1,299.1	1,296.5	4.6	2.5	-171.90	17.2	-30.7	199.9	195.3	4.59	43.555	
1,400.0	1,369.1	1,400.9	1,397.2	5.1	2.8	-170.79	29.8	-39.0	215.7	210.7	5.02	42.972	
1,500.0	1,465.0	1,502.9	1,497.8	5.7	3.1	-169.58	43.9	-48.3	230.0	224.6	5.48	42.009	
1,600.0	1,561.0	1,601.8	1,595.2	6.2	3.4	-168.43	58.2	-57.8	243.8	237.9	5.95	41.012	
1,700.0	1,656.9	1,700.8	1,692.7	6.7	3.7	-167.40	72.5	-67.3	257.7	251.3	6.43	40.086	
1,800.0	1,752.9	1,799.7	1,790.1	7.2	4.1	-166.47	86.8	-76.8	271.7	264.7	6.92	39.229	
1,900.0	1,848.9	1,898.6	1,887.5	7.7	4.4	-165.64	101.2	-86.2	285.7	278.2	7.43	38.439	
2,000.0	1,944.8	1,997.6	1,984.9	8.3	4.7	-164.88	115.5	-95.7	299.7	291.8	7.95	37.712	
2,100.0	2,040.8	2,096.5	2,082.4	8.8	5.0	-164.20	129.8	-105.2	313.8	305.4	8.47	37.044	
2,200.0	2,136.7	2,195.4	2,179.8	9.3	5.4	-163.57	144.1	-114.7	328.0	319.0	9.00	36.429	
2,300.0	2,232.7	2,294.4	2,277.2	9.8	5.7	-162.99	158.5	-124.2	342.2	332.6	9.54	35.863	
2,400.0	2,328.6	2,393.3	2,374.7	10.3	6.0	-162.46	172.8	-133.7	356.4	346.3	10.08	35.341	
2,500.0	2,424.6	2,492.2	2,472.1	10.9	6.4	-161.97	187.1	-143.1	370.7	360.0	10.63	34.859	
2,600.0	2,520.6	2,591.2	2,569.5	11.4	6.7	-161.52	201.4	-152.6	384.9	373.7	11.19	34.414	
2,700.0	2,616.5	2,690.1	2,666.9	11.9	7.1	-161.09	215.8	-162.1	399.2	387.5	11.74	34.001	
2,800.0	2,712.5	2,789.0	2,764.4	12.4	7.4	-160.70	230.1	-171.6	413.5	401.2	12.30	33.618	
2,900.0	2,808.4	2,888.0	2,861.8	12.9	7.7	-160.34	244.4	-181.1	427.9	415.0	12.86	33.262	
3,000.0	2,904.4	2,986.9	2,959.2	13.5	8.1	-159.99	258.7	-190.6	442.2	428.8	13.43	32.930	
3,100.0	3,000.3	3,080.7	3,051.7	14.0	8.4	-159.75	271.7	-199.1	457.1	443.2	13.96	32.755	
3,200.0	3,096.3	3,174.0	3,144.0	14.5	8.7	-159.66	283.4	-206.9	473.2	458.7	14.44	32.758	
3,300.0	3,192.2	3,267.0	3,236.1	15.0	8.9	-159.70	293.8	-213.7	490.3	475.5	14.89	32.921	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - Qualls 3E-28H - 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	-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	131.962	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-40.1	0.0	40.1	39.4	0.65	61.394	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-171.83	-40.1	0.0	42.2	41.2	1.00	42.177	
400.0	399.7	399.7	399.7	0.7	0.7	-172.91	-40.1	0.0	48.7	47.4	1.35	36.130	
500.0	499.1	499.3	499.3	1.0	0.8	-173.35	-40.0	-0.9	59.4	57.7	1.69	35.073	SF
600.0	598.0	598.4	598.3	1.3	1.0	-172.68	-39.7	-3.4	74.2	72.1	2.04	36.348	
700.0	696.0	696.7	696.6	1.7	1.2	-171.51	-39.2	-7.6	93.0	90.6	2.39	38.868	
800.0	793.2	794.2	793.9	2.1	1.4	-170.20	-38.6	-13.5	115.8	113.1	2.75	42.063	
900.0	889.3	890.8	890.2	2.6	1.6	-168.93	-37.8	-20.9	142.3	139.2	3.14	45.329	
1,000.0	985.3	987.2	986.1	3.1	1.8	-167.59	-36.8	-29.9	169.4	165.8	3.56	47.565	
1,100.0	1,081.2	1,083.4	1,081.8	3.6	2.0	-166.12	-35.7	-40.5	196.5	192.5	4.01	48.947	
1,200.0	1,177.2	1,179.6	1,177.2	4.1	2.3	-164.59	-34.4	-52.6	223.6	219.1	4.50	49.673	
1,300.0	1,273.1	1,275.6	1,272.3	4.6	2.6	-163.12	-32.9	-65.9	250.9	245.9	5.01	50.048	
1,400.0	1,369.1	1,371.6	1,367.3	5.1	2.8	-161.93	-31.5	-79.2	278.3	272.8	5.54	50.269	
1,500.0	1,465.0	1,467.6	1,462.4	5.7	3.1	-160.96	-30.0	-92.5	305.8	299.8	6.07	50.395	
1,600.0	1,561.0	1,563.7	1,557.5	6.2	3.4	-160.15	-28.6	-105.7	333.4	326.8	6.61	50.462	
1,700.0	1,656.9	1,659.7	1,652.6	6.7	3.6	-159.46	-27.1	-119.0	361.0	353.9	7.15	50.491	
1,800.0	1,752.9	1,755.7	1,747.7	7.2	3.9	-158.87	-25.7	-132.3	388.7	381.0	7.70	50.496	
1,900.0	1,848.9	1,851.7	1,842.8	7.7	4.2	-158.35	-24.3	-145.6	416.4	408.2	8.25	50.485	
2,000.0	1,944.8	1,947.7	1,937.9	8.3	4.5	-157.90	-22.8	-158.9	444.2	435.4	8.80	50.465	
2,100.0	2,040.8	2,043.8	2,033.0	8.8	4.8	-157.51	-21.4	-172.2	471.9	462.6	9.36	50.438	
2,200.0	2,136.7	2,139.9	2,128.2	9.3	5.0	-157.16	-19.9	-185.5	499.7	489.8	9.91	50.413	

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 Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - Qualls 3F-28H - 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	-51.0	0.0	51.0				
100.0	100.0	100.0	100.0	0.2	0.2	180.00	-51.0	0.0	51.0	50.7	0.30	167.948	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-51.0	0.0	51.0	50.4	0.65	78.136	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-171.74	-51.0	0.0	53.2	52.2	1.00	53.091	
400.0	399.7	398.9	398.9	0.7	0.7	-172.15	-51.7	-0.5	60.4	59.0	1.35	44.798	
500.0	499.1	497.1	497.1	1.0	0.8	-172.13	-53.8	-1.9	73.3	71.6	1.69	43.312	SF
600.0	598.0	594.2	594.1	1.3	1.0	-171.87	-57.3	-4.2	91.8	89.8	2.03	45.144	
700.0	696.0	689.8	689.5	1.7	1.2	-171.50	-62.1	-7.3	116.0	113.6	2.37	48.825	
800.0	793.2	783.5	782.9	2.1	1.4	-171.11	-68.0	-11.3	145.6	142.9	2.71	53.622	
900.0	889.3	875.2	874.2	2.6	1.6	-170.78	-75.1	-15.9	180.1	177.1	3.06	58.818	
1,000.0	985.3	965.7	964.2	3.1	1.8	-170.41	-83.2	-21.3	216.5	213.1	3.42	63.220	
1,100.0	1,081.2	1,055.2	1,053.1	3.6	2.1	-169.96	-92.5	-27.4	254.1	250.4	3.79	67.002	
1,200.0	1,177.2	1,143.8	1,140.7	4.1	2.3	-169.47	-102.7	-34.2	293.0	288.8	4.17	70.306	
1,300.0	1,273.1	1,231.3	1,227.2	4.6	2.6	-168.96	-114.0	-41.7	333.1	328.5	4.55	73.235	
1,400.0	1,369.1	1,318.8	1,313.4	5.1	2.9	-168.45	-126.3	-49.8	374.3	369.4	4.94	75.842	
1,500.0	1,465.0	1,409.6	1,402.9	5.7	3.2	-167.98	-139.5	-58.6	416.0	410.6	5.33	77.992	
1,600.0	1,561.0	1,500.5	1,492.4	6.2	3.5	-167.60	-152.6	-67.3	457.6	451.9	5.73	79.819	
1,700.0	1,656.9	1,591.4	1,581.9	6.7	3.8	-167.28	-165.8	-76.0	499.3	493.1	6.13	81.387	

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 Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - Qualls 3G-28H - 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	-58.3	0.0	58.3				
100.0	100.0	100.0	100.0	0.2	0.2	180.00	-58.3	0.0	58.3	58.0	0.30	191.939	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-58.3	0.0	58.3	57.6	0.65	89.298	CC, ES
300.0	300.0	299.0	299.0	0.5	0.5	-171.42	-59.1	-0.3	61.3	60.3	1.00	61.276	
400.0	399.7	397.5	397.5	0.7	0.7	-171.46	-61.5	-1.2	70.1	68.8	1.35	52.147	
500.0	499.1	495.2	495.0	1.0	0.9	-171.50	-65.4	-2.6	84.9	83.2	1.69	50.293	SF
600.0	598.0	591.5	591.2	1.3	1.1	-171.52	-70.9	-4.6	105.5	103.5	2.03	52.003	
700.0	696.0	686.2	685.6	1.7	1.3	-171.52	-77.7	-7.1	131.8	129.4	2.37	55.724	
800.0	793.2	778.7	777.7	2.1	1.5	-171.50	-85.7	-10.0	163.7	161.0	2.70	60.691	
900.0	889.3	868.9	867.4	2.6	1.7	-171.50	-94.9	-13.3	200.6	197.6	3.03	66.143	
1,000.0	985.3	957.9	955.7	3.1	1.9	-171.46	-105.3	-17.1	239.5	236.1	3.38	70.857	
1,100.0	1,081.2	1,045.7	1,042.7	3.6	2.2	-171.32	-116.8	-21.3	279.6	275.9	3.73	75.024	
1,200.0	1,177.2	1,132.5	1,128.3	4.1	2.4	-171.12	-129.4	-25.9	321.1	317.0	4.08	78.772	
1,300.0	1,273.1	1,219.1	1,213.7	4.6	2.7	-170.89	-143.2	-30.9	363.9	359.4	4.43	82.157	
1,400.0	1,369.1	1,309.3	1,302.6	5.1	3.0	-170.68	-157.9	-36.3	407.0	402.2	4.79	84.988	
1,500.0	1,465.0	1,399.5	1,391.4	5.7	3.3	-170.51	-172.6	-41.6	450.1	445.0	5.15	87.408	
1,600.0	1,561.0	1,489.7	1,480.3	6.2	3.6	-170.37	-187.4	-47.0	493.3	487.8	5.51	89.497	

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 Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - SLATER 43-28 (EXISTING) - EXISTING - SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 176-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
11,300.0	7,057.0	7,209.6	7,053.5	106.4	24.6	88.73	1,185.3	4,366.0	471.7	345.2	126.52	3.729	
11,400.0	7,057.0	7,207.4	7,051.3	108.8	24.6	88.41	1,185.4	4,366.1	422.0	293.0	128.95	3.273	
11,500.0	7,057.0	7,205.3	7,049.2	111.2	24.6	88.10	1,185.5	4,366.1	391.9	260.6	131.38	2.983	
11,572.4	7,057.0	7,203.8	7,047.7	113.0	24.6	87.87	1,185.6	4,366.2	385.2	252.0	133.14	2.893	CC, ES
11,600.0	7,057.0	7,203.2	7,047.1	113.7	24.6	87.79	1,185.6	4,366.2	386.2	252.4	133.81	2.886	SF
11,700.0	7,057.0	7,201.1	7,045.0	116.1	24.6	87.48	1,185.7	4,366.2	405.8	269.5	136.23	2.978	
11,787.6	7,057.0	7,199.3	7,043.2	118.2	24.6	87.20	1,185.7	4,366.3	441.2	302.8	138.35	3.189	

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 Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - SLATER 4-4-28 (EXISTING) - Existing - SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 139-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
9,200.0	7,057.0	7,294.6	7,077.6	57.3	28.7	-95.36	1,736.5	2,440.0	476.5	403.2	73.24	6.506	
9,300.0	7,057.0	7,291.5	7,074.5	59.5	28.7	-94.31	1,736.5	2,440.1	384.4	308.6	75.77	5.073	
9,400.0	7,057.0	7,288.5	7,071.5	61.7	28.7	-93.29	1,736.6	2,440.2	297.4	219.2	78.28	3.799	
9,500.0	7,057.0	7,285.6	7,068.6	64.0	28.7	-92.28	1,736.6	2,440.3	221.7	140.9	80.78	2.745	
9,600.0	7,057.0	7,282.7	7,065.7	66.2	28.7	-91.28	1,736.6	2,440.4	172.7	89.5	83.26	2.075	
9,646.7	7,057.0	7,281.4	7,064.4	67.3	28.7	-90.82	1,736.7	2,440.4	166.3	81.9	84.42	1.970	CC, ES, SF
9,700.0	7,057.0	7,279.9	7,062.9	68.5	28.7	-90.30	1,736.7	2,440.5	174.6	88.9	85.73	2.037	
9,800.0	7,057.0	7,277.1	7,060.1	70.8	28.7	-89.34	1,736.7	2,440.5	226.1	138.0	88.17	2.565	
9,900.0	7,057.0	7,274.3	7,057.4	73.2	28.7	-88.40	1,736.8	2,440.6	302.9	212.3	90.59	3.344	
10,000.0	7,057.0	7,271.6	7,054.7	75.5	28.7	-87.47	1,736.8	2,440.7	390.4	297.4	92.99	4.198	
10,100.0	7,057.0	7,269.0	7,052.0	77.8	28.7	-86.56	1,736.8	2,440.8	482.7	387.3	95.37	5.061	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 S28-T3N-R68W (Qualls) - SLATER 6-4-28 (EXISTING) - EXISTING - SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 109-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	7,057.0	7,212.2	7,060.5	82.5	23.7	-93.54	1,756.4	3,459.8	410.8	318.5	92.32	4.450	
10,400.0	7,057.0	7,209.5	7,057.7	84.9	23.7	-92.69	1,756.4	3,459.9	324.9	230.0	94.85	3.425	
10,500.0	7,057.0	7,206.7	7,054.9	87.3	23.7	-91.82	1,756.5	3,460.0	249.6	152.2	97.37	2.563	
10,600.0	7,057.0	7,203.8	7,052.0	89.6	23.7	-90.94	1,756.5	3,460.1	197.6	97.7	99.88	1.978	
10,666.4	7,057.0	7,201.8	7,050.1	91.2	23.7	-90.34	1,756.5	3,460.1	186.1	84.5	101.53	1.833	CC, ES, SF
10,700.0	7,057.0	7,200.9	7,049.1	92.0	23.7	-90.03	1,756.5	3,460.2	189.1	86.7	102.36	1.847	
10,800.0	7,057.0	7,197.9	7,046.1	94.4	23.7	-89.11	1,756.5	3,460.3	229.0	124.2	104.82	2.185	
10,900.0	7,057.0	7,194.8	7,043.0	96.8	23.7	-88.17	1,756.5	3,460.3	298.6	191.3	107.26	2.784	
11,000.0	7,057.0	7,191.7	7,039.9	99.2	23.7	-87.21	1,756.5	3,460.4	381.8	272.2	109.66	3.482	
11,100.0	7,057.0	7,188.5	7,036.7	101.6	23.7	-86.23	1,756.6	3,460.5	471.6	359.6	112.03	4.210	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Qualls 3A-28H
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Reference Site:	S28-T3N-R68W (Qualls)	**MD Reference:**	WELL @ 4970.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Qualls 3A-28H	**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 WELL @ 4970.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Qualls 3A-28H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.31°