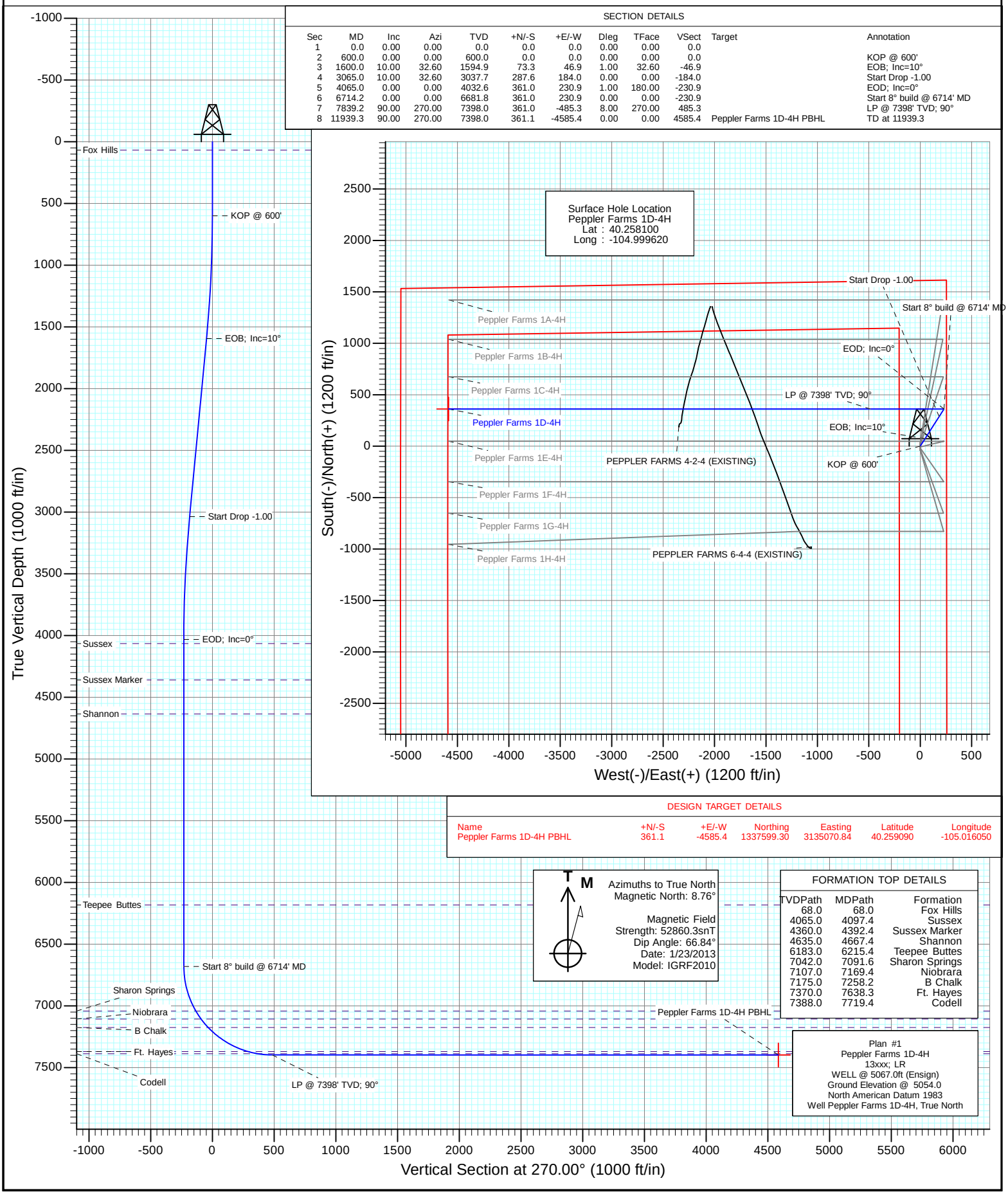
Project: DJ Wattenberg
Site: S4-T3N-R68W (Peppler Farms)
Well: Peppler Farms 1D-4H
Wellbore: Hz
Design: Plan #1

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	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0		KOP @ 600'
3	1600.0	10.00	32.60	1594.9	73.3	46.9	1.00	32.60	-46.9		EOB; Inc=10°
4	3065.0	10.00	32.60	3037.7	287.6	184.0	0.00	0.00	-184.0		Start Drop -1.00
5	4065.0	0.00	0.00	4032.6	361.0	230.9	1.00	180.00	-230.9		EOD; Inc=0°
6	6714.2	0.00	0.00	6681.8	361.0	230.9	0.00	0.00	-230.9		Start 8° build @ 6714' MD
7	7839.2	90.00	270.00	7398.0	361.0	-485.3	8.00	270.00	485.3		LP @ 7398' TVD; 90°
8	11939.3	90.00	270.00	7398.0	361.1	-4585.4	0.00	0.00	4585.4	Peppler Farms 1D-4H PBHL	TD at 11939.3



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Peppler Farms 1D-4H PBHL	361.1	-4585.4	1337599.30	3135070.84	40.259090	-105.016050

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
68.0	68.0	Fox Hills
4065.0	4097.4	Sussex
4360.0	4392.4	Sussex Marker
4635.0	4667.4	Shannon
6183.0	6215.4	Teepee Buttes
7042.0	7091.6	Sharon Springs
7107.0	7169.4	Niobrara
7175.0	7258.2	B Chalk
7370.0	7638.3	Ft. Hayes
7388.0	7719.4	Codell

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Peppler Farms 1D-4H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 5067.0ft (Ensign)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5067.0ft (Ensign)
Site:	S4-T3N-R68W (Peppler Farms)	**North Reference:**	True
Well:	Peppler Farms 1D-4H	**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 S4-T3N-R68W (Peppler Farms)

Site Position:		**Northing:**	1,337,296.89 ft	**Latitude:**	40.258190
From:	Lat/Long	**Easting:**	3,139,658.06 ft	**Longitude:**	-104.999620
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.32 °

Well Peppler Farms 1D-4H

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,337,264.10 ft	**Latitude:**	40.258100
	+E/-W	0.0 ft	**Easting:**	3,139,658.25 ft	**Longitude:**	-104.999620
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	5,054.0 ft

Wellbore Hz

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	1/23/2013	8.76	66.84	52,860

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	270.00

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	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,600.0	10.00	32.60	1,594.9	73.3	46.9	1.00	1.00	0.00	32.60	
3,065.0	10.00	32.60	3,037.7	287.6	184.0	0.00	0.00	0.00	0.00	
4,065.0	0.00	0.00	4,032.6	361.0	230.9	1.00	-1.00	0.00	180.00	
6,714.2	0.00	0.00	6,681.8	361.0	230.9	0.00	0.00	0.00	0.00	
7,839.2	90.00	270.00	7,398.0	361.0	-485.3	8.00	8.00	0.00	270.00	
11,939.3	90.00	270.00	7,398.0	361.1	-4,585.4	0.00	0.00	0.00	0.00	Peppler Farms 1D-4H

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Peppler Farms 1D-4H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 5067.0ft (Ensign)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5067.0ft (Ensign)
Site:	S4-T3N-R68W (Peppler Farms)	**North Reference:**	True
Well:	Peppler Farms 1D-4H	**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	
68.0	0.00	0.00	68.0	0.0	0.0	0.0	0.00	0.00	Fox Hills
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	KOP @ 600'
700.0	1.00	32.60	700.0	0.7	0.5	-0.5	1.00	1.00	
800.0	2.00	32.60	800.0	2.9	1.9	-1.9	1.00	1.00	
900.0	3.00	32.60	899.9	6.6	4.2	-4.2	1.00	1.00	
1,000.0	4.00	32.60	999.7	11.8	7.5	-7.5	1.00	1.00	
1,100.0	5.00	32.60	1,099.4	18.4	11.7	-11.7	1.00	1.00	
1,200.0	6.00	32.60	1,198.9	26.4	16.9	-16.9	1.00	1.00	
1,300.0	7.00	32.60	1,298.3	36.0	23.0	-23.0	1.00	1.00	
1,400.0	8.00	32.60	1,397.4	47.0	30.0	-30.0	1.00	1.00	
1,500.0	9.00	32.60	1,496.3	59.4	38.0	-38.0	1.00	1.00	
1,600.0	10.00	32.60	1,594.9	73.3	46.9	-46.9	1.00	1.00	EOB; Inc=10°
1,700.0	10.00	32.60	1,693.4	88.0	56.3	-56.3	0.00	0.00	
1,800.0	10.00	32.60	1,791.9	102.6	65.6	-65.6	0.00	0.00	
1,900.0	10.00	32.60	1,890.4	117.2	75.0	-75.0	0.00	0.00	
2,000.0	10.00	32.60	1,988.9	131.8	84.3	-84.3	0.00	0.00	
2,100.0	10.00	32.60	2,087.3	146.5	93.7	-93.7	0.00	0.00	
2,200.0	10.00	32.60	2,185.8	161.1	103.0	-103.0	0.00	0.00	
2,300.0	10.00	32.60	2,284.3	175.7	112.4	-112.4	0.00	0.00	
2,400.0	10.00	32.60	2,382.8	190.4	121.7	-121.7	0.00	0.00	
2,500.0	10.00	32.60	2,481.3	205.0	131.1	-131.1	0.00	0.00	
2,600.0	10.00	32.60	2,579.7	219.6	140.5	-140.5	0.00	0.00	
2,700.0	10.00	32.60	2,678.2	234.3	149.8	-149.8	0.00	0.00	
2,800.0	10.00	32.60	2,776.7	248.9	159.2	-159.2	0.00	0.00	
2,900.0	10.00	32.60	2,875.2	263.5	168.5	-168.5	0.00	0.00	
3,000.0	10.00	32.60	2,973.7	278.1	177.9	-177.9	0.00	0.00	
3,065.0	10.00	32.60	3,037.7	287.6	184.0	-184.0	0.00	0.00	Start Drop -1.00
3,100.0	9.65	32.60	3,072.2	292.7	187.2	-187.2	1.00	-1.00	
3,200.0	8.65	32.60	3,170.9	306.1	195.7	-195.7	1.00	-1.00	
3,300.0	7.65	32.60	3,269.9	318.0	203.4	-203.4	1.00	-1.00	
3,400.0	6.65	32.60	3,369.1	328.5	210.1	-210.1	1.00	-1.00	
3,500.0	5.65	32.60	3,468.5	337.5	215.9	-215.9	1.00	-1.00	
3,600.0	4.65	32.60	3,568.1	345.1	220.7	-220.7	1.00	-1.00	
3,700.0	3.65	32.60	3,667.9	351.2	224.6	-224.6	1.00	-1.00	
3,800.0	2.65	32.60	3,767.7	355.8	227.6	-227.6	1.00	-1.00	
3,900.0	1.65	32.60	3,867.6	359.0	229.6	-229.6	1.00	-1.00	
4,000.0	0.65	32.60	3,967.6	360.7	230.7	-230.7	1.00	-1.00	
4,065.0	0.00	0.00	4,032.6	361.0	230.9	-230.9	1.00	-1.00	EOD; Inc=0°
4,097.4	0.00	0.00	4,065.0	361.0	230.9	-230.9	0.00	0.00	Sussex
4,100.0	0.00	0.00	4,067.6	361.0	230.9	-230.9	0.00	0.00	
4,200.0	0.00	0.00	4,167.6	361.0	230.9	-230.9	0.00	0.00	
4,300.0	0.00	0.00	4,267.6	361.0	230.9	-230.9	0.00	0.00	
4,392.4	0.00	0.00	4,360.0	361.0	230.9	-230.9	0.00	0.00	Sussex Marker
4,400.0	0.00	0.00	4,367.6	361.0	230.9	-230.9	0.00	0.00	
4,500.0	0.00	0.00	4,467.6	361.0	230.9	-230.9	0.00	0.00	
4,600.0	0.00	0.00	4,567.6	361.0	230.9	-230.9	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Peppler Farms 1D-4H
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Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5067.0ft (Ensign)
Site:	S4-T3N-R68W (Peppler Farms)	**North Reference:**	True
Well:	Peppler Farms 1D-4H	**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
4,667.4	0.00	0.00	4,635.0	361.0	230.9	-230.9	0.00	0.00	Shannon
4,700.0	0.00	0.00	4,667.6	361.0	230.9	-230.9	0.00	0.00	
4,800.0	0.00	0.00	4,767.6	361.0	230.9	-230.9	0.00	0.00	
4,900.0	0.00	0.00	4,867.6	361.0	230.9	-230.9	0.00	0.00	
5,000.0	0.00	0.00	4,967.6	361.0	230.9	-230.9	0.00	0.00	
5,100.0	0.00	0.00	5,067.6	361.0	230.9	-230.9	0.00	0.00	
5,200.0	0.00	0.00	5,167.6	361.0	230.9	-230.9	0.00	0.00	
5,300.0	0.00	0.00	5,267.6	361.0	230.9	-230.9	0.00	0.00	
5,400.0	0.00	0.00	5,367.6	361.0	230.9	-230.9	0.00	0.00	
5,500.0	0.00	0.00	5,467.6	361.0	230.9	-230.9	0.00	0.00	
5,600.0	0.00	0.00	5,567.6	361.0	230.9	-230.9	0.00	0.00	
5,700.0	0.00	0.00	5,667.6	361.0	230.9	-230.9	0.00	0.00	
5,800.0	0.00	0.00	5,767.6	361.0	230.9	-230.9	0.00	0.00	
5,900.0	0.00	0.00	5,867.6	361.0	230.9	-230.9	0.00	0.00	
6,000.0	0.00	0.00	5,967.6	361.0	230.9	-230.9	0.00	0.00	
6,100.0	0.00	0.00	6,067.6	361.0	230.9	-230.9	0.00	0.00	
6,200.0	0.00	0.00	6,167.6	361.0	230.9	-230.9	0.00	0.00	
6,215.4	0.00	0.00	6,183.0	361.0	230.9	-230.9	0.00	0.00	Teepee Buttes
6,300.0	0.00	0.00	6,267.6	361.0	230.9	-230.9	0.00	0.00	
6,400.0	0.00	0.00	6,367.6	361.0	230.9	-230.9	0.00	0.00	
6,500.0	0.00	0.00	6,467.6	361.0	230.9	-230.9	0.00	0.00	
6,600.0	0.00	0.00	6,567.6	361.0	230.9	-230.9	0.00	0.00	
6,700.0	0.00	0.00	6,667.6	361.0	230.9	-230.9	0.00	0.00	
6,714.2	0.00	0.00	6,681.8	361.0	230.9	-230.9	0.00	0.00	Start 8° build @ 6714' MD
6,800.0	6.86	270.00	6,767.4	361.0	225.7	-225.7	8.00	8.00	
6,900.0	14.86	270.00	6,865.5	361.0	206.9	-206.9	8.00	8.00	
7,000.0	22.86	270.00	6,960.1	361.0	174.6	-174.6	8.00	8.00	
7,091.6	30.19	270.00	7,042.0	361.0	133.7	-133.7	8.00	8.00	Sharon Springs
7,100.0	30.86	270.00	7,049.2	361.0	129.4	-129.4	8.00	8.00	
7,169.4	36.42	270.00	7,107.0	361.0	91.0	-91.0	8.00	8.00	Niobrara
7,200.0	38.86	270.00	7,131.2	361.0	72.3	-72.3	8.00	8.00	
7,258.2	43.52	270.00	7,175.0	361.0	34.0	-34.0	8.00	8.00	B Chalk
7,300.0	46.86	270.00	7,204.4	361.0	4.3	-4.3	8.00	8.00	
7,400.0	54.86	270.00	7,267.5	361.0	-73.2	73.2	8.00	8.00	
7,500.0	62.86	270.00	7,319.2	361.0	-158.7	158.7	8.00	8.00	
7,600.0	70.86	270.00	7,358.4	361.0	-250.6	250.6	8.00	8.00	
7,638.3	73.93	270.00	7,370.0	361.0	-287.0	287.0	8.00	8.00	Ft. Hayes
7,700.0	78.86	270.00	7,384.5	361.0	-347.0	347.0	8.00	8.00	
7,719.4	80.41	270.00	7,388.0	361.0	-366.1	366.1	8.00	8.00	Codell
7,800.0	86.86	270.00	7,396.9	361.0	-446.2	446.2	8.00	8.00	
7,839.2	90.00	270.00	7,398.0	361.0	-485.3	485.3	8.00	8.00	LP @ 7398' TVD; 90°
7,900.0	90.00	270.00	7,398.0	361.0	-546.1	546.1	0.00	0.00	
8,000.0	90.00	270.00	7,398.0	361.0	-646.1	646.1	0.00	0.00	
8,100.0	90.00	270.00	7,398.0	361.0	-746.1	746.1	0.00	0.00	
8,200.0	90.00	270.00	7,398.0	361.0	-846.1	846.1	0.00	0.00	
8,300.0	90.00	270.00	7,398.0	361.0	-946.1	946.1	0.00	0.00	
8,400.0	90.00	270.00	7,398.0	361.0	-1,046.1	1,046.1	0.00	0.00	
8,500.0	90.00	270.00	7,398.0	361.0	-1,146.1	1,146.1	0.00	0.00	
8,600.0	90.00	270.00	7,398.0	361.0	-1,246.1	1,246.1	0.00	0.00	
8,700.0	90.00	270.00	7,398.0	361.0	-1,346.1	1,346.1	0.00	0.00	
8,800.0	90.00	270.00	7,398.0	361.0	-1,446.1	1,446.1	0.00	0.00	
8,900.0	90.00	270.00	7,398.0	361.0	-1,546.1	1,546.1	0.00	0.00	

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Site:	S4-T3N-R68W (Peppler Farms)	**North Reference:**	True
Well:	Peppler Farms 1D-4H	**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	270.00	7,398.0	361.0	-1,646.1	1,646.1	0.00	0.00	
9,100.0	90.00	270.00	7,398.0	361.0	-1,746.1	1,746.1	0.00	0.00	
9,200.0	90.00	270.00	7,398.0	361.0	-1,846.1	1,846.1	0.00	0.00	
9,300.0	90.00	270.00	7,398.0	361.0	-1,946.1	1,946.1	0.00	0.00	
9,400.0	90.00	270.00	7,398.0	361.0	-2,046.1	2,046.1	0.00	0.00	
9,500.0	90.00	270.00	7,398.0	361.0	-2,146.1	2,146.1	0.00	0.00	
9,600.0	90.00	270.00	7,398.0	361.0	-2,246.1	2,246.1	0.00	0.00	
9,700.0	90.00	270.00	7,398.0	361.0	-2,346.1	2,346.1	0.00	0.00	
9,800.0	90.00	270.00	7,398.0	361.0	-2,446.1	2,446.1	0.00	0.00	
9,900.0	90.00	270.00	7,398.0	361.0	-2,546.1	2,546.1	0.00	0.00	
10,000.0	90.00	270.00	7,398.0	361.0	-2,646.1	2,646.1	0.00	0.00	
10,100.0	90.00	270.00	7,398.0	361.0	-2,746.1	2,746.1	0.00	0.00	
10,200.0	90.00	270.00	7,398.0	361.0	-2,846.1	2,846.1	0.00	0.00	
10,300.0	90.00	270.00	7,398.0	361.0	-2,946.1	2,946.1	0.00	0.00	
10,400.0	90.00	270.00	7,398.0	361.0	-3,046.1	3,046.1	0.00	0.00	
10,500.0	90.00	270.00	7,398.0	361.0	-3,146.1	3,146.1	0.00	0.00	
10,600.0	90.00	270.00	7,398.0	361.0	-3,246.1	3,246.1	0.00	0.00	
10,700.0	90.00	270.00	7,398.0	361.1	-3,346.1	3,346.1	0.00	0.00	
10,800.0	90.00	270.00	7,398.0	361.1	-3,446.1	3,446.1	0.00	0.00	
10,900.0	90.00	270.00	7,398.0	361.1	-3,546.1	3,546.1	0.00	0.00	
11,000.0	90.00	270.00	7,398.0	361.1	-3,646.1	3,646.1	0.00	0.00	
11,100.0	90.00	270.00	7,398.0	361.1	-3,746.1	3,746.1	0.00	0.00	
11,200.0	90.00	270.00	7,398.0	361.1	-3,846.1	3,846.1	0.00	0.00	
11,300.0	90.00	270.00	7,398.0	361.1	-3,946.1	3,946.1	0.00	0.00	
11,400.0	90.00	270.00	7,398.0	361.1	-4,046.1	4,046.1	0.00	0.00	
11,500.0	90.00	270.00	7,398.0	361.1	-4,146.1	4,146.1	0.00	0.00	
11,600.0	90.00	270.00	7,398.0	361.1	-4,246.1	4,246.1	0.00	0.00	
11,700.0	90.00	270.00	7,398.0	361.1	-4,346.1	4,346.1	0.00	0.00	
11,800.0	90.00	270.00	7,398.0	361.1	-4,446.1	4,446.1	0.00	0.00	
11,900.0	90.00	270.00	7,398.0	361.1	-4,546.1	4,546.1	0.00	0.00	
11,939.3	90.00	270.00	7,398.0	361.1	-4,585.4	4,585.4	0.00	0.00	TD at 11939.3 - Peppler Farms 1D-4H PBHL

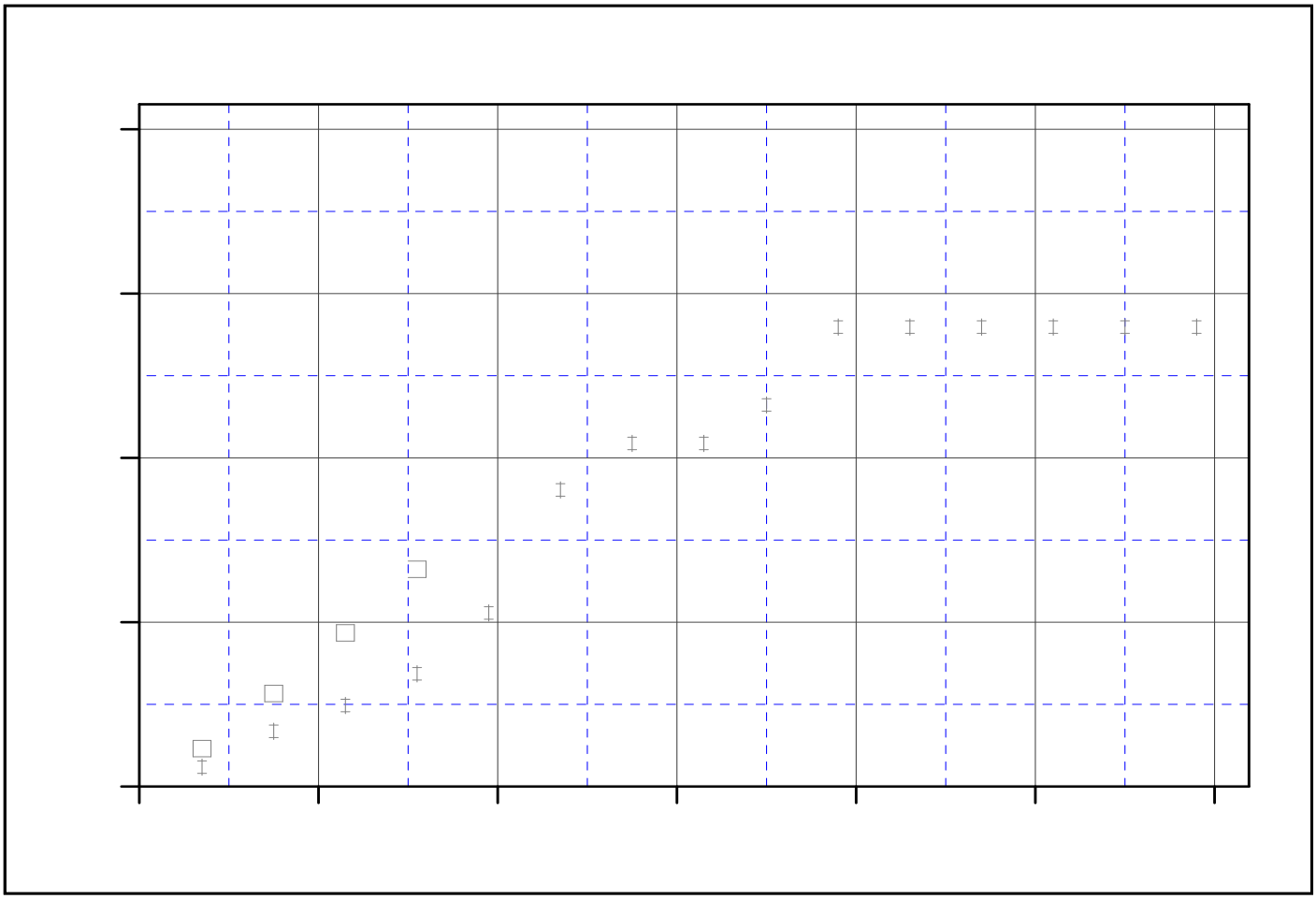
Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Peppler Farms 1D-4H P - plan hits target center - Point	0.00	0.00	7,398.0	361.1	-4,585.4	1,337,599.30	3,135,070.84	40.259090	-105.016050

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Peppler Farms 1D-4H
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 5067.0ft (Ensign)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 5067.0ft (Ensign)
Site:	S4-T3N-R68W (Peppler Farms)	**North Reference:**	True
Well:	Peppler Farms 1D-4H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Hz		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
68.0	68.0	Fox Hills			
4,097.4	4,065.0	Sussex			
4,392.4	4,360.0	Sussex Marker			
4,667.4	4,635.0	Shannon			
6,215.4	6,183.0	Teepee Buttes			
7,091.6	7,042.0	Sharon Springs			
7,169.4	7,107.0	Niobrara			
7,258.2	7,175.0	B Chalk			
7,638.3	7,370.0	Ft. Hayes			
7,719.4	7,388.0	Codell			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
600.0	600.0	0.0	0.0	KOP @ 600'
1,600.0	1,594.9	73.3	46.9	EOB; Inc=10°
3,065.0	3,037.7	287.6	184.0	Start Drop -1.00
4,065.0	4,032.6	361.0	230.9	EOD; Inc=0°
6,714.2	6,681.8	361.0	230.9	Start 8° build @ 6714' MD
7,839.2	7,398.0	361.0	-485.3	LP @ 7398' TVD; 90°
11,939.3	7,398.0	361.1	-4,585.4	TD at 11939.3