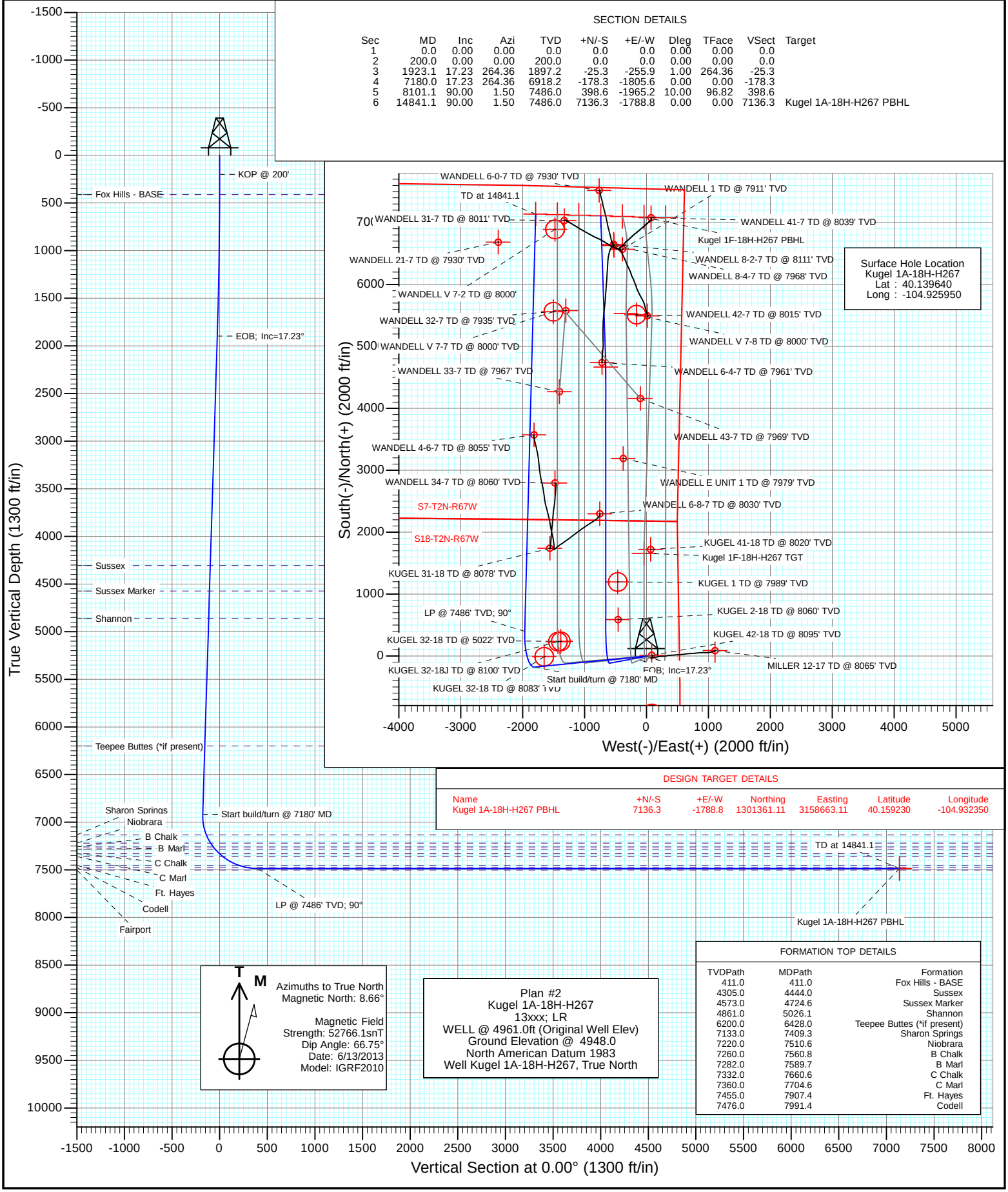
encana natural gas

Project: DJ Wattenberg
Site: S18-T2N-R67W (Kugel)
Well: Kugel 1A-18H-H267
Wellbore: Hz
Design: Plan #2

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	1923.1	17.23	264.36	1897.2	-25.3	-255.9	1.00	264.36	-25.3	
4	7180.0	17.23	264.36	6918.2	-178.3	-1805.6	0.00	0.00	-178.3	
5	8101.1	90.00	1.50	7486.0	398.6	-1965.2	10.00	96.82	398.6	
6	14841.1	90.00	1.50	7486.0	7136.3	-1788.8	0.00	0.00	7136.3	Kugel 1A-18H-H267 PBHL



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Kugel 1A-18H-H267 PBHL	7136.3	-1788.8	1301361.11	3158663.11	40.159230	-104.932350

T M

Azimuths to True North
Magnetic North: 8.66°

Magnetic Field
Strength: 52766.1snT
Dip Angle: 66.75°
Date: 6/13/2013
Model: IGRF2010

Plan #2
Kugel 1A-18H-H267
13xxx; LR
WELL @ 4961.0ft (Original Well Elev)
Ground Elevation @ 4948.0
North American Datum 1983
Well Kugel 1A-18H-H267, True North

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
411.0	411.0	Fox Hills - BASE
4305.0	4444.0	Sussex
4573.0	4724.6	Sussex Marker
4861.0	5026.1	Shannon
6200.0	6428.0	Teepee Buttes (*if present)
7133.0	7409.3	Sharon Springs
7220.0	7510.6	Niobrara
7260.0	7560.8	B Chalk
7282.0	7589.7	B Marl
7332.0	7660.6	C Chalk
7360.0	7704.6	C Marl
7455.0	7907.4	Ft. Hayes
7476.0	7991.4	Codell

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site:	S18-T2N-R67W (Kugel)	**North Reference:**	True
Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel)

Site Position:		**Northing:**	1,294,236.49 ft	**Latitude:**	40.139640
From:	Lat/Long	**Easting:**	3,160,498.07 ft	**Longitude:**	-104.925950
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.37 °

Well Kugel 1A-18H-H267

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,294,236.50 ft	**Latitude:**	40.139640
	+E/-W	0.0 ft	**Easting:**	3,160,498.07 ft	**Longitude:**	-104.925950
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,948.0 ft

Wellbore Hz

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/13/2013	8.66	66.75	52,766

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	0.00

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	
1,923.1	17.23	264.36	1,897.2	-25.3	-255.9	1.00	1.00	0.00	264.36	
7,180.0	17.23	264.36	6,918.2	-178.3	-1,805.6	0.00	0.00	0.00	0.00	
8,101.1	90.00	1.50	7,486.0	398.6	-1,965.2	10.00	7.90	10.55	96.82	
14,841.1	90.00	1.50	7,486.0	7,136.3	-1,788.8	0.00	0.00	0.00	0.00	Kugel 1A-18H-H267 F

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site:	S18-T2N-R67W (Kugel)	**North Reference:**	True
Well:	Kugel 1A-18H-H267	**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	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	1.00	264.36	300.0	-0.1	-0.9	-0.1	1.00	1.00	
400.0	2.00	264.36	400.0	-0.3	-3.5	-0.3	1.00	1.00	
411.0	2.11	264.36	411.0	-0.4	-3.9	-0.4	1.00	1.00	Fox Hills - BASE
500.0	3.00	264.36	499.9	-0.8	-7.8	-0.8	1.00	1.00	
600.0	4.00	264.36	599.7	-1.4	-13.9	-1.4	1.00	1.00	
700.0	5.00	264.36	699.4	-2.1	-21.7	-2.1	1.00	1.00	
800.0	6.00	264.36	798.9	-3.1	-31.2	-3.1	1.00	1.00	
900.0	7.00	264.36	898.3	-4.2	-42.5	-4.2	1.00	1.00	
1,000.0	8.00	264.36	997.4	-5.5	-55.5	-5.5	1.00	1.00	
1,100.0	9.00	264.36	1,096.3	-6.9	-70.2	-6.9	1.00	1.00	
1,200.0	10.00	264.36	1,194.9	-8.6	-86.6	-8.6	1.00	1.00	
1,300.0	11.00	264.36	1,293.3	-10.3	-104.8	-10.3	1.00	1.00	
1,400.0	12.00	264.36	1,391.2	-12.3	-124.6	-12.3	1.00	1.00	
1,500.0	13.00	264.36	1,488.9	-14.4	-146.1	-14.4	1.00	1.00	
1,600.0	14.00	264.36	1,586.1	-16.7	-169.4	-16.7	1.00	1.00	
1,700.0	15.00	264.36	1,682.9	-19.2	-194.3	-19.2	1.00	1.00	
1,800.0	16.00	264.36	1,779.3	-21.8	-220.9	-21.8	1.00	1.00	
1,900.0	17.00	264.36	1,875.2	-24.6	-249.1	-24.6	1.00	1.00	
1,923.1	17.23	264.36	1,897.2	-25.3	-255.9	-25.3	1.00	1.00	EOB; Inc=17.23°
2,000.0	17.23	264.36	1,970.7	-27.5	-278.6	-27.5	0.00	0.00	
2,100.0	17.23	264.36	2,066.2	-30.4	-308.1	-30.4	0.00	0.00	
2,200.0	17.23	264.36	2,161.7	-33.3	-337.5	-33.3	0.00	0.00	
2,300.0	17.23	264.36	2,257.2	-36.2	-367.0	-36.2	0.00	0.00	
2,400.0	17.23	264.36	2,352.7	-39.2	-396.5	-39.2	0.00	0.00	
2,500.0	17.23	264.36	2,448.3	-42.1	-426.0	-42.1	0.00	0.00	
2,600.0	17.23	264.36	2,543.8	-45.0	-455.4	-45.0	0.00	0.00	
2,700.0	17.23	264.36	2,639.3	-47.9	-484.9	-47.9	0.00	0.00	
2,800.0	17.23	264.36	2,734.8	-50.8	-514.4	-50.8	0.00	0.00	
2,900.0	17.23	264.36	2,830.3	-53.7	-543.9	-53.7	0.00	0.00	
3,000.0	17.23	264.36	2,925.8	-56.6	-573.4	-56.6	0.00	0.00	
3,100.0	17.23	264.36	3,021.3	-59.5	-602.8	-59.5	0.00	0.00	
3,200.0	17.23	264.36	3,116.8	-62.4	-632.3	-62.4	0.00	0.00	
3,300.0	17.23	264.36	3,212.3	-65.4	-661.8	-65.4	0.00	0.00	
3,400.0	17.23	264.36	3,307.9	-68.3	-691.3	-68.3	0.00	0.00	
3,500.0	17.23	264.36	3,403.4	-71.2	-720.8	-71.2	0.00	0.00	
3,600.0	17.23	264.36	3,498.9	-74.1	-750.2	-74.1	0.00	0.00	
3,700.0	17.23	264.36	3,594.4	-77.0	-779.7	-77.0	0.00	0.00	
3,800.0	17.23	264.36	3,689.9	-79.9	-809.2	-79.9	0.00	0.00	
3,900.0	17.23	264.36	3,785.4	-82.8	-838.7	-82.8	0.00	0.00	
4,000.0	17.23	264.36	3,880.9	-85.7	-868.1	-85.7	0.00	0.00	
4,100.0	17.23	264.36	3,976.4	-88.6	-897.6	-88.6	0.00	0.00	
4,200.0	17.23	264.36	4,072.0	-91.6	-927.1	-91.6	0.00	0.00	
4,300.0	17.23	264.36	4,167.5	-94.5	-956.6	-94.5	0.00	0.00	
4,400.0	17.23	264.36	4,263.0	-97.4	-986.1	-97.4	0.00	0.00	
4,444.0	17.23	264.36	4,305.0	-98.7	-999.0	-98.7	0.00	0.00	Sussex
4,500.0	17.23	264.36	4,358.5	-100.3	-1,015.5	-100.3	0.00	0.00	
4,600.0	17.23	264.36	4,454.0	-103.2	-1,045.0	-103.2	0.00	0.00	
4,700.0	17.23	264.36	4,549.5	-106.1	-1,074.5	-106.1	0.00	0.00	
4,724.6	17.23	264.36	4,573.0	-106.8	-1,081.7	-106.8	0.00	0.00	Sussex Marker

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site:	S18-T2N-R67W (Kugel)	**North Reference:**	True
Well:	Kugel 1A-18H-H267	**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
4,800.0	17.23	264.36	4,645.0	-109.0	-1,104.0	-109.0	0.00	0.00	
4,900.0	17.23	264.36	4,740.5	-111.9	-1,133.4	-111.9	0.00	0.00	
5,000.0	17.23	264.36	4,836.1	-114.8	-1,162.9	-114.8	0.00	0.00	
5,026.1	17.23	264.36	4,861.0	-115.6	-1,170.6	-115.6	0.00	0.00	Shannon
5,100.0	17.23	264.36	4,931.6	-117.8	-1,192.4	-117.8	0.00	0.00	
5,200.0	17.23	264.36	5,027.1	-120.7	-1,221.9	-120.7	0.00	0.00	
5,300.0	17.23	264.36	5,122.6	-123.6	-1,251.4	-123.6	0.00	0.00	
5,400.0	17.23	264.36	5,218.1	-126.5	-1,280.8	-126.5	0.00	0.00	
5,500.0	17.23	264.36	5,313.6	-129.4	-1,310.3	-129.4	0.00	0.00	
5,600.0	17.23	264.36	5,409.1	-132.3	-1,339.8	-132.3	0.00	0.00	
5,700.0	17.23	264.36	5,504.6	-135.2	-1,369.3	-135.2	0.00	0.00	
5,800.0	17.23	264.36	5,600.2	-138.1	-1,398.8	-138.1	0.00	0.00	
5,900.0	17.23	264.36	5,695.7	-141.0	-1,428.2	-141.0	0.00	0.00	
6,000.0	17.23	264.36	5,791.2	-144.0	-1,457.7	-144.0	0.00	0.00	
6,100.0	17.23	264.36	5,886.7	-146.9	-1,487.2	-146.9	0.00	0.00	
6,200.0	17.23	264.36	5,982.2	-149.8	-1,516.7	-149.8	0.00	0.00	
6,300.0	17.23	264.36	6,077.7	-152.7	-1,546.1	-152.7	0.00	0.00	
6,400.0	17.23	264.36	6,173.2	-155.6	-1,575.6	-155.6	0.00	0.00	
6,428.0	17.23	264.36	6,200.0	-156.4	-1,583.9	-156.4	0.00	0.00	Teepee Buttes (*if present)
6,500.0	17.23	264.36	6,268.7	-158.5	-1,605.1	-158.5	0.00	0.00	
6,600.0	17.23	264.36	6,364.2	-161.4	-1,634.6	-161.4	0.00	0.00	
6,700.0	17.23	264.36	6,459.8	-164.3	-1,664.1	-164.3	0.00	0.00	
6,800.0	17.23	264.36	6,555.3	-167.2	-1,693.5	-167.2	0.00	0.00	
6,900.0	17.23	264.36	6,650.8	-170.2	-1,723.0	-170.2	0.00	0.00	
7,000.0	17.23	264.36	6,746.3	-173.1	-1,752.5	-173.1	0.00	0.00	
7,100.0	17.23	264.36	6,841.8	-176.0	-1,782.0	-176.0	0.00	0.00	
7,180.0	17.23	264.36	6,918.2	-178.3	-1,805.6	-178.3	0.00	0.00	Start build/turn @ 7180' MD
7,200.0	17.11	271.12	6,937.3	-178.5	-1,811.4	-178.5	10.00	-0.63	
7,300.0	19.68	302.16	7,032.4	-169.3	-1,840.5	-169.3	10.00	2.58	
7,400.0	26.00	322.39	7,124.7	-142.9	-1,868.2	-142.9	10.00	6.32	
7,409.3	26.70	323.78	7,133.0	-139.6	-1,870.7	-139.6	10.00	7.49	Sharon Springs
7,500.0	34.04	334.40	7,211.3	-100.1	-1,893.7	-100.1	10.00	8.09	
7,510.6	34.95	335.37	7,220.0	-94.7	-1,896.3	-94.7	10.00	8.55	Niobrara
7,560.8	39.32	339.44	7,260.0	-66.7	-1,907.8	-66.7	10.00	8.73	B Chalk
7,589.7	41.91	341.45	7,282.0	-49.0	-1,914.2	-49.0	10.00	8.92	B Marl
7,600.0	42.83	342.11	7,289.6	-42.4	-1,916.3	-42.4	10.00	9.00	
7,660.6	48.36	345.62	7,332.0	-0.8	-1,928.3	-0.8	10.00	9.11	C Chalk
7,700.0	51.99	347.58	7,357.2	28.6	-1,935.3	28.6	10.00	9.24	
7,704.6	52.42	347.80	7,360.0	32.1	-1,936.0	32.1	10.00	9.28	C Marl
7,800.0	61.35	351.82	7,412.1	110.7	-1,950.0	110.7	10.00	9.36	
7,900.0	70.81	355.35	7,452.6	201.4	-1,960.1	201.4	10.00	9.47	
7,907.4	71.52	355.60	7,455.0	208.4	-1,960.7	208.4	10.00	9.50	Ft. Hayes
7,991.4	79.52	358.24	7,476.0	289.6	-1,965.0	289.6	10.00	9.53	Codell
8,000.0	80.34	358.50	7,477.5	298.0	-1,965.2	298.0	10.00	9.54	
8,100.0	89.89	1.47	7,486.0	397.5	-1,965.3	397.5	10.00	9.55	
8,101.1	90.00	1.50	7,486.0	398.6	-1,965.2	398.6	10.00	9.56	LP @ 7486' TVD; 90°
8,200.0	90.00	1.50	7,486.0	497.5	-1,962.6	497.5	0.00	0.00	
8,300.0	90.00	1.50	7,486.0	597.5	-1,960.0	597.5	0.00	0.00	
8,400.0	90.00	1.50	7,486.0	697.4	-1,957.4	697.4	0.00	0.00	
8,500.0	90.00	1.50	7,486.0	797.4	-1,954.8	797.4	0.00	0.00	
8,600.0	90.00	1.50	7,486.0	897.4	-1,952.2	897.4	0.00	0.00	
8,700.0	90.00	1.50	7,486.0	997.3	-1,949.6	997.3	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site:	S18-T2N-R67W (Kugel)	**North Reference:**	True
Well:	Kugel 1A-18H-H267	**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
8,800.0	90.00	1.50	7,486.0	1,097.3	-1,946.9	1,097.3	0.00	0.00	
8,900.0	90.00	1.50	7,486.0	1,197.3	-1,944.3	1,197.3	0.00	0.00	
9,000.0	90.00	1.50	7,486.0	1,297.2	-1,941.7	1,297.2	0.00	0.00	
9,100.0	90.00	1.50	7,486.0	1,397.2	-1,939.1	1,397.2	0.00	0.00	
9,200.0	90.00	1.50	7,486.0	1,497.2	-1,936.5	1,497.2	0.00	0.00	
9,300.0	90.00	1.50	7,486.0	1,597.1	-1,933.8	1,597.1	0.00	0.00	
9,400.0	90.00	1.50	7,486.0	1,697.1	-1,931.2	1,697.1	0.00	0.00	
9,500.0	90.00	1.50	7,486.0	1,797.1	-1,928.6	1,797.1	0.00	0.00	
9,600.0	90.00	1.50	7,486.0	1,897.0	-1,926.0	1,897.0	0.00	0.00	
9,700.0	90.00	1.50	7,486.0	1,997.0	-1,923.4	1,997.0	0.00	0.00	
9,800.0	90.00	1.50	7,486.0	2,097.0	-1,920.8	2,097.0	0.00	0.00	
9,900.0	90.00	1.50	7,486.0	2,196.9	-1,918.1	2,196.9	0.00	0.00	
10,000.0	90.00	1.50	7,486.0	2,296.9	-1,915.5	2,296.9	0.00	0.00	
10,100.0	90.00	1.50	7,486.0	2,396.9	-1,912.9	2,396.9	0.00	0.00	
10,200.0	90.00	1.50	7,486.0	2,496.8	-1,910.3	2,496.8	0.00	0.00	
10,300.0	90.00	1.50	7,486.0	2,596.8	-1,907.7	2,596.8	0.00	0.00	
10,400.0	90.00	1.50	7,486.0	2,696.8	-1,905.1	2,696.8	0.00	0.00	
10,500.0	90.00	1.50	7,486.0	2,796.7	-1,902.4	2,796.7	0.00	0.00	
10,600.0	90.00	1.50	7,486.0	2,896.7	-1,899.8	2,896.7	0.00	0.00	
10,700.0	90.00	1.50	7,486.0	2,996.6	-1,897.2	2,996.6	0.00	0.00	
10,800.0	90.00	1.50	7,486.0	3,096.6	-1,894.6	3,096.6	0.00	0.00	
10,900.0	90.00	1.50	7,486.0	3,196.6	-1,892.0	3,196.6	0.00	0.00	
11,000.0	90.00	1.50	7,486.0	3,296.5	-1,889.3	3,296.5	0.00	0.00	
11,100.0	90.00	1.50	7,486.0	3,396.5	-1,886.7	3,396.5	0.00	0.00	
11,200.0	90.00	1.50	7,486.0	3,496.5	-1,884.1	3,496.5	0.00	0.00	
11,300.0	90.00	1.50	7,486.0	3,596.4	-1,881.5	3,596.4	0.00	0.00	
11,400.0	90.00	1.50	7,486.0	3,696.4	-1,878.9	3,696.4	0.00	0.00	
11,500.0	90.00	1.50	7,486.0	3,796.4	-1,876.3	3,796.4	0.00	0.00	
11,600.0	90.00	1.50	7,486.0	3,896.3	-1,873.6	3,896.3	0.00	0.00	
11,700.0	90.00	1.50	7,486.0	3,996.3	-1,871.0	3,996.3	0.00	0.00	
11,800.0	90.00	1.50	7,486.0	4,096.3	-1,868.4	4,096.3	0.00	0.00	
11,900.0	90.00	1.50	7,486.0	4,196.2	-1,865.8	4,196.2	0.00	0.00	
12,000.0	90.00	1.50	7,486.0	4,296.2	-1,863.2	4,296.2	0.00	0.00	
12,100.0	90.00	1.50	7,486.0	4,396.2	-1,860.6	4,396.2	0.00	0.00	
12,200.0	90.00	1.50	7,486.0	4,496.1	-1,857.9	4,496.1	0.00	0.00	
12,300.0	90.00	1.50	7,486.0	4,596.1	-1,855.3	4,596.1	0.00	0.00	
12,400.0	90.00	1.50	7,486.0	4,696.1	-1,852.7	4,696.1	0.00	0.00	
12,500.0	90.00	1.50	7,486.0	4,796.0	-1,850.1	4,796.0	0.00	0.00	
12,600.0	90.00	1.50	7,486.0	4,896.0	-1,847.5	4,896.0	0.00	0.00	
12,700.0	90.00	1.50	7,486.0	4,996.0	-1,844.8	4,996.0	0.00	0.00	
12,800.0	90.00	1.50	7,486.0	5,095.9	-1,842.2	5,095.9	0.00	0.00	
12,900.0	90.00	1.50	7,486.0	5,195.9	-1,839.6	5,195.9	0.00	0.00	
13,000.0	90.00	1.50	7,486.0	5,295.9	-1,837.0	5,295.9	0.00	0.00	
13,100.0	90.00	1.50	7,486.0	5,395.8	-1,834.4	5,395.8	0.00	0.00	
13,200.0	90.00	1.50	7,486.0	5,495.8	-1,831.8	5,495.8	0.00	0.00	
13,300.0	90.00	1.50	7,486.0	5,595.8	-1,829.1	5,595.8	0.00	0.00	
13,400.0	90.00	1.50	7,486.0	5,695.7	-1,826.5	5,695.7	0.00	0.00	
13,500.0	90.00	1.50	7,486.0	5,795.7	-1,823.9	5,795.7	0.00	0.00	
13,600.0	90.00	1.50	7,486.0	5,895.7	-1,821.3	5,895.7	0.00	0.00	
13,700.0	90.00	1.50	7,486.0	5,995.6	-1,818.7	5,995.6	0.00	0.00	
13,800.0	90.00	1.50	7,486.0	6,095.6	-1,816.1	6,095.6	0.00	0.00	
13,900.0	90.00	1.50	7,486.0	6,195.6	-1,813.4	6,195.6	0.00	0.00	

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Project:	DJ Wattenberg	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site:	S18-T2N-R67W (Kugel)	**North Reference:**	True
Well:	Kugel 1A-18H-H267	**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
14,000.0	90.00	1.50	7,486.0	6,295.5	-1,810.8	6,295.5	0.00	0.00	
14,100.0	90.00	1.50	7,486.0	6,395.5	-1,808.2	6,395.5	0.00	0.00	
14,200.0	90.00	1.50	7,486.0	6,495.4	-1,805.6	6,495.4	0.00	0.00	
14,300.0	90.00	1.50	7,486.0	6,595.4	-1,803.0	6,595.4	0.00	0.00	
14,400.0	90.00	1.50	7,486.0	6,695.4	-1,800.3	6,695.4	0.00	0.00	
14,500.0	90.00	1.50	7,486.0	6,795.3	-1,797.7	6,795.3	0.00	0.00	
14,600.0	90.00	1.50	7,486.0	6,895.3	-1,795.1	6,895.3	0.00	0.00	
14,700.0	90.00	1.50	7,486.0	6,995.3	-1,792.5	6,995.3	0.00	0.00	
14,800.0	90.00	1.50	7,486.0	7,095.2	-1,789.9	7,095.2	0.00	0.00	
14,841.1	90.00	1.50	7,486.0	7,136.3	-1,788.8	7,136.3	0.00	0.00	TD at 14841.1

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
Kugel 1A-18H-H267 PBH - plan hits target center - Point	0.00	0.00	7,486.0	7,136.3	-1,788.8	1,301,361.11	3,158,663.11	40.159230	-104.932350

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
411.0	411.0	Fox Hills - BASE			
4,444.0	4,305.0	Sussex			
4,724.6	4,573.0	Sussex Marker			
5,026.1	4,861.0	Shannon			
6,428.0	6,200.0	Teepee Buttes (*if present)			
7,409.3	7,133.0	Sharon Springs			
7,510.6	7,220.0	Niobrara			
7,560.8	7,260.0	B Chalk			
7,589.7	7,282.0	B Marl			
7,660.6	7,332.0	C Chalk			
7,704.6	7,360.0	C Marl			
7,907.4	7,455.0	Ft. Hayes			
7,991.4	7,476.0	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'
1,923.1	1,897.2	-25.3	-255.9	EOB; Inc=17.23°
7,180.0	6,918.2	-178.3	-1,805.6	Start build/turn @ 7180' MD
8,101.1	7,486.0	398.6	-1,965.2	LP @ 7486' TVD; 90°
14,841.1	7,486.0	7,136.3	-1,788.8	TD at 14841.1

EnCana Oil & Gas (USA) Inc

DJ Wattenberg
S18-T2N-R67W (Kugel)
Kugel 1A-18H-H267
Hz
Plan #2

Anticollision Report

27 June, 2013

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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** 6/27/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	14,841.1	Plan #2 (Hz)	Geolink MWD	Geolink MWD

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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

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
S18-T2N-R67W (Kugel)						
BRETT 1 (EXISTING) - HS RESOURCES WELL - NO S						Out of range
BRETT 2 (EXISTING) - HS RESOURCES WELL - NO S						Out of range
BRETT 3 (EXISTING) - KERR-MCGEE WELL - NO SUR						Out of range
BRETT 4 (EXISTING) - KERR-MCGEE WELL - NO SUR						Out of range
DREW GAS UNIT TRUE 1 (EXISTING) - KERR-MCGEE						Out of range
FARNSWORTH 9-18A (EXISTING) - KERR-MCGEE WE						Out of range
HSR-OWEN 15-18A (EXISTING) - KERR-MCGEE WELL						Out of range
KUGEL 1 (EXISTING) - MACHII-ROSS WELL - NO SUR						Out of range
Kugel 1B-18H-H267 - Hz - Plan #1	200.0	200.0	11.2	10.5	17.132	CC, ES
Kugel 1B-18H-H267 - Hz - Plan #1	14,841.1	14,387.0	433.2	227.1	2.102	SF
Kugel 1C-18H-H267 - Hz - Plan #1	200.0	200.0	19.6	18.9	29.982	CC, ES
Kugel 1C-18H-H267 - Hz - Plan #1	1,400.0	1,406.0	57.7	52.8	11.936	SF
Kugel 1D-18H-H267 - Hz - Plan #1	200.0	199.0	30.8	30.1	47.240	CC, ES
Kugel 1D-18H-H267 - Hz - Plan #1	1,200.0	1,203.7	76.0	71.8	18.350	SF
Kugel 1E-18H-H267 - Hz - Plan #2	200.0	199.0	39.1	38.5	60.124	CC, ES
Kugel 1E-18H-H267 - Hz - Plan #2	900.0	900.7	74.5	71.4	24.099	SF
Kugel 1F-18H-H267 - Hz - Plan #1	200.0	199.0	50.3	49.7	77.302	CC, ES
Kugel 1F-18H-H267 - Hz - Plan #1	800.0	797.9	81.6	78.9	29.816	SF
Kugel 1G-18H-H267 - Hz - Plan #1	200.0	199.0	61.5	60.9	94.481	CC, ES
Kugel 1G-18H-H267 - Hz - Plan #1	700.0	695.8	86.2	83.9	36.121	SF
KUGEL 2-18 (EXISTING) - ENCANA WELL - NO SURVE						Out of range
KUGEL 31-18 (EXISTING) - ENCANA WELL - NO SURV	9,453.9	7,464.0	370.0	322.7	7.830	CC, ES
KUGEL 31-18 (EXISTING) - ENCANA WELL - NO SURV	9,500.0	7,464.0	372.9	324.9	7.768	SF
KUGEL 32-18 (EXISTING) - MACHII-ROSS WELL - NO	5,230.1	5,022.0	391.0	358.9	12.171	CC, ES, SF
KUGEL 32-18 (EXISTING) NARC - NORTH AMERICAN	6,604.4	6,372.4	150.3	107.0	3.471	CC, ES, SF
KUGEL 32-18J (EXISTING) - MACHII-ROSS WELL - NO	5,777.2	5,584.4	372.4	335.2	9.998	CC
KUGEL 32-18J (EXISTING) - MACHII-ROSS WELL - NO	5,800.0	5,606.2	372.5	335.1	9.956	ES
KUGEL 32-18J (EXISTING) - MACHII-ROSS WELL - NO	6,000.0	5,797.2	378.2	339.7	9.818	SF
KUGEL 41-18 (EXISTING) - ENCANA WELL - ENCANA						Out of range
KUGEL 42-18 (EXISTING) - ENCANA WELL - NO SURV	200.0	187.0	86.8	86.1	132.893	CC, ES
KUGEL 42-18 (EXISTING) - ENCANA WELL - NO SURV	1,000.0	984.4	142.5	139.1	41.584	SF
MILLER 12-17 (EXISTING) - ENCANA WELL - SURVEY	242.6	225.4	106.9	106.0	127.939	CC, ES
MILLER 12-17 (EXISTING) - ENCANA WELL - SURVEY	1,200.0	1,183.0	176.5	172.1	40.518	SF
WANDELL 1 (EXISTING) - ENCANA WELL - NO SURVE						Out of range
WANDELL 21-7 (EXISTING) - ENCANA WELL - NO SUR						Out of range
WANDELL 31-7 (EXISTING) - ENCANA WELL - SURVE	14,750.1	7,536.2	459.4	319.0	3.271	CC, ES
WANDELL 31-7 (EXISTING) - ENCANA WELL - SURVE	14,800.0	7,536.4	462.1	320.8	3.270	SF
WANDELL 32-7 (EXISTING) - ENCANA WELL - NO SUR						Out of range
WANDELL 33-7 (EXISTING) - ENCANA WELL - PLAN O	11,984.6	7,632.5	459.7	356.4	4.450	CC
WANDELL 33-7 (EXISTING) - ENCANA WELL - PLAN O	12,000.0	7,632.5	460.0	356.4	4.441	ES, SF
WANDELL 34-7 (EXISTING) - ENCANA WELL - SURVE	10,508.2	7,589.7	428.4	353.9	5.745	CC, ES, SF
WANDELL 41-7 (EXISTING) - ENCANA WELL - SURVE						Out of range
WANDELL 42-7 (EXISTING) - ENCANA WELL - SURVE						Out of range
WANDELL 43-7 (EXISTING) - ENCANA WELL - PLAN O						Out of range
WANDELL 4-6-7 (EXISTING) - ENCANA WELL - SURVE	11,276.2	7,801.1	64.9	-34.8	0.651	Level 1, CC, ES, SF
WANDELL 6-0-7 (EXISTING) - ENCANA WELL - SURVE						Out of range
WANDELL 6-4-7 (EXISTING) - ENCANA WELL - SURVE						Out of range
WANDELL 6-8-7 (EXISTING) - ENCANA WELL - SURVE						Out of range
WANDELL 8-2-7 (EXISTING) - ENCANA WELL - NO SU						Out of range
WANDELL 8-4-7 (EXISTING) - ENCANA WELL - NO SU						Out of range
WANDELL E UNIT 1 (EXISTING) - ENCANA WELL - NO						Out of range
WANDELL V 7-2 (EXISTING) - GERRITY OIL WELL - NO	14,603.8	7,405.0	317.9	182.4	2.345	CC, ES, SF
WANDELL V 7-7 (EXISTING) - GERRITY OIL WELL - NO	13,274.0	7,404.0	327.5	215.1	2.914	CC, ES

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 Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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

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
S18-T2N-R67W (Kugel)						
WANDELL V 7-7 (EXISTING) - GERRITY OIL WELL - NO	13,300.0	7,404.0	328.6	215.7	2.911	SF
WANDELL V 7-8 (EXISTING) - GERRITY OIL WELL - NO						Out of range

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - Kugel 1B-18H-H267 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.04	0.0	11.2	11.2				
100.0	100.0	100.0	100.0	0.2	0.2	90.04	0.0	11.2	11.2	10.9	0.30	36.825	
200.0	200.0	200.0	200.0	0.3	0.3	90.04	0.0	11.2	11.2	10.5	0.65	17.132	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-174.73	0.0	11.2	12.1	11.1	1.00	12.031	
400.0	400.0	400.2	400.2	0.7	0.7	-175.44	-0.1	10.3	13.8	12.4	1.35	10.207	
500.0	499.9	500.4	500.4	0.9	0.9	-176.08	-0.3	7.7	15.5	13.8	1.70	9.131	
600.0	599.7	600.7	600.6	1.1	1.0	-176.66	-0.7	3.3	17.2	15.2	2.05	8.420	
700.0	699.4	701.0	700.7	1.3	1.2	-177.21	-1.2	-2.8	19.0	16.6	2.40	7.915	
800.0	798.9	801.4	800.7	1.5	1.5	-177.73	-1.9	-10.7	20.7	17.9	2.75	7.537	
900.0	898.3	901.7	900.6	1.8	1.7	-178.23	-2.7	-20.3	22.4	19.3	3.09	7.244	
1,000.0	997.4	1,002.1	1,000.4	2.0	1.9	-178.71	-3.7	-31.6	24.1	20.7	3.44	7.009	
1,100.0	1,096.3	1,102.5	1,099.9	2.3	2.2	-179.18	-4.8	-44.7	25.8	22.0	3.79	6.816	
1,200.0	1,194.9	1,203.0	1,199.2	2.7	2.5	-179.63	-6.1	-59.6	27.5	23.4	4.13	6.655	
1,300.0	1,293.3	1,303.5	1,298.3	3.0	2.8	179.92	-7.5	-76.1	29.2	24.7	4.48	6.518	
1,400.0	1,391.2	1,404.0	1,397.2	3.4	3.2	179.48	-9.0	-94.5	30.9	26.1	4.83	6.399	
1,500.0	1,488.9	1,504.5	1,495.7	3.8	3.5	179.04	-10.8	-114.5	32.6	27.4	5.17	6.295	
1,600.0	1,586.1	1,605.1	1,593.8	4.3	4.0	178.61	-12.6	-136.3	34.2	28.7	5.52	6.202	
1,700.0	1,682.9	1,705.1	1,691.2	4.7	4.4	178.24	-14.5	-158.8	36.7	30.9	5.86	6.265	
1,800.0	1,779.3	1,805.0	1,788.5	5.2	4.8	178.00	-16.5	-181.3	41.0	34.8	6.21	6.604	
1,900.0	1,875.2	1,904.8	1,885.8	5.8	5.2	177.90	-18.4	-203.8	47.0	40.5	6.55	7.174	
2,000.0	1,970.7	2,004.5	1,982.9	6.3	5.6	177.86	-20.3	-226.2	54.2	47.3	6.90	7.855	
2,100.0	2,066.2	2,104.3	2,080.1	6.8	6.1	177.84	-22.2	-248.7	61.5	54.2	7.26	8.473	
2,200.0	2,161.7	2,204.0	2,177.2	7.4	6.5	177.82	-24.2	-271.2	68.8	61.2	7.61	9.033	
2,300.0	2,257.2	2,303.7	2,274.4	7.9	6.9	177.81	-26.1	-293.6	76.0	68.1	7.97	9.544	
2,400.0	2,352.7	2,403.5	2,371.6	8.5	7.3	177.79	-28.0	-316.1	83.3	75.0	8.32	10.011	
2,500.0	2,448.3	2,503.2	2,468.7	9.1	7.8	177.78	-29.9	-338.6	90.6	81.9	8.68	10.440	
2,600.0	2,543.8	2,602.9	2,565.9	9.6	8.2	177.77	-31.8	-361.0	97.9	88.8	9.03	10.836	
2,700.0	2,639.3	2,702.7	2,663.0	10.2	8.6	177.77	-33.8	-383.5	105.1	95.8	9.39	11.201	
2,800.0	2,734.8	2,802.4	2,760.2	10.7	9.1	177.76	-35.7	-405.9	112.4	102.7	9.74	11.540	
2,900.0	2,830.3	2,902.1	2,857.3	11.3	9.5	177.75	-37.6	-428.4	119.7	109.6	10.10	11.855	
3,000.0	2,925.8	3,001.9	2,954.5	11.8	9.9	177.75	-39.5	-450.9	127.0	116.5	10.45	12.149	
3,100.0	3,021.3	3,101.6	3,051.6	12.4	10.4	177.74	-41.4	-473.3	134.2	123.4	10.80	12.424	
3,200.0	3,116.8	3,201.4	3,148.8	13.0	10.8	177.74	-43.4	-495.8	141.5	130.3	11.16	12.681	
3,300.0	3,212.3	3,301.1	3,245.9	13.5	11.2	177.74	-45.3	-518.3	148.8	137.3	11.51	12.923	
3,400.0	3,307.9	3,400.8	3,343.1	14.1	11.7	177.73	-47.2	-540.7	156.0	144.2	11.87	13.150	
3,500.0	3,403.4	3,500.6	3,440.2	14.7	12.1	177.73	-49.1	-563.2	163.3	151.1	12.22	13.364	
3,600.0	3,498.9	3,600.3	3,537.4	15.2	12.6	177.73	-51.1	-585.6	170.6	158.0	12.58	13.565	
3,700.0	3,594.4	3,700.0	3,634.5	15.8	13.0	177.72	-53.0	-608.1	177.9	164.9	12.93	13.756	
3,800.0	3,689.9	3,799.8	3,731.7	16.3	13.4	177.72	-54.9	-630.6	185.1	171.9	13.28	13.937	
3,900.0	3,785.4	3,899.5	3,828.9	16.9	13.9	177.72	-56.8	-653.0	192.4	178.8	13.64	14.108	
4,000.0	3,880.9	3,999.2	3,926.0	17.5	14.3	177.72	-58.7	-675.5	199.7	185.7	13.99	14.271	
4,100.0	3,976.4	4,099.0	4,023.2	18.0	14.7	177.72	-60.7	-698.0	207.0	192.6	14.35	14.425	
4,200.0	4,072.0	4,198.7	4,120.3	18.6	15.2	177.71	-62.6	-720.4	214.2	199.5	14.70	14.572	
4,300.0	4,167.5	4,298.4	4,217.5	19.2	15.6	177.71	-64.5	-742.9	221.5	206.4	15.05	14.713	
4,400.0	4,263.0	4,398.2	4,314.6	19.7	16.0	177.71	-66.4	-765.4	228.8	213.4	15.41	14.847	
4,500.0	4,358.5	4,497.9	4,411.8	20.3	16.5	177.71	-68.3	-787.8	236.0	220.3	15.76	14.974	
4,600.0	4,454.0	4,597.6	4,508.9	20.9	16.9	177.71	-70.3	-810.3	243.3	227.2	16.12	15.097	
4,700.0	4,549.5	4,697.4	4,606.1	21.4	17.4	177.71	-72.2	-832.7	250.6	234.1	16.47	15.213	
4,800.0	4,645.0	4,797.1	4,703.2	22.0	17.8	177.71	-74.1	-855.2	257.9	241.0	16.83	15.326	
4,900.0	4,740.5	4,896.9	4,800.4	22.5	18.2	177.70	-76.0	-877.7	265.1	248.0	17.18	15.433	
5,000.0	4,836.1	4,996.6	4,897.5	23.1	18.7	177.70	-78.0	-900.1	272.4	254.9	17.53	15.536	
5,100.0	4,931.6	5,096.3	4,994.7	23.7	19.1	177.70	-79.9	-922.6	279.7	261.8	17.89	15.635	

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 Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - Kugel 1B-18H-H267 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink 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	5,027.1	5,196.1	5,091.9	24.2	19.6	177.70	-81.8	-945.1	286.9	268.7	18.24	15.730	
5,300.0	5,122.6	5,295.8	5,189.0	24.8	20.0	177.70	-83.7	-967.5	294.2	275.6	18.60	15.822	
5,400.0	5,218.1	5,395.5	5,286.2	25.4	20.4	177.70	-85.6	-990.0	301.5	282.5	18.95	15.910	
5,500.0	5,313.6	5,495.3	5,383.3	25.9	20.9	177.70	-87.6	-1,012.4	308.8	289.5	19.30	15.995	
5,600.0	5,409.1	5,595.0	5,480.5	26.5	21.3	177.70	-89.5	-1,034.9	316.0	296.4	19.66	16.077	
5,700.0	5,504.6	5,694.7	5,577.6	27.1	21.7	177.70	-91.4	-1,057.4	323.3	303.3	20.01	16.156	
5,800.0	5,600.2	5,794.5	5,674.8	27.6	22.2	177.70	-93.3	-1,079.8	330.6	310.2	20.37	16.232	
5,900.0	5,695.7	5,894.2	5,771.9	28.2	22.6	177.70	-95.2	-1,102.3	337.9	317.1	20.72	16.305	
6,000.0	5,791.2	5,993.9	5,869.1	28.8	23.1	177.70	-97.2	-1,124.8	345.1	324.1	21.07	16.377	
6,100.0	5,886.7	6,093.7	5,966.2	29.3	23.5	177.69	-99.1	-1,147.2	352.4	331.0	21.43	16.445	
6,200.0	5,982.2	6,193.4	6,063.4	29.9	23.9	177.69	-101.0	-1,169.7	359.7	337.9	21.78	16.512	
6,300.0	6,077.7	6,293.1	6,160.5	30.5	24.4	177.69	-102.9	-1,192.2	366.9	344.8	22.14	16.576	
6,400.0	6,173.2	6,392.9	6,257.7	31.0	24.8	177.69	-104.8	-1,214.6	374.2	351.7	22.49	16.639	
6,500.0	6,268.7	6,492.6	6,354.8	31.6	25.2	177.69	-106.8	-1,237.1	381.5	358.6	22.84	16.699	
6,600.0	6,364.2	6,592.4	6,452.0	32.2	25.7	177.69	-108.7	-1,259.5	388.8	365.6	23.20	16.758	
6,700.0	6,459.8	6,692.1	6,549.2	32.7	26.1	177.69	-110.6	-1,282.0	396.0	372.5	23.55	16.815	
6,800.0	6,555.3	6,791.8	6,646.3	33.3	26.6	177.69	-112.5	-1,304.5	403.3	379.4	23.91	16.870	
6,900.0	6,650.8	6,883.6	6,735.6	33.9	27.0	176.98	-109.2	-1,325.1	411.4	387.0	24.35	16.895	
7,000.0	6,746.3	6,970.1	6,818.3	34.4	27.3	174.56	-92.8	-1,344.2	422.3	397.0	25.21	16.748	
7,100.0	6,841.8	7,050.0	6,891.7	35.0	27.6	170.97	-66.6	-1,361.2	437.6	410.8	26.82	16.315	
7,200.0	6,937.3	7,119.9	6,952.5	35.6	27.9	160.06	-35.2	-1,375.3	459.4	429.9	29.46	15.591	
7,300.0	7,032.4	7,186.0	7,006.2	36.1	28.1	124.68	1.3	-1,387.7	484.6	451.2	33.33	14.540	
11,800.0	7,486.0	11,354.2	7,230.0	81.9	78.8	59.16	4,096.3	-1,439.4	499.6	371.8	127.77	3.910	
11,900.0	7,486.0	11,454.2	7,230.0	83.4	80.5	59.01	4,196.2	-1,439.4	497.3	366.8	130.55	3.809	
12,000.0	7,486.0	11,554.1	7,230.0	85.0	82.1	58.85	4,296.2	-1,439.4	495.1	361.8	133.32	3.713	
12,100.0	7,486.0	11,654.1	7,230.0	86.6	83.8	58.70	4,396.2	-1,439.4	492.8	356.8	136.08	3.622	
12,200.0	7,486.0	11,754.1	7,230.0	88.1	85.4	58.54	4,496.1	-1,439.4	490.6	351.8	138.83	3.534	
12,300.0	7,486.0	11,854.0	7,230.0	89.7	87.1	58.38	4,596.1	-1,439.4	488.4	346.8	141.56	3.450	
12,400.0	7,486.0	11,954.0	7,230.0	91.3	88.7	58.22	4,696.1	-1,439.4	486.1	341.9	144.29	3.369	
12,500.0	7,486.0	12,054.0	7,230.0	92.9	90.4	58.05	4,796.0	-1,439.4	483.9	336.9	147.00	3.292	
12,600.0	7,486.0	12,153.9	7,230.0	94.5	92.1	57.89	4,896.0	-1,439.4	481.7	332.0	149.70	3.218	
12,700.0	7,486.0	12,253.9	7,230.0	96.1	93.7	57.72	4,996.0	-1,439.4	479.5	327.1	152.38	3.147	
12,800.0	7,486.0	12,353.9	7,230.0	97.8	95.4	57.55	5,095.9	-1,439.4	477.3	322.2	155.06	3.078	
12,900.0	7,486.0	12,453.8	7,230.0	99.4	97.1	57.38	5,195.9	-1,439.4	475.1	317.3	157.72	3.012	
13,000.0	7,486.0	12,553.8	7,230.0	101.0	98.7	57.21	5,295.9	-1,439.4	472.9	312.5	160.36	2.949	
13,100.0	7,486.0	12,653.8	7,230.0	102.6	100.4	57.04	5,395.8	-1,439.4	470.7	307.7	162.99	2.888	
13,200.0	7,486.0	12,753.7	7,230.0	104.3	102.1	56.87	5,495.8	-1,439.4	468.5	302.9	165.61	2.829	
13,300.0	7,486.0	12,853.7	7,230.0	105.9	103.8	56.69	5,595.8	-1,439.4	466.3	298.1	168.21	2.772	
13,400.0	7,486.0	12,953.7	7,230.0	107.5	105.5	56.51	5,695.7	-1,439.4	464.1	293.3	170.80	2.717	
13,500.0	7,486.0	13,053.6	7,230.0	109.2	107.2	56.33	5,795.7	-1,439.4	461.9	288.5	173.37	2.664	
13,600.0	7,486.0	13,153.6	7,230.0	110.8	108.9	56.15	5,895.7	-1,439.4	459.7	283.8	175.92	2.613	
13,700.0	7,486.0	13,253.5	7,230.0	112.5	110.6	55.97	5,995.6	-1,439.4	457.6	279.1	178.46	2.564	
13,800.0	7,486.0	13,353.5	7,230.0	114.2	112.3	55.79	6,095.6	-1,439.4	455.4	274.4	180.98	2.516	
13,900.0	7,486.0	13,453.5	7,230.0	115.8	113.9	55.60	6,195.6	-1,439.4	453.2	269.7	183.49	2.470	
14,000.0	7,486.0	13,553.4	7,230.0	117.5	115.6	55.41	6,295.5	-1,439.4	451.1	265.1	185.97	2.425	
14,100.0	7,486.0	13,653.4	7,230.0	119.1	117.3	55.22	6,395.5	-1,439.4	448.9	260.5	188.44	2.382	
14,200.0	7,486.0	13,753.4	7,230.0	120.8	119.0	55.03	6,495.4	-1,439.4	446.8	255.9	190.89	2.340	
14,300.0	7,486.0	13,853.3	7,230.0	122.5	120.8	54.84	6,595.4	-1,439.4	444.6	251.3	193.33	2.300	
14,400.0	7,486.0	13,953.3	7,230.0	124.1	122.5	54.64	6,695.4	-1,439.4	442.5	246.8	195.74	2.261	
14,500.0	7,486.0	14,053.3	7,230.0	125.8	124.2	54.45	6,795.3	-1,439.4	440.4	242.2	198.13	2.223	
14,600.0	7,486.0	14,153.2	7,230.0	127.5	125.9	54.25	6,895.3	-1,439.4	438.2	237.7	200.50	2.186	
14,700.0	7,486.0	14,253.2	7,230.0	129.2	127.6	54.05	6,995.3	-1,439.4	436.1	233.3	202.86	2.150	

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 Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - Kugel 1B-18H-H267 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink 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
14,800.0	7,486.0	14,353.2	7,230.0	130.8	129.3	53.84	7,095.2	-1,439.4	434.0	228.8	205.19	2.115	
14,841.1	7,486.0	14,387.0	7,230.0	131.5	129.9	53.77	7,129.0	-1,439.4	433.2	227.1	206.07	2.102	SF

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - Kugel 1C-18H-H267 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.05	0.0	19.6	19.6				
100.0	100.0	100.0	100.0	0.2	0.2	90.05	0.0	19.6	19.6	19.3	0.30	64.443	
200.0	200.0	200.0	200.0	0.3	0.3	90.05	0.0	19.6	19.6	18.9	0.65	29.982	CC, ES
300.0	300.0	300.0	300.0	0.5	0.5	-174.55	0.0	19.6	20.4	19.4	1.00	20.404	
400.0	400.0	400.0	400.0	0.7	0.7	-175.17	0.0	19.6	23.0	21.7	1.35	17.066	
500.0	499.9	500.3	500.3	0.9	0.9	-175.78	-0.1	18.7	26.5	24.8	1.70	15.607	
600.0	599.7	600.8	600.7	1.1	1.0	-176.21	-0.4	16.1	30.0	28.0	2.05	14.645	
700.0	699.4	701.3	701.1	1.3	1.2	-176.51	-0.9	11.7	33.5	31.1	2.40	13.961	
800.0	798.9	801.8	801.5	1.5	1.4	-176.71	-1.6	5.6	36.9	34.2	2.75	13.450	
900.0	898.3	902.4	901.8	1.8	1.6	-176.86	-2.5	-2.3	40.4	37.3	3.09	13.052	
1,000.0	997.4	1,003.1	1,002.0	2.0	1.8	-176.95	-3.5	-11.9	43.8	40.4	3.44	12.733	
1,100.0	1,096.3	1,103.9	1,102.1	2.3	2.1	-176.99	-4.8	-23.3	47.3	43.5	3.79	12.470	
1,200.0	1,194.9	1,204.7	1,202.0	2.7	2.4	-177.01	-6.3	-36.5	50.7	46.5	4.14	12.248	
1,300.0	1,293.3	1,305.5	1,301.7	3.0	2.7	-177.00	-7.9	-51.4	54.1	49.6	4.49	12.059	
1,400.0	1,391.2	1,406.0	1,400.8	3.4	3.0	-176.98	-9.7	-67.8	57.7	52.8	4.83	11.936	SF
1,500.0	1,488.9	1,505.8	1,499.3	3.8	3.3	-177.04	-11.6	-84.3	62.7	57.6	5.18	12.121	
1,600.0	1,586.1	1,605.6	1,597.7	4.3	3.6	-177.15	-13.4	-100.9	69.6	64.0	5.52	12.603	
1,700.0	1,682.9	1,705.2	1,695.9	4.7	3.9	-177.31	-15.3	-117.4	78.1	72.3	5.86	13.328	
1,800.0	1,779.3	1,804.7	1,794.0	5.2	4.2	-177.48	-17.1	-133.8	88.4	82.2	6.20	14.258	
1,900.0	1,875.2	1,904.0	1,891.9	5.8	4.6	-177.66	-18.9	-150.3	100.4	93.9	6.54	15.361	
2,000.0	1,970.7	2,003.1	1,989.6	6.3	4.9	-177.83	-20.8	-166.7	113.7	106.8	6.88	16.510	
2,100.0	2,066.2	2,102.2	2,087.3	6.8	5.2	-177.96	-22.6	-183.1	127.0	119.7	7.24	17.547	
2,200.0	2,161.7	2,201.3	2,185.1	7.4	5.6	-178.07	-24.4	-199.5	140.2	132.7	7.59	18.489	
2,300.0	2,257.2	2,300.4	2,282.8	7.9	5.9	-178.16	-26.2	-215.9	153.5	145.6	7.94	19.348	
2,400.0	2,352.7	2,399.5	2,380.5	8.5	6.2	-178.24	-28.1	-232.4	166.8	158.5	8.29	20.134	
2,500.0	2,448.3	2,498.7	2,478.2	9.1	6.6	-178.30	-29.9	-248.8	180.1	171.5	8.64	20.857	
2,600.0	2,543.8	2,597.8	2,576.0	9.6	6.9	-178.36	-31.7	-265.2	193.4	184.4	8.99	21.523	
2,700.0	2,639.3	2,696.9	2,673.7	10.2	7.2	-178.40	-33.5	-281.6	206.7	197.4	9.34	22.140	
2,800.0	2,734.8	2,796.0	2,771.4	10.7	7.6	-178.45	-35.4	-298.0	220.0	210.3	9.69	22.712	
2,900.0	2,830.3	2,895.1	2,869.2	11.3	7.9	-178.48	-37.2	-314.5	233.3	223.2	10.04	23.244	
3,000.0	2,925.8	2,994.2	2,966.9	11.8	8.2	-178.52	-39.0	-330.9	246.6	236.2	10.39	23.741	
3,100.0	3,021.3	3,093.3	3,064.6	12.4	8.6	-178.55	-40.9	-347.3	259.9	249.1	10.74	24.205	
3,200.0	3,116.8	3,192.4	3,162.3	13.0	8.9	-178.57	-42.7	-363.7	273.2	262.1	11.09	24.640	
3,300.0	3,212.3	3,291.6	3,260.1	13.5	9.2	-178.60	-44.5	-380.1	286.4	275.0	11.44	25.049	
3,400.0	3,307.9	3,390.7	3,357.8	14.1	9.6	-178.62	-46.3	-396.5	299.7	288.0	11.79	25.433	
3,500.0	3,403.4	3,489.8	3,455.5	14.7	9.9	-178.64	-48.2	-413.0	313.0	300.9	12.14	25.795	
3,600.0	3,498.9	3,588.9	3,553.2	15.2	10.2	-178.66	-50.0	-429.4	326.3	313.8	12.48	26.137	
3,700.0	3,594.4	3,688.0	3,651.0	15.8	10.6	-178.68	-51.8	-445.8	339.6	326.8	12.83	26.461	
3,800.0	3,689.9	3,787.1	3,748.7	16.3	10.9	-178.69	-53.6	-462.2	352.9	339.7	13.18	26.767	
3,900.0	3,785.4	3,886.2	3,846.4	16.9	11.3	-178.71	-55.5	-478.6	366.2	352.7	13.53	27.058	
4,000.0	3,880.9	3,985.3	3,944.1	17.5	11.6	-178.72	-57.3	-495.0	379.5	365.6	13.88	27.333	
4,100.0	3,976.4	4,084.5	4,041.9	18.0	11.9	-178.74	-59.1	-511.5	392.8	378.5	14.23	27.596	
4,200.0	4,072.0	4,183.6	4,139.6	18.6	12.3	-178.75	-61.0	-527.9	406.1	391.5	14.58	27.846	
4,300.0	4,167.5	4,282.7	4,237.3	19.2	12.6	-178.76	-62.8	-544.3	419.4	404.4	14.93	28.084	
4,400.0	4,263.0	4,381.8	4,335.0	19.7	12.9	-178.77	-64.6	-560.7	432.7	417.4	15.28	28.311	
4,500.0	4,358.5	4,480.9	4,432.8	20.3	13.3	-178.78	-66.4	-577.1	445.9	430.3	15.63	28.528	
4,600.0	4,454.0	4,580.0	4,530.5	20.9	13.6	-178.79	-68.3	-593.5	459.2	443.3	15.98	28.736	
4,700.0	4,549.5	4,679.1	4,628.2	21.4	14.0	-178.80	-70.1	-610.0	472.5	456.2	16.33	28.934	
4,800.0	4,645.0	4,778.2	4,726.0	22.0	14.3	-178.81	-71.9	-626.4	485.8	469.1	16.68	29.125	
4,900.0	4,740.5	4,877.4	4,823.7	22.5	14.6	-178.82	-73.8	-642.8	499.1	482.1	17.03	29.308	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - Kugel 1D-18H-H267 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.05	0.0	30.8	30.8				
100.0	100.0	99.0	99.0	0.2	0.2	90.05	0.0	30.8	30.8	30.5	0.30	101.777	
200.0	200.0	199.0	199.0	0.3	0.3	90.05	0.0	30.8	30.8	30.1	0.65	47.240	CC, ES
300.0	300.0	299.0	299.0	0.5	0.5	-174.47	0.0	30.8	31.6	30.6	1.00	31.623	
400.0	400.0	399.0	399.0	0.7	0.7	-174.89	0.0	30.8	34.2	32.9	1.35	25.379	
500.0	499.9	498.9	498.9	0.9	0.8	-175.46	0.0	30.8	38.6	36.9	1.70	22.732	
600.0	599.7	599.4	599.4	1.1	1.0	-175.91	-0.2	29.9	43.8	41.8	2.05	21.417	
700.0	699.4	700.1	700.1	1.3	1.2	-176.09	-0.7	27.3	49.1	46.7	2.39	20.489	
800.0	798.9	800.9	800.7	1.5	1.4	-176.08	-1.5	23.0	54.3	51.6	2.74	19.798	
900.0	898.3	901.7	901.4	1.8	1.6	-175.93	-2.6	16.9	59.6	56.5	3.09	19.263	
1,000.0	997.4	1,002.7	1,002.0	2.0	1.8	-175.68	-4.0	9.1	64.8	61.4	3.44	18.836	
1,100.0	1,096.3	1,103.7	1,102.6	2.3	2.0	-175.34	-5.8	-0.5	70.1	66.3	3.79	18.484	
1,200.0	1,194.9	1,203.7	1,202.0	2.7	2.2	-175.02	-7.7	-11.1	76.0	71.8	4.14	18.350	SF
1,300.0	1,293.3	1,303.4	1,301.1	3.0	2.5	-174.85	-9.7	-21.6	83.6	79.1	4.49	18.624	
1,400.0	1,391.2	1,403.0	1,400.1	3.4	2.7	-174.81	-11.6	-32.2	92.9	88.1	4.83	19.221	
1,500.0	1,488.9	1,502.3	1,498.9	3.8	3.0	-174.86	-13.5	-42.7	104.0	98.8	5.18	20.078	
1,600.0	1,586.1	1,601.5	1,597.5	4.3	3.2	-174.97	-15.5	-53.2	116.8	111.3	5.52	21.147	
1,700.0	1,682.9	1,700.5	1,695.9	4.7	3.4	-175.12	-17.4	-63.7	131.3	125.5	5.86	22.393	
1,800.0	1,779.3	1,799.1	1,794.0	5.2	3.7	-175.30	-19.3	-74.2	147.6	141.4	6.20	23.787	
1,900.0	1,875.2	1,897.5	1,891.8	5.8	3.9	-175.48	-21.2	-84.6	165.5	159.0	6.54	25.308	
2,000.0	1,970.7	1,995.7	1,989.3	6.3	4.2	-175.67	-23.1	-95.0	184.7	177.8	6.89	26.817	
2,100.0	2,066.2	2,093.8	2,086.9	6.8	4.4	-175.83	-25.0	-105.4	203.9	196.7	7.24	28.175	
2,200.0	2,161.7	2,191.9	2,184.5	7.4	4.7	-175.96	-26.9	-115.8	223.1	215.5	7.59	29.408	
2,300.0	2,257.2	2,290.1	2,282.0	7.9	4.9	-176.07	-28.9	-126.2	242.3	234.4	7.94	30.532	
2,400.0	2,352.7	2,388.2	2,379.6	8.5	5.2	-176.16	-30.8	-136.6	261.5	253.2	8.29	31.562	
2,500.0	2,448.3	2,486.3	2,477.2	9.1	5.4	-176.24	-32.7	-147.0	280.7	272.1	8.64	32.509	
2,600.0	2,543.8	2,584.5	2,574.7	9.6	5.7	-176.31	-34.6	-157.4	299.9	291.0	8.99	33.382	
2,700.0	2,639.3	2,682.6	2,672.3	10.2	5.9	-176.37	-36.5	-167.8	319.2	309.8	9.34	34.189	
2,800.0	2,734.8	2,780.7	2,769.9	10.7	6.2	-176.42	-38.4	-178.2	338.4	328.7	9.68	34.939	
2,900.0	2,830.3	2,878.9	2,867.4	11.3	6.4	-176.47	-40.3	-188.6	357.6	347.6	10.03	35.636	
3,000.0	2,925.8	2,977.0	2,965.0	11.8	6.7	-176.52	-42.2	-199.0	376.8	366.4	10.38	36.287	
3,100.0	3,021.3	3,075.2	3,062.6	12.4	6.9	-176.56	-44.1	-209.4	396.0	385.3	10.73	36.895	
3,200.0	3,116.8	3,173.3	3,160.1	13.0	7.2	-176.59	-46.1	-219.8	415.2	404.1	11.08	37.465	
3,300.0	3,212.3	3,271.4	3,257.7	13.5	7.4	-176.62	-48.0	-230.2	434.4	423.0	11.43	38.001	
3,400.0	3,307.9	3,369.6	3,355.3	14.1	7.7	-176.65	-49.9	-240.6	453.7	441.9	11.78	38.504	
3,500.0	3,403.4	3,467.7	3,452.8	14.7	7.9	-176.68	-51.8	-251.0	472.9	460.7	12.13	38.979	
3,600.0	3,498.9	3,565.8	3,550.4	15.2	8.2	-176.71	-53.7	-261.4	492.1	479.6	12.48	39.427	

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 Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - Kugel 1E-18H-H267 - Hz - Plan #2

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.05	0.0	39.1	39.2				
100.0	100.0	99.0	99.0	0.2	0.2	90.05	0.0	39.1	39.1	38.8	0.30	129.534	
200.0	200.0	199.0	199.0	0.3	0.3	90.05	0.0	39.1	39.1	38.5	0.65	60.124	CC, ES
300.0	300.0	299.0	299.0	0.5	0.5	-174.43	0.0	39.1	40.0	39.0	1.00	40.010	
400.0	400.0	399.0	399.0	0.7	0.7	-174.77	0.0	39.1	42.6	41.3	1.35	31.598	
500.0	499.9	498.9	498.9	0.9	0.8	-175.25	0.0	39.1	47.0	45.3	1.70	27.674	
600.0	599.7	598.7	598.7	1.1	1.0	-175.80	0.0	39.1	53.0	51.0	2.04	25.945	
700.0	699.4	699.3	699.3	1.3	1.2	-176.05	-0.4	38.3	60.1	57.7	2.39	25.103	
800.0	798.9	800.1	800.1	1.5	1.4	-175.81	-1.4	35.9	67.2	64.5	2.74	24.508	
900.0	898.3	900.7	900.6	1.8	1.6	-175.25	-3.0	31.9	74.5	71.4	3.09	24.099	SF
1,000.0	997.4	1,000.3	1,000.1	2.0	1.7	-174.78	-4.9	27.5	83.1	79.6	3.44	24.161	
1,100.0	1,096.3	1,099.8	1,099.4	2.3	1.9	-174.49	-6.7	23.1	93.4	89.6	3.79	24.673	
1,200.0	1,194.9	1,199.1	1,198.6	2.7	2.1	-174.36	-8.5	18.7	105.5	101.3	4.13	25.523	
1,300.0	1,293.3	1,298.1	1,297.5	3.0	2.3	-174.33	-10.3	14.4	119.2	114.8	4.48	26.633	
1,400.0	1,391.2	1,396.9	1,396.2	3.4	2.5	-174.37	-12.1	10.0	134.7	129.9	4.82	27.948	
1,500.0	1,488.9	1,495.4	1,494.6	3.8	2.7	-174.47	-13.9	5.6	151.9	146.8	5.16	29.431	
1,600.0	1,586.1	1,593.6	1,592.7	4.3	2.9	-174.60	-15.7	1.3	170.8	165.3	5.50	31.051	
1,700.0	1,682.9	1,691.5	1,690.4	4.7	3.0	-174.75	-17.5	-3.0	191.5	185.6	5.84	32.787	
1,800.0	1,779.3	1,788.9	1,787.8	5.2	3.2	-174.91	-19.3	-7.3	213.8	207.6	6.17	34.622	
1,900.0	1,875.2	1,886.0	1,884.7	5.8	3.4	-175.07	-21.1	-11.6	237.8	231.3	6.51	36.542	
2,000.0	1,970.7	1,982.8	1,981.4	6.3	3.6	-175.23	-22.8	-15.9	263.0	256.1	6.85	38.389	
2,100.0	2,066.2	2,079.5	2,078.0	6.8	3.8	-175.37	-24.6	-20.2	288.2	281.0	7.20	40.046	
2,200.0	2,161.7	2,176.3	2,174.7	7.4	4.0	-175.49	-26.4	-24.4	313.5	305.9	7.54	41.551	
2,300.0	2,257.2	2,273.0	2,271.3	7.9	4.2	-175.59	-28.1	-28.7	338.7	330.8	7.89	42.924	
2,400.0	2,352.7	2,369.8	2,368.0	8.5	4.3	-175.68	-29.9	-33.0	364.0	355.7	8.24	44.182	
2,500.0	2,448.3	2,466.6	2,464.6	9.1	4.5	-175.76	-31.7	-37.3	389.2	380.6	8.59	45.339	
2,600.0	2,543.8	2,563.3	2,561.3	9.6	4.7	-175.82	-33.4	-41.5	414.5	405.6	8.93	46.406	
2,700.0	2,639.3	2,660.1	2,657.9	10.2	4.9	-175.88	-35.2	-45.8	439.7	430.5	9.28	47.393	
2,800.0	2,734.8	2,756.8	2,754.6	10.7	5.1	-175.94	-37.0	-50.1	465.0	455.4	9.63	48.310	
2,900.0	2,830.3	2,853.6	2,851.2	11.3	5.3	-175.98	-38.8	-54.4	490.2	480.3	9.97	49.163	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - Kugel 1F-18H-H267 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.05	0.0	50.3	50.3				
100.0	100.0	99.0	99.0	0.2	0.2	90.05	0.0	50.3	50.3	50.0	0.30	166.544	
200.0	200.0	199.0	199.0	0.3	0.3	90.05	0.0	50.3	50.3	49.7	0.65	77.302	CC, ES
300.0	300.0	299.0	299.0	0.5	0.5	-174.41	0.0	50.3	51.2	50.2	1.00	51.194	
400.0	400.0	399.0	399.0	0.7	0.7	-174.68	0.0	50.3	53.8	52.5	1.35	39.890	
500.0	499.9	498.9	498.9	0.9	0.8	-175.07	0.0	50.3	58.1	56.4	1.70	34.263	
600.0	599.7	598.7	598.7	1.1	1.0	-175.54	0.0	50.3	64.2	62.2	2.04	31.413	
700.0	699.4	698.4	698.4	1.3	1.2	-176.02	0.0	50.3	72.1	69.7	2.39	30.129	
800.0	798.9	797.9	797.9	1.5	1.4	-176.48	0.0	50.3	81.6	78.9	2.74	29.816	SF
900.0	898.3	897.3	897.3	1.8	1.5	-176.90	0.0	50.3	92.9	89.8	3.08	30.149	
1,000.0	997.4	996.4	996.4	2.0	1.7	-177.28	0.0	50.3	106.0	102.5	3.43	30.934	
1,100.0	1,096.3	1,095.3	1,095.3	2.3	1.9	-177.60	0.0	50.3	120.7	117.0	3.77	32.047	
1,200.0	1,194.9	1,193.9	1,193.9	2.7	2.1	-177.89	0.0	50.3	137.2	133.1	4.11	33.410	
1,300.0	1,293.3	1,292.3	1,292.3	3.0	2.2	-178.13	0.0	50.3	155.4	151.0	4.45	34.966	
1,400.0	1,391.2	1,390.2	1,390.2	3.4	2.4	-178.33	0.0	50.3	175.4	170.6	4.78	36.675	
1,500.0	1,488.9	1,487.9	1,487.9	3.8	2.6	-178.51	0.0	50.3	197.0	191.9	5.12	38.511	
1,600.0	1,586.1	1,585.1	1,585.1	4.3	2.7	-178.66	0.0	50.3	220.3	214.9	5.45	40.451	
1,700.0	1,682.9	1,681.9	1,681.9	4.7	2.9	-178.79	0.0	50.3	245.4	239.6	5.78	42.480	
1,800.0	1,779.3	1,778.3	1,778.3	5.2	3.1	-178.91	0.0	50.3	272.1	266.0	6.10	44.586	
1,900.0	1,875.2	1,874.2	1,874.2	5.8	3.2	-179.01	0.0	50.3	300.5	294.0	6.43	46.760	
2,000.0	1,970.7	1,969.7	1,969.7	6.3	3.4	-179.09	0.0	50.3	330.0	323.3	6.76	48.815	
2,100.0	2,066.2	2,065.2	2,065.2	6.8	3.6	-179.17	0.0	50.3	359.7	352.6	7.10	50.655	
2,200.0	2,161.7	2,160.7	2,160.7	7.4	3.7	-179.23	0.0	50.3	389.3	381.8	7.44	52.328	
2,300.0	2,257.2	2,256.2	2,256.2	7.9	3.9	-179.29	0.0	50.3	418.9	411.1	7.78	53.856	
2,400.0	2,352.7	2,351.7	2,351.7	8.5	4.1	-179.33	0.0	50.3	448.5	440.4	8.12	55.256	
2,500.0	2,448.3	2,447.3	2,447.3	9.1	4.2	-179.37	0.0	50.3	478.1	469.7	8.46	56.545	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - Kugel 1G-18H-H267 - Hz - Plan #1

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.05	-0.1	61.5	61.5				
100.0	100.0	99.0	99.0	0.2	0.2	90.05	-0.1	61.5	61.5	61.2	0.30	203.554	
200.0	200.0	199.0	199.0	0.3	0.3	90.05	-0.1	61.5	61.5	60.9	0.65	94.481	CC, ES
300.0	300.0	299.0	299.0	0.5	0.5	-174.39	-0.1	61.5	62.4	61.4	1.00	62.377	
400.0	400.0	399.0	399.0	0.7	0.7	-174.62	-0.1	61.5	65.0	63.6	1.35	48.181	
500.0	499.9	498.9	498.9	0.9	0.8	-174.95	-0.1	61.5	69.3	67.6	1.70	40.853	
600.0	599.7	597.5	597.5	1.1	1.0	-175.06	-0.4	62.3	76.2	74.1	2.04	37.281	
700.0	699.4	695.8	695.7	1.3	1.2	-174.73	-1.5	64.5	86.2	83.9	2.39	36.121	SF
800.0	798.9	794.4	794.3	1.5	1.4	-174.22	-3.2	68.0	99.3	96.5	2.73	36.322	
900.0	898.3	893.3	893.1	1.8	1.6	-173.88	-5.0	71.6	114.1	111.1	3.08	37.069	
1,000.0	997.4	991.9	991.7	2.0	1.7	-173.71	-6.8	75.1	130.7	127.3	3.42	38.178	
1,100.0	1,096.3	1,090.2	1,089.9	2.3	1.9	-173.64	-8.5	78.7	149.0	145.2	3.77	39.550	
1,200.0	1,194.9	1,188.2	1,187.8	2.7	2.1	-173.65	-10.3	82.2	169.0	164.9	4.11	41.121	
1,300.0	1,293.3	1,285.8	1,285.3	3.0	2.3	-173.70	-12.0	85.8	190.6	186.2	4.45	42.849	
1,400.0	1,391.2	1,383.1	1,382.5	3.4	2.5	-173.80	-13.7	89.3	214.0	209.2	4.79	44.701	
1,500.0	1,488.9	1,479.9	1,479.2	3.8	2.6	-173.91	-15.5	92.8	239.1	233.9	5.12	46.655	
1,600.0	1,586.1	1,576.2	1,575.5	4.3	2.8	-174.03	-17.2	96.3	265.8	260.3	5.46	48.696	
1,700.0	1,682.9	1,672.1	1,671.3	4.7	3.0	-174.17	-18.9	99.7	294.2	288.4	5.79	50.811	
1,800.0	1,779.3	1,767.5	1,766.6	5.2	3.2	-174.30	-20.6	103.2	324.3	318.2	6.12	52.991	
1,900.0	1,875.2	1,862.3	1,861.3	5.8	3.4	-174.43	-22.3	106.6	356.0	349.5	6.45	55.228	
2,000.0	1,970.7	1,956.7	1,955.7	6.3	3.5	-174.58	-24.0	110.0	388.9	382.1	6.78	57.322	
2,100.0	2,066.2	2,051.2	2,050.0	6.8	3.7	-174.72	-25.6	113.4	421.8	414.7	7.13	59.190	
2,200.0	2,161.7	2,145.6	2,144.4	7.4	3.9	-174.83	-27.3	116.9	454.7	447.3	7.47	60.888	
2,300.0	2,257.2	2,240.0	2,238.7	7.9	4.1	-174.93	-29.0	120.3	487.7	479.8	7.81	62.438	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - KUGEL 31-18 (EXISTING) - ENCANA WELL - NO SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 8078-Geolink 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	7,486.0	7,464.0	7,464.0	46.7	13.0	90.00	1,741.3	-1,559.9	448.7	405.6	43.19	10.390	
9,300.0	7,486.0	7,464.0	7,464.0	47.7	13.0	90.00	1,741.3	-1,559.9	400.7	356.0	44.78	8.950	
9,400.0	7,486.0	7,464.0	7,464.0	48.7	13.0	90.00	1,741.3	-1,559.9	373.9	327.5	46.38	8.062	
9,453.9	7,486.0	7,464.0	7,464.0	49.3	13.0	90.00	1,741.3	-1,559.9	370.0	322.7	47.25	7.830	CC, ES
9,500.0	7,486.0	7,464.0	7,464.0	49.8	13.0	90.00	1,741.3	-1,559.9	372.9	324.9	48.00	7.768	SF
9,600.0	7,486.0	7,464.0	7,464.0	51.0	13.0	90.00	1,741.3	-1,559.9	397.8	348.2	49.63	8.015	
9,700.0	7,486.0	7,464.0	7,464.0	52.2	13.0	90.00	1,741.3	-1,559.9	444.4	393.1	51.27	8.667	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - KUGEL 32-18 (EXISTING) - MACHII-ROSS WELL - NO SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 5022-Geolink 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
4,500.0	4,358.5	4,360.5	4,360.5	20.3	7.6	49.57	237.2	-1,382.2	498.3	474.6	23.78	20.957	
4,600.0	4,454.0	4,456.0	4,456.0	20.9	7.8	52.19	237.2	-1,382.2	479.1	454.2	24.89	19.252	
4,700.0	4,549.5	4,551.5	4,551.5	21.4	7.9	55.01	237.2	-1,382.2	461.0	435.0	26.04	17.708	
4,800.0	4,645.0	4,647.0	4,647.0	22.0	8.1	58.04	237.2	-1,382.2	444.2	416.9	27.22	16.320	
4,900.0	4,740.5	4,742.5	4,742.5	22.5	8.3	61.29	237.2	-1,382.2	428.7	400.3	28.42	15.084	
5,000.0	4,836.1	4,838.1	4,838.1	23.1	8.4	64.75	237.2	-1,382.2	414.7	385.1	29.63	13.996	
5,100.0	4,931.6	4,933.6	4,933.6	23.7	8.6	68.42	237.2	-1,382.2	402.5	371.7	30.84	13.053	
5,200.0	5,027.1	5,022.0	5,022.0	24.2	8.8	71.99	237.2	-1,382.2	392.2	360.2	31.97	12.269	
5,230.1	5,055.8	5,022.0	5,022.0	24.4	8.8	71.99	237.2	-1,382.2	391.0	358.9	32.13	12.171	CC, ES, SF
5,300.0	5,122.6	5,022.0	5,022.0	24.8	8.8	71.99	237.2	-1,382.2	397.2	364.7	32.51	12.220	
5,400.0	5,218.1	5,022.0	5,022.0	25.4	8.8	71.99	237.2	-1,382.2	426.4	393.3	33.05	12.902	
5,500.0	5,313.6	5,022.0	5,022.0	25.9	8.8	71.99	237.2	-1,382.2	475.1	441.6	33.59	14.147	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - KUGEL 32-18 (EXISTING) NARC - NORTH AMERICAN WELL - NO SURVEY

Offset Site Error: 0.0 ft

Survey Program: 8083-Geolink 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	4,836.1	4,840.1	4,840.1	23.1	8.4	18.32	-12.0	-1,650.6	498.4	479.2	19.26	25.883	
5,100.0	4,931.6	4,935.6	4,935.6	23.7	8.6	19.45	-12.0	-1,650.6	470.3	450.4	19.92	23.608	
5,200.0	5,027.1	5,031.1	5,031.1	24.2	8.8	20.72	-12.0	-1,650.6	442.3	421.7	20.64	21.431	
5,300.0	5,122.6	5,126.6	5,126.6	24.8	8.9	22.16	-12.0	-1,650.6	414.6	393.2	21.43	19.350	
5,400.0	5,218.1	5,222.1	5,222.1	25.4	9.1	23.80	-12.0	-1,650.6	387.1	364.8	22.29	17.365	
5,500.0	5,313.6	5,317.6	5,317.6	25.9	9.3	25.69	-12.0	-1,650.6	360.0	336.8	23.26	15.476	
5,600.0	5,409.1	5,413.1	5,413.1	26.5	9.4	27.88	-12.0	-1,650.6	333.3	309.0	24.35	13.687	
5,700.0	5,504.6	5,508.6	5,508.6	27.1	9.6	30.43	-12.0	-1,650.6	307.2	281.6	25.59	12.003	
5,800.0	5,600.2	5,604.2	5,604.2	27.6	9.8	33.44	-12.0	-1,650.6	281.7	254.7	27.01	10.430	
5,900.0	5,695.7	5,699.7	5,699.7	28.2	9.9	37.02	-12.0	-1,650.6	257.1	228.5	28.64	8.979	
6,000.0	5,791.2	5,795.2	5,795.2	28.8	10.1	41.32	-12.0	-1,650.6	233.8	203.2	30.51	7.661	
6,100.0	5,886.7	5,890.7	5,890.7	29.3	10.3	46.49	-12.0	-1,650.6	211.9	179.3	32.65	6.492	
6,200.0	5,982.2	5,986.2	5,986.2	29.9	10.4	52.72	-12.0	-1,650.6	192.2	157.2	35.02	5.489	
6,300.0	6,077.7	6,081.7	6,081.7	30.5	10.6	60.19	-12.0	-1,650.6	175.3	137.7	37.53	4.670	
6,400.0	6,173.2	6,177.2	6,177.2	31.0	10.8	68.96	-12.0	-1,650.6	162.0	122.1	39.98	4.053	
6,500.0	6,268.7	6,272.7	6,272.7	31.6	10.9	78.88	-12.0	-1,650.6	153.4	111.4	42.01	3.652	
6,600.0	6,364.2	6,368.2	6,368.2	32.2	11.1	89.53	-12.0	-1,650.6	150.3	107.0	43.27	3.474	
6,604.4	6,368.4	6,372.4	6,372.4	32.2	11.1	90.00	-12.0	-1,650.6	150.3	107.0	43.31	3.471	CC, ES, SF
6,700.0	6,459.8	6,463.8	6,463.8	32.7	11.3	100.20	-12.0	-1,650.6	152.9	109.4	43.55	3.512	
6,800.0	6,555.3	6,559.3	6,559.3	33.3	11.4	110.21	-12.0	-1,650.6	161.1	118.2	42.92	3.753	
6,900.0	6,650.8	6,654.8	6,654.8	33.9	11.6	119.09	-12.0	-1,650.6	174.0	132.3	41.70	4.172	
7,000.0	6,746.3	6,750.3	6,750.3	34.4	11.8	126.68	-12.0	-1,650.6	190.6	150.4	40.22	4.738	
7,100.0	6,841.8	6,845.8	6,845.8	35.0	11.9	133.01	-12.0	-1,650.6	210.1	171.4	38.74	5.423	
7,200.0	6,937.3	6,941.3	6,941.3	35.6	12.1	131.58	-12.0	-1,650.6	231.5	194.0	37.52	6.171	
7,300.0	7,032.4	7,036.4	7,036.4	36.1	12.3	107.20	-12.0	-1,650.6	246.5	210.6	35.93	6.862	
7,400.0	7,124.7	7,128.7	7,128.7	36.6	12.4	95.91	-12.0	-1,650.6	253.9	220.8	33.05	7.682	
7,500.0	7,211.3	7,215.3	7,215.3	37.0	12.6	94.70	-12.0	-1,650.6	258.6	228.8	29.78	8.683	
7,600.0	7,289.6	7,293.6	7,293.6	37.4	12.7	98.37	-12.0	-1,650.6	267.4	239.9	27.46	9.738	
7,700.0	7,357.2	7,361.2	7,361.2	37.7	12.8	102.98	-12.0	-1,650.6	287.5	260.9	26.63	10.797	
7,800.0	7,412.1	7,416.1	7,416.1	38.1	12.9	105.75	-12.0	-1,650.6	323.5	296.9	26.62	12.153	
7,900.0	7,452.6	7,456.6	7,456.6	38.4	13.0	105.02	-12.0	-1,650.6	375.9	348.8	27.08	13.884	
8,000.0	7,477.5	7,481.5	7,481.5	38.7	13.1	99.88	-12.0	-1,650.6	441.7	413.7	27.96	15.795	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - KUGEL 32-18J (EXISTING) - MACHII-ROSS WELL - NO SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 8100-Geolink 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
4,700.0	4,549.5	4,555.5	4,555.5	21.4	8.0	50.71	233.2	-1,428.6	490.4	465.2	25.23	19.438	
4,800.0	4,645.0	4,651.0	4,651.0	22.0	8.1	53.41	233.2	-1,428.6	471.7	445.3	26.38	17.882	
4,900.0	4,740.5	4,746.5	4,746.5	22.5	8.3	56.32	233.2	-1,428.6	454.1	426.6	27.57	16.475	
5,000.0	4,836.1	4,842.1	4,842.1	23.1	8.5	59.44	233.2	-1,428.6	437.9	409.1	28.78	15.214	
5,100.0	4,931.6	4,937.6	4,937.6	23.7	8.6	62.78	233.2	-1,428.6	423.0	393.0	30.01	14.096	
5,200.0	5,027.1	5,033.1	5,033.1	24.2	8.8	66.32	233.2	-1,428.6	409.8	378.6	31.24	13.117	
5,300.0	5,122.6	5,128.6	5,128.6	24.8	9.0	70.07	233.2	-1,428.6	398.4	365.9	32.46	12.274	
5,400.0	5,218.1	5,224.1	5,224.1	25.4	9.1	74.01	233.2	-1,428.6	388.8	355.2	33.63	11.563	
5,500.0	5,313.6	5,319.6	5,319.6	25.9	9.3	78.11	233.2	-1,428.6	381.4	346.7	34.73	10.981	
5,600.0	5,409.1	5,415.1	5,415.1	26.5	9.5	82.33	233.2	-1,428.6	376.1	340.4	35.75	10.522	
5,700.0	5,504.6	5,510.6	5,510.6	27.1	9.6	86.64	233.2	-1,428.6	373.1	336.5	36.65	10.183	
5,777.2	5,578.4	5,584.4	5,584.4	27.5	9.7	90.00	233.2	-1,428.6	372.4	335.2	37.25	9.998	CC
5,800.0	5,600.2	5,606.2	5,606.2	27.6	9.8	90.99	233.2	-1,428.6	372.5	335.1	37.41	9.956	ES
5,900.0	5,695.7	5,701.7	5,701.7	28.2	10.0	95.33	233.2	-1,428.6	374.2	336.2	38.04	9.837	
6,000.0	5,791.2	5,797.2	5,797.2	28.8	10.1	99.61	233.2	-1,428.6	378.2	339.7	38.53	9.818	SF
6,100.0	5,886.7	5,892.7	5,892.7	29.3	10.3	103.78	233.2	-1,428.6	384.5	345.7	38.87	9.893	
6,200.0	5,982.2	5,988.2	5,988.2	29.9	10.5	107.80	233.2	-1,428.6	392.9	353.9	39.08	10.055	
6,300.0	6,077.7	6,083.7	6,083.7	30.5	10.6	111.66	233.2	-1,428.6	403.4	364.2	39.18	10.295	
6,400.0	6,173.2	6,179.2	6,179.2	31.0	10.8	115.32	233.2	-1,428.6	415.6	376.4	39.18	10.608	
6,500.0	6,268.7	6,274.7	6,274.7	31.6	11.0	118.77	233.2	-1,428.6	429.6	390.5	39.11	10.985	
6,600.0	6,364.2	6,370.2	6,370.2	32.2	11.1	122.01	233.2	-1,428.6	445.1	406.1	38.98	11.419	
6,700.0	6,459.8	6,465.8	6,465.8	32.7	11.3	125.03	233.2	-1,428.6	462.0	423.2	38.81	11.904	
6,800.0	6,555.3	6,561.3	6,561.3	33.3	11.5	127.84	233.2	-1,428.6	480.1	441.5	38.61	12.434	
6,900.0	6,650.8	6,656.8	6,656.8	33.9	11.6	130.46	233.2	-1,428.6	499.3	460.9	38.40	13.002	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - KUGEL 42-18 (EXISTING) - ENCANA WELL - NO SURVEYS — **Offset Site Error:** 0.0 ft

Survey Program: 8095-Geolink 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	81.55	12.7	85.8	87.7				
100.0	100.0	87.0	87.0	0.2	0.2	81.55	12.7	85.8	86.8	86.5	0.30	285.543	
200.0	200.0	187.0	187.0	0.3	0.3	81.55	12.7	85.8	86.8	86.1	0.65	132.893	CC, ES
300.0	300.0	287.0	287.0	0.5	0.5	177.22	12.7	85.8	87.6	86.6	1.00	87.476	
400.0	400.0	387.0	387.0	0.7	0.7	177.30	12.7	85.8	90.3	88.9	1.35	66.829	
500.0	499.9	486.9	486.9	0.9	0.8	177.42	12.7	85.8	94.6	92.9	1.70	55.696	
600.0	599.7	586.7	586.7	1.1	1.0	177.58	12.7	85.8	100.7	98.7	2.05	49.217	
700.0	699.4	686.4	686.4	1.3	1.2	177.75	12.7	85.8	108.6	106.2	2.39	45.362	
800.0	798.9	785.9	785.9	1.5	1.4	177.93	12.7	85.8	118.1	115.4	2.74	43.132	
900.0	898.3	885.3	885.3	1.8	1.5	178.10	12.7	85.8	129.4	126.4	3.08	41.981	
1,000.0	997.4	984.4	984.4	2.0	1.7	178.27	12.7	85.8	142.5	139.1	3.43	41.584	SF
1,100.0	1,096.3	1,083.3	1,083.3	2.3	1.9	178.43	12.7	85.8	157.3	153.5	3.77	41.734	
1,200.0	1,194.9	1,181.9	1,181.9	2.7	2.1	178.58	12.7	85.8	173.8	169.7	4.11	42.296	
1,300.0	1,293.3	1,280.3	1,280.3	3.0	2.2	178.71	12.7	85.8	192.0	187.5	4.45	43.177	
1,400.0	1,391.2	1,378.2	1,378.2	3.4	2.4	178.83	12.7	85.8	211.9	207.1	4.78	44.310	
1,500.0	1,488.9	1,475.9	1,475.9	3.8	2.6	178.93	12.7	85.8	233.6	228.4	5.12	45.648	
1,600.0	1,586.1	1,573.1	1,573.1	4.3	2.7	179.02	12.7	85.8	256.9	251.4	5.45	47.154	
1,700.0	1,682.9	1,669.9	1,669.9	4.7	2.9	179.11	12.7	85.8	281.9	276.2	5.78	48.801	
1,800.0	1,779.3	1,766.3	1,766.3	5.2	3.1	179.18	12.7	85.8	308.7	302.5	6.10	50.568	
1,900.0	1,875.2	1,862.2	1,862.2	5.8	3.3	179.24	12.7	85.8	337.1	330.6	6.43	52.440	
2,000.0	1,970.7	1,957.7	1,957.7	6.3	3.4	179.30	12.7	85.8	366.6	359.9	6.76	54.214	
2,100.0	2,066.2	2,053.2	2,053.2	6.8	3.6	179.36	12.7	85.8	396.2	389.1	7.10	55.796	
2,200.0	2,161.7	2,148.7	2,148.7	7.4	3.8	179.40	12.7	85.8	425.9	418.4	7.44	57.234	
2,300.0	2,257.2	2,244.2	2,244.2	7.9	3.9	179.44	12.7	85.8	455.5	447.7	7.78	58.548	
2,400.0	2,352.7	2,339.7	2,339.7	8.5	4.1	179.47	12.7	85.8	485.1	477.0	8.12	59.752	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - MILLER 12-17 (EXISTING) - ENCANA WELL - SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 825-Geolink 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	86.70	6.2	107.4	109.0				
100.0	100.0	82.3	82.3	0.2	0.2	86.80	6.0	107.3	107.4	107.1	0.30	358.719	
200.0	200.0	182.7	182.6	0.3	0.4	87.20	5.2	106.9	107.0	106.3	0.65	163.700	
242.6	242.6	225.4	225.4	0.4	0.4	-176.90	4.7	106.6	106.9	106.0	0.84	127.939	CC, ES
300.0	300.0	283.0	283.0	0.5	0.6	-176.47	3.9	106.1	107.1	106.0	1.05	102.305	
400.0	400.0	383.3	383.3	0.7	0.8	-175.55	1.9	105.1	108.6	107.2	1.42	76.736	
500.0	499.9	483.6	483.5	0.9	1.0	-174.44	-0.6	103.8	111.6	109.8	1.79	62.537	
600.0	599.7	583.8	583.7	1.1	1.2	-173.20	-3.7	102.2	116.1	114.0	2.16	53.879	
700.0	699.4	683.9	683.7	1.3	1.4	-171.87	-7.4	100.3	122.1	119.6	2.53	48.337	
800.0	798.9	783.9	783.6	1.5	1.6	-170.53	-11.7	98.0	129.6	126.7	2.90	44.721	
900.0	898.3	883.5	883.0	1.8	1.8	-169.23	-16.5	95.5	138.6	135.3	3.27	42.384	
1,000.0	997.4	982.6	981.9	2.0	1.9	-168.33	-21.0	93.3	149.6	146.0	3.64	41.126	
1,100.0	1,096.3	1,081.6	1,080.9	2.3	2.1	-167.77	-25.2	91.2	162.5	158.5	4.01	40.560	
1,200.0	1,194.9	1,183.0	1,182.2	2.7	2.3	-167.64	-28.8	88.6	176.5	172.1	4.36	40.518	SF
1,300.0	1,293.3	1,285.2	1,284.3	3.0	2.5	-168.22	-30.4	84.4	190.5	185.8	4.70	40.564	
1,400.0	1,391.2	1,380.2	1,379.2	3.4	2.6	-169.28	-30.0	80.8	206.2	201.2	5.00	41.273	
1,500.0	1,488.9	1,473.7	1,472.7	3.8	2.8	-170.69	-28.0	79.2	225.8	220.5	5.29	42.680	
1,600.0	1,586.1	1,572.8	1,571.7	4.3	2.9	-172.27	-24.9	78.7	248.3	242.7	5.59	44.375	
1,700.0	1,682.9	1,670.7	1,669.5	4.7	3.1	-173.37	-22.9	76.7	271.0	265.1	5.91	45.853	
1,800.0	1,779.3	1,760.4	1,759.3	5.2	3.2	-174.00	-22.4	76.2	297.1	290.9	6.23	47.721	
1,900.0	1,875.2	1,850.6	1,849.5	5.8	3.4	-174.30	-23.3	77.9	327.2	320.6	6.54	49.990	
2,000.0	1,970.7	1,946.2	1,945.0	6.3	3.5	-174.52	-24.8	80.4	359.1	352.2	6.88	52.185	
2,100.0	2,066.2	2,045.4	2,044.2	6.8	3.7	-174.78	-25.8	82.1	390.2	382.9	7.22	54.002	
2,200.0	2,161.7	2,146.9	2,145.7	7.4	3.9	-175.11	-26.3	82.3	419.9	412.4	7.57	55.483	
2,300.0	2,257.2	2,240.8	2,239.6	7.9	4.0	-175.48	-25.9	81.9	449.1	441.2	7.89	56.896	
2,400.0	2,352.7	2,332.7	2,331.5	8.5	4.2	-175.93	-24.4	82.2	478.9	470.7	8.21	58.327	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - WANDELL 31-7 (EXISTING) - ENCANA WELL - SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 400-Geolink 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
14,600.0	7,486.0	7,535.6	7,417.2	127.5	21.9	90.02	7,033.4	-1,331.9	483.3	345.5	137.84	3.507	
14,700.0	7,486.0	7,536.0	7,417.6	129.2	21.9	90.08	7,033.4	-1,331.9	462.2	322.6	139.58	3.311	
14,750.1	7,486.0	7,536.2	7,417.8	130.0	21.9	90.10	7,033.4	-1,331.9	459.4	319.0	140.46	3.271	CC, ES
14,800.0	7,486.0	7,536.4	7,418.0	130.8	21.9	90.13	7,033.4	-1,331.9	462.1	320.8	141.33	3.270	SF
14,841.1	7,486.0	7,536.6	7,418.2	131.5	21.9	90.15	7,033.4	-1,331.9	468.3	326.3	142.05	3.297	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - WANDELL 33-7 (EXISTING) - ENCANA WELL - PLAN ONLY

Offset Site Error: 0.0 ft

Survey Program: 0-Geolink MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
11,800.0	7,486.0	7,632.5	7,421.0	81.9	26.2	90.00	4,268.8	-1,404.0	495.4	395.3	100.12	4.948	
11,900.0	7,486.0	7,632.5	7,421.0	83.4	26.2	90.00	4,268.8	-1,404.0	467.4	365.6	101.85	4.590	
11,984.6	7,486.0	7,632.5	7,421.0	84.7	26.2	90.00	4,268.8	-1,404.0	459.7	356.4	103.31	4.450	CC
12,000.0	7,486.0	7,632.5	7,421.0	85.0	26.2	90.00	4,268.8	-1,404.0	460.0	356.4	103.57	4.441	ES, SF
12,100.0	7,486.0	7,632.5	7,421.0	86.6	26.2	90.00	4,268.8	-1,404.0	474.0	368.7	105.30	4.501	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - WANDELL 34-7 (EXISTING) - ENCANA WELL - SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 676-Geolink 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	7,486.0	7,589.5	7,461.5	59.8	22.8	90.06	2,793.7	-1,473.9	476.3	405.3	71.05	6.704	
10,400.0	7,486.0	7,589.6	7,461.6	61.2	22.8	90.08	2,793.7	-1,473.9	441.9	369.1	72.74	6.075	
10,500.0	7,486.0	7,589.7	7,461.7	62.6	22.8	90.09	2,793.7	-1,473.9	428.5	354.1	74.43	5.757	
10,508.2	7,486.0	7,589.7	7,461.7	62.7	22.8	90.10	2,793.7	-1,473.9	428.4	353.9	74.57	5.745	CC, ES, SF
10,600.0	7,486.0	7,589.8	7,461.8	64.0	22.8	90.11	2,793.7	-1,473.9	438.1	362.0	76.13	5.755	
10,700.0	7,486.0	7,589.9	7,461.9	65.4	22.8	90.12	2,793.7	-1,473.9	469.4	391.6	77.83	6.031	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - WANDELL 4-6-7 (EXISTING) - ENCANA WELL - SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 47-Geolink 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
10,800.0	7,486.0	7,798.9	7,464.4	66.8	35.3	87.73	3,570.9	-1,817.3	480.6	389.2	91.38	5.259	
10,900.0	7,486.0	7,799.3	7,464.9	68.3	35.3	88.14	3,570.9	-1,817.3	381.7	288.6	93.12	4.100	
11,000.0	7,486.0	7,799.8	7,465.4	69.7	35.3	88.56	3,570.9	-1,817.3	283.7	188.9	94.85	2.991	
11,100.0	7,486.0	7,800.3	7,465.8	71.2	35.3	88.97	3,570.9	-1,817.3	187.8	91.2	96.58	1.944	
11,200.0	7,486.0	7,800.7	7,466.3	72.7	35.3	89.38	3,571.0	-1,817.3	100.1	1.7	98.31	1.018	Level 2
11,276.2	7,486.0	7,801.1	7,466.7	73.8	35.3	89.69	3,571.0	-1,817.3	64.9	-34.8	99.63	0.651	Level 1, CC, ES, SF
11,300.0	7,486.0	7,801.2	7,466.8	74.2	35.3	89.79	3,571.0	-1,817.3	69.1	-31.0	100.04	0.691	Level 1
11,400.0	7,486.0	7,801.7	7,467.2	75.7	35.3	90.20	3,571.0	-1,817.3	139.8	38.0	101.77	1.373	Level 3
11,500.0	7,486.0	7,802.1	7,467.7	77.2	35.3	90.61	3,571.0	-1,817.3	233.0	129.5	103.49	2.252	
11,600.0	7,486.0	7,802.6	7,468.2	78.8	35.3	91.02	3,571.0	-1,817.3	330.2	225.0	105.21	3.139	
11,700.0	7,486.0	7,803.1	7,468.6	80.3	35.3	91.43	3,571.0	-1,817.3	428.7	321.8	106.92	4.010	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - WANDELL V 7-2 (EXISTING) - GERRITY OIL WELL - NO SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 8000-Geolink 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
14,300.0	7,486.0	7,405.0	7,405.0	122.5	12.9	90.00	6,890.8	-1,477.2	439.8	309.5	130.27	3.376	
14,400.0	7,486.0	7,405.0	7,405.0	124.1	12.9	90.00	6,890.8	-1,477.2	377.7	245.6	132.02	2.861	
14,500.0	7,486.0	7,405.0	7,405.0	125.8	12.9	90.00	6,890.8	-1,477.2	334.5	200.7	133.76	2.500	
14,600.0	7,486.0	7,405.0	7,405.0	127.5	12.9	90.00	6,890.8	-1,477.2	318.0	182.5	135.51	2.347	
14,603.8	7,486.0	7,405.0	7,405.0	127.6	12.9	90.00	6,890.8	-1,477.2	317.9	182.4	135.57	2.345	CC, ES, SF
14,700.0	7,486.0	7,405.0	7,405.0	129.2	12.9	90.00	6,890.8	-1,477.2	332.2	194.9	137.25	2.420	
14,800.0	7,486.0	7,405.0	7,405.0	130.8	12.9	90.00	6,890.8	-1,477.2	373.6	234.6	139.00	2.688	
14,841.1	7,486.0	7,405.0	7,405.0	131.5	12.9	90.00	6,890.8	-1,477.2	396.7	257.0	139.71	2.840	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 S18-T2N-R67W (Kugel) - WANDELL V 7-7 (EXISTING) - GERRITY OIL WELL - NO SURVEYS

Offset Site Error: 0.0 ft

Survey Program: 8000-Geolink 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
12,900.0	7,486.0	7,404.0	7,404.0	99.4	12.9	90.00	5,561.2	-1,502.4	497.1	391.2	105.90	4.694	
13,000.0	7,486.0	7,404.0	7,404.0	101.0	12.9	90.00	5,561.2	-1,502.4	427.0	319.4	107.64	3.967	
13,100.0	7,486.0	7,404.0	7,404.0	102.6	12.9	90.00	5,561.2	-1,502.4	370.9	261.5	109.38	3.391	
13,200.0	7,486.0	7,404.0	7,404.0	104.3	12.9	90.00	5,561.2	-1,502.4	335.8	224.7	111.12	3.022	
13,274.0	7,486.0	7,404.0	7,404.0	105.5	12.9	90.00	5,561.2	-1,502.4	327.5	215.1	112.40	2.914	CC, ES
13,300.0	7,486.0	7,404.0	7,404.0	105.9	12.9	90.00	5,561.2	-1,502.4	328.6	215.7	112.86	2.911	SF
13,400.0	7,486.0	7,404.0	7,404.0	107.5	12.9	90.00	5,561.2	-1,502.4	350.9	236.3	114.60	3.062	
13,500.0	7,486.0	7,404.0	7,404.0	109.2	12.9	90.00	5,561.2	-1,502.4	398.0	281.6	116.34	3.421	
13,600.0	7,486.0	7,404.0	7,404.0	110.8	12.9	90.00	5,561.2	-1,502.4	462.1	344.1	118.08	3.914	

Company:	EnCana Oil & Gas (USA) Inc	**Local Co-ordinate Reference:**	Well Kugel 1A-18H-H267
Project:	DJ Wattenberg	**TVD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Reference Site:	S18-T2N-R67W (Kugel)	**MD Reference:**	WELL @ 4961.0ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Kugel 1A-18H-H267	**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 @ 4961.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Kugel 1A-18H-H267
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.37°