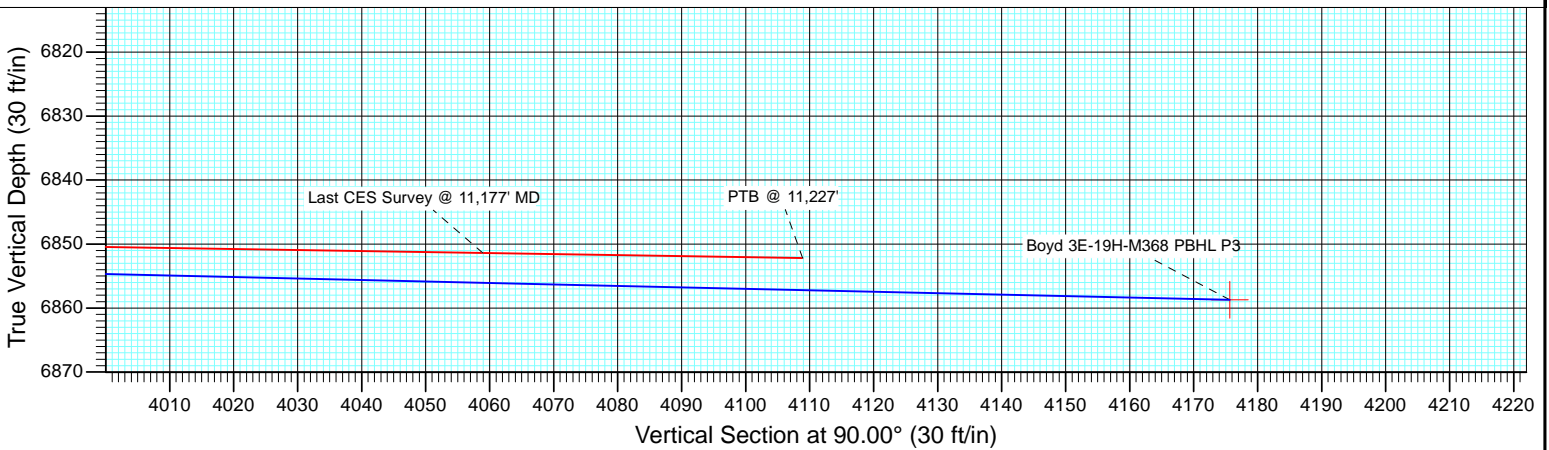
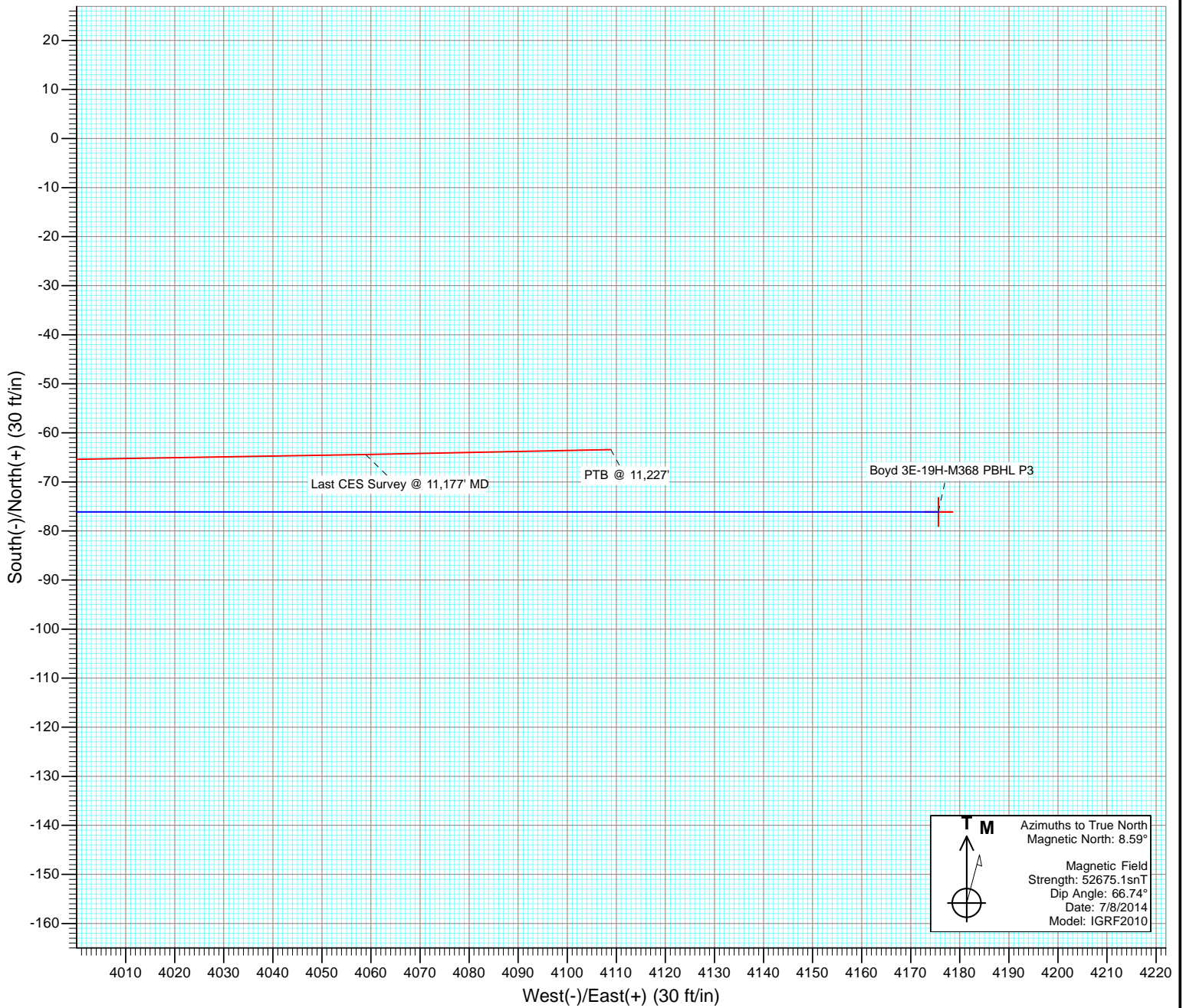




Project: DJ Wattenberg
Site: S19-T3N-R68W (Bohrer/Boyd)
Well: Boyd 3E-19H-M368
Wellbore: Hz
Design: FINAL



Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3E-19H-M368
Project: DJ Wattenberg	TVD Reference: WELL @ 5029.0ft (Original Well Elev)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: WELL @ 5029.0ft (Original Well Elev)
Well: Boyd 3E-19H-M368	North Reference: True
Wellbore: Hz	Survey Calculation Method: Minimum Curvature
Design: FINAL	Database: USA EDM 5000 Multi Users DB

Project DJ Wattenberg		
Map System: US State Plane 1983	System Datum: Mean Sea Level	
Geo Datum: North American Datum 1983		
Map Zone: Colorado Northern Zone		

Site S19-T3N-R68W (Bohrer/Boyd)				
Site Position:	Northing: 1,318,413.13 ft	Latitude: 40.206570		
From: Lat/Long	Easting: 3,124,860.64 ft	Longitude: -105.052980		
Position Uncertainty: 0.0 ft	Slot Radius: 13.200 in	Grid Convergence: 0.29 °		

Well Boyd 3E-19H-M368				
Well Position	+N/-S 0.0 ft	Northing: 1,318,383.99 ft	Latitude: 40.206490	
	+E/-W 0.0 ft	Easting: 3,124,860.79 ft	Longitude: -105.052980	
Position Uncertainty	0.0 ft	Wellhead Elevation: ft	Ground Level: 5,004.0 ft	

Wellbore Hz					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/8/2014	8.59	66.74	52,675

Design FINAL				
Audit Notes:				
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.0		
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	90.00

Survey Program		Date 7/13/2014
From (ft)	To (ft)	Survey (Wellbore)
141.0	11,227.0	Survey #1 (Hz)
		Tool Name Geolink MWD
		Description Geolink MWD

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
141.0	0.20	231.70	141.0	-0.2	-0.2	-0.2	0.14	0.14	
233.0	0.40	234.90	233.0	-0.4	-0.6	-0.6	0.22	0.22	
325.0	0.90	215.30	325.0	-1.2	-1.3	-1.3	0.59	0.54	
417.0	1.60	242.40	417.0	-2.4	-2.8	-2.8	0.98	0.76	
509.0	1.80	241.20	508.9	-3.7	-5.2	-5.2	0.22	0.22	
601.0	2.60	241.20	600.9	-5.4	-8.3	-8.3	0.87	0.87	
693.0	3.20	244.20	692.7	-7.5	-12.5	-12.5	0.67	0.65	
784.0	3.50	263.10	783.6	-9.0	-17.5	-17.5	1.25	0.33	
809.0	3.60	259.70	808.5	-9.2	-19.0	-19.0	0.93	0.40	
914.0	3.70	260.10	913.3	-10.4	-25.6	-25.6	0.10	0.10	
1,006.0	3.60	258.20	1,005.1	-11.5	-31.4	-31.4	0.17	-0.11	
1,098.0	4.70	264.00	1,096.9	-12.4	-37.9	-37.9	1.28	1.20	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3E-19H-M368
Project:	DJ Wattenberg	TD Reference:	WELL @ 5029.0ft (Original Well Elev)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MD Reference:	WELL @ 5029.0ft (Original Well Elev)
Well:	Boyd 3E-19H-M368	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
1,190.0	6.20	261.10	1,188.5	-13.6	-46.6	-46.6	1.66	1.63	
1,282.0	6.30	254.40	1,279.9	-15.7	-56.4	-56.4	0.80	0.11	
1,374.0	7.10	265.10	1,371.3	-17.6	-66.9	-66.9	1.61	0.87	
1,465.0	7.10	276.70	1,461.6	-17.4	-78.1	-78.1	1.57	0.00	
1,557.0	7.30	268.00	1,552.9	-16.9	-89.6	-89.6	1.20	0.22	
1,649.0	7.60	262.20	1,644.1	-18.0	-101.4	-101.4	0.88	0.33	
1,740.0	6.90	281.60	1,734.4	-17.7	-112.8	-112.8	2.78	-0.77	
1,832.0	6.80	283.50	1,825.7	-15.3	-123.5	-123.5	0.27	-0.11	
1,924.0	6.80	277.30	1,917.1	-13.3	-134.2	-134.2	0.80	0.00	
2,016.0	5.90	265.70	2,008.5	-13.0	-144.3	-144.3	1.70	-0.98	
2,107.0	5.60	262.70	2,099.1	-13.9	-153.4	-153.4	0.47	-0.33	
2,199.0	5.80	262.90	2,190.6	-15.1	-162.4	-162.4	0.22	0.22	
2,291.0	5.40	257.80	2,282.2	-16.5	-171.3	-171.3	0.69	-0.43	
2,383.0	5.10	255.30	2,373.8	-18.5	-179.5	-179.5	0.41	-0.33	
2,477.0	7.30	260.30	2,467.2	-20.6	-189.4	-189.4	2.41	2.34	
2,572.0	7.00	255.20	2,561.5	-23.1	-200.9	-200.9	0.74	-0.32	
2,666.0	6.90	268.90	2,654.8	-24.6	-212.1	-212.1	1.76	-0.11	
2,761.0	7.30	261.60	2,749.1	-25.6	-223.8	-223.8	1.04	0.42	
2,855.0	7.10	257.10	2,842.4	-27.8	-235.4	-235.4	0.64	-0.21	
2,949.0	7.30	255.40	2,935.6	-30.6	-246.8	-246.8	0.31	0.21	
3,044.0	6.30	268.50	3,030.0	-32.3	-257.9	-257.9	1.94	-1.05	
3,139.0	6.50	262.40	3,124.4	-33.1	-268.4	-268.4	0.75	0.21	
3,233.0	6.40	260.00	3,217.8	-34.7	-278.8	-278.8	0.31	-0.11	
3,328.0	6.50	257.80	3,312.2	-36.8	-289.3	-289.3	0.28	0.11	
3,422.0	6.20	273.40	3,405.6	-37.6	-299.6	-299.6	1.86	-0.32	
3,517.0	4.70	263.10	3,500.2	-37.8	-308.5	-308.5	1.88	-1.58	
3,611.0	4.40	259.10	3,593.9	-38.9	-315.9	-315.9	0.46	-0.32	
3,706.0	5.20	263.80	3,688.5	-40.1	-323.8	-323.8	0.94	0.84	
3,801.0	5.40	262.20	3,783.1	-41.1	-332.5	-332.5	0.26	0.21	
3,895.0	5.20	259.30	3,876.7	-42.5	-341.0	-341.0	0.36	-0.21	
3,989.0	6.20	270.50	3,970.3	-43.3	-350.3	-350.3	1.59	1.06	
4,084.0	5.90	266.50	4,064.7	-43.5	-360.3	-360.3	0.54	-0.32	
4,179.0	5.50	268.70	4,159.3	-43.9	-369.7	-369.7	0.48	-0.42	
4,273.0	7.10	264.80	4,252.7	-44.6	-380.0	-380.0	1.76	1.70	
4,368.0	6.80	263.80	4,347.0	-45.7	-391.5	-391.5	0.34	-0.32	
4,462.0	6.10	259.20	4,440.4	-47.2	-401.9	-401.9	0.93	-0.74	
4,557.0	5.60	255.20	4,534.9	-49.4	-411.3	-411.3	0.68	-0.53	
4,652.0	5.90	262.70	4,629.4	-51.2	-420.7	-420.7	0.85	0.32	
4,746.0	7.00	269.40	4,722.8	-51.8	-431.2	-431.2	1.42	1.17	
4,841.0	6.60	265.50	4,817.2	-52.3	-442.4	-442.4	0.64	-0.42	
4,936.0	5.60	263.40	4,911.6	-53.3	-452.5	-452.5	1.08	-1.05	
5,030.0	6.60	266.00	5,005.1	-54.2	-462.4	-462.4	1.10	1.06	
5,125.0	5.90	259.10	5,099.5	-55.5	-472.7	-472.7	1.08	-0.74	
5,219.0	6.00	270.40	5,193.0	-56.4	-482.3	-482.3	1.25	0.11	
5,314.0	6.90	263.40	5,287.4	-57.0	-492.9	-492.9	1.26	0.95	
5,408.0	6.10	259.30	5,380.8	-58.6	-503.5	-503.5	0.98	-0.85	
5,503.0	5.60	256.60	5,475.3	-60.6	-512.9	-512.9	0.60	-0.53	
5,598.0	6.30	269.40	5,569.8	-61.7	-522.7	-522.7	1.57	0.74	
5,693.0	5.50	261.50	5,664.3	-62.4	-532.4	-532.4	1.20	-0.84	
5,787.0	6.00	268.00	5,757.8	-63.3	-541.7	-541.7	0.87	0.53	
5,881.0	5.00	261.30	5,851.4	-64.1	-550.7	-550.7	1.26	-1.06	
5,976.0	5.30	269.40	5,946.0	-64.7	-559.2	-559.2	0.83	0.32	
6,070.0	4.70	267.30	6,039.7	-65.0	-567.4	-567.4	0.67	-0.64	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3E-19H-M368
Project:	DJ Wattenberg	TD Reference:	WELL @ 5029.0ft (Original Well Elev)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MD Reference:	WELL @ 5029.0ft (Original Well Elev)
Well:	Boyd 3E-19H-M368	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
6,117.0	4.50	263.10	6,086.5	-65.3	-571.1	-571.1	0.83	-0.43	
6,165.0	3.70	230.30	6,134.4	-66.5	-574.2	-574.2	5.08	-1.67	
6,212.0	3.30	190.50	6,181.3	-68.8	-575.6	-575.6	5.13	-0.85	
6,260.0	6.60	132.00	6,229.2	-72.0	-573.8	-573.8	11.72	6.87	
6,307.0	10.10	115.60	6,275.7	-75.6	-568.1	-568.1	8.94	7.45	
6,354.0	12.20	94.10	6,321.8	-77.7	-559.4	-559.4	9.83	4.47	
6,401.0	18.50	79.60	6,367.1	-76.7	-547.1	-547.1	15.60	13.40	
6,449.0	25.10	76.10	6,411.7	-72.9	-529.7	-529.7	14.01	13.75	
6,496.0	31.00	78.50	6,453.1	-68.1	-508.1	-508.1	12.78	12.55	
6,543.0	36.10	80.00	6,492.3	-63.3	-482.6	-482.6	10.99	10.85	
6,590.0	39.90	82.40	6,529.3	-58.9	-454.0	-454.0	8.67	8.09	
6,638.0	42.50	83.80	6,565.4	-55.1	-422.6	-422.6	5.75	5.42	
6,685.0	46.50	83.80	6,598.9	-51.5	-389.9	-389.9	8.51	8.51	
6,732.0	52.60	88.70	6,629.4	-49.3	-354.2	-354.2	15.20	12.98	
6,779.0	57.80	91.50	6,656.2	-49.4	-315.7	-315.7	12.10	11.06	
6,827.0	61.10	92.90	6,680.6	-51.0	-274.4	-274.4	7.32	6.87	
6,874.0	65.00	94.40	6,701.9	-53.6	-232.6	-232.6	8.77	8.30	
6,922.0	69.50	95.40	6,720.5	-57.4	-188.5	-188.5	9.57	9.37	
6,969.0	74.90	96.00	6,734.9	-61.9	-144.0	-144.0	11.55	11.49	
7,016.0	83.80	95.30	6,743.5	-66.4	-98.1	-98.1	18.99	18.94	
7,043.0	89.60	93.30	6,745.1	-68.4	-71.2	-71.2	22.72	21.48	
7,136.0	93.50	92.80	6,742.6	-73.4	21.6	21.6	4.23	4.19	
7,231.0	90.60	92.60	6,739.2	-77.8	116.5	116.5	3.06	-3.05	
7,325.0	88.40	92.00	6,740.0	-81.6	210.4	210.4	2.43	-2.34	
7,420.0	88.00	90.20	6,743.0	-83.4	305.3	305.3	1.94	-0.42	
7,514.0	87.20	89.30	6,746.9	-83.0	399.2	399.2	1.28	-0.85	
7,608.0	88.40	89.50	6,750.5	-82.0	493.1	493.1	1.29	1.28	
7,703.0	89.70	88.90	6,752.1	-80.7	588.1	588.1	1.51	1.37	
7,798.0	87.70	90.20	6,754.3	-80.0	683.1	683.1	2.51	-2.11	
7,892.0	88.60	90.30	6,757.3	-80.4	777.0	777.0	0.96	0.96	
7,987.0	88.00	90.70	6,760.1	-81.2	872.0	872.0	0.76	-0.63	
8,081.0	86.40	90.00	6,764.7	-81.8	965.9	965.9	1.86	-1.70	
8,176.0	85.50	89.90	6,771.4	-81.7	1,060.6	1,060.6	0.95	-0.95	
8,271.0	88.00	88.70	6,776.8	-80.5	1,155.5	1,155.5	2.92	2.63	
8,365.0	86.00	88.60	6,781.7	-78.3	1,249.3	1,249.3	2.13	-2.13	
8,460.0	87.20	89.10	6,787.4	-76.4	1,344.1	1,344.1	1.37	1.26	
8,555.0	89.90	90.20	6,789.8	-75.8	1,439.1	1,439.1	3.07	2.84	
8,649.0	91.10	91.00	6,788.9	-76.8	1,533.1	1,533.1	1.53	1.28	
8,744.0	90.00	90.90	6,788.0	-78.4	1,628.0	1,628.0	1.16	-1.16	
8,839.0	89.30	91.90	6,788.6	-80.7	1,723.0	1,723.0	1.28	-0.74	
8,933.0	90.30	93.10	6,788.9	-84.8	1,816.9	1,816.9	1.66	1.06	
9,028.0	89.00	91.80	6,789.5	-88.9	1,911.8	1,911.8	1.94	-1.37	
9,123.0	87.30	91.50	6,792.6	-91.6	2,006.7	2,006.7	1.82	-1.79	
9,218.0	85.80	90.20	6,798.3	-93.0	2,101.5	2,101.5	2.09	-1.58	
9,312.0	85.80	89.00	6,805.2	-92.4	2,195.3	2,195.3	1.27	0.00	
9,407.0	87.70	88.00	6,810.6	-89.9	2,290.1	2,290.1	2.26	2.00	
9,501.0	88.70	87.50	6,813.5	-86.2	2,384.0	2,384.0	1.19	1.06	
9,596.0	89.50	86.80	6,815.0	-81.5	2,478.8	2,478.8	1.12	0.84	
9,691.0	89.30	88.30	6,816.0	-77.4	2,573.7	2,573.7	1.59	-0.21	
9,785.0	88.90	88.60	6,817.5	-74.9	2,667.7	2,667.7	0.53	-0.43	
9,880.0	88.70	89.50	6,819.5	-73.3	2,762.7	2,762.7	0.97	-0.21	
9,975.0	89.60	91.40	6,820.9	-74.0	2,857.6	2,857.6	2.21	0.95	
10,069.0	88.80	90.20	6,822.2	-75.4	2,951.6	2,951.6	1.53	-0.85	

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3E-19H-M368
Project: DJ Wattenberg	TVD Reference: WELL @ 5029.0ft (Original Well Elev)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: WELL @ 5029.0ft (Original Well Elev)
Well: Boyd 3E-19H-M368	North Reference: True
Wellbore: Hz	Survey Calculation Method: Minimum Curvature
Design: FINAL	Database: USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
10,164.0	88.70	89.60	6,824.3	-75.2	3,046.6	3,046.6	0.64	-0.11	
10,258.0	88.20	89.10	6,826.8	-74.1	3,140.6	3,140.6	0.75	-0.53	
10,353.0	87.60	90.30	6,830.3	-73.6	3,235.5	3,235.5	1.41	-0.63	
10,448.0	90.10	90.20	6,832.2	-74.0	3,330.5	3,330.5	2.63	2.63	
10,542.0	91.30	89.80	6,831.0	-74.0	3,424.5	3,424.5	1.35	1.28	
10,637.0	87.50	89.70	6,832.0	-73.6	3,519.4	3,519.4	4.00	-4.00	
10,732.0	86.40	88.90	6,837.1	-72.5	3,614.3	3,614.3	1.43	-1.16	
10,826.0	87.10	88.10	6,842.4	-70.0	3,708.1	3,708.1	1.13	0.74	
10,920.0	88.10	88.40	6,846.4	-67.1	3,802.0	3,802.0	1.11	1.06	
11,015.0	89.00	90.10	6,848.8	-65.9	3,896.9	3,896.9	2.02	0.95	
11,110.0	89.10	89.40	6,850.3	-65.5	3,991.9	3,991.9	0.74	0.11	
11,177.0	89.10	88.80	6,851.4	-64.4	4,058.9	4,058.9	0.90	0.00	Last CES Survey @ 11,177' MD
11,227.0	89.10	88.80	6,852.2	-63.4	4,108.9	4,108.9	0.00	0.00	PTB @ 11,227'

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Boyd 3E-19H-M368 PBI - hit/miss target - Shape	0.00	0.00	6,858.7	-76.1	4,175.6	1,318,328.90	3,129,036.75	40.206280	-105.038030
- actual wellpath misses target center by 68.3ft at 11227.0ft MD (6852.2 TVD, -63.4 N, 4108.9 E)									
- Point									
Boyd 3E-19H-M368 PBI - hit/miss target - Shape	0.00	0.00	6,819.0	-76.1	4,175.6	1,318,328.90	3,129,036.75	40.206280	-105.038030
- actual wellpath misses target center by 75.6ft at 11227.0ft MD (6852.2 TVD, -63.4 N, 4108.9 E)									
- Point									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,177.0	6,851.4	-64.4	4,058.9	Last CES Survey @ 11,177' MD
11,227.0	6,852.2	-63.4	4,108.9	PTB @ 11,227'

Checked By: _____	Approved By: _____	Date: _____
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EnCana Oil & Gas (USA) Inc

DJ Wattenberg

S19-T3N-R68W (Bohrer/Boyd)

Boyd 3E-19H-M368

Hz

Design: FINAL

Survey Report - Geographic

13 July, 2014

Cathedral Energy Services

Survey Report - Geographic

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3E-19H-M368
Project: DJ Wattenberg	TVD Reference: WELL @ 5029.0ft (Original Well Elev)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: WELL @ 5029.0ft (Original Well Elev)
Well: Boyd 3E-19H-M368	North Reference: True
Wellbore: Hz	Survey Calculation Method: Minimum Curvature
Design: FINAL	Database: USA EDM 5000 Multi Users DB

Project DJ Wattenberg			
Map System: US State Plane 1983	System Datum: Mean Sea Level		
Geo Datum: North American Datum 1983			
Map Zone: Colorado Northern Zone			

Site S19-T3N-R68W (Bohrer/Boyd)			
Site Position:	Northing: 1,318,413.13 ft	Latitude: 40.206570	
From: Lat/Long	Easting: 3,124,860.64 ft	Longitude: -105.052980	
Position Uncertainty: 0.0 ft	Slot Radius: 13.200 in	Grid Convergence: 0.29 °	

Well Boyd 3E-19H-M368			
Well Position	+N/-S 0.0 ft	Northing: 1,318,383.99 ft	Latitude: 40.206490
	+E/-W 0.0 ft	Easting: 3,124,860.79 ft	Longitude: -105.052980
Position Uncertainty	0.0 ft	Wellhead Elevation: ft	Ground Level: 5,004.0 ft

Wellbore Hz					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/8/2014	8.59	66.74	52,675

Design FINAL					
Audit Notes:					
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.0			
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	90.00	

Survey Program		Date 7/13/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
141.0	11,227.0	Survey #1 (Hz)	Geolink MWD	Geolink MWD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	1,318,383.99	3,124,860.79	40.206490	-105.052980	
141.0	0.20	231.70	141.0	-0.2	-0.2	1,318,383.83	3,124,860.60	40.206490	-105.052981	
233.0	0.40	234.90	233.0	-0.4	-0.6	1,318,383.55	3,124,860.21	40.206489	-105.052982	
325.0	0.90	215.30	325.0	-1.2	-1.3	1,318,382.77	3,124,859.53	40.206487	-105.052985	
417.0	1.60	242.40	417.0	-2.4	-2.8	1,318,381.58	3,124,857.98	40.206483	-105.052990	
509.0	1.80	241.20	508.9	-3.7	-5.2	1,318,380.27	3,124,855.58	40.206480	-105.052999	
601.0	2.60	241.20	600.9	-5.4	-8.3	1,318,378.56	3,124,852.50	40.206475	-105.053010	
693.0	3.20	244.20	692.7	-7.5	-12.5	1,318,376.41	3,124,848.37	40.206469	-105.053025	
784.0	3.50	263.10	783.6	-9.0	-17.5	1,318,374.95	3,124,843.33	40.206465	-105.053043	
809.0	3.60	259.70	808.5	-9.2	-19.0	1,318,374.71	3,124,841.80	40.206465	-105.053048	
914.0	3.70	260.10	913.3	-10.4	-25.6	1,318,373.50	3,124,835.23	40.206462	-105.053072	
1,006.0	3.60	258.20	1,005.1	-11.5	-31.4	1,318,372.37	3,124,829.48	40.206459	-105.053093	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3E-19H-M368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5029.0ft (Original Well Elev)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MD Reference:	WELL @ 5029.0ft (Original Well Elev)
Well:	Boyd 3E-19H-M368	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
1,098.0	4.70	264.00	1,096.9	-12.4	-37.9	1,318,371.36	3,124,822.91	40.206456	-105.053116	
1,190.0	6.20	261.10	1,188.5	-13.6	-46.6	1,318,370.15	3,124,814.26	40.206453	-105.053147	
1,282.0	6.30	254.40	1,279.9	-15.7	-56.4	1,318,367.97	3,124,804.50	40.206447	-105.053182	
1,374.0	7.10	265.10	1,371.3	-17.6	-66.9	1,318,366.08	3,124,793.98	40.206442	-105.053220	
1,465.0	7.10	276.70	1,461.6	-17.4	-78.1	1,318,366.20	3,124,782.79	40.206442	-105.053260	
1,557.0	7.30	268.00	1,552.9	-16.9	-89.6	1,318,366.60	3,124,771.30	40.206444	-105.053301	
1,649.0	7.60	262.20	1,644.1	-18.0	-101.4	1,318,365.51	3,124,759.44	40.206441	-105.053343	
1,740.0	6.90	281.60	1,734.4	-17.7	-112.8	1,318,365.73	3,124,748.12	40.206442	-105.053384	
1,832.0	6.80	283.50	1,825.7	-15.3	-123.5	1,318,368.06	3,124,737.40	40.206448	-105.053422	
1,924.0	6.80	277.30	1,917.1	-13.3	-134.2	1,318,369.97	3,124,726.69	40.206453	-105.053461	
2,016.0	5.90	265.70	2,008.5	-13.0	-144.3	1,318,370.26	3,124,716.57	40.206454	-105.053497	
2,107.0	5.60	262.70	2,099.1	-13.9	-153.4	1,318,369.30	3,124,707.50	40.206452	-105.053529	
2,199.0	5.80	262.90	2,190.6	-15.1	-162.4	1,318,368.11	3,124,698.45	40.206449	-105.053562	
2,291.0	5.40	257.80	2,282.2	-16.5	-171.3	1,318,366.57	3,124,689.61	40.206445	-105.053593	
2,383.0	5.10	255.30	2,373.8	-18.5	-179.5	1,318,364.58	3,124,681.43	40.206439	-105.053623	
2,477.0	7.30	260.30	2,467.2	-20.6	-189.4	1,318,362.46	3,124,671.51	40.206434	-105.053658	
2,572.0	7.00	255.20	2,561.5	-23.1	-200.9	1,318,359.91	3,124,659.98	40.206427	-105.053700	
2,666.0	6.90	268.90	2,654.8	-24.6	-212.1	1,318,358.28	3,124,648.80	40.206422	-105.053740	
2,761.0	7.30	261.60	2,749.1	-25.6	-223.8	1,318,357.23	3,124,637.13	40.206420	-105.053781	
2,855.0	7.10	257.10	2,842.4	-27.8	-235.4	1,318,355.00	3,124,625.57	40.206414	-105.053823	
2,949.0	7.30	255.40	2,935.6	-30.6	-246.8	1,318,352.14	3,124,614.15	40.206406	-105.053864	
3,044.0	6.30	268.50	3,030.0	-32.3	-257.9	1,318,350.43	3,124,603.10	40.206402	-105.053903	
3,139.0	6.50	262.40	3,124.4	-33.1	-268.4	1,318,349.53	3,124,592.57	40.206399	-105.053941	
3,233.0	6.40	260.00	3,217.8	-34.7	-278.8	1,318,347.86	3,124,582.14	40.206395	-105.053979	
3,328.0	6.50	257.80	3,312.2	-36.8	-289.3	1,318,345.76	3,124,571.68	40.206389	-105.054016	
3,422.0	6.20	273.40	3,405.6	-37.6	-299.6	1,318,344.88	3,124,561.42	40.206387	-105.054053	
3,517.0	4.70	263.10	3,500.2	-37.8	-308.5	1,318,344.67	3,124,552.43	40.206386	-105.054085	
3,611.0	4.40	259.10	3,593.9	-38.9	-315.9	1,318,343.49	3,124,545.07	40.206383	-105.054111	
3,706.0	5.20	263.80	3,688.5	-40.1	-323.8	1,318,342.30	3,124,537.22	40.206380	-105.054139	
3,801.0	5.40	262.20	3,783.1	-41.1	-332.5	1,318,341.18	3,124,528.52	40.206377	-105.054171	
3,895.0	5.20	259.30	3,876.7	-42.5	-341.0	1,318,339.75	3,124,519.96	40.206373	-105.054201	
3,989.0	6.20	270.50	3,970.3	-43.3	-350.3	1,318,338.95	3,124,510.70	40.206371	-105.054234	
4,084.0	5.90	266.50	4,064.7	-43.5	-360.3	1,318,338.65	3,124,500.70	40.206371	-105.054270	
4,179.0	5.50	268.70	4,159.3	-43.9	-369.7	1,318,338.20	3,124,491.27	40.206369	-105.054304	
4,273.0	7.10	264.80	4,252.7	-44.6	-380.0	1,318,337.52	3,124,480.99	40.206368	-105.054341	
4,368.0	6.80	263.80	4,347.0	-45.7	-391.5	1,318,336.32	3,124,469.56	40.206365	-105.054382	
4,462.0	6.10	259.20	4,440.4	-47.2	-401.9	1,318,334.73	3,124,459.13	40.206360	-105.054419	
4,557.0	5.60	255.20	4,534.9	-49.4	-411.3	1,318,332.56	3,124,449.70	40.206355	-105.054453	
4,652.0	5.90	262.70	4,629.4	-51.2	-420.7	1,318,330.70	3,124,440.38	40.206350	-105.054486	
4,746.0	7.00	269.40	4,722.8	-51.8	-431.2	1,318,329.98	3,124,429.86	40.206348	-105.054524	
4,841.0	6.60	265.50	4,817.2	-52.3	-442.4	1,318,329.43	3,124,418.64	40.206346	-105.054564	
4,936.0	5.60	263.40	4,911.6	-53.3	-452.5	1,318,328.42	3,124,408.59	40.206344	-105.054600	
5,030.0	6.60	266.00	5,005.1	-54.2	-462.4	1,318,327.47	3,124,398.65	40.206341	-105.054636	
5,125.0	5.90	259.10	5,099.5	-55.5	-472.7	1,318,326.11	3,124,388.42	40.206338	-105.054673	
5,219.0	6.00	270.40	5,193.0	-56.4	-482.3	1,318,325.18	3,124,378.77	40.206335	-105.054707	
5,314.0	6.90	263.40	5,287.4	-57.0	-492.9	1,318,324.51	3,124,368.14	40.206334	-105.054745	
5,408.0	6.10	259.30	5,380.8	-58.6	-503.5	1,318,322.88	3,124,357.63	40.206329	-105.054783	
5,503.0	5.60	256.60	5,475.3	-60.6	-512.9	1,318,320.82	3,124,348.17	40.206324	-105.054817	
5,598.0	6.30	269.40	5,569.8	-61.7	-522.7	1,318,319.64	3,124,338.45	40.206321	-105.054852	
5,693.0	5.50	261.50	5,664.3	-62.4	-532.4	1,318,318.86	3,124,328.74	40.206319	-105.054886	
5,787.0	6.00	268.00	5,757.8	-63.3	-541.7	1,318,317.98	3,124,319.38	40.206316	-105.054920	
5,881.0	5.00	261.30	5,851.4	-64.1	-550.7	1,318,317.14	3,124,310.42	40.206314	-105.054952	
5,976.0	5.30	269.40	5,946.0	-64.7	-559.2	1,318,316.43	3,124,301.95	40.206312	-105.054982	
6,070.0	4.70	267.30	6,039.7	-65.0	-567.4	1,318,316.16	3,124,293.76	40.206312	-105.055012	
6,117.0	4.50	263.10	6,086.5	-65.3	-571.1	1,318,315.83	3,124,290.01	40.206311	-105.055025	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3E-19H-M368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5029.0ft (Original Well Elev)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MD Reference:	WELL @ 5029.0ft (Original Well Elev)
Well:	Boyd 3E-19H-M368	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
6,165.0	3.70	230.30	6,134.4	-66.5	-574.2	1,318,314.60	3,124,286.95	40.206308	-105.055036	
6,212.0	3.30	190.50	6,181.3	-68.8	-575.6	1,318,312.29	3,124,285.55	40.206301	-105.055041	
6,260.0	6.60	132.00	6,229.2	-72.0	-573.8	1,318,309.09	3,124,287.37	40.206292	-105.055035	
6,307.0	10.10	115.60	6,275.7	-75.6	-568.1	1,318,305.53	3,124,293.11	40.206283	-105.055014	
6,354.0	12.20	94.10	6,321.8	-77.7	-559.4	1,318,303.44	3,124,301.80	40.206277	-105.054983	
6,401.0	18.50	79.60	6,367.1	-76.7	-547.1	1,318,304.50	3,124,314.10	40.206279	-105.054939	
6,449.0	25.10	76.10	6,411.7	-72.9	-529.7	1,318,308.41	3,124,331.47	40.206290	-105.054877	
6,496.0	31.00	78.50	6,453.1	-68.1	-508.1	1,318,313.33	3,124,353.00	40.206303	-105.054800	
6,543.0	36.10	80.00	6,492.3	-63.3	-482.6	1,318,318.28	3,124,378.49	40.206316	-105.054708	
6,590.0	39.90	82.40	6,529.3	-58.9	-454.0	1,318,322.82	3,124,407.06	40.206328	-105.054606	
6,638.0	42.50	83.80	6,565.4	-55.1	-422.6	1,318,326.77	3,124,438.42	40.206339	-105.054493	
6,685.0	46.50	83.80	6,598.9	-51.5	-389.9	1,318,330.49	3,124,471.15	40.206349	-105.054376	
6,732.0	52.60	88.70	6,629.4	-49.3	-354.2	1,318,332.94	3,124,506.79	40.206355	-105.054249	
6,779.0	57.80	91.50	6,656.2	-49.4	-315.7	1,318,333.03	3,124,545.37	40.206355	-105.054110	
6,827.0	61.10	92.90	6,680.6	-51.0	-274.4	1,318,331.65	3,124,586.67	40.206350	-105.053963	
6,874.0	65.00	94.40	6,701.9	-53.6	-232.6	1,318,329.18	3,124,628.49	40.206343	-105.053813	
6,922.0	69.50	95.40	6,720.5	-57.4	-188.5	1,318,325.62	3,124,672.60	40.206332	-105.053655	
6,969.0	74.90	96.00	6,734.9	-61.9	-144.0	1,318,321.40	3,124,717.13	40.206320	-105.053496	
7,016.0	83.80	95.30	6,743.5	-66.4	-98.1	1,318,317.09	3,124,763.07	40.206308	-105.053331	
7,043.0	89.60	93.30	6,745.1	-68.4	-71.2	1,318,315.21	3,124,789.95	40.206302	-105.053235	
7,136.0	93.50	92.80	6,742.6	-73.4	21.6	1,318,310.73	3,124,882.79	40.206289	-105.052903	
7,231.0	90.60	92.60	6,739.2	-77.8	116.5	1,318,306.73	3,124,977.63	40.206276	-105.052563	
7,325.0	88.40	92.00	6,740.0	-81.6	210.4	1,318,303.44	3,125,071.57	40.206266	-105.052227	
7,420.0	88.00	90.20	6,743.0	-83.4	305.3	1,318,302.09	3,125,166.51	40.206261	-105.051887	
7,514.0	87.20	89.30	6,746.9	-83.0	399.2	1,318,302.97	3,125,260.42	40.206262	-105.051551	
7,608.0	88.40	89.50	6,750.5	-82.0	493.1	1,318,304.43	3,125,354.34	40.206265	-105.051215	
7,703.0	89.70	88.90	6,752.1	-80.7	588.1	1,318,306.24	3,125,449.30	40.206268	-105.050875	
7,798.0	87.70	90.20	6,754.3	-80.0	683.1	1,318,307.46	3,125,544.26	40.206271	-105.050535	
7,892.0	88.60	90.30	6,757.3	-80.4	777.0	1,318,307.53	3,125,638.21	40.206269	-105.050198	
7,987.0	88.00	90.70	6,760.1	-81.2	872.0	1,318,307.18	3,125,733.17	40.206267	-105.049858	
8,081.0	86.40	90.00	6,764.7	-81.8	965.9	1,318,307.07	3,125,827.06	40.206266	-105.049522	
8,176.0	85.50	89.90	6,771.4	-81.7	1,060.6	1,318,307.63	3,125,921.82	40.206266	-105.049183	
8,271.0	88.00	88.70	6,776.8	-80.5	1,155.5	1,318,309.27	3,126,016.64	40.206269	-105.048843	
8,365.0	86.00	88.60	6,781.7	-78.3	1,249.3	1,318,311.96	3,126,110.47	40.206275	-105.048507	
8,460.0	87.20	89.10	6,787.4	-76.4	1,344.1	1,318,314.34	3,126,205.27	40.206280	-105.048168	
8,555.0	89.90	90.20	6,789.8	-75.8	1,439.1	1,318,315.40	3,126,300.22	40.206282	-105.047828	
8,649.0	91.10	91.00	6,788.9	-76.8	1,533.1	1,318,314.89	3,126,394.21	40.206279	-105.047491	
8,744.0	90.00	90.90	6,788.0	-78.4	1,628.0	1,318,313.79	3,126,489.20	40.206275	-105.047151	
8,839.0	89.30	91.90	6,788.6	-80.7	1,723.0	1,318,311.95	3,126,584.18	40.206268	-105.046811	
8,933.0	90.30	93.10	6,788.9	-84.8	1,816.9	1,318,308.32	3,126,678.11	40.206257	-105.046475	
9,028.0	89.00	91.80	6,789.5	-88.9	1,911.8	1,318,304.74	3,126,773.03	40.206246	-105.046135	
9,123.0	87.30	91.50	6,792.6	-91.6	2,006.7	1,318,302.48	3,126,867.95	40.206238	-105.045796	
9,218.0	85.80	90.20	6,798.3	-93.0	2,101.5	1,318,301.55	3,126,962.77	40.206234	-105.045456	
9,312.0	85.80	89.00	6,805.2	-92.4	2,195.3	1,318,302.68	3,127,056.51	40.206236	-105.045121	
9,407.0	87.70	88.00	6,810.6	-89.9	2,290.1	1,318,305.64	3,127,151.31	40.206243	-105.044781	
9,501.0	88.70	87.50	6,813.5	-86.2	2,384.0	1,318,309.80	3,127,245.17	40.206253	-105.044445	
9,596.0	89.50	86.80	6,815.0	-81.5	2,478.8	1,318,315.00	3,127,340.01	40.206266	-105.044105	
9,691.0	89.30	88.30	6,816.0	-77.4	2,573.7	1,318,319.54	3,127,434.89	40.206277	-105.043765	
9,785.0	88.90	88.60	6,817.5	-74.9	2,667.7	1,318,322.56	3,127,528.83	40.206284	-105.043429	
9,880.0	88.70	89.50	6,819.5	-73.3	2,762.7	1,318,324.61	3,127,623.79	40.206288	-105.043089	
9,975.0	89.60	91.40	6,820.9	-74.0	2,857.6	1,318,324.35	3,127,718.77	40.206286	-105.042749	
10,069.0	88.80	90.20	6,822.2	-75.4	2,951.6	1,318,323.51	3,127,812.76	40.206283	-105.042413	
10,164.0	88.70	89.60	6,824.3	-75.2	3,046.6	1,318,324.15	3,127,907.73	40.206283	-105.042073	
10,258.0	88.20	89.10	6,826.8	-74.1	3,140.6	1,318,325.69	3,128,001.69	40.206286	-105.041736	
10,353.0	87.60	90.30	6,830.3	-73.6	3,235.5	1,318,326.67	3,128,096.61	40.206287	-105.041396	

Cathedral Energy Services

Survey Report - Geographic

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3E-19H-M368
Project: DJ Wattenberg	TVD Reference: WELL @ 5029.0ft (Original Well Elev)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: WELL @ 5029.0ft (Original Well Elev)
Well: Boyd 3E-19H-M368	North Reference: True
Wellbore: Hz	Survey Calculation Method: Minimum Curvature
Design: FINAL	Database: USA EDM 5000 Multi Users DB

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
10,448.0	90.10	90.20	6,832.2	-74.0	3,330.5	1,318,326.73	3,128,191.59	40.206286	-105.041056	
10,542.0	91.30	89.80	6,831.0	-74.0	3,424.5	1,318,327.21	3,128,285.58	40.206286	-105.040720	
10,637.0	87.50	89.70	6,832.0	-73.6	3,519.4	1,318,328.10	3,128,380.55	40.206287	-105.040380	
10,732.0	86.40	88.90	6,837.1	-72.5	3,614.3	1,318,329.74	3,128,475.40	40.206290	-105.040040	
10,826.0	87.10	88.10	6,842.4	-70.0	3,708.1	1,318,332.67	3,128,569.20	40.206297	-105.039704	
10,920.0	88.10	88.40	6,846.4	-67.1	3,802.0	1,318,336.01	3,128,663.06	40.206305	-105.039368	
11,015.0	89.00	90.10	6,848.8	-65.9	3,896.9	1,318,337.73	3,128,758.01	40.206308	-105.039028	
11,110.0	89.10	89.40	6,850.3	-65.5	3,991.9	1,318,338.62	3,128,852.99	40.206309	-105.038688	
11,177.0	89.10	88.80	6,851.4	-64.4	4,058.9	1,318,340.01	3,128,919.97	40.206312	-105.038448	
Last CES Survey @ 11,177' MD										
11,227.0	89.10	88.80	6,852.2	-63.4	4,108.9	1,318,341.31	3,128,969.94	40.206315	-105.038269	
PTB @ 11,227'										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
Boyd 3E-19H-M368 PBI	0.00	0.00	6,858.7	-76.1	4,175.6	1,318,328.90	3,129,036.75	40.206280	-105.038030	
- hit/miss target										
- Shape										
- actual wellpath misses target center by 68.3ft at 11227.0ft MD (6852.2 TVD, -63.4 N, 4108.9 E)										
- Point										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,177.0	6,851.4	-64.4	4,058.9	Last CES Survey @ 11,177' MD	
11,227.0	6,852.2	-63.4	4,108.9	PTB @ 11,227'	

Checked By: _____ Approved By: _____ Date: _____