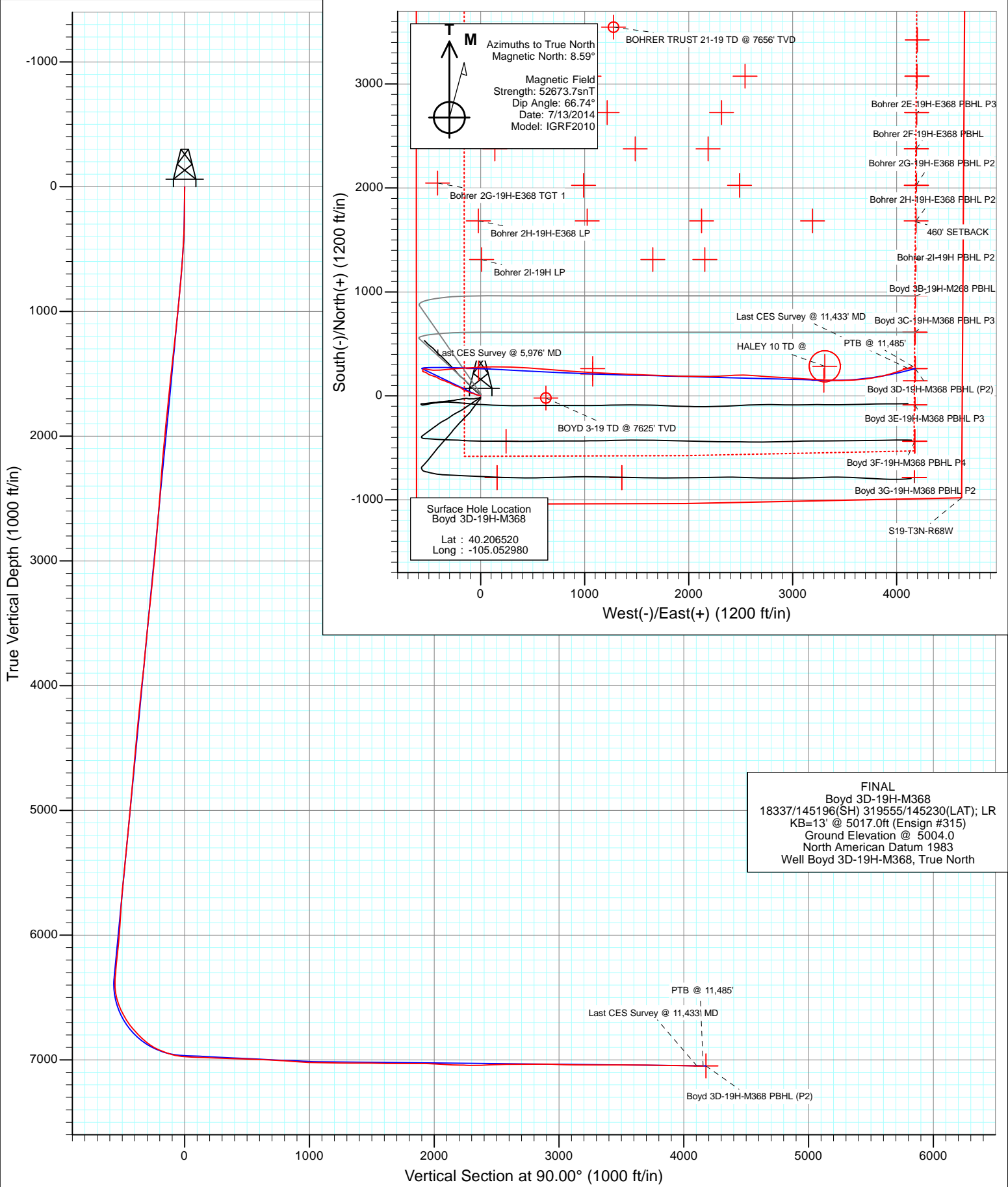


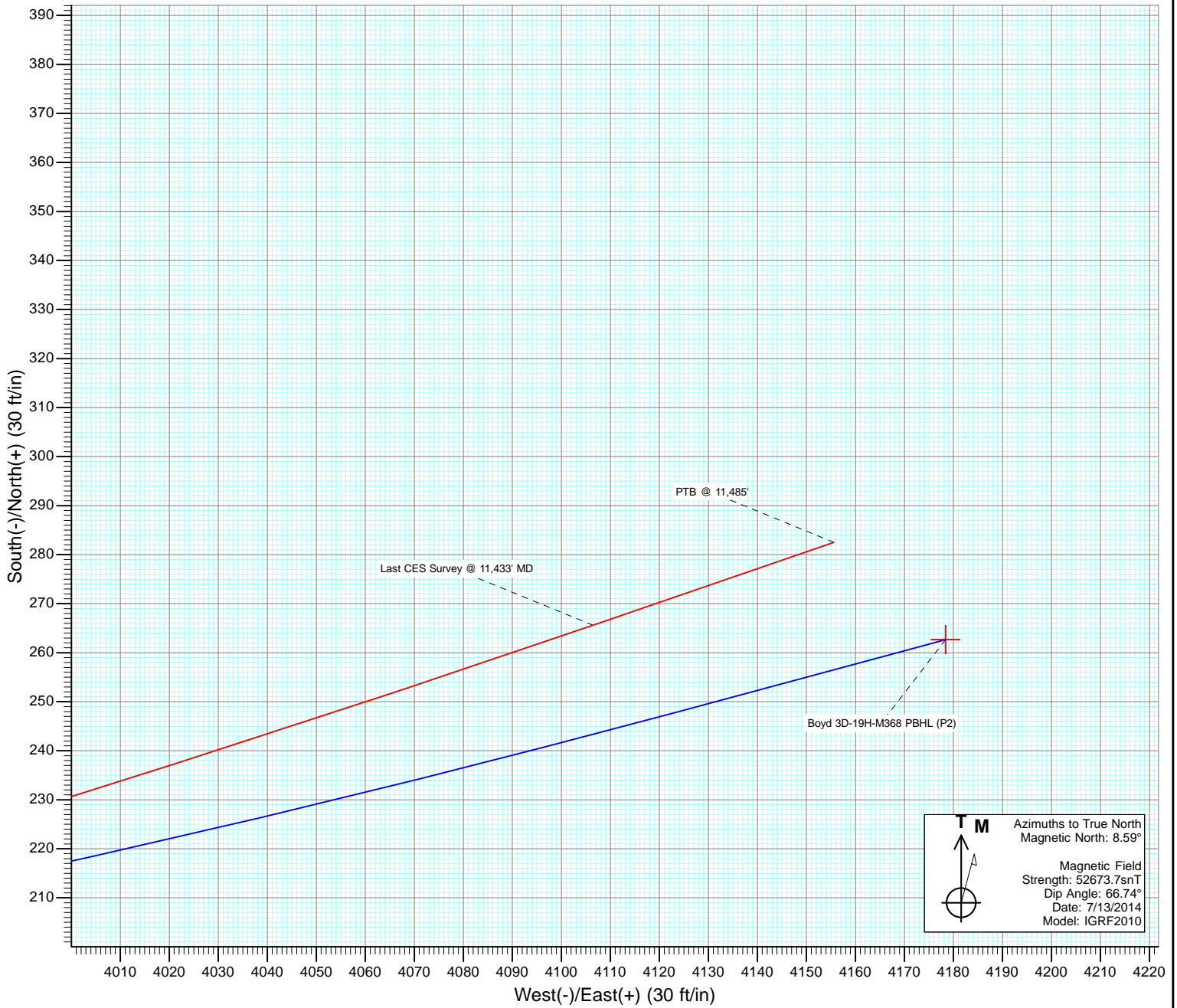


Project: DJ Wattenberg
 Site: S19-T3N-R68W (Bohrer/Boyd)
 Well: Boyd 3D-19H-M368
 Wellbore: Hz
 Design: FINAL

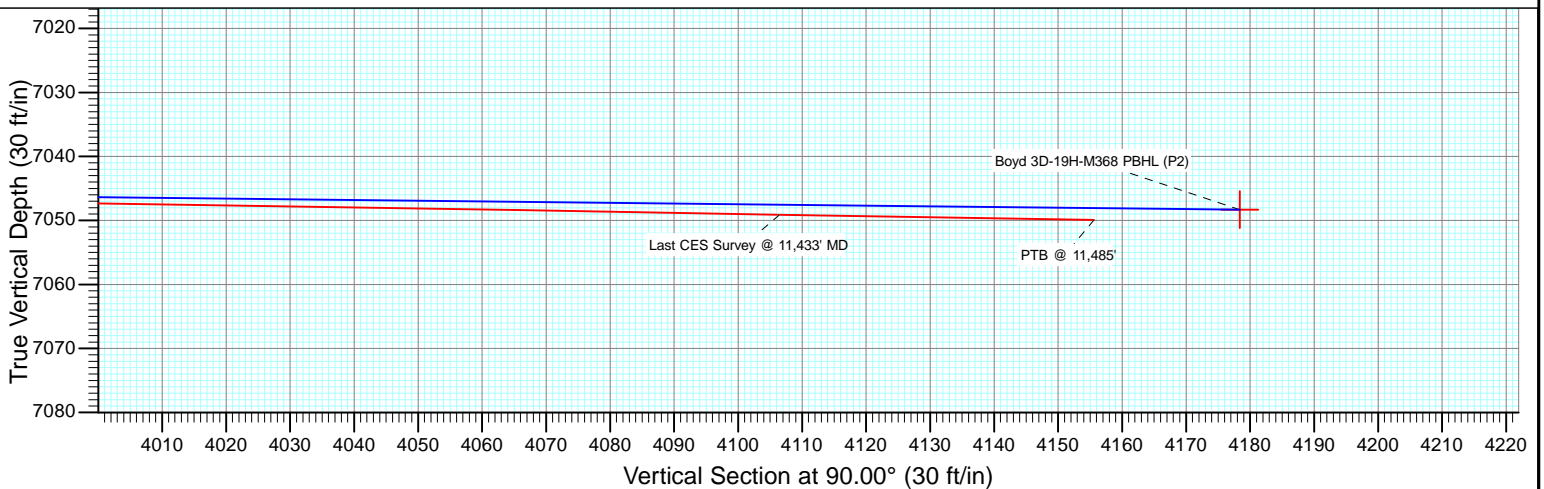




Project: DJ Wattenberg
Site: S19-T3N-R68W (Bohrer/Boyd)
Well: Boyd 3D-19H-M368
Wellbore: Hz
Design: FINAL



T M
Azimuths to True North
Magnetic North: 8.59°
Magnetic Field
Strength: 52673.7snT
Dip Angle: 66.74°
Date: 7/13/2014
Model: IGRF2010



Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3D-19H-M368
Project: DJ Wattenberg	TVD Reference: KB=13' @ 5017.0ft (Ensign #315)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: KB=13' @ 5017.0ft (Ensign #315)
Well: Boyd 3D-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 3D-19H-M368				
Well Position	+N/-S	0.0 ft	Northing:	1,318,394.91 ft
	+E/-W	0.0 ft	Easting:	3,124,860.73 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	7/13/2014	8.59	66.74	52,674

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 7/28/2014
From (ft)	To (ft)	Survey (Wellbore)
141.0	11,485.0	Survey #1 (Hz)
		Tool Name Geolink MWD
		Description Geolink MWD

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	0.50	267.60	141.0	0.0	-0.6	-0.6	0.35	0.35	
233.0	0.90	279.90	233.0	0.1	-1.7	-1.7	0.46	0.43	
325.0	1.90	288.30	325.0	0.7	-3.9	-3.9	1.11	1.09	
417.0	2.60	288.80	416.9	1.8	-7.3	-7.3	0.76	0.76	
509.0	3.40	287.00	508.8	3.3	-11.9	-11.9	0.88	0.87	
601.0	4.50	284.30	600.5	5.0	-18.0	-18.0	1.21	1.20	
693.0	5.00	282.90	692.2	6.8	-25.4	-25.4	0.56	0.54	
784.0	5.40	284.40	782.9	8.7	-33.4	-33.4	0.46	0.44	
813.0	5.50	289.10	811.7	9.5	-36.1	-36.1	1.58	0.34	
919.0	5.20	293.40	917.3	13.1	-45.3	-45.3	0.47	-0.28	
1,011.0	6.90	291.90	1,008.7	16.8	-54.2	-54.2	1.86	1.85	
1,103.0	6.70	287.90	1,100.1	20.5	-64.5	-64.5	0.56	-0.22	

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3D-19H-M368
Project: DJ Wattenberg	TD Reference: KB=13' @ 5017.0ft (Ensign #315)
Site: S19-T3N-R68W (Bohrer/Boyd)	MVD Reference: KB=13' @ 5017.0ft (Ensign #315)
Well: Boyd 3D-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
1,195.0	6.50	284.00	1,191.5	23.4	-74.6	-74.6	0.53	-0.22	
1,286.0	6.40	278.80	1,281.9	25.5	-84.6	-84.6	0.65	-0.11	
1,378.0	6.70	294.10	1,373.3	28.4	-94.6	-94.6	1.92	0.33	
1,466.0	6.50	288.70	1,460.7	32.1	-104.0	-104.0	0.74	-0.23	
1,558.0	6.00	300.40	1,552.2	36.2	-113.1	-113.1	1.48	-0.54	
1,650.0	6.50	294.00	1,643.6	40.8	-122.0	-122.0	0.93	0.54	
1,742.0	6.20	286.20	1,735.1	44.3	-131.5	-131.5	0.99	-0.33	
1,833.0	6.10	289.50	1,825.6	47.3	-140.8	-140.8	0.40	-0.11	
1,925.0	6.00	285.40	1,917.1	50.2	-150.0	-150.0	0.48	-0.11	
2,017.0	6.20	305.80	2,008.5	54.4	-158.7	-158.7	2.35	0.22	
2,109.0	6.40	301.60	2,100.0	60.0	-167.1	-167.1	0.55	0.22	
2,200.0	6.60	301.10	2,190.4	65.3	-175.9	-175.9	0.23	0.22	
2,292.0	4.70	308.80	2,282.0	70.4	-183.4	-183.4	2.22	-2.07	
2,384.0	5.20	305.90	2,373.6	75.2	-189.7	-189.7	0.61	0.54	
2,478.0	5.00	297.50	2,467.2	79.6	-196.8	-196.8	0.82	-0.21	
2,573.0	4.90	293.40	2,561.9	83.1	-204.1	-204.1	0.39	-0.11	
2,668.0	4.90	286.30	2,656.5	85.9	-211.8	-211.8	0.64	0.00	
2,762.0	5.20	288.50	2,750.2	88.4	-219.7	-219.7	0.38	0.32	
2,856.0	5.40	291.50	2,843.8	91.3	-227.8	-227.8	0.36	0.21	
2,951.0	6.00	293.80	2,938.3	95.0	-236.5	-236.5	0.68	0.63	
3,046.0	5.70	289.90	3,032.8	98.6	-245.5	-245.5	0.52	-0.32	
3,140.0	6.10	295.00	3,126.3	102.3	-254.4	-254.4	0.70	0.43	
3,235.0	6.20	292.50	3,220.8	106.4	-263.7	-263.7	0.30	0.11	
3,329.0	7.20	301.70	3,314.1	111.4	-273.4	-273.4	1.56	1.06	
3,423.0	6.90	296.80	3,407.4	117.1	-283.5	-283.5	0.71	-0.32	
3,518.0	6.40	293.40	3,501.8	121.7	-293.4	-293.4	0.67	-0.53	
3,613.0	5.80	288.30	3,596.2	125.3	-302.8	-302.8	0.85	-0.63	
3,707.0	5.80	294.80	3,689.8	128.8	-311.7	-311.7	0.70	0.00	
3,802.0	5.50	291.60	3,784.3	132.5	-320.3	-320.3	0.46	-0.32	
3,896.0	6.80	295.50	3,877.7	136.6	-329.5	-329.5	1.45	1.38	
3,991.0	6.70	292.20	3,972.1	141.1	-339.7	-339.7	0.42	-0.11	
4,085.0	6.40	288.50	4,065.5	144.8	-349.7	-349.7	0.55	-0.32	
4,180.0	6.50	289.80	4,159.9	148.3	-359.8	-359.8	0.19	0.11	
4,274.0	6.30	287.70	4,253.3	151.7	-369.7	-369.7	0.33	-0.21	
4,369.0	5.80	292.80	4,347.8	155.1	-379.1	-379.1	0.77	-0.53	
4,464.0	5.40	295.20	4,442.3	158.9	-387.6	-387.6	0.49	-0.42	
4,559.0	4.80	290.70	4,536.9	162.2	-395.3	-395.3	0.76	-0.63	
4,653.0	5.80	303.60	4,630.5	166.2	-403.0	-403.0	1.65	1.06	
4,748.0	6.50	303.00	4,725.0	171.8	-411.5	-411.5	0.74	0.74	
4,842.0	5.90	298.10	4,818.4	177.0	-420.2	-420.2	0.85	-0.64	
4,937.0	5.40	292.60	4,913.0	181.0	-428.6	-428.6	0.78	-0.53	
5,031.0	5.50	286.80	5,006.6	184.0	-437.0	-437.0	0.60	0.11	
5,126.0	4.80	277.60	5,101.2	185.8	-445.3	-445.3	1.14	-0.74	
5,220.0	6.90	295.60	5,194.7	188.8	-454.3	-454.3	2.94	2.23	
5,315.0	6.30	289.30	5,289.1	193.0	-464.4	-464.4	0.99	-0.63	
5,409.0	5.80	287.40	5,382.5	196.1	-473.8	-473.8	0.57	-0.53	
5,504.0	5.40	286.70	5,477.1	198.8	-482.7	-482.7	0.43	-0.42	
5,599.0	6.20	297.20	5,571.6	202.5	-491.5	-491.5	1.40	0.84	
5,694.0	5.50	290.30	5,666.1	206.4	-500.3	-500.3	1.04	-0.74	
5,788.0	5.10	307.90	5,759.7	210.5	-507.9	-507.9	1.77	-0.43	
5,883.0	4.80	313.60	5,854.3	215.9	-514.1	-514.1	0.61	-0.32	
5,977.0	4.30	300.20	5,948.1	220.3	-520.0	-520.0	1.25	-0.53	
6,072.0	6.00	298.10	6,042.7	224.5	-527.4	-527.4	1.80	1.79	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3D-19H-M368
Project:	DJ Wattenberg	TVD Reference:	KB=13' @ 5017.0ft (Ensign #315)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MVD Reference:	KB=13' @ 5017.0ft (Ensign #315)
Well:	Boyd 3D-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
6,166.0	6.50	287.50	6,136.1	228.4	-536.8	-536.8	1.34	0.53	
6,261.0	5.60	278.60	6,230.6	230.7	-546.5	-546.5	1.37	-0.95	
6,308.0	5.10	281.20	6,277.4	231.4	-550.9	-550.9	1.18	-1.06	
6,356.0	5.50	299.90	6,325.2	233.0	-554.9	-554.9	3.68	0.83	
6,403.0	9.30	345.70	6,371.8	237.8	-557.8	-557.8	14.32	8.09	
6,450.0	12.00	15.80	6,418.0	246.2	-557.5	-557.5	12.95	5.74	
6,497.0	12.40	41.50	6,464.0	254.7	-552.8	-552.8	11.49	0.85	
6,545.0	16.00	77.80	6,510.6	260.0	-542.9	-542.9	19.61	7.50	
6,592.0	21.20	102.10	6,555.2	259.5	-528.2	-528.2	19.64	11.06	
6,639.0	25.30	104.90	6,598.4	255.2	-510.2	-510.2	9.03	8.72	
6,686.0	28.80	101.10	6,640.2	250.4	-489.4	-489.4	8.30	7.45	
6,734.0	31.70	95.80	6,681.7	246.9	-465.5	-465.5	8.21	6.04	
6,781.0	36.70	90.50	6,720.6	245.5	-439.1	-439.1	12.37	10.64	
6,828.0	41.50	85.70	6,757.1	246.6	-409.5	-409.5	12.07	10.21	
6,875.0	43.90	85.40	6,791.6	249.1	-377.7	-377.7	5.12	5.11	
6,923.0	46.30	84.40	6,825.5	252.1	-343.9	-343.9	5.21	5.00	
6,970.0	51.50	83.40	6,856.4	255.9	-308.7	-308.7	11.18	11.06	
7,018.0	56.20	85.10	6,884.7	259.7	-270.1	-270.1	10.20	9.79	
7,065.0	63.40	87.50	6,908.3	262.3	-229.6	-229.6	15.94	15.32	
7,112.0	67.80	86.40	6,927.7	264.6	-186.9	-186.9	9.60	9.36	
7,159.0	70.40	86.30	6,944.5	267.4	-143.1	-143.1	5.54	5.53	
7,206.0	75.00	86.40	6,958.4	270.3	-98.3	-98.3	9.79	9.79	
7,253.0	80.40	87.30	6,968.5	272.8	-52.5	-52.5	11.64	11.49	
7,272.0	82.70	87.60	6,971.2	273.6	-33.7	-33.7	12.21	12.11	
7,323.0	86.70	86.60	6,976.0	276.2	17.0	17.0	8.08	7.84	
7,417.0	88.30	90.10	6,980.1	278.9	110.9	110.9	4.09	1.70	
7,511.0	87.30	90.70	6,983.7	278.2	204.8	204.8	1.24	-1.06	
7,606.0	88.00	91.60	6,987.6	276.3	299.7	299.7	1.20	0.74	
7,700.0	88.20	93.50	6,990.7	272.1	393.6	393.6	2.03	0.21	
7,795.0	88.00	93.80	6,993.8	266.1	488.3	488.3	0.38	-0.21	
7,889.0	88.40	94.30	6,996.8	259.5	582.0	582.0	0.68	0.43	
7,984.0	86.40	94.50	7,001.1	252.2	676.6	676.6	2.12	-2.11	
8,079.0	87.50	94.90	7,006.1	244.4	771.2	771.2	1.23	1.16	
8,173.0	84.70	93.70	7,012.5	237.4	864.7	864.7	3.24	-2.98	
8,268.0	87.20	94.00	7,019.2	231.0	959.2	959.2	2.65	2.63	
8,363.0	89.30	93.50	7,022.2	224.8	1,054.0	1,054.0	2.27	2.21	
8,457.0	88.90	92.70	7,023.6	219.7	1,147.8	1,147.8	0.95	-0.43	
8,552.0	88.90	92.30	7,025.5	215.6	1,242.7	1,242.7	0.42	0.00	
8,647.0	89.60	92.30	7,026.7	211.8	1,337.6	1,337.6	0.74	0.74	
8,741.0	90.40	92.70	7,026.7	207.7	1,431.6	1,431.6	0.95	0.85	
8,836.0	88.80	92.10	7,027.4	203.7	1,526.5	1,526.5	1.80	-1.68	
8,931.0	90.10	92.50	7,028.3	199.9	1,621.4	1,621.4	1.43	1.37	
9,025.0	89.00	92.60	7,029.0	195.7	1,715.3	1,715.3	1.18	-1.17	
9,120.0	90.20	91.00	7,029.7	192.7	1,810.2	1,810.2	2.11	1.26	
9,215.0	89.80	91.40	7,029.7	190.7	1,905.2	1,905.2	0.60	-0.42	
9,310.0	86.40	90.60	7,032.8	189.1	2,000.1	2,000.1	3.68	-3.58	
9,404.0	86.90	90.60	7,038.3	188.1	2,094.0	2,094.0	0.53	0.53	
9,499.0	89.00	90.20	7,041.7	187.4	2,188.9	2,188.9	2.25	2.21	
9,593.0	87.70	87.30	7,044.4	189.5	2,282.8	2,282.8	3.38	-1.38	
9,688.0	93.20	86.50	7,043.7	194.6	2,377.6	2,377.6	5.85	5.79	
9,783.0	92.50	88.90	7,038.9	198.4	2,472.4	2,472.4	2.63	-0.74	
9,877.0	90.00	92.00	7,036.9	197.7	2,566.4	2,566.4	4.24	-2.66	
9,972.0	90.50	94.60	7,036.5	192.2	2,661.2	2,661.2	2.79	0.53	

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3D-19H-M368
Project: DJ Wattenberg	TVD Reference: KB=13' @ 5017.0ft (Ensign #315)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: KB=13' @ 5017.0ft (Ensign #315)
Well: Boyd 3D-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
10,066.0	90.70	94.10	7,035.5	185.1	2,755.0	2,755.0	0.57	0.21	
10,161.0	90.80	93.10	7,034.3	179.1	2,849.8	2,849.8	1.06	0.11	
10,256.0	88.10	93.60	7,035.2	173.6	2,944.6	2,944.6	2.89	-2.84	
10,350.0	88.30	92.50	7,038.1	168.6	3,038.4	3,038.4	1.19	0.21	
10,445.0	89.20	93.90	7,040.2	163.3	3,133.2	3,133.2	1.75	0.95	
10,540.0	90.00	94.00	7,040.9	156.7	3,228.0	3,228.0	0.85	0.84	
10,634.0	89.80	92.60	7,041.0	151.3	3,321.8	3,321.8	1.50	-0.21	
10,729.0	89.50	90.20	7,041.6	149.0	3,416.8	3,416.8	2.55	-0.32	
10,823.0	91.20	89.10	7,041.0	149.6	3,510.8	3,510.8	2.15	1.81	
10,917.0	89.10	85.20	7,040.8	154.2	3,604.7	3,604.7	4.71	-2.23	
11,012.0	89.40	84.40	7,042.0	162.8	3,699.3	3,699.3	0.90	0.32	
11,107.0	88.80	79.30	7,043.5	176.3	3,793.3	3,793.3	5.40	-0.63	
11,201.0	88.80	75.30	7,045.5	197.0	3,884.9	3,884.9	4.25	0.00	
11,296.0	89.40	72.70	7,047.0	223.1	3,976.2	3,976.2	2.81	0.63	
11,391.0	88.90	71.70	7,048.4	252.2	4,066.7	4,066.7	1.18	-0.53	
11,433.0	89.10	71.00	7,049.1	265.6	4,106.4	4,106.4	1.73	0.48	Last CES Survey @ 11,433' MD
11,485.0	89.10	71.00	7,049.9	282.5	4,155.6	4,155.6	0.00	0.00	PTB @ 11,485'

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3D-19H-M368
Project: DJ Wattenberg	TVD Reference: KB=13' @ 5017.0ft (Ensign #315)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: KB=13' @ 5017.0ft (Ensign #315)
Well: Boyd 3D-19H-M368	North Reference: True
Wellbore: Hz	Survey Calculation Method: Minimum Curvature
Design: FINAL	Database: USA EDM 5000 Multi Users DB

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
Boyd 3D-19H-M368 PBT - actual wellpath misses target center by 30.3ft at 11485.0ft MD (7049.9 TVD, 282.5 N, 4155.6 E) - Point	0.00	0.00	7,048.3	262.7	4,178.4	1,318,678.63	3,129,037.73	40.207240	-105.038020
Boyd 3D-19H-M368 TGT - actual wellpath misses target center by 15.4ft at 8385.5ft MD (7022.4 TVD, 223.5 N, 1076.4 E) - Point	0.00	0.00	7,015.0	210.0	1,075.8	1,318,610.33	3,125,935.46	40.207096	-105.049128
Boyd 3D-19H-M368 TGT - actual wellpath misses target center by 39.8ft at 8382.6ft MD (7022.4 TVD, 223.6 N, 1073.6 E) - Point	0.00	0.00	7,015.0	262.7	1,075.8	1,318,662.99	3,125,935.20	40.207241	-105.049128
Boyd 3D-19H-M368 PBT - actual wellpath misses target center by 37.3ft at 11485.0ft MD (7049.9 TVD, 282.5 N, 4155.6 E) - Point	0.00	0.00	7,028.0	262.7	4,178.4	1,318,678.63	3,129,037.73	40.207240	-105.038020
Boyd 3D-19H-M368 PBT - actual wellpath misses target center by 137.4ft at 11461.7ft MD (7049.6 TVD, 274.9 N, 4133.6 E) - Point	0.00	0.00	7,048.3	145.0	4,178.4	1,318,560.97	3,129,038.32	40.206917	-105.038020
Boyd 3D-19H-M368 LP - actual wellpath misses target center by 13.8ft at 7282.9ft MD (6972.6 TVD, 274.1 N, -22.9 E) - Point	0.00	0.00	6,965.0	262.7	-21.6	1,318,657.45	3,124,837.81	40.207241	-105.053057
Interp @ 7038.9 (Boyd 3 - actual wellpath misses target center by 3.1ft at 10612.3ft MD (7041.0 TVD, 152.3 N, 3300.1 E) - Point	0.00	0.00	7,038.9	150.0	3,300.0	1,318,561.55	3,128,159.93	40.206931	-105.041165

Design Annotations					
	Measured	Vertical	Local Coordinates		Comment
	Depth	Depth	+N/-S	+E/-W	
	(ft)	(ft)	(ft)	(ft)	
	11,433.0	7,049.1	265.6	4,106.4	Last CES Survey @ 11,433' MD
	11,485.0	7,049.9	282.5	4,155.6	PTB @ 11,485'

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

DJ Wattenberg

S19-T3N-R68W (Bohrer/Boyd)

Boyd 3D-19H-M368

Hz

Design: FINAL

Survey Report - Geographic

28 July, 2014

Cathedral Energy Services

Survey Report - Geographic

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3D-19H-M368
Project: DJ Wattenberg	TVD Reference: KB=13' @ 5017.0ft (Ensign #315)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: KB=13' @ 5017.0ft (Ensign #315)
Well: Boyd 3D-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 3D-19H-M368				
Well Position	+N/-S	0.0 ft	Northing:	1,318,394.91 ft
	+E/-W	0.0 ft	Easting:	3,124,860.73 ft
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft
			Latitude:	40.206520
			Longitude:	-105.052980
			Ground Level:	5,004.0 ft

Wellbore Hz					
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	7/13/2014	(°)	(°)	(nT)
			8.59	66.74	52,674

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

Survey Program		Date 7/28/2014
From	To	Survey (Wellbore)
(ft)	(ft)	
141.0	11,485.0	Survey #1 (Hz)
		Tool Name
		Geolink MWD
		Description
		Geolink MWD

Survey										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Map Northing	Map Easting	Latitude	Longitude	
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
0.0	0.00	0.00	0.0	0.0	0.0	1,318,394.91	3,124,860.73	40.206520	-105.052980	
141.0	0.50	267.60	141.0	0.0	-0.6	1,318,394.88	3,124,860.12	40.206520	-105.052982	
233.0	0.90	279.90	233.0	0.1	-1.7	1,318,394.98	3,124,859.00	40.206520	-105.052986	
325.0	1.90	288.30	325.0	0.7	-3.9	1,318,395.58	3,124,856.84	40.206522	-105.052994	
417.0	2.60	288.80	416.9	1.8	-7.3	1,318,396.71	3,124,853.41	40.206525	-105.053006	
509.0	3.40	287.00	508.8	3.3	-11.9	1,318,398.16	3,124,848.82	40.206529	-105.053023	
601.0	4.50	284.30	600.5	5.0	-18.0	1,318,399.82	3,124,842.71	40.206534	-105.053045	
693.0	5.00	282.90	692.2	6.8	-25.4	1,318,401.57	3,124,835.29	40.206539	-105.053071	
784.0	5.40	284.40	782.9	8.7	-33.4	1,318,403.47	3,124,827.27	40.206544	-105.053100	
813.0	5.50	289.10	811.7	9.5	-36.1	1,318,404.26	3,124,824.63	40.206546	-105.053109	
919.0	5.20	293.40	917.3	13.1	-45.3	1,318,407.78	3,124,815.40	40.206556	-105.053142	
1,011.0	6.90	291.90	1,008.7	16.8	-54.2	1,318,411.45	3,124,806.43	40.206566	-105.053174	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3D-19H-M368
Project:	DJ Wattenberg	TVD Reference:	KB=13' @ 5017.0ft (Ensign #315)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MD Reference:	KB=13' @ 5017.0ft (Ensign #315)
Well:	Boyd 3D-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	
1,103.0	6.70	287.90	1,100.1	20.5	-64.5	1,318,415.11	3,124,796.18	40.206576	-105.053211	
1,195.0	6.50	284.00	1,191.5	23.4	-74.6	1,318,417.97	3,124,786.00	40.206584	-105.053247	
1,286.0	6.40	278.80	1,281.9	25.5	-84.6	1,318,419.94	3,124,775.98	40.206590	-105.053283	
1,378.0	6.70	294.10	1,373.3	28.4	-94.6	1,318,422.87	3,124,766.00	40.206598	-105.053319	
1,466.0	6.50	288.70	1,460.7	32.1	-104.0	1,318,426.51	3,124,756.58	40.206608	-105.053353	
1,558.0	6.00	300.40	1,552.2	36.2	-113.1	1,318,430.57	3,124,747.48	40.206619	-105.053385	
1,650.0	6.50	294.00	1,643.6	40.8	-122.0	1,318,435.07	3,124,738.55	40.206632	-105.053417	
1,742.0	6.20	286.20	1,735.1	44.3	-131.5	1,318,438.53	3,124,729.01	40.206642	-105.053451	
1,833.0	6.10	289.50	1,825.6	47.3	-140.8	1,318,441.47	3,124,719.71	40.206650	-105.053484	
1,925.0	6.00	285.40	1,917.1	50.2	-150.0	1,318,444.33	3,124,710.46	40.206658	-105.053517	
2,017.0	6.20	305.80	2,008.5	54.4	-158.7	1,318,448.47	3,124,701.77	40.206669	-105.053548	
2,109.0	6.40	301.60	2,100.0	60.0	-167.1	1,318,454.02	3,124,693.34	40.206685	-105.053578	
2,200.0	6.60	301.10	2,190.4	65.3	-175.9	1,318,459.34	3,124,684.52	40.206699	-105.053610	
2,292.0	4.70	308.80	2,282.0	70.4	-183.4	1,318,464.39	3,124,677.03	40.206713	-105.053637	
2,384.0	5.20	305.90	2,373.6	75.2	-189.7	1,318,469.17	3,124,670.69	40.206727	-105.053659	
2,478.0	5.00	297.50	2,467.2	79.6	-196.8	1,318,473.52	3,124,663.58	40.206739	-105.053685	
2,573.0	4.90	293.40	2,561.9	83.1	-204.1	1,318,477.00	3,124,656.17	40.206748	-105.053711	
2,668.0	4.90	286.30	2,656.5	85.9	-211.8	1,318,479.72	3,124,648.54	40.206756	-105.053738	
2,762.0	5.20	288.50	2,750.2	88.4	-219.7	1,318,482.16	3,124,640.63	40.206763	-105.053767	
2,856.0	5.40	291.50	2,843.8	91.3	-227.8	1,318,485.09	3,124,632.46	40.206771	-105.053796	
2,951.0	6.00	293.80	2,938.3	95.0	-236.5	1,318,488.68	3,124,623.74	40.206781	-105.053827	
3,046.0	5.70	289.90	3,032.8	98.6	-245.5	1,318,492.25	3,124,614.75	40.206791	-105.053859	
3,140.0	6.10	295.00	3,126.3	102.3	-254.4	1,318,495.90	3,124,605.81	40.206801	-105.053891	
3,235.0	6.20	292.50	3,220.8	106.4	-263.7	1,318,499.95	3,124,596.48	40.206812	-105.053924	
3,329.0	7.20	301.70	3,314.1	111.4	-273.4	1,318,504.94	3,124,586.75	40.206826	-105.053959	
3,423.0	6.90	296.80	3,407.4	117.1	-283.5	1,318,510.53	3,124,576.67	40.206841	-105.053995	
3,518.0	6.40	293.40	3,501.8	121.7	-293.4	1,318,515.16	3,124,566.69	40.206854	-105.054031	
3,613.0	5.80	288.30	3,596.2	125.3	-302.8	1,318,518.72	3,124,557.26	40.206864	-105.054065	
3,707.0	5.80	294.80	3,689.8	128.8	-311.7	1,318,522.16	3,124,548.42	40.206874	-105.054096	
3,802.0	5.50	291.60	3,784.3	132.5	-320.3	1,318,525.81	3,124,539.81	40.206884	-105.054127	
3,896.0	6.80	295.50	3,877.7	136.6	-329.5	1,318,529.81	3,124,530.58	40.206895	-105.054160	
3,991.0	6.70	292.20	3,972.1	141.1	-339.7	1,318,534.28	3,124,520.35	40.206907	-105.054196	
4,085.0	6.40	288.50	4,065.5	144.8	-349.7	1,318,537.96	3,124,510.28	40.206918	-105.054232	
4,180.0	6.50	289.80	4,159.9	148.3	-359.8	1,318,541.41	3,124,500.19	40.206927	-105.054268	
4,274.0	6.30	287.70	4,253.3	151.7	-369.7	1,318,544.73	3,124,490.25	40.206936	-105.054304	
4,369.0	5.80	292.80	4,347.8	155.1	-379.1	1,318,548.13	3,124,480.84	40.206946	-105.054338	
4,464.0	5.40	295.20	4,442.3	158.9	-387.6	1,318,551.85	3,124,472.35	40.206956	-105.054368	
4,559.0	4.80	290.70	4,536.9	162.2	-395.3	1,318,555.12	3,124,464.57	40.206965	-105.054396	
4,653.0	5.80	303.60	4,630.5	166.2	-403.0	1,318,559.10	3,124,456.92	40.206976	-105.054423	
4,748.0	6.50	303.00	4,725.0	171.8	-411.5	1,318,564.64	3,124,448.38	40.206992	-105.054454	
4,842.0	5.90	298.10	4,818.4	177.0	-420.2	1,318,569.77	3,124,439.63	40.207006	-105.054485	
4,937.0	5.40	292.60	4,913.0	181.0	-428.6	1,318,573.75	3,124,431.18	40.207017	-105.054515	
5,031.0	5.50	286.80	5,006.6	184.0	-437.0	1,318,576.71	3,124,422.77	40.207025	-105.054545	
5,126.0	4.80	277.60	5,101.2	185.8	-445.3	1,318,578.51	3,124,414.46	40.207030	-105.054575	
5,220.0	6.90	295.60	5,194.7	188.8	-454.3	1,318,581.42	3,124,405.45	40.207038	-105.054607	
5,315.0	6.30	289.30	5,289.1	193.0	-464.4	1,318,585.56	3,124,395.36	40.207050	-105.054643	
5,409.0	5.80	287.40	5,382.5	196.1	-473.8	1,318,588.64	3,124,385.95	40.207058	-105.054677	
5,504.0	5.40	286.70	5,477.1	198.8	-482.7	1,318,591.31	3,124,377.07	40.207066	-105.054708	
5,599.0	6.20	297.20	5,571.6	202.5	-491.5	1,318,594.90	3,124,368.21	40.207076	-105.054740	
5,694.0	5.50	290.30	5,666.1	206.4	-500.3	1,318,598.78	3,124,359.36	40.207087	-105.054772	
5,788.0	5.10	307.90	5,759.7	210.5	-507.9	1,318,602.87	3,124,351.82	40.207098	-105.054799	
5,883.0	4.80	313.60	5,854.3	215.9	-514.1	1,318,608.17	3,124,345.58	40.207113	-105.054821	
5,977.0	4.30	300.20	5,948.1	220.3	-520.0	1,318,612.63	3,124,339.66	40.207125	-105.054842	
6,072.0	6.00	298.10	6,042.7	224.5	-527.4	1,318,616.72	3,124,332.18	40.207136	-105.054869	
6,166.0	6.50	287.50	6,136.1	228.4	-536.8	1,318,620.59	3,124,322.75	40.207147	-105.054902	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3D-19H-M368
Project:	DJ Wattenberg	TVD Reference:	KB=13' @ 5017.0ft (Ensign #315)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MD Reference:	KB=13' @ 5017.0ft (Ensign #315)
Well:	Boyd 3D-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	
6,261.0	5.60	278.60	6,230.6	230.7	-546.5	1,318,622.85	3,124,313.03	40.207153	-105.054937	
6,308.0	5.10	281.20	6,277.4	231.4	-550.9	1,318,623.57	3,124,308.71	40.207155	-105.054953	
6,356.0	5.50	299.90	6,325.2	233.0	-554.9	1,318,625.11	3,124,304.62	40.207160	-105.054967	
6,403.0	9.30	345.70	6,371.8	237.8	-557.8	1,318,629.91	3,124,301.70	40.207173	-105.054978	
6,450.0	12.00	15.80	6,418.0	246.2	-557.5	1,318,638.30	3,124,302.05	40.207196	-105.054976	
6,497.0	12.40	41.50	6,464.0	254.7	-552.8	1,318,646.81	3,124,306.68	40.207219	-105.054959	
6,545.0	16.00	77.80	6,510.6	260.0	-542.9	1,318,652.13	3,124,316.56	40.207234	-105.054924	
6,592.0	21.20	102.10	6,555.2	259.5	-528.2	1,318,651.79	3,124,331.23	40.207233	-105.054871	
6,639.0	25.30	104.90	6,598.4	255.2	-510.2	1,318,647.52	3,124,349.28	40.207221	-105.054807	
6,686.0	28.80	101.10	6,640.2	250.4	-489.4	1,318,642.86	3,124,370.12	40.207207	-105.054732	
6,734.0	31.70	95.80	6,681.7	246.9	-465.5	1,318,639.48	3,124,394.04	40.207198	-105.054647	
6,781.0	36.70	90.50	6,720.6	245.5	-439.1	1,318,638.24	3,124,420.40	40.207194	-105.054552	
6,828.0	41.50	85.70	6,757.1	246.6	-409.5	1,318,639.43	3,124,449.99	40.207197	-105.054446	
6,875.0	43.90	85.40	6,791.6	249.1	-377.7	1,318,642.07	3,124,481.75	40.207204	-105.054333	
6,923.0	46.30	84.40	6,825.5	252.1	-343.9	1,318,645.27	3,124,515.60	40.207212	-105.054211	
6,970.0	51.50	83.40	6,856.4	255.9	-308.7	1,318,649.22	3,124,550.78	40.207222	-105.054085	
7,018.0	56.20	85.10	6,884.7	259.7	-270.1	1,318,653.28	3,124,589.32	40.207233	-105.053947	
7,065.0	63.40	87.50	6,908.3	262.3	-229.6	1,318,656.07	3,124,629.81	40.207240	-105.053802	
7,112.0	67.80	86.40	6,927.7	264.6	-186.9	1,318,658.57	3,124,672.53	40.207246	-105.053649	
7,159.0	70.40	86.30	6,944.5	267.4	-143.1	1,318,661.58	3,124,716.33	40.207254	-105.053492	
7,206.0	75.00	86.40	6,958.4	270.3	-98.3	1,318,664.67	3,124,761.08	40.207262	-105.053332	
7,253.0	80.40	87.30	6,968.5	272.8	-52.5	1,318,667.41	3,124,806.90	40.207269	-105.053168	
7,272.0	82.70	87.60	6,971.2	273.6	-33.7	1,318,668.35	3,124,825.67	40.207271	-105.053101	
7,323.0	86.70	86.60	6,976.0	276.2	17.0	1,318,671.17	3,124,876.37	40.207278	-105.052919	
7,417.0	88.30	90.10	6,980.1	278.9	110.9	1,318,674.35	3,124,970.20	40.207286	-105.052583	
7,511.0	87.30	90.70	6,983.7	278.2	204.8	1,318,674.16	3,125,064.13	40.207284	-105.052247	
7,606.0	88.00	91.60	6,987.6	276.3	299.7	1,318,672.74	3,125,159.04	40.207279	-105.051907	
7,700.0	88.20	93.50	6,990.7	272.1	393.6	1,318,669.03	3,125,252.91	40.207267	-105.051571	
7,795.0	88.00	93.80	6,993.8	266.1	488.3	1,318,663.46	3,125,347.70	40.207250	-105.051232	
7,889.0	88.40	94.30	6,996.8	259.5	582.0	1,318,657.30	3,125,441.45	40.207232	-105.050896	
7,984.0	86.40	94.50	7,001.1	252.2	676.6	1,318,650.50	3,125,536.10	40.207212	-105.050558	
8,079.0	87.50	94.90	7,006.1	244.4	771.2	1,318,643.20	3,125,630.68	40.207191	-105.050219	
8,173.0	84.70	93.70	7,012.5	237.4	864.7	1,318,636.64	3,125,724.22	40.207172	-105.049884	
8,268.0	87.20	94.00	7,019.2	231.0	959.2	1,318,630.75	3,125,818.80	40.207154	-105.049546	
8,363.0	89.30	93.50	7,022.1	224.8	1,054.0	1,318,625.02	3,125,913.57	40.207137	-105.049207	
8,457.0	88.90	92.70	7,023.6	219.7	1,147.8	1,318,620.41	3,126,007.45	40.207123	-105.048871	
8,552.0	88.90	92.30	7,025.5	215.6	1,242.7	1,318,616.75	3,126,102.36	40.207112	-105.048531	
8,647.0	89.60	92.30	7,026.7	211.8	1,337.6	1,318,613.41	3,126,197.29	40.207101	-105.048191	
8,741.0	90.40	92.70	7,026.7	207.7	1,431.6	1,318,609.79	3,126,291.22	40.207090	-105.047855	
8,836.0	88.80	92.10	7,027.4	203.7	1,526.5	1,318,606.29	3,126,386.15	40.207079	-105.047515	
8,931.0	90.10	92.50	7,028.3	199.9	1,621.4	1,318,602.95	3,126,481.09	40.207069	-105.047175	
9,025.0	89.00	92.60	7,029.0	195.7	1,715.3	1,318,599.25	3,126,575.01	40.207057	-105.046839	
9,120.0	90.20	91.00	7,029.7	192.7	1,810.2	1,318,596.74	3,126,669.97	40.207049	-105.046499	
9,215.0	89.80	91.40	7,029.7	190.7	1,905.2	1,318,595.23	3,126,764.96	40.207043	-105.046159	
9,310.0	86.40	90.60	7,032.8	189.1	2,000.1	1,318,594.05	3,126,859.88	40.207039	-105.045819	
9,404.0	86.90	90.60	7,038.3	188.1	2,094.0	1,318,593.54	3,126,953.72	40.207036	-105.045483	
9,499.0	89.00	90.20	7,041.7	187.4	2,188.9	1,318,593.36	3,127,048.65	40.207034	-105.045143	
9,593.0	87.70	87.30	7,044.4	189.5	2,282.8	1,318,595.88	3,127,142.57	40.207040	-105.044807	
9,688.0	93.20	86.50	7,043.7	194.6	2,377.6	1,318,601.49	3,127,237.36	40.207054	-105.044468	
9,783.0	92.50	88.90	7,038.9	198.4	2,472.4	1,318,605.78	3,127,332.14	40.207064	-105.044128	
9,877.0	90.00	92.00	7,036.9	197.7	2,566.4	1,318,605.51	3,127,426.10	40.207062	-105.043792	
9,972.0	90.50	94.60	7,036.5	192.2	2,661.2	1,318,600.52	3,127,520.96	40.207047	-105.043452	
10,066.0	90.70	94.10	7,035.5	185.1	2,755.0	1,318,593.86	3,127,614.72	40.207028	-105.043117	
10,161.0	90.80	93.10	7,034.3	179.1	2,849.8	1,318,588.38	3,127,709.55	40.207011	-105.042777	
10,256.0	88.10	93.60	7,035.2	173.6	2,944.6	1,318,583.31	3,127,804.40	40.206996	-105.042438	

Cathedral Energy Services

Survey Report - Geographic

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3D-19H-M368
Project: DJ Wattenberg	TVD Reference: KB=13' @ 5017.0ft (Ensign #315)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: KB=13' @ 5017.0ft (Ensign #315)
Well: Boyd 3D-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	
10,350.0	88.30	92.50	7,038.1	168.6	3,038.4	1,318,578.78	3,127,898.24	40.206982	-105.042102	
10,445.0	89.20	93.90	7,040.2	163.3	3,133.2	1,318,573.96	3,127,993.09	40.206968	-105.041762	
10,540.0	90.00	94.00	7,040.9	156.7	3,228.0	1,318,567.89	3,128,087.90	40.206950	-105.041423	
10,634.0	89.80	92.60	7,041.0	151.3	3,321.8	1,318,562.95	3,128,181.76	40.206935	-105.041087	
10,729.0	89.50	90.20	7,041.6	149.0	3,416.8	1,318,561.11	3,128,276.74	40.206928	-105.040747	
10,823.0	91.20	89.10	7,041.0	149.6	3,510.8	1,318,562.16	3,128,370.75	40.206930	-105.040410	
10,917.0	89.10	85.20	7,040.8	154.2	3,604.7	1,318,567.30	3,128,464.58	40.206943	-105.040074	
11,012.0	89.40	84.40	7,042.0	162.8	3,699.3	1,318,576.39	3,128,559.14	40.206966	-105.039736	
11,107.0	88.80	79.30	7,043.5	176.3	3,793.3	1,318,590.33	3,128,653.07	40.207003	-105.039399	
11,201.0	88.80	75.30	7,045.5	197.0	3,884.9	1,318,611.44	3,128,744.62	40.207060	-105.039071	
11,296.0	89.40	72.70	7,047.0	223.1	3,976.2	1,318,638.08	3,128,835.79	40.207132	-105.038744	
11,391.0	88.90	71.70	7,048.4	252.2	4,066.7	1,318,667.58	3,128,926.08	40.207211	-105.038420	
11,433.0	89.10	71.00	7,049.1	265.6	4,106.4	1,318,681.20	3,128,965.78	40.207248	-105.038278	
Last CES Survey @ 11,433' MD										
11,485.0	89.10	71.00	7,049.9	282.5	4,155.6	1,318,698.37	3,129,014.86	40.207295	-105.038102	
PTB @ 11,485'										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
Boyd 3D-19H-M368 PBI - hit/miss target - Shape	0.00	0.00	7,048.3	262.7	4,178.4	1,318,678.63	3,129,037.73	40.207240	-105.038020	
- actual wellpath misses target center by 30.3ft at 11485.0ft MD (7049.9 TVD, 282.5 N, 4155.6 E)										
- Point										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,433.0	7,049.1	265.6	4,106.4	Last CES Survey @ 11,433' MD	
11,485.0	7,049.9	282.5	4,155.6	PTB @ 11,485'	

Checked By: _____ Approved By: _____ Date: _____