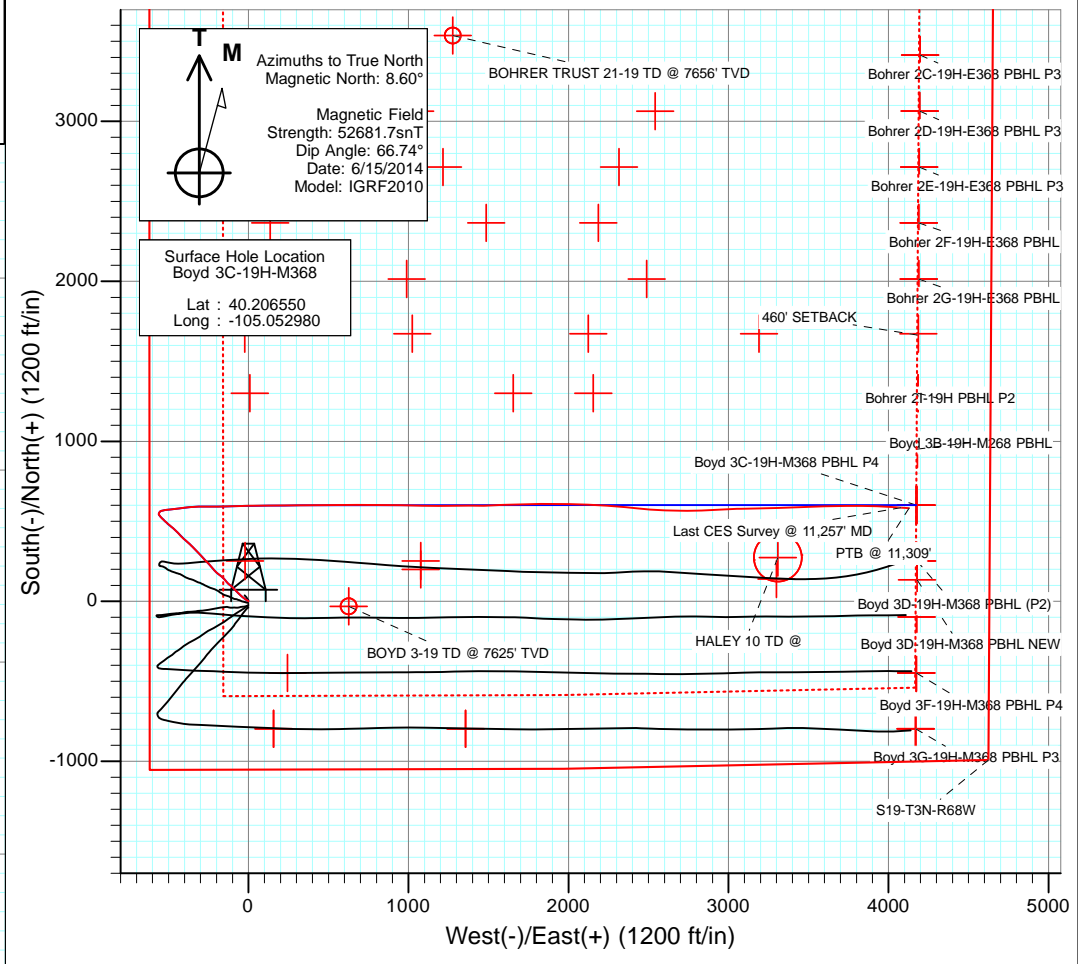
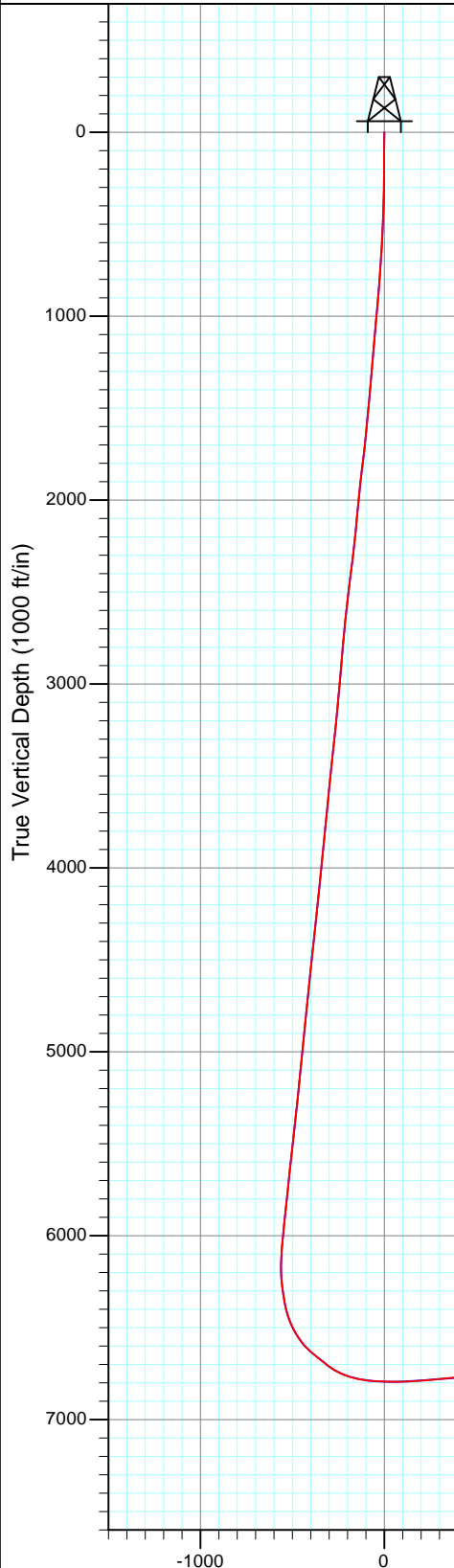




Project: DJ Wattenberg
 Site: S19-T3N-R68W (Bohrer/Boyd)
 Well: Boyd 3C-19H-M368
 Wellbore: Hz
 Design: FINAL

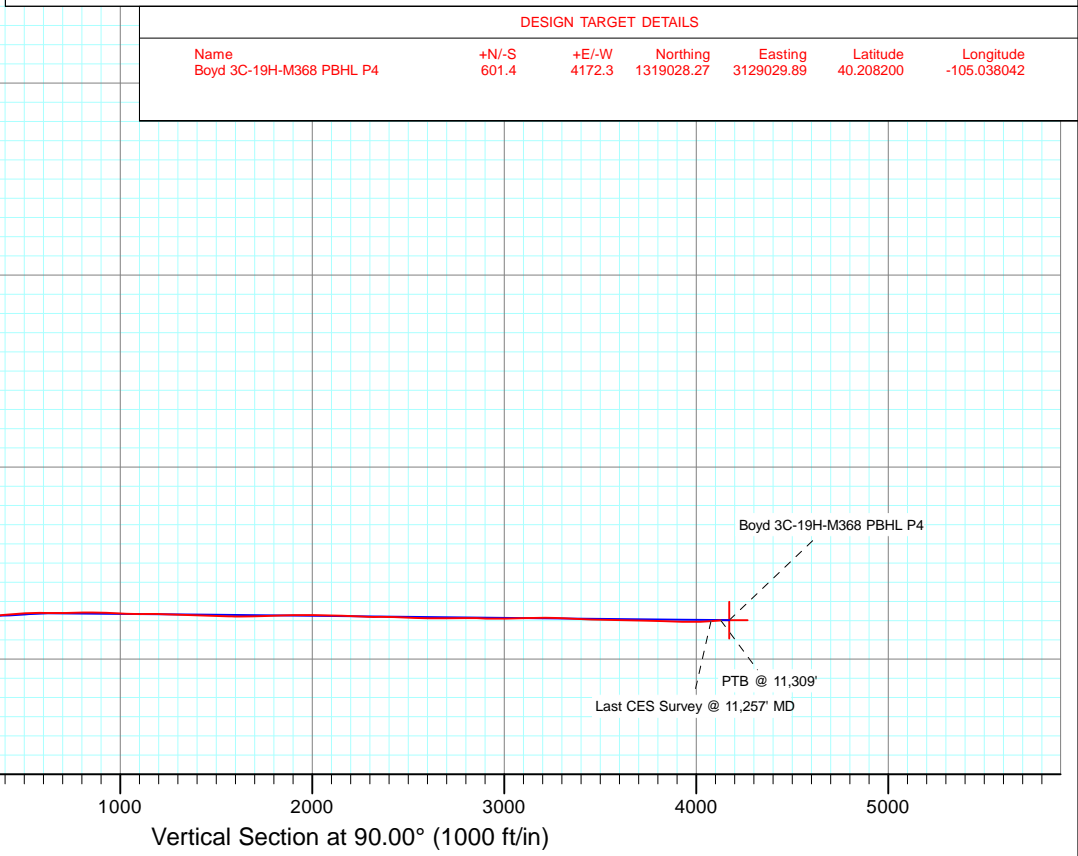


FINAL
 Boyd 3C-19H-M368
 17637 145193; LR
 WELL @ 5029.0ft (Ensign 135)
 Ground Elevation @ 5004.0
 North American Datum 1983
 Well Boyd 3C-19H-M368, True North



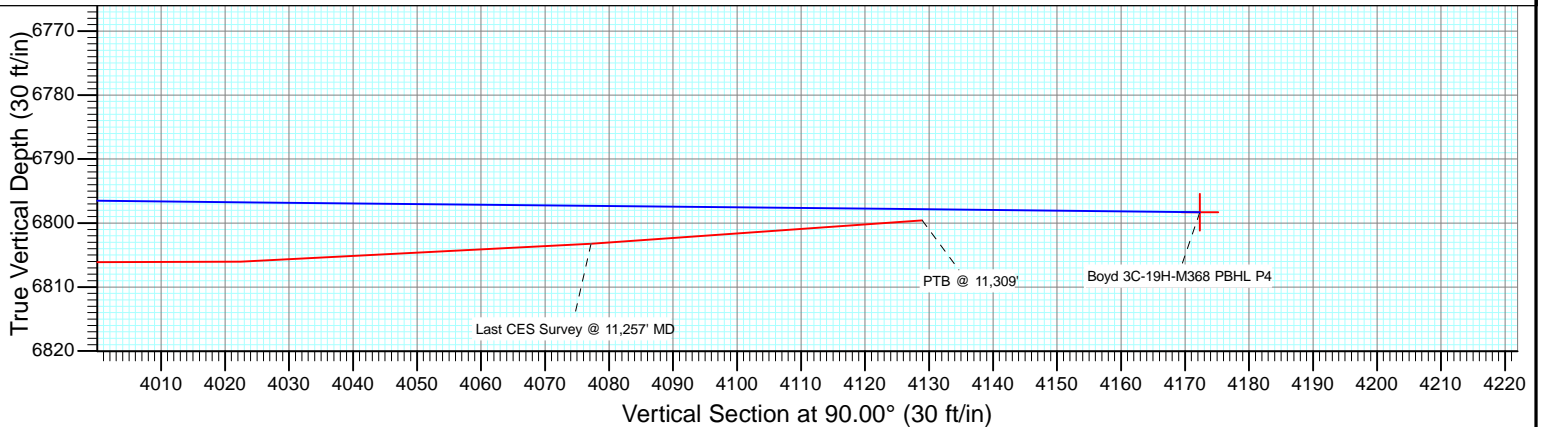
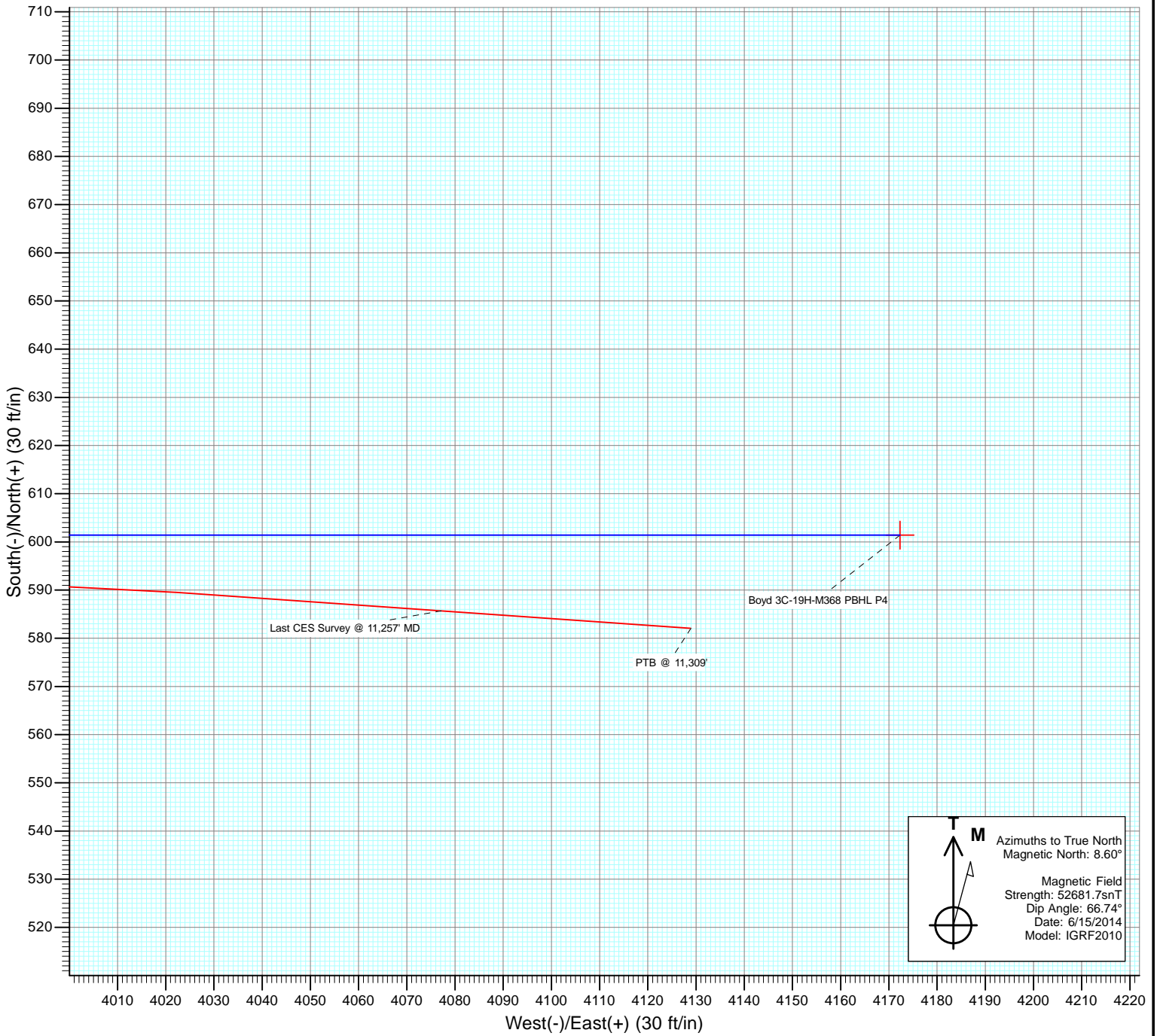
DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Boyd 3C-19H-M368 PBHL P4	601.4	4172.3	1319028.27	3129029.89	40.208200	-105.038042





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



Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3C-19H-M368
Project: DJ Wattenberg	TVD Reference: WELL @ 5029.0ft (Ensign 135)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: WELL @ 5029.0ft (Ensign 135)
Well: Boyd 3C-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 3C-19H-M368				
Well Position	+N/-S	0.0 ft	Northing:	1,318,405.84 ft
	+E/-W	0.0 ft	Easting:	3,124,860.68 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	6/15/2014	8.60	66.74	52,682

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 8/3/2014
From (ft)	To (ft)	Survey (Wellbore)
141.0	11,309.0	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	0.70	356.00	141.0	0.9	-0.1	-0.1	0.50	0.50	
233.0	0.90	333.30	233.0	2.1	-0.4	-0.4	0.40	0.22	
325.0	1.40	293.20	325.0	3.2	-1.8	-1.8	1.00	0.54	
417.0	2.30	299.20	416.9	4.5	-4.4	-4.4	1.00	0.98	
509.0	2.70	291.40	508.8	6.2	-8.1	-8.1	0.57	0.43	
601.0	3.50	296.10	600.7	8.2	-12.6	-12.6	0.91	0.87	
693.0	4.10	305.70	692.5	11.4	-17.8	-17.8	0.95	0.65	
784.0	5.10	311.20	783.2	15.9	-23.5	-23.5	1.20	1.10	
823.0	5.50	307.70	822.0	18.2	-26.3	-26.3	1.32	1.03	
915.0	5.80	302.70	913.6	23.4	-33.7	-33.7	0.63	0.33	
1,007.0	7.20	308.70	1,005.0	29.5	-42.1	-42.1	1.69	1.52	
1,099.0	6.80	317.30	1,096.3	37.1	-50.3	-50.3	1.22	-0.43	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3C-19H-M368
Project:	DJ Wattenberg	TD Reference:	WELL @ 5029.0ft (Ensign 135)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MVD Reference:	WELL @ 5029.0ft (Ensign 135)
Well:	Boyd 3C-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
1,191.0	7.30	312.00	1,187.6	45.1	-58.3	-58.3	0.89	0.54	
1,282.0	6.80	319.70	1,277.9	53.0	-66.1	-66.1	1.17	-0.55	
1,374.0	6.50	313.80	1,369.3	60.8	-73.4	-73.4	0.81	-0.33	
1,466.0	7.60	316.90	1,460.6	68.8	-81.3	-81.3	1.26	1.20	
1,557.0	8.00	312.20	1,550.8	77.5	-90.1	-90.1	0.83	0.44	
1,649.0	7.80	316.50	1,641.9	86.3	-99.1	-99.1	0.68	-0.22	
1,741.0	8.70	309.60	1,733.0	95.3	-108.8	-108.8	1.45	0.98	
1,833.0	9.50	310.00	1,823.8	104.6	-120.0	-120.0	0.87	0.87	
1,924.0	9.00	317.30	1,913.6	114.7	-130.5	-130.5	1.40	-0.55	
2,016.0	8.30	321.20	2,004.6	125.1	-139.6	-139.6	0.99	-0.76	
2,108.0	7.90	316.90	2,095.7	134.9	-148.1	-148.1	0.79	-0.43	
2,199.0	8.30	315.80	2,185.7	144.2	-156.9	-156.9	0.47	0.44	
2,291.0	8.00	309.50	2,276.8	153.0	-166.5	-166.5	1.02	-0.33	
2,383.0	9.10	306.60	2,367.8	161.4	-177.3	-177.3	1.28	1.20	
2,478.0	8.90	308.10	2,461.6	170.4	-189.1	-189.1	0.32	-0.21	
2,572.0	9.10	310.00	2,554.5	179.7	-200.5	-200.5	0.38	0.21	
2,667.0	8.70	324.30	2,648.3	190.4	-210.4	-210.4	2.36	-0.42	
2,761.0	8.50	315.80	2,741.3	201.1	-219.4	-219.4	1.37	-0.21	
2,856.0	7.40	321.00	2,835.4	210.9	-228.2	-228.2	1.38	-1.16	
2,950.0	7.10	318.00	2,928.6	219.9	-235.9	-235.9	0.51	-0.32	
3,045.0	7.70	317.70	3,022.8	229.0	-244.1	-244.1	0.63	0.63	
3,139.0	7.60	315.30	3,116.0	238.1	-252.7	-252.7	0.36	-0.11	
3,234.0	8.10	314.90	3,210.1	247.3	-261.9	-261.9	0.53	0.53	
3,328.0	8.40	315.80	3,303.1	256.9	-271.3	-271.3	0.35	0.32	
3,423.0	9.50	321.70	3,397.0	268.0	-281.0	-281.0	1.51	1.16	
3,517.0	9.00	318.90	3,489.8	279.6	-290.7	-290.7	0.72	-0.53	
3,612.0	8.00	313.60	3,583.7	289.8	-300.3	-300.3	1.34	-1.05	
3,706.0	8.40	316.00	3,676.7	299.2	-309.9	-309.9	0.56	0.43	
3,801.0	7.90	310.70	3,770.8	308.5	-319.6	-319.6	0.95	-0.53	
3,896.0	8.00	319.10	3,864.9	317.7	-328.9	-328.9	1.23	0.11	
3,990.0	8.10	317.30	3,958.0	327.6	-337.7	-337.7	0.29	0.11	
4,085.0	7.80	312.90	4,052.0	336.9	-346.9	-346.9	0.71	-0.32	
4,179.0	9.00	316.90	4,145.0	346.6	-356.6	-356.6	1.42	1.28	
4,274.0	8.40	314.50	4,238.9	356.9	-366.7	-366.7	0.74	-0.63	
4,368.0	7.60	314.40	4,332.0	366.0	-376.0	-376.0	0.85	-0.85	
4,463.0	8.80	310.50	4,426.1	375.1	-386.0	-386.0	1.39	1.26	
4,558.0	7.90	307.40	4,520.0	383.8	-396.7	-396.7	1.06	-0.95	
4,652.0	7.60	311.50	4,613.2	391.9	-406.5	-406.5	0.67	-0.32	
4,747.0	7.80	318.70	4,707.3	400.9	-415.5	-415.5	1.04	0.21	
4,841.0	8.30	315.80	4,800.4	410.5	-424.4	-424.4	0.69	0.53	
4,936.0	9.00	317.30	4,894.3	420.9	-434.2	-434.2	0.77	0.74	
5,031.0	7.80	315.70	4,988.3	431.0	-443.8	-443.8	1.29	-1.26	
5,125.0	8.60	316.70	5,081.3	440.7	-453.0	-453.0	0.86	0.85	
5,220.0	6.80	309.30	5,175.5	449.4	-462.3	-462.3	2.16	-1.89	
5,314.0	8.40	308.20	5,268.7	457.2	-472.0	-472.0	1.71	1.70	
5,409.0	7.50	310.10	5,362.7	465.4	-482.2	-482.2	0.99	-0.95	
5,504.0	8.10	310.10	5,456.9	473.8	-492.0	-492.0	0.63	0.63	
5,598.0	8.60	308.20	5,549.9	482.4	-502.6	-502.6	0.61	0.53	
5,693.0	8.00	313.40	5,643.9	491.3	-513.0	-513.0	1.01	-0.63	
5,787.0	8.40	316.50	5,736.9	500.8	-522.5	-522.5	0.63	0.43	
5,882.0	9.20	317.60	5,830.8	511.4	-532.4	-532.4	0.86	0.84	
5,976.0	7.60	309.30	5,923.8	520.9	-542.3	-542.3	2.13	-1.70	
6,071.0	7.90	322.60	6,017.9	530.1	-551.1	-551.1	1.91	0.32	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3C-19H-M368
Project:	DJ Wattenberg	TD Reference:	WELL @ 5029.0ft (Ensign 135)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MD Reference:	WELL @ 5029.0ft (Ensign 135)
Well:	Boyd 3C-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
6,118.0	7.50	316.70	6,064.5	534.9	-555.2	-555.2	1.88	-0.85	
6,166.0	6.80	320.90	6,112.1	539.4	-559.1	-559.1	1.82	-1.46	
6,213.0	6.70	357.80	6,158.8	544.3	-561.0	-561.0	9.07	-0.21	
6,260.0	7.30	17.40	6,205.5	549.8	-560.2	-560.2	5.21	1.28	
6,307.0	8.70	34.10	6,252.0	555.6	-557.3	-557.3	5.74	2.98	
6,355.0	9.80	55.30	6,299.4	561.0	-551.9	-551.9	7.41	2.29	
6,402.0	10.00	69.30	6,345.7	564.7	-544.8	-544.8	5.13	0.43	
6,449.0	13.30	75.50	6,391.7	567.5	-535.7	-535.7	7.50	7.02	
6,496.0	18.20	80.10	6,437.0	570.1	-523.3	-523.3	10.75	10.43	
6,544.0	23.40	83.20	6,481.8	572.5	-506.4	-506.4	11.07	10.83	
6,591.0	29.30	84.20	6,523.9	574.8	-485.7	-485.7	12.59	12.55	
6,638.0	34.80	83.40	6,563.7	577.5	-460.9	-460.9	11.74	11.70	
6,685.0	42.60	82.80	6,600.4	581.0	-431.7	-431.7	16.61	16.60	
6,733.0	49.20	83.30	6,633.8	585.2	-397.5	-397.5	13.77	13.75	
6,780.0	52.20	85.90	6,663.5	588.6	-361.3	-361.3	7.68	6.38	
6,827.0	53.20	87.30	6,692.0	590.8	-324.0	-324.0	3.18	2.13	
6,875.0	54.70	88.70	6,720.3	592.2	-285.2	-285.2	3.91	3.12	
6,923.0	61.90	89.90	6,745.5	592.6	-244.4	-244.4	15.15	15.00	
6,970.0	70.90	89.90	6,764.3	592.7	-201.4	-201.4	19.15	19.15	
7,018.0	78.60	89.30	6,776.9	593.1	-155.1	-155.1	16.09	16.04	
7,065.0	81.50	88.90	6,785.0	593.8	-108.8	-108.8	6.23	6.17	
7,112.0	85.10	88.30	6,790.5	594.9	-62.2	-62.2	7.76	7.66	
7,119.0	85.40	88.40	6,791.1	595.1	-55.2	-55.2	4.52	4.29	
7,166.0	88.00	87.10	6,793.8	597.0	-8.3	-8.3	6.18	5.53	
7,228.0	89.60	89.80	6,795.1	598.6	53.6	53.6	5.06	2.58	
7,323.0	93.70	90.00	6,792.4	598.8	148.6	148.6	4.32	4.32	
7,417.0	94.80	89.00	6,785.4	599.6	242.3	242.3	1.58	1.17	
7,512.0	95.30	90.10	6,777.0	600.4	336.9	336.9	1.27	0.53	
7,606.0	96.30	89.90	6,767.5	600.4	430.5	430.5	1.08	1.06	
7,700.0	92.20	88.60	6,760.6	601.6	524.2	524.2	4.57	-4.36	
7,795.0	88.40	88.50	6,760.1	604.0	619.1	619.1	4.00	-4.00	
7,890.0	91.10	91.10	6,760.5	604.3	714.1	714.1	3.95	2.84	
7,984.0	91.20	91.80	6,758.6	602.0	808.1	808.1	0.75	0.11	
8,079.0	87.50	90.80	6,759.7	599.8	903.0	903.0	4.03	-3.89	
8,174.0	87.40	90.90	6,763.9	598.4	997.9	997.9	0.15	-0.11	
8,268.0	90.60	90.70	6,765.5	597.1	1,091.9	1,091.9	3.41	3.40	
8,363.0	88.90	89.80	6,766.0	596.7	1,186.9	1,186.9	2.02	-1.79	
8,457.0	87.80	89.30	6,768.7	597.4	1,280.8	1,280.8	1.29	-1.17	
8,552.0	87.80	89.90	6,772.3	598.1	1,375.7	1,375.7	0.63	0.00	
8,647.0	88.70	90.30	6,775.2	597.9	1,470.7	1,470.7	1.04	0.95	
8,742.0	87.50	86.10	6,778.4	600.9	1,565.6	1,565.6	4.60	-1.26	
8,805.0	90.50	88.50	6,779.5	603.8	1,628.5	1,628.5	6.10	4.76	
8,868.0	91.60	88.00	6,778.3	605.8	1,691.4	1,691.4	1.92	1.75	
8,931.0	91.70	88.60	6,776.5	607.6	1,754.4	1,754.4	0.97	0.16	
9,026.0	91.60	89.70	6,773.8	609.0	1,849.3	1,849.3	1.16	-0.11	
9,120.0	90.70	90.30	6,771.9	609.0	1,943.3	1,943.3	1.15	-0.96	
9,215.0	88.90	91.70	6,772.2	607.4	2,038.3	2,038.3	2.40	-1.89	
9,310.0	88.20	93.80	6,774.6	602.8	2,133.2	2,133.2	2.33	-0.74	
9,404.0	87.30	93.40	6,778.3	596.9	2,226.9	2,226.9	1.05	-0.96	
9,499.0	89.20	94.40	6,781.2	590.5	2,321.6	2,321.6	2.26	2.00	
9,594.0	89.40	96.20	6,782.4	581.7	2,416.2	2,416.2	1.91	0.21	
9,688.0	87.20	94.20	6,785.1	573.2	2,509.8	2,509.8	3.16	-2.34	
9,783.0	88.70	91.40	6,788.5	568.5	2,604.6	2,604.6	3.34	1.58	

Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3C-19H-M368
Project: DJ Wattenberg	TVD Reference: WELL @ 5029.0ft (Ensign 135)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: WELL @ 5029.0ft (Ensign 135)
Well: Boyd 3C-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
9,877.0	91.30	91.20	6,788.5	566.4	2,698.5	2,698.5	2.77	2.77	
9,972.0	90.40	88.50	6,787.1	566.7	2,793.5	2,793.5	3.00	-0.95	
10,067.0	88.40	87.00	6,788.1	570.4	2,888.4	2,888.4	2.63	-2.11	
10,161.0	89.20	87.20	6,790.1	575.1	2,982.3	2,982.3	0.88	0.85	
10,256.0	92.40	89.00	6,788.8	578.3	3,077.2	3,077.2	3.86	3.37	
10,350.0	91.00	88.60	6,786.0	580.3	3,171.2	3,171.2	1.55	-1.49	
10,445.0	88.00	88.10	6,786.8	583.0	3,266.1	3,266.1	3.20	-3.16	
10,540.0	87.00	88.80	6,791.0	585.6	3,361.0	3,361.0	1.28	-1.05	
10,634.0	88.30	88.00	6,794.8	588.2	3,454.9	3,454.9	1.62	1.38	
10,729.0	88.30	87.60	6,797.6	591.8	3,549.7	3,549.7	0.42	0.00	
10,824.0	90.00	88.40	6,799.0	595.2	3,644.7	3,644.7	1.98	1.79	
10,918.0	88.20	89.90	6,800.5	596.5	3,738.6	3,738.6	2.49	-1.91	
11,012.0	88.20	90.60	6,803.5	596.1	3,832.6	3,832.6	0.74	0.00	
11,107.0	88.40	91.70	6,806.3	594.2	3,927.5	3,927.5	1.18	0.21	
11,202.0	91.90	94.00	6,806.0	589.5	4,022.4	4,022.4	4.41	3.68	
11,257.0	94.00	94.00	6,803.2	585.7	4,077.2	4,077.2	3.82	3.82	Last CES Survey @ 11,257' MD
11,309.0	94.00	94.00	6,799.6	582.1	4,128.9	4,128.9	0.00	0.00	PTB @ 11,309'

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Boyd 3C-19H-M368 PBI - hit/miss target - Shape	0.00	0.00	6,819.0	601.4	4,178.3	1,319,028.33	3,129,035.90	40.208200	-105.038020
- actual wellpath misses target center by 56.5ft at 11309.0ft MD (6799.6 TVD, 582.1 N, 4128.9 E)									
- Point									
Boyd 3C-19H-M368 PBI - hit/miss target - Shape	0.00	0.00	6,798.3	601.4	4,172.3	1,319,028.27	3,129,029.89	40.208200	-105.038042
- actual wellpath misses target center by 47.5ft at 11309.0ft MD (6799.6 TVD, 582.1 N, 4128.9 E)									
- Point									
Boyd 3C-19H-M368 PBI - hit/miss target - Shape	0.00	0.00	6,838.0	601.4	4,172.3	1,319,028.30	3,129,029.93	40.208200	-105.038041
- actual wellpath misses target center by 61.2ft at 11309.0ft MD (6799.6 TVD, 582.1 N, 4128.9 E)									
- Point									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,257.0	6,803.2	585.7	4,077.2	Last CES Survey @ 11,257' MD
11,309.0	6,799.6	582.1	4,128.9	PTB @ 11,309'

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

DJ Wattenberg

S19-T3N-R68W (Bohrer/Boyd)

Boyd 3C-19H-M368

Hz

Design: FINAL

Survey Report - Geographic

03 August, 2014

Cathedral Energy Services

Survey Report - Geographic

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3C-19H-M368
Project: DJ Wattenberg	TVD Reference: WELL @ 5029.0ft (Ensign 135)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: WELL @ 5029.0ft (Ensign 135)
Well: Boyd 3C-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 3C-19H-M368				
Well Position	+N/-S 0.0 ft	Northing: 1,318,405.84 ft	Latitude:	40.206550
	+E/-W 0.0 ft	Easting: 3,124,860.68 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	6/15/2014	8.60	66.74	52,682

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 8/3/2014
From (ft)	To (ft)	Survey (Wellbore)
141.0	11,309.0	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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	1,318,405.84	3,124,860.68	40.206550	-105.052980	
141.0	0.70	356.00	141.0	0.9	-0.1	1,318,406.70	3,124,860.61	40.206552	-105.052980	
233.0	0.90	333.30	233.0	2.1	-0.4	1,318,407.91	3,124,860.24	40.206556	-105.052982	
325.0	1.40	293.20	325.0	3.2	-1.8	1,318,408.99	3,124,858.88	40.206559	-105.052987	
417.0	2.30	299.20	416.9	4.5	-4.4	1,318,410.32	3,124,856.23	40.206562	-105.052996	
509.0	2.70	291.40	508.8	6.2	-8.1	1,318,411.99	3,124,852.59	40.206567	-105.053009	
601.0	3.50	296.10	600.7	8.2	-12.6	1,318,413.99	3,124,848.04	40.206573	-105.053025	
693.0	4.10	305.70	692.5	11.4	-17.8	1,318,417.12	3,124,842.83	40.206581	-105.053044	
784.0	5.10	311.20	783.2	15.9	-23.5	1,318,421.66	3,124,837.12	40.206594	-105.053064	
823.0	5.50	307.70	822.0	18.2	-26.3	1,318,423.93	3,124,834.33	40.206600	-105.053074	
915.0	5.80	302.70	913.6	23.4	-33.7	1,318,429.10	3,124,826.90	40.206614	-105.053101	
1,007.0	7.20	308.70	1,005.0	29.5	-42.1	1,318,435.17	3,124,818.46	40.206631	-105.053131	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3C-19H-M368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5029.0ft (Ensign 135)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MD Reference:	WELL @ 5029.0ft (Ensign 135)
Well:	Boyd 3C-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	
1,099.0	6.80	317.30	1,096.3	37.1	-50.3	1,318,442.74	3,124,810.23	40.206652	-105.053160	
1,191.0	7.30	312.00	1,187.6	45.1	-58.3	1,318,450.61	3,124,802.15	40.206674	-105.053189	
1,282.0	6.80	319.70	1,277.9	53.0	-66.1	1,318,458.55	3,124,794.33	40.206696	-105.053217	
1,374.0	6.50	313.80	1,369.3	60.8	-73.4	1,318,466.27	3,124,787.01	40.206717	-105.053243	
1,466.0	7.60	316.90	1,460.6	68.8	-81.3	1,318,474.28	3,124,779.05	40.206739	-105.053271	
1,557.0	8.00	312.20	1,550.8	77.5	-90.1	1,318,482.88	3,124,770.21	40.206763	-105.053303	
1,649.0	7.80	316.50	1,641.9	86.3	-99.1	1,318,491.66	3,124,761.12	40.206787	-105.053335	
1,741.0	8.70	309.60	1,733.0	95.3	-108.8	1,318,500.58	3,124,751.42	40.206812	-105.053370	
1,833.0	9.50	310.00	1,823.8	104.6	-120.0	1,318,509.84	3,124,740.20	40.206837	-105.053410	
1,924.0	9.00	317.30	1,913.6	114.7	-130.5	1,318,519.84	3,124,729.56	40.206865	-105.053448	
2,016.0	8.30	321.20	2,004.6	125.1	-139.6	1,318,530.26	3,124,720.47	40.206894	-105.053480	
2,108.0	7.90	316.90	2,095.7	134.9	-148.1	1,318,540.01	3,124,711.94	40.206920	-105.053510	
2,199.0	8.30	315.80	2,185.7	144.2	-156.9	1,318,549.24	3,124,703.04	40.206946	-105.053542	
2,291.0	8.00	309.50	2,276.8	153.0	-166.5	1,318,558.03	3,124,693.43	40.206970	-105.053576	
2,383.0	9.10	306.60	2,367.8	161.4	-177.3	1,318,566.38	3,124,682.60	40.206993	-105.053615	
2,478.0	8.90	308.10	2,461.6	170.4	-189.1	1,318,575.34	3,124,670.74	40.207018	-105.053657	
2,572.0	9.10	310.00	2,554.5	179.7	-200.5	1,318,584.54	3,124,659.28	40.207043	-105.053698	
2,667.0	8.70	324.30	2,648.3	190.4	-210.4	1,318,595.16	3,124,649.28	40.207073	-105.053734	
2,761.0	8.50	315.80	2,741.3	201.1	-219.4	1,318,605.87	3,124,640.23	40.207102	-105.053766	
2,856.0	7.40	321.00	2,835.4	210.9	-228.2	1,318,615.61	3,124,631.44	40.207129	-105.053797	
2,950.0	7.10	318.00	2,928.6	219.9	-235.9	1,318,624.59	3,124,623.70	40.207154	-105.053825	
3,045.0	7.70	317.70	3,022.8	229.0	-244.1	1,318,633.62	3,124,615.44	40.207179	-105.053854	
3,139.0	7.60	315.30	3,116.0	238.1	-252.7	1,318,642.65	3,124,606.78	40.207204	-105.053885	
3,234.0	8.10	314.90	3,210.1	247.3	-261.9	1,318,651.80	3,124,597.58	40.207229	-105.053918	
3,328.0	8.40	315.80	3,303.1	256.9	-271.3	1,318,661.35	3,124,588.05	40.207255	-105.053952	
3,423.0	9.50	321.70	3,397.0	268.0	-281.0	1,318,672.43	3,124,578.30	40.207286	-105.053986	
3,517.0	9.00	318.90	3,489.8	279.6	-290.7	1,318,684.00	3,124,568.60	40.207318	-105.054021	
3,612.0	8.00	313.60	3,583.7	289.8	-300.3	1,318,694.11	3,124,558.87	40.207346	-105.054056	
3,706.0	8.40	316.00	3,676.7	299.2	-309.9	1,318,703.52	3,124,549.32	40.207371	-105.054090	
3,801.0	7.90	310.70	3,770.8	308.5	-319.6	1,318,712.72	3,124,539.50	40.207397	-105.054125	
3,896.0	8.00	319.10	3,864.9	317.7	-328.9	1,318,721.92	3,124,530.18	40.207422	-105.054158	
3,990.0	8.10	317.30	3,958.0	327.6	-337.7	1,318,731.69	3,124,521.36	40.207449	-105.054189	
4,085.0	7.80	312.90	4,052.0	336.9	-346.9	1,318,740.95	3,124,512.05	40.207475	-105.054222	
4,179.0	9.00	316.90	4,145.0	346.6	-356.6	1,318,750.61	3,124,502.30	40.207501	-105.054257	
4,274.0	8.40	314.50	4,238.9	356.9	-366.7	1,318,760.85	3,124,492.22	40.207530	-105.054293	
4,368.0	7.60	314.40	4,332.0	366.0	-376.0	1,318,769.97	3,124,482.84	40.207555	-105.054326	
4,463.0	8.80	310.50	4,426.1	375.1	-386.0	1,318,779.03	3,124,472.78	40.207580	-105.054362	
4,558.0	7.90	307.40	4,520.0	383.8	-396.7	1,318,787.66	3,124,462.02	40.207604	-105.054401	
4,652.0	7.60	311.50	4,613.2	391.9	-406.5	1,318,795.65	3,124,452.20	40.207626	-105.054436	
4,747.0	7.80	318.70	4,707.3	400.9	-415.5	1,318,804.61	3,124,443.19	40.207650	-105.054468	
4,841.0	8.30	315.80	4,800.4	410.5	-424.4	1,318,814.23	3,124,434.20	40.207677	-105.054500	
4,936.0	9.00	317.30	4,894.3	420.9	-434.2	1,318,824.55	3,124,424.33	40.207705	-105.054535	
5,031.0	7.80	315.70	4,988.3	431.0	-443.8	1,318,834.58	3,124,414.74	40.207733	-105.054569	
5,125.0	8.60	316.70	5,081.3	440.7	-453.0	1,318,844.21	3,124,405.41	40.207760	-105.054602	
5,220.0	6.80	309.30	5,175.5	449.4	-462.3	1,318,852.90	3,124,396.14	40.207784	-105.054635	
5,314.0	8.40	308.20	5,268.7	457.2	-472.0	1,318,860.62	3,124,386.40	40.207805	-105.054670	
5,409.0	7.50	310.10	5,362.7	465.4	-482.2	1,318,868.85	3,124,376.17	40.207828	-105.054707	
5,504.0	8.10	310.10	5,456.9	473.8	-492.0	1,318,877.11	3,124,366.26	40.207851	-105.054742	
5,598.0	8.60	308.20	5,549.9	482.4	-502.6	1,318,885.67	3,124,355.63	40.207874	-105.054780	
5,693.0	8.00	313.40	5,643.9	491.3	-513.0	1,318,894.55	3,124,345.20	40.207899	-105.054817	
5,787.0	8.40	316.50	5,736.9	500.8	-522.5	1,318,903.98	3,124,335.67	40.207925	-105.054851	
5,882.0	9.20	317.60	5,830.8	511.4	-532.4	1,318,914.57	3,124,325.72	40.207954	-105.054886	
5,976.0	7.60	309.30	5,923.8	520.9	-542.3	1,318,924.01	3,124,315.80	40.207980	-105.054922	
6,071.0	7.90	322.60	6,017.9	530.1	-551.1	1,318,933.13	3,124,306.92	40.208005	-105.054953	
6,118.0	7.50	316.70	6,064.5	534.9	-555.2	1,318,937.90	3,124,302.83	40.208018	-105.054968	

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Boyd 3C-19H-M368
Project:	DJ Wattenberg	TVD Reference:	WELL @ 5029.0ft (Ensign 135)
Site:	S19-T3N-R68W (Bohrer/Boyd)	MD Reference:	WELL @ 5029.0ft (Ensign 135)
Well:	Boyd 3C-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	
6,166.0	6.80	320.90	6,112.1	539.4	-559.1	1,318,942.37	3,124,298.87	40.208031	-105.054982	
6,213.0	6.70	357.80	6,158.8	544.3	-561.0	1,318,947.26	3,124,296.98	40.208044	-105.054989	
6,260.0	7.30	17.40	6,205.5	549.8	-560.2	1,318,952.86	3,124,297.74	40.208059	-105.054986	
6,307.0	8.70	34.10	6,252.0	555.6	-557.3	1,318,958.66	3,124,300.60	40.208075	-105.054976	
6,355.0	9.80	55.30	6,299.4	561.0	-551.9	1,318,964.02	3,124,305.97	40.208090	-105.054956	
6,402.0	10.00	69.30	6,345.7	564.7	-544.8	1,318,967.78	3,124,313.06	40.208100	-105.054931	
6,449.0	13.30	75.50	6,391.7	567.5	-535.7	1,318,970.62	3,124,322.10	40.208108	-105.054898	
6,496.0	18.20	80.10	6,437.0	570.1	-523.3	1,318,973.30	3,124,334.56	40.208115	-105.054854	
6,544.0	23.40	83.20	6,481.8	572.5	-506.4	1,318,975.81	3,124,351.41	40.208122	-105.054793	
6,591.0	29.30	84.20	6,523.9	574.8	-485.7	1,318,978.18	3,124,372.12	40.208128	-105.054719	
6,638.0	34.80	83.40	6,563.7	577.5	-460.9	1,318,981.01	3,124,396.89	40.208135	-105.054630	
6,685.0	42.60	82.80	6,600.4	581.0	-431.7	1,318,984.70	3,124,426.02	40.208145	-105.054526	
6,733.0	49.20	83.30	6,633.8	585.2	-397.5	1,318,989.03	3,124,460.20	40.208156	-105.054404	
6,780.0	52.20	85.90	6,663.5	588.6	-361.3	1,318,992.62	3,124,496.38	40.208166	-105.054274	
6,827.0	53.20	87.30	6,692.0	590.8	-324.0	1,318,995.02	3,124,533.69	40.208172	-105.054140	
6,875.0	54.70	88.70	6,720.3	592.2	-285.2	1,318,996.57	3,124,572.48	40.208176	-105.054001	
6,923.0	61.90	89.90	6,745.5	592.6	-244.4	1,318,997.25	3,124,613.28	40.208177	-105.053855	
6,970.0	70.90	89.90	6,764.3	592.7	-201.4	1,318,997.55	3,124,656.31	40.208177	-105.053701	
7,018.0	78.60	89.30	6,776.9	593.1	-155.1	1,318,998.11	3,124,702.58	40.208178	-105.053536	
7,065.0	81.50	88.90	6,785.0	593.8	-108.8	1,318,999.07	3,124,748.86	40.208180	-105.053370	
7,112.0	85.10	88.30	6,790.5	594.9	-62.2	1,319,000.44	3,124,795.51	40.208183	-105.053203	
7,119.0	85.40	88.40	6,791.1	595.1	-55.2	1,319,000.68	3,124,802.48	40.208184	-105.053178	
7,166.0	88.00	87.10	6,793.8	597.0	-8.3	1,319,002.76	3,124,849.35	40.208189	-105.053010	
7,228.0	89.60	89.80	6,795.1	598.6	53.6	1,319,004.75	3,124,911.30	40.208193	-105.052788	
7,323.0	93.70	90.00	6,792.4	598.8	148.6	1,319,005.39	3,125,006.23	40.208194	-105.052448	
7,417.0	94.80	89.00	6,785.4	599.6	242.3	1,319,006.68	3,125,099.96	40.208196	-105.052113	
7,512.0	95.30	90.10	6,777.0	600.4	336.9	1,319,007.90	3,125,194.59	40.208198	-105.051774	
7,606.0	96.30	89.90	6,767.5	600.4	430.5	1,319,008.37	3,125,288.10	40.208198	-105.051439	
7,700.0	92.20	88.60	6,760.6	601.6	524.2	1,319,010.08	3,125,381.81	40.208201	-105.051104	
7,795.0	88.40	88.50	6,760.1	604.0	619.1	1,319,012.96	3,125,476.74	40.208208	-105.050764	
7,890.0	91.10	91.10	6,760.5	604.3	714.1	1,319,013.77	3,125,571.72	40.208209	-105.050423	
7,984.0	91.20	91.80	6,758.6	602.0	808.1	1,319,011.86	3,125,665.69	40.208202	-105.050087	
8,079.0	87.50	90.80	6,759.7	599.8	903.0	1,319,010.19	3,125,760.65	40.208197	-105.049747	
8,174.0	87.40	90.90	6,763.9	598.4	997.9	1,319,009.26	3,125,855.55	40.208193	-105.049407	
8,268.0	90.60	90.70	6,765.5	597.1	1,091.9	1,319,008.42	3,125,949.52	40.208189	-105.049071	
8,363.0	88.90	89.80	6,766.0	596.7	1,186.9	1,319,008.48	3,126,044.51	40.208188	-105.048731	
8,457.0	87.80	89.30	6,768.7	597.4	1,280.8	1,319,009.70	3,126,138.46	40.208190	-105.048394	
8,552.0	87.80	89.90	6,772.3	598.1	1,375.7	1,319,010.84	3,126,233.37	40.208192	-105.048055	
8,647.0	88.70	90.30	6,775.2	597.9	1,470.7	1,319,011.15	3,126,328.32	40.208191	-105.047715	
8,742.0	87.50	86.10	6,778.4	600.9	1,565.6	1,319,014.61	3,126,423.19	40.208199	-105.047375	
8,805.0	90.50	88.50	6,779.5	603.8	1,628.5	1,319,017.89	3,126,486.08	40.208208	-105.047150	
8,868.0	91.60	88.00	6,778.3	605.8	1,691.4	1,319,020.13	3,126,549.03	40.208213	-105.046924	
8,931.0	91.70	88.60	6,776.5	607.6	1,754.4	1,319,022.32	3,126,611.96	40.208218	-105.046699	
9,026.0	91.60	89.70	6,773.8	609.0	1,849.3	1,319,024.20	3,126,706.90	40.208222	-105.046359	
9,120.0	90.70	90.30	6,771.9	609.0	1,943.3	1,319,024.68	3,126,800.88	40.208222	-105.046022	
9,215.0	88.90	91.70	6,772.2	607.4	2,038.3	1,319,023.50	3,126,895.89	40.208217	-105.045682	
9,310.0	88.20	93.80	6,774.6	602.8	2,133.2	1,319,019.42	3,126,990.76	40.208205	-105.045343	
9,404.0	87.30	93.40	6,778.3	596.9	2,226.9	1,319,014.00	3,127,084.53	40.208188	-105.045007	
9,499.0	89.20	94.40	6,781.2	590.5	2,321.6	1,319,008.02	3,127,179.29	40.208171	-105.044668	
9,594.0	89.40	96.20	6,782.4	581.7	2,416.2	1,318,999.72	3,127,273.92	40.208147	-105.044329	
9,688.0	87.20	94.20	6,785.1	573.2	2,509.8	1,318,991.67	3,127,367.52	40.208123	-105.043994	
9,783.0	88.70	91.40	6,788.5	568.5	2,604.6	1,318,987.52	3,127,462.36	40.208110	-105.043655	
9,877.0	91.30	91.20	6,788.5	566.4	2,698.5	1,318,985.86	3,127,556.34	40.208105	-105.043318	
9,972.0	90.40	88.50	6,787.1	566.7	2,793.5	1,318,986.58	3,127,651.31	40.208105	-105.042978	
10,067.0	88.40	87.00	6,788.1	570.4	2,888.4	1,318,990.79	3,127,746.21	40.208115	-105.042639	

Cathedral Energy Services

Survey Report - Geographic

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well Boyd 3C-19H-M368
Project: DJ Wattenberg	TVD Reference: WELL @ 5029.0ft (Ensign 135)
Site: S19-T3N-R68W (Bohrer/Boyd)	MD Reference: WELL @ 5029.0ft (Ensign 135)
Well: Boyd 3C-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	
10,161.0	89.20	87.20	6,790.1	575.1	2,982.3	1,318,996.02	3,127,840.04	40.208128	-105.042302	
10,256.0	92.40	89.00	6,788.8	578.3	3,077.2	1,318,999.65	3,127,934.95	40.208137	-105.041963	
10,350.0	91.00	88.60	6,786.0	580.3	3,171.2	1,319,002.09	3,128,028.87	40.208142	-105.041626	
10,445.0	88.00	88.10	6,786.8	583.0	3,266.1	1,319,005.30	3,128,123.80	40.208150	-105.041286	
10,540.0	87.00	88.80	6,791.0	585.6	3,361.0	1,319,008.35	3,128,218.66	40.208157	-105.040947	
10,634.0	88.30	88.00	6,794.8	588.2	3,454.9	1,319,011.44	3,128,312.53	40.208164	-105.040611	
10,729.0	88.30	87.60	6,797.6	591.8	3,549.7	1,319,015.57	3,128,407.40	40.208174	-105.040271	
10,824.0	90.00	88.40	6,799.0	595.2	3,644.7	1,319,019.36	3,128,502.31	40.208183	-105.039931	
10,918.0	88.20	89.90	6,800.5	596.5	3,738.6	1,319,021.23	3,128,596.27	40.208187	-105.039594	
11,012.0	88.20	90.60	6,803.5	596.1	3,832.6	1,319,021.29	3,128,690.22	40.208186	-105.039258	
11,107.0	88.40	91.70	6,806.3	594.2	3,927.5	1,319,019.87	3,128,785.17	40.208180	-105.038918	
11,202.0	91.90	94.00	6,806.0	589.5	4,022.4	1,319,015.62	3,128,880.05	40.208167	-105.038578	
11,257.0	94.00	94.00	6,803.2	585.7	4,077.2	1,319,012.07	3,128,934.84	40.208157	-105.038382	
Last CES Survey @ 11,257' MD										
11,309.0	94.00	94.00	6,799.6	582.1	4,128.9	1,319,008.71	3,128,986.60	40.208147	-105.038197	
PTB @ 11,309'										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
Boyd 3C-19H-M368 PBI - hit/miss target - Shape - Point	0.00	0.00	6,798.3	601.4	4,172.3	1,319,028.27	3,129,029.89	40.208200	-105.038042	
- actual wellpath misses target center by 47.5ft at 11309.0ft MD (6799.6 TVD, 582.1 N, 4128.9 E)										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,257.0	6,803.2	585.7	4,077.2	Last CES Survey @ 11,257' MD	
11,309.0	6,799.6	582.1	4,128.9	PTB @ 11,309'	

Checked By: _____ Approved By: _____ Date: _____