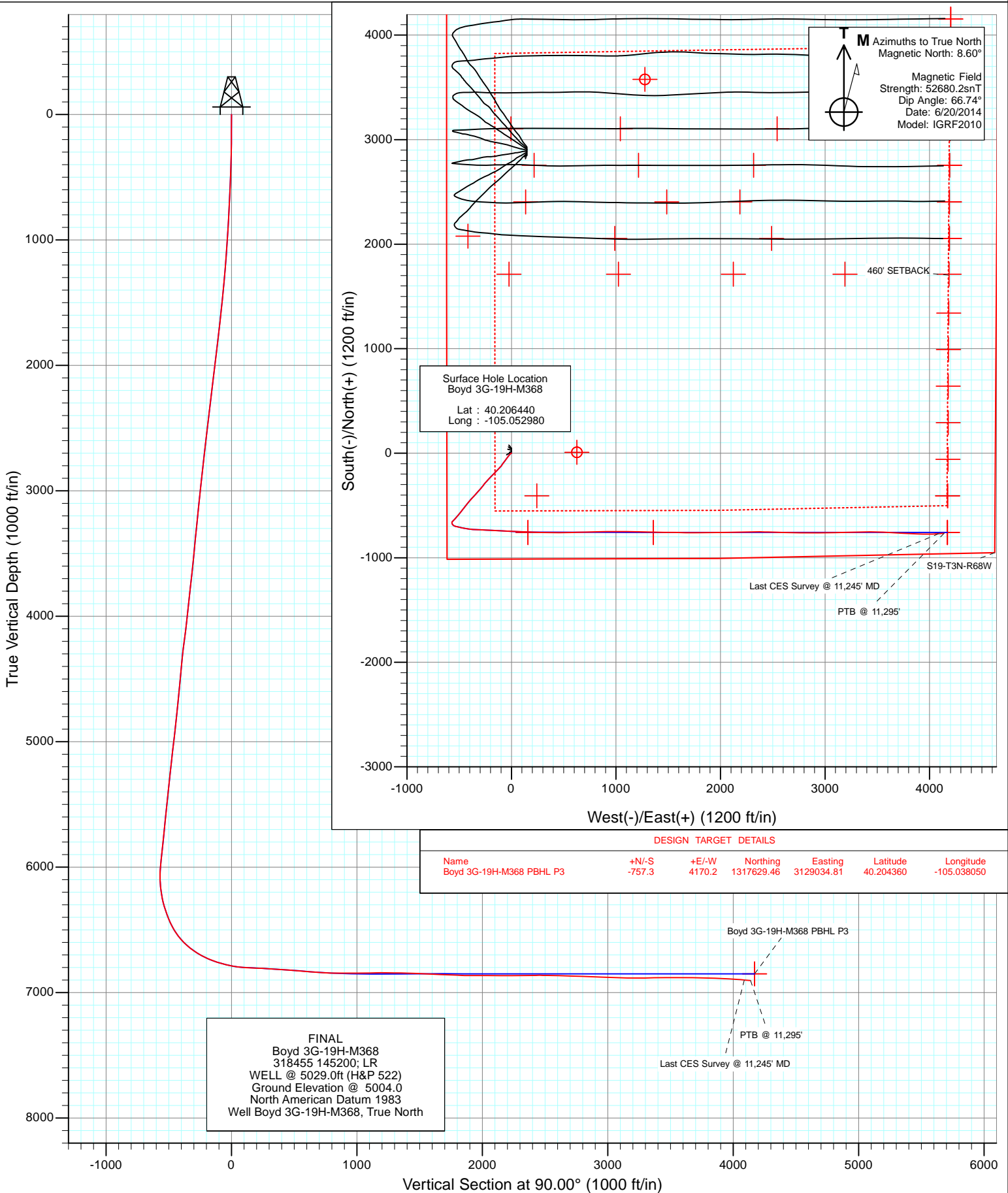




Project: DJ Wattenberg  
 Site: S19-T3N-R68W (Bohrer/Boyd)  
 Well: Boyd 3G-19H-M368  
 Wellbore: Hz  
 Design: FINAL



**M** Azimuths to True North  
 Magnetic North: 8.60°  
 Magnetic Field Strength: 52680.2snT  
 Dip Angle: 66.74°  
 Date: 6/20/2014  
 Model: IGRF2010

Surface Hole Location  
 Boyd 3G-19H-M368  
 Lat : 40.206440  
 Long : -105.052980

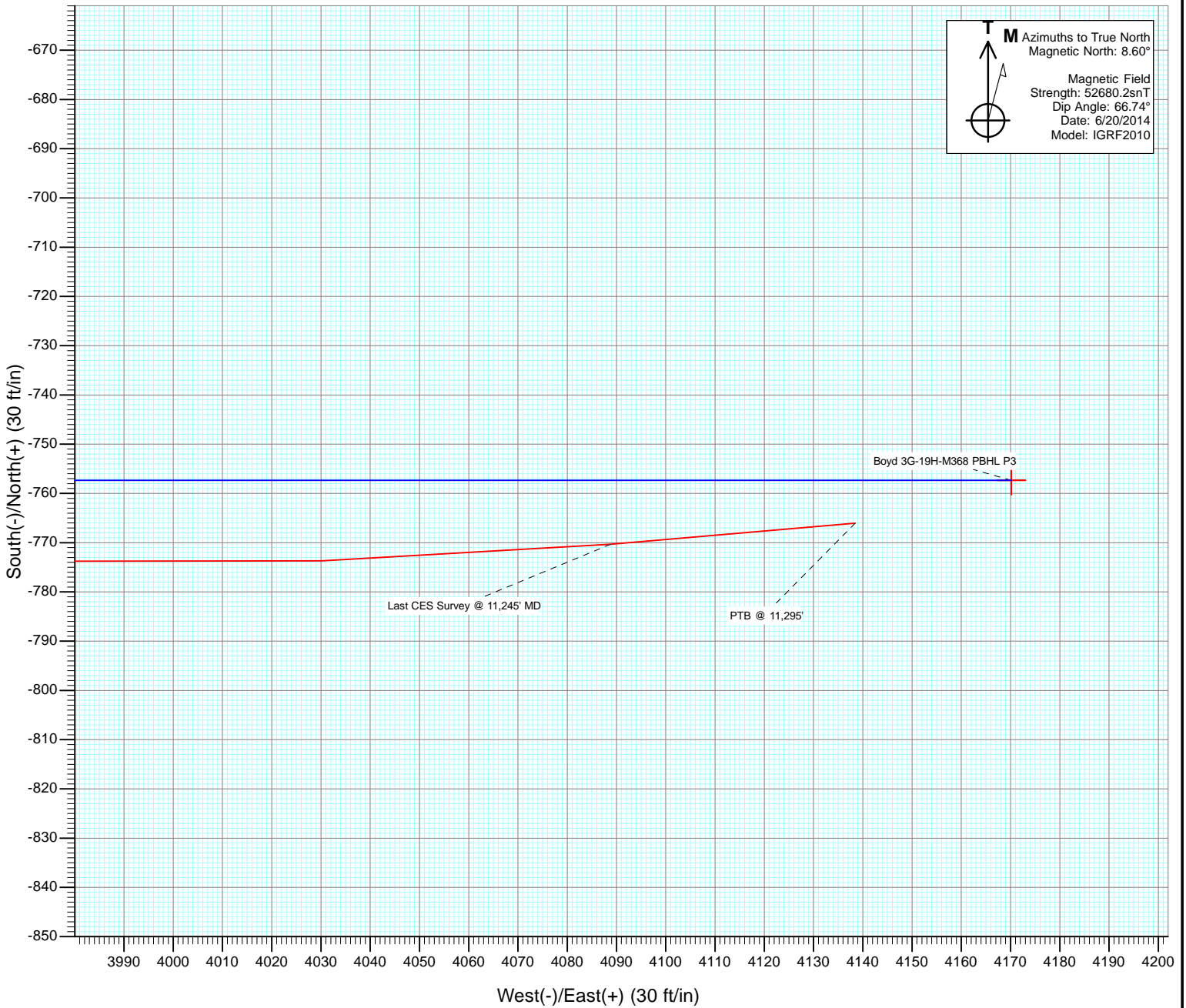
DESIGN TARGET DETAILS							
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
Boyd 3G-19H-M368 PBHL P3	-757.3	4170.2	1317629.46	3129034.81	40.204360	-105.038050	

FINAL  
 Boyd 3G-19H-M368  
 318455 145200; LR  
 WELL @ 5029.0ft (H&P 522)  
 Ground Elevation @ 5004.0  
 North American Datum 1983  
 Well Boyd 3G-19H-M368, True North

Boyd 3G-19H-M368 PBHL P3  
 PTB @ 11,295'  
 Last CES Survey @ 11,245' MD

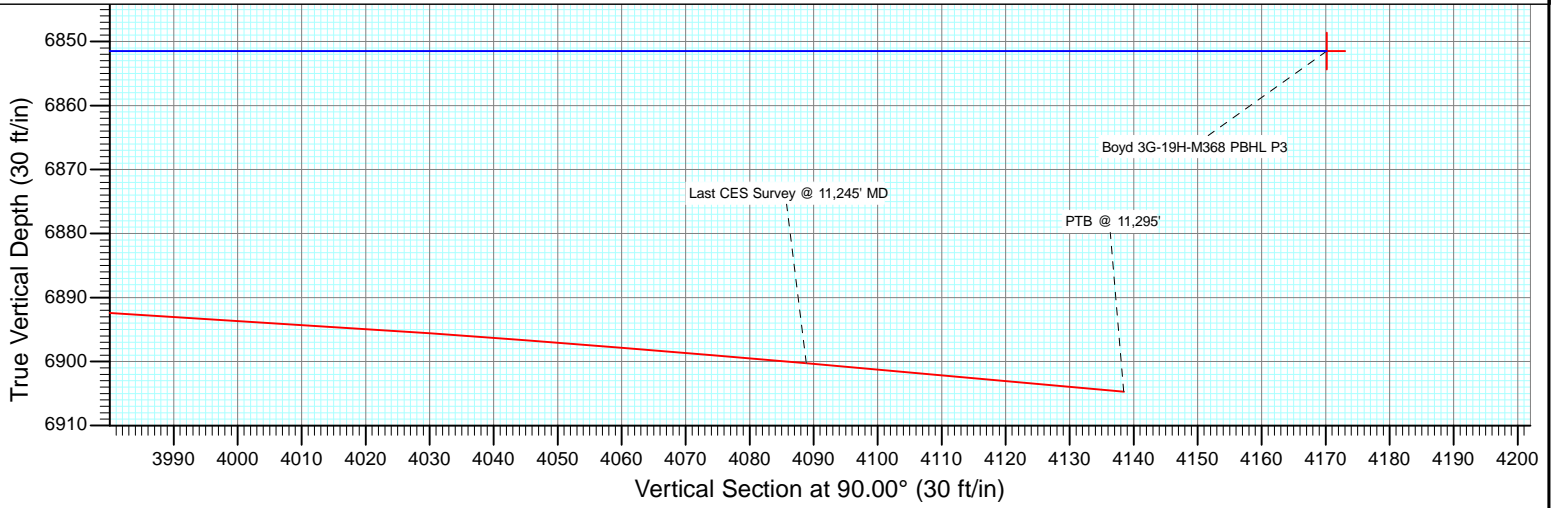


Project: DJ Wattenberg  
Site: S19-T3N-R68W (Bohrer/Boyd)  
Well: Boyd 3G-19H-M368  
Wellbore: Hz  
Design: FINAL



**M** Azimuths to True North  
Magnetic North: 8.60°

Magnetic Field  
Strength: 52680.2snT  
Dip Angle: 66.74°  
Date: 6/20/2014  
Model: IGRF2010



# Cathedral Energy Services

## Survey Report

<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b> Well Boyd 3G-19H-M368
<b>Project:</b> DJ Wattenberg	<b>TVD Reference:</b> WELL @ 5029.0ft (H&P 522)
<b>Site:</b> S19-T3N-R68W (Bohrer/Boyd)	<b>MD Reference:</b> WELL @ 5029.0ft (H&P 522)
<b>Well:</b> Boyd 3G-19H-M368	<b>North Reference:</b> True
<b>Wellbore:</b> Hz	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL	<b>Database:</b> USA EDM 5000 Multi Users DB

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

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

<b>Well</b> Boyd 3G-19H-M368				
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,318,365.77 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	3,124,860.88 ft
			<b>Longitude:</b>	-105.052980
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	5,004.0 ft

<b>Wellbore</b> Hz					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	6/20/2014	8.60	66.74	52,680

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

<b>Survey Program</b>		<b>Date</b> 6/30/2014
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>
141.0	11,295.0	Survey #1 (Hz)
		<b>Tool Name</b> Geolink MWD
		<b>Description</b> 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	0.10	248.70	141.0	0.0	-0.1	-0.1	0.07	0.07	
233.0	0.60	293.40	233.0	0.1	-0.6	-0.6	0.58	0.54	
325.0	1.50	253.90	325.0	0.0	-2.2	-2.2	1.20	0.98	
417.0	1.80	247.90	416.9	-0.9	-4.7	-4.7	0.38	0.33	
509.0	3.00	234.80	508.9	-2.8	-8.0	-8.0	1.43	1.30	
601.0	3.70	214.50	600.7	-6.7	-11.7	-11.7	1.49	0.76	
693.0	4.50	221.00	692.5	-11.8	-15.7	-15.7	1.00	0.87	
784.0	5.00	220.10	783.2	-17.6	-20.6	-20.6	0.56	0.55	
805.0	4.80	221.60	804.1	-18.9	-21.8	-21.8	1.13	-0.95	
915.0	5.10	223.40	913.7	-25.9	-28.2	-28.2	0.31	0.27	
1,007.0	5.90	215.50	1,005.2	-32.7	-33.8	-33.8	1.20	0.87	
1,099.0	6.70	213.20	1,096.7	-41.1	-39.5	-39.5	0.91	0.87	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Boyd 3G-19H-M368
<b>Project:</b>	DJ Wattenberg	<b>TD Reference:</b>	WELL @ 5029.0ft (H&P 522)
<b>Site:</b>	S19-T3N-R68W (Bohrer/Boyd)	<b>MVD Reference:</b>	WELL @ 5029.0ft (H&P 522)
<b>Well:</b>	Boyd 3G-19H-M368	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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	7.90	216.50	1,187.9	-50.7	-46.2	-46.2	1.38	1.30	
1,283.0	9.10	213.80	1,278.9	-61.8	-54.0	-54.0	1.37	1.30	
1,375.0	8.80	218.10	1,369.8	-73.4	-62.4	-62.4	0.80	-0.33	
1,466.0	9.10	220.10	1,459.7	-84.3	-71.3	-71.3	0.47	0.33	
1,558.0	10.90	217.20	1,550.3	-96.8	-81.2	-81.2	2.03	1.96	
1,650.0	10.40	210.90	1,640.7	-110.9	-90.8	-90.8	1.38	-0.54	
1,741.0	10.40	218.60	1,730.2	-124.4	-100.1	-100.1	1.53	0.00	
1,833.0	10.30	220.80	1,820.7	-137.1	-110.7	-110.7	0.44	-0.11	
1,925.0	9.90	227.80	1,911.3	-148.6	-121.9	-121.9	1.40	-0.43	
2,017.0	9.60	224.30	2,002.0	-159.4	-133.1	-133.1	0.72	-0.33	
2,108.0	9.10	226.60	2,091.8	-169.8	-143.6	-143.6	0.69	-0.55	
2,200.0	9.90	224.60	2,182.5	-180.4	-154.5	-154.5	0.94	0.87	
2,292.0	9.10	222.90	2,273.3	-191.4	-165.0	-165.0	0.92	-0.87	
2,384.0	10.30	220.10	2,363.9	-203.0	-175.2	-175.2	1.40	1.30	
2,478.0	10.50	227.00	2,456.4	-215.3	-186.9	-186.9	1.34	0.21	
2,573.0	10.10	224.60	2,549.9	-227.1	-199.1	-199.1	0.62	-0.42	
2,667.0	9.60	223.80	2,642.5	-238.6	-210.3	-210.3	0.55	-0.53	
2,762.0	8.70	223.00	2,736.3	-249.6	-220.7	-220.7	0.96	-0.95	
2,856.0	9.70	220.10	2,829.1	-260.9	-230.6	-230.6	1.17	1.06	
2,951.0	9.00	221.80	2,922.8	-272.5	-240.7	-240.7	0.79	-0.74	
3,045.0	8.40	223.70	3,015.7	-283.0	-250.4	-250.4	0.71	-0.64	
3,139.0	9.40	216.70	3,108.6	-294.1	-259.7	-259.7	1.57	1.06	
3,234.0	9.00	215.60	3,202.4	-306.4	-268.7	-268.7	0.46	-0.42	
3,329.0	9.80	220.20	3,296.1	-318.6	-278.2	-278.2	1.15	0.84	
3,423.0	9.30	219.70	3,388.8	-330.5	-288.2	-288.2	0.54	-0.53	
3,518.0	8.40	218.90	3,482.7	-341.8	-297.5	-297.5	0.96	-0.95	
3,612.0	9.30	222.70	3,575.5	-352.8	-307.0	-307.0	1.14	0.96	
3,707.0	8.70	220.70	3,669.4	-363.8	-316.8	-316.8	0.71	-0.63	
3,802.0	9.60	224.40	3,763.2	-375.0	-327.1	-327.1	1.13	0.95	
3,896.0	8.80	223.20	3,856.0	-385.8	-337.5	-337.5	0.88	-0.85	
3,991.0	9.80	220.10	3,949.7	-397.3	-347.7	-347.7	1.18	1.05	
4,086.0	8.90	217.70	4,043.4	-409.3	-357.4	-357.4	1.03	-0.95	
4,180.0	10.80	224.80	4,136.1	-421.3	-368.0	-368.0	2.40	2.02	
4,275.0	10.70	226.00	4,229.4	-433.7	-380.6	-380.6	0.26	-0.11	
4,370.0	9.10	218.70	4,323.0	-445.7	-391.7	-391.7	2.14	-1.68	
4,464.0	8.00	218.50	4,415.9	-456.6	-400.4	-400.4	1.17	-1.17	
4,559.0	7.80	222.80	4,510.0	-466.5	-408.9	-408.9	0.66	-0.21	
4,654.0	9.10	219.80	4,604.0	-477.0	-418.1	-418.1	1.44	1.37	
4,749.0	9.80	217.20	4,697.7	-489.3	-427.8	-427.8	0.86	0.74	
4,843.0	9.70	217.20	4,790.3	-501.9	-437.4	-437.4	0.11	-0.11	
4,938.0	10.90	217.60	4,883.8	-515.4	-447.7	-447.7	1.27	1.26	
5,032.0	9.70	217.30	4,976.3	-528.8	-457.9	-457.9	1.28	-1.28	
5,127.0	9.70	220.90	5,069.9	-541.2	-468.0	-468.0	0.64	0.00	
5,222.0	9.80	220.90	5,163.6	-553.3	-478.6	-478.6	0.11	0.11	
5,316.0	10.20	218.60	5,256.1	-565.9	-489.0	-489.0	0.60	0.43	
5,411.0	10.00	214.70	5,349.7	-579.3	-498.9	-498.9	0.75	-0.21	
5,506.0	9.50	221.50	5,443.3	-591.9	-508.8	-508.8	1.32	-0.53	
5,600.0	8.60	221.30	5,536.1	-603.0	-518.6	-518.6	0.96	-0.96	
5,695.0	8.70	222.30	5,630.1	-613.6	-528.1	-528.1	0.19	0.11	
5,789.0	8.50	220.70	5,723.0	-624.2	-537.5	-537.5	0.33	-0.21	
5,884.0	9.10	222.20	5,816.9	-635.1	-547.1	-547.1	0.68	0.63	
5,979.0	8.60	227.50	5,910.7	-645.4	-557.4	-557.4	1.01	-0.53	
6,010.0	8.10	226.70	5,941.4	-648.5	-560.7	-560.7	1.66	-1.61	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Boyd 3G-19H-M368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5029.0ft (H&P 522)
<b>Site:</b>	S19-T3N-R68W (Bohrer/Boyd)	<b>MD Reference:</b>	WELL @ 5029.0ft (H&P 522)
<b>Well:</b>	Boyd 3G-19H-M368	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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
6,042.0	7.30	227.20	5,973.1	-651.4	-563.8	-563.8	2.51	-2.50	
6,073.0	7.50	216.50	6,003.9	-654.4	-566.4	-566.4	4.49	0.65	
6,105.0	8.20	199.90	6,035.6	-658.2	-568.5	-568.5	7.39	2.19	
6,137.0	9.00	184.30	6,067.2	-662.8	-569.4	-569.4	7.68	2.50	
6,168.0	10.00	171.70	6,097.8	-667.9	-569.2	-569.2	7.42	3.23	
6,200.0	11.30	161.60	6,129.3	-673.7	-567.8	-567.8	7.09	4.06	
6,231.0	12.00	150.90	6,159.6	-679.4	-565.3	-565.3	7.31	2.26	
6,263.0	12.00	140.10	6,190.9	-684.8	-561.5	-561.5	7.01	0.00	
6,294.0	12.00	129.40	6,221.2	-689.3	-557.0	-557.0	7.17	0.00	
6,326.0	13.10	117.40	6,252.5	-693.1	-551.2	-551.2	8.82	3.44	
6,357.0	15.00	110.30	6,282.6	-696.1	-544.3	-544.3	8.26	6.13	
6,388.0	17.20	105.70	6,312.3	-698.8	-536.1	-536.1	8.20	7.10	
6,420.0	19.10	103.70	6,342.8	-701.3	-526.5	-526.5	6.25	5.94	
6,451.0	20.30	102.60	6,371.9	-703.6	-516.3	-516.3	4.05	3.87	
6,483.0	22.10	102.70	6,401.8	-706.2	-505.0	-505.0	5.63	5.62	
6,514.0	23.90	103.70	6,430.3	-709.0	-493.2	-493.2	5.94	5.81	
6,546.0	26.70	102.70	6,459.2	-712.1	-479.9	-479.9	8.85	8.75	
6,578.0	29.90	101.70	6,487.4	-715.3	-465.1	-465.1	10.11	10.00	
6,609.0	33.00	101.20	6,513.8	-718.5	-449.2	-449.2	10.04	10.00	
6,641.0	36.30	99.20	6,540.2	-721.7	-431.3	-431.3	10.91	10.31	
6,672.0	39.80	97.60	6,564.6	-724.5	-412.4	-412.4	11.73	11.29	
6,704.0	43.30	96.20	6,588.5	-727.0	-391.4	-391.4	11.32	10.94	
6,735.0	46.50	94.20	6,610.5	-729.0	-369.6	-369.6	11.28	10.32	
6,766.0	49.50	93.20	6,631.2	-730.5	-346.6	-346.6	9.97	9.68	
6,798.0	52.20	92.80	6,651.4	-731.8	-321.8	-321.8	8.49	8.44	
6,830.0	55.30	91.90	6,670.3	-732.8	-296.0	-296.0	9.95	9.69	
6,861.0	58.10	92.30	6,687.4	-733.8	-270.2	-270.2	9.10	9.04	
6,893.0	60.80	92.60	6,703.6	-734.9	-242.6	-242.6	8.48	8.44	
6,924.0	64.00	92.20	6,718.0	-736.1	-215.2	-215.2	10.39	10.32	
6,956.0	66.90	92.20	6,731.3	-737.2	-186.1	-186.1	9.06	9.06	
6,988.0	69.10	93.20	6,743.3	-738.6	-156.5	-156.5	7.46	6.87	
7,019.0	71.10	93.60	6,753.8	-740.3	-127.4	-127.4	6.56	6.45	
7,051.0	73.50	93.60	6,763.5	-742.2	-97.0	-97.0	7.50	7.50	
7,082.0	75.90	93.30	6,771.7	-744.0	-67.1	-67.1	7.80	7.74	
7,114.0	76.70	93.20	6,779.3	-745.8	-36.1	-36.1	2.52	2.50	
7,145.0	77.90	93.10	6,786.1	-747.5	-5.9	-5.9	3.88	3.87	
7,177.0	80.60	92.50	6,792.1	-749.0	25.5	25.5	8.64	8.44	
7,208.0	83.50	92.20	6,796.4	-750.3	56.2	56.2	9.40	9.35	
7,250.0	86.50	91.60	6,800.0	-751.6	98.0	98.0	7.28	7.14	
7,307.0	87.30	91.50	6,803.1	-753.2	154.9	154.9	1.41	1.40	
7,402.0	87.10	91.60	6,807.7	-755.8	249.8	249.8	0.24	-0.21	
7,496.0	86.10	91.70	6,813.3	-758.5	343.6	343.6	1.07	-1.06	
7,590.0	85.50	90.30	6,820.2	-760.1	437.3	437.3	1.62	-0.64	
7,685.0	86.10	88.90	6,827.2	-759.4	532.0	532.0	1.60	0.63	
7,780.0	84.90	88.20	6,834.6	-757.0	626.7	626.7	1.46	-1.26	
7,874.0	86.30	88.80	6,841.8	-754.6	720.4	720.4	1.62	1.49	
7,969.0	89.20	88.30	6,845.6	-752.2	815.3	815.3	3.10	3.05	
8,063.0	90.50	88.90	6,845.8	-749.9	909.2	909.2	1.52	1.38	
8,158.0	90.20	90.10	6,845.2	-749.1	1,004.2	1,004.2	1.30	-0.32	
8,253.0	91.10	90.20	6,844.1	-749.3	1,099.2	1,099.2	0.95	0.95	
8,347.0	90.40	91.80	6,842.9	-750.9	1,193.2	1,193.2	1.86	-0.74	
8,442.0	89.50	91.60	6,843.0	-753.8	1,288.2	1,288.2	0.97	-0.95	
8,537.0	88.20	90.20	6,844.9	-755.3	1,383.1	1,383.1	2.01	-1.37	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Boyd 3G-19H-M368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5029.0ft (H&P 522)
<b>Site:</b>	S19-T3N-R68W (Bohrer/Boyd)	<b>MD Reference:</b>	WELL @ 5029.0ft (H&P 522)
<b>Well:</b>	Boyd 3G-19H-M368	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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
8,631.0	87.90	90.90	6,848.1	-756.2	1,477.1	1,477.1	0.81	-0.32	
8,726.0	87.30	91.20	6,852.1	-757.9	1,572.0	1,572.0	0.71	-0.63	
8,820.0	87.30	90.90	6,856.5	-759.6	1,665.8	1,665.8	0.32	0.00	
8,915.0	87.80	90.40	6,860.6	-760.7	1,760.7	1,760.7	0.74	0.53	
8,947.0	87.60	88.90	6,861.9	-760.5	1,792.7	1,792.7	4.73	-0.62	
9,010.0	88.50	88.80	6,864.0	-759.2	1,855.7	1,855.7	1.44	1.43	
9,105.0	90.50	90.00	6,864.8	-758.2	1,950.7	1,950.7	2.46	2.11	
9,200.0	89.50	89.90	6,864.8	-758.2	2,045.7	2,045.7	1.06	-1.05	
9,294.0	90.00	88.80	6,865.2	-757.1	2,139.6	2,139.6	1.29	0.53	
9,389.0	90.10	88.00	6,865.2	-754.4	2,234.6	2,234.6	0.85	0.11	
9,483.0	90.90	89.40	6,864.3	-752.3	2,328.6	2,328.6	1.72	0.85	
9,578.0	90.60	91.10	6,863.1	-752.7	2,423.6	2,423.6	1.82	-0.32	
9,673.0	88.90	92.70	6,863.5	-755.9	2,518.5	2,518.5	2.46	-1.79	
9,767.0	88.50	90.90	6,865.6	-758.8	2,612.4	2,612.4	1.96	-0.43	
9,862.0	88.00	90.40	6,868.5	-759.9	2,707.4	2,707.4	0.74	-0.53	
9,956.0	88.40	90.70	6,871.5	-760.8	2,801.3	2,801.3	0.53	0.43	
10,051.0	87.70	90.30	6,874.7	-761.6	2,896.3	2,896.3	0.85	-0.74	
10,146.0	87.70	89.80	6,878.5	-761.7	2,991.2	2,991.2	0.53	0.00	
10,240.0	87.70	88.30	6,882.3	-760.2	3,085.1	3,085.1	1.59	0.00	
10,335.0	90.10	88.90	6,884.1	-757.8	3,180.1	3,180.1	2.60	2.53	
10,429.0	90.90	88.00	6,883.3	-755.3	3,274.0	3,274.0	1.28	0.85	
10,524.0	90.10	88.70	6,882.5	-752.6	3,369.0	3,369.0	1.12	-0.84	
10,619.0	90.90	91.10	6,881.7	-752.4	3,464.0	3,464.0	2.66	0.84	
10,713.0	89.60	92.70	6,881.2	-755.5	3,557.9	3,557.9	2.19	-1.38	
10,808.0	89.80	92.50	6,881.7	-759.8	3,652.8	3,652.8	0.30	0.21	
10,902.0	88.50	93.30	6,883.1	-764.6	3,746.7	3,746.7	1.62	-1.38	
10,997.0	88.40	93.10	6,885.7	-769.9	3,841.5	3,841.5	0.24	-0.11	
11,092.0	86.80	91.60	6,889.7	-773.8	3,936.3	3,936.3	2.31	-1.68	
11,186.0	86.00	88.30	6,895.6	-773.7	4,030.1	4,030.1	3.61	-0.85	
11,245.0	84.90	85.10	6,900.3	-770.3	4,088.8	4,088.8	5.72	-1.86	Last CES Survey @ 11,245' MD
11,295.0	84.90	85.10	6,904.7	-766.0	4,138.4	4,138.4	0.00	0.00	PTB @ 11,295'

# Cathedral Energy Services

## Survey Report

<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b> Well Boyd 3G-19H-M368
<b>Project:</b> DJ Wattenberg	<b>TVD Reference:</b> WELL @ 5029.0ft (H&P 522)
<b>Site:</b> S19-T3N-R68W (Bohrer/Boyd)	<b>MD Reference:</b> WELL @ 5029.0ft (H&P 522)
<b>Well:</b> Boyd 3G-19H-M368	<b>North Reference:</b> True
<b>Wellbore:</b> Hz	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL	<b>Database:</b> 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 - Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
Boyd 3G-19H-M368 TG` - actual wellpath misses target center by 4.9ft at 7309.5ft MD (6803.2 TVD, -753.3 N, 157.4 E) - Point	0.00	0.00	6,805.9	-757.3	157.2	1,317,609.23	3,125,021.86	40.204361	-105.052417
Boyd 3G-19H-M368 TG` - actual wellpath misses target center by 3.5ft at 8511.0ft MD (6844.2 TVD, -755.1 N, 1357.1 E) - Point	0.00	0.00	6,841.5	-757.3	1,357.2	1,317,615.28	3,126,221.84	40.204361	-105.048121
Boyd 3G-19H-M368 TG` - actual wellpath misses target center by 13.3ft at 7310.0ft MD (6803.2 TVD, -753.3 N, 157.9 E) - Point	0.00	0.00	6,815.9	-757.3	157.2	1,317,609.23	3,125,021.86	40.204361	-105.052417
Boyd 3G-19H-M368 PBI` - actual wellpath misses target center by 71.3ft at 11295.0ft MD (6904.7 TVD, -766.0 N, 4138.4 E) - Point	0.00	0.00	6,841.5	-757.3	4,170.2	1,317,629.46	3,129,034.81	40.204360	-105.038050
Boyd 3G-19H-M368 PBI` - actual wellpath misses target center by 62.6ft at 11295.0ft MD (6904.7 TVD, -766.0 N, 4138.4 E) - Point	0.00	0.00	6,851.5	-757.3	4,170.2	1,317,629.46	3,129,034.81	40.204360	-105.038050
Boyd 3G-19H-M368 TG` - actual wellpath misses target center by 7.7ft at 8511.2ft MD (6844.2 TVD, -755.1 N, 1357.3 E) - Point	0.00	0.00	6,851.5	-757.3	1,357.2	1,317,615.28	3,126,221.84	40.204361	-105.048121
Boyd 3G-19H-M368 PBI` - actual wellpath misses target center by 91.8ft at 11295.0ft MD (6904.7 TVD, -766.0 N, 4138.4 E) - Point	0.00	0.00	6,819.0	-757.3	4,170.2	1,317,629.46	3,129,034.81	40.204360	-105.038050

Design Annotations					
	Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
			+N/-S (ft)	+E/-W (ft)	
	11,245.0	6,900.3	-770.3	4,088.8	Last CES Survey @ 11,245' MD
	11,295.0	6,904.7	-766.0	4,138.4	PTB @ 11,295'

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

**DJ Wattenberg**

**S19-T3N-R68W (Bohrer/Boyd)**

**Boyd 3G-19H-M368**

**Hz**

**Design: FINAL**

## **Survey Report - Geographic**

**30 June, 2014**

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b> Well Boyd 3G-19H-M368
<b>Project:</b> DJ Wattenberg	<b>TVD Reference:</b> WELL @ 5029.0ft (H&P 522)
<b>Site:</b> S19-T3N-R68W (Bohrer/Boyd)	<b>MD Reference:</b> WELL @ 5029.0ft (H&P 522)
<b>Well:</b> Boyd 3G-19H-M368	<b>North Reference:</b> True
<b>Wellbore:</b> Hz	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL	<b>Database:</b> USA EDM 5000 Multi Users DB

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

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

<b>Well</b> Boyd 3G-19H-M368			
<b>Well Position</b>	<b>+N/-S</b> 0.0 ft	<b>Northing:</b> 1,318,365.77 ft	<b>Latitude:</b> 40.206440
	<b>+E/-W</b> 0.0 ft	<b>Easting:</b> 3,124,860.88 ft	<b>Longitude:</b> -105.052980
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b> ft	<b>Ground Level:</b> 5,004.0 ft

<b>Wellbore</b> Hz					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
	IGRF2010	6/20/2014	(°) 8.60	(°) 66.74	(nT) 52,680

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

<b>Survey Program</b>		<b>Date</b> 6/30/2014
<b>From</b>	<b>To</b>	<b>Survey (Wellbore)</b>
(ft) 141.0	(ft) 11,295.0	Survey #1 (Hz)
		<b>Tool Name</b> Geolink MWD
		<b>Description</b> Geolink MWD

<b>Survey</b>										
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	1,318,365.77	3,124,860.88	40.206440	-105.052980	
141.0	0.10	248.70	141.0	0.0	-0.1	1,318,365.73	3,124,860.77	40.206440	-105.052981	
233.0	0.60	293.40	233.0	0.1	-0.6	1,318,365.89	3,124,860.25	40.206440	-105.052983	
325.0	1.50	253.90	325.0	0.0	-2.2	1,318,365.74	3,124,858.65	40.206440	-105.052988	
417.0	1.80	247.90	416.9	-0.9	-4.7	1,318,364.85	3,124,856.16	40.206438	-105.052997	
509.0	3.00	234.80	508.9	-2.8	-8.0	1,318,362.90	3,124,852.86	40.206432	-105.053009	
601.0	3.70	214.50	600.7	-6.7	-11.7	1,318,359.05	3,124,849.23	40.206422	-105.053022	
693.0	4.50	221.00	692.5	-11.8	-15.7	1,318,353.86	3,124,845.21	40.206408	-105.053037	
784.0	5.00	220.10	783.2	-17.6	-20.6	1,318,348.10	3,124,840.34	40.206392	-105.053054	
805.0	4.80	221.60	804.1	-18.9	-21.8	1,318,346.74	3,124,839.18	40.206388	-105.053058	
915.0	5.10	223.40	913.7	-25.9	-28.2	1,318,339.71	3,124,832.80	40.206369	-105.053081	
1,007.0	5.90	215.50	1,005.2	-32.7	-33.8	1,318,332.87	3,124,827.27	40.206350	-105.053101	

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Boyd 3G-19H-M368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5029.0ft (H&P 522)
<b>Site:</b>	S19-T3N-R68W (Bohrer/Boyd)	<b>MD Reference:</b>	WELL @ 5029.0ft (H&P 522)
<b>Well:</b>	Boyd 3G-19H-M368	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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	6.70	213.20	1,096.7	-41.1	-39.5	1,318,324.50	3,124,821.63	40.206327	-105.053122	
1,191.0	7.90	216.50	1,187.9	-50.7	-46.2	1,318,314.89	3,124,814.98	40.206301	-105.053146	
1,283.0	9.10	213.80	1,278.9	-61.8	-54.0	1,318,303.72	3,124,807.23	40.206270	-105.053173	
1,375.0	8.80	218.10	1,369.8	-73.4	-62.4	1,318,292.10	3,124,798.90	40.206239	-105.053204	
1,466.0	9.10	220.10	1,459.7	-84.3	-71.3	1,318,281.07	3,124,790.02	40.206209	-105.053235	
1,558.0	10.90	217.20	1,550.3	-96.8	-81.2	1,318,268.52	3,124,780.14	40.206174	-105.053271	
1,650.0	10.40	210.90	1,640.7	-110.9	-90.8	1,318,254.42	3,124,770.69	40.206136	-105.053305	
1,741.0	10.40	218.60	1,730.2	-124.4	-100.1	1,318,240.91	3,124,761.41	40.206099	-105.053339	
1,833.0	10.30	220.80	1,820.7	-137.1	-110.7	1,318,228.14	3,124,750.92	40.206064	-105.053376	
1,925.0	9.90	227.80	1,911.3	-148.6	-121.9	1,318,216.54	3,124,739.75	40.206032	-105.053417	
2,017.0	9.60	224.30	2,002.0	-159.4	-133.1	1,318,205.68	3,124,728.58	40.206002	-105.053457	
2,108.0	9.10	226.60	2,091.8	-169.8	-143.6	1,318,195.25	3,124,718.11	40.205974	-105.053494	
2,200.0	9.90	224.60	2,182.5	-180.4	-154.5	1,318,184.57	3,124,707.32	40.205945	-105.053533	
2,292.0	9.10	222.90	2,273.3	-191.4	-165.0	1,318,173.56	3,124,696.87	40.205915	-105.053571	
2,384.0	10.30	220.10	2,363.9	-203.0	-175.2	1,318,161.88	3,124,686.68	40.205883	-105.053608	
2,478.0	10.50	227.00	2,456.4	-215.3	-186.9	1,318,149.55	3,124,675.06	40.205849	-105.053649	
2,573.0	10.10	224.60	2,549.9	-227.1	-199.1	1,318,137.66	3,124,662.94	40.205817	-105.053693	
2,667.0	9.60	223.80	2,642.5	-238.6	-210.3	1,318,126.08	3,124,651.79	40.205785	-105.053733	
2,762.0	8.70	223.00	2,736.3	-249.6	-220.7	1,318,115.05	3,124,641.46	40.205755	-105.053770	
2,856.0	9.70	220.10	2,829.1	-260.9	-230.6	1,318,103.74	3,124,631.57	40.205724	-105.053806	
2,951.0	9.00	221.80	2,922.8	-272.5	-240.7	1,318,092.03	3,124,621.52	40.205692	-105.053842	
3,045.0	8.40	223.70	3,015.7	-283.0	-250.4	1,318,081.54	3,124,611.93	40.205663	-105.053877	
3,139.0	9.40	216.70	3,108.6	-294.1	-259.7	1,318,070.37	3,124,602.65	40.205633	-105.053910	
3,234.0	9.00	215.60	3,202.4	-306.4	-268.7	1,318,058.07	3,124,593.75	40.205599	-105.053942	
3,329.0	9.80	220.20	3,296.1	-318.6	-278.2	1,318,045.80	3,124,584.27	40.205566	-105.053976	
3,423.0	9.30	219.70	3,388.8	-330.5	-288.2	1,318,033.80	3,124,574.32	40.205533	-105.054012	
3,518.0	8.40	218.90	3,482.7	-341.8	-297.5	1,318,022.44	3,124,565.11	40.205502	-105.054045	
3,612.0	9.30	222.70	3,575.5	-352.8	-307.0	1,318,011.47	3,124,555.70	40.205472	-105.054079	
3,707.0	8.70	220.70	3,669.4	-363.8	-316.8	1,318,000.33	3,124,545.87	40.205441	-105.054115	
3,802.0	9.60	224.40	3,763.2	-375.0	-327.1	1,317,989.17	3,124,535.70	40.205411	-105.054151	
3,896.0	8.80	223.20	3,856.0	-385.8	-337.5	1,317,978.28	3,124,525.35	40.205381	-105.054189	
3,991.0	9.80	220.10	3,949.7	-397.3	-347.7	1,317,966.74	3,124,515.22	40.205349	-105.054225	
4,086.0	8.90	217.70	4,043.4	-409.3	-357.4	1,317,954.70	3,124,505.58	40.205317	-105.054260	
4,180.0	10.80	224.80	4,136.1	-421.3	-368.0	1,317,942.64	3,124,494.99	40.205284	-105.054298	
4,275.0	10.70	226.00	4,229.4	-433.7	-380.6	1,317,930.13	3,124,482.43	40.205249	-105.054343	
4,370.0	9.10	218.70	4,323.0	-445.7	-391.7	1,317,918.09	3,124,471.45	40.205217	-105.054383	
4,464.0	8.00	218.50	4,415.9	-456.6	-400.4	1,317,907.12	3,124,462.79	40.205187	-105.054414	
4,559.0	7.80	222.80	4,510.0	-466.5	-408.9	1,317,897.18	3,124,454.34	40.205159	-105.054444	
4,654.0	9.10	219.80	4,604.0	-477.0	-418.1	1,317,886.63	3,124,445.21	40.205131	-105.054477	
4,749.0	9.80	217.20	4,697.7	-489.3	-427.8	1,317,874.37	3,124,435.57	40.205097	-105.054512	
4,843.0	9.70	217.20	4,790.3	-501.9	-437.4	1,317,861.64	3,124,426.01	40.205062	-105.054546	
4,938.0	10.90	217.60	4,883.8	-515.4	-447.7	1,317,848.10	3,124,415.76	40.205025	-105.054583	
5,032.0	9.70	217.30	4,976.3	-528.8	-457.9	1,317,834.70	3,124,405.60	40.204989	-105.054620	
5,127.0	9.70	220.90	5,069.9	-541.2	-468.0	1,317,822.24	3,124,395.58	40.204954	-105.054656	
5,222.0	9.80	220.90	5,163.6	-553.3	-478.6	1,317,810.02	3,124,385.10	40.204921	-105.054694	
5,316.0	10.20	218.60	5,256.1	-565.9	-489.0	1,317,797.42	3,124,374.74	40.204887	-105.054731	
5,411.0	10.00	214.70	5,349.7	-579.3	-498.9	1,317,784.01	3,124,364.86	40.204850	-105.054767	
5,506.0	9.50	221.50	5,443.3	-591.9	-508.8	1,317,771.31	3,124,355.03	40.204815	-105.054802	
5,600.0	8.60	221.30	5,536.1	-603.0	-518.6	1,317,760.17	3,124,345.31	40.204785	-105.054837	
5,695.0	8.70	222.30	5,630.1	-613.6	-528.1	1,317,749.47	3,124,335.84	40.204756	-105.054871	
5,789.0	8.50	220.70	5,723.0	-624.2	-537.5	1,317,738.90	3,124,326.58	40.204727	-105.054904	
5,884.0	9.10	222.20	5,816.9	-635.1	-547.1	1,317,727.96	3,124,317.01	40.204697	-105.054939	
5,979.0	8.60	227.50	5,910.7	-645.4	-557.4	1,317,717.55	3,124,306.78	40.204668	-105.054976	
6,010.0	8.10	226.70	5,941.4	-648.5	-560.7	1,317,714.47	3,124,303.50	40.204660	-105.054988	
6,042.0	7.30	227.20	5,973.1	-651.4	-563.8	1,317,711.53	3,124,300.38	40.204652	-105.054999	

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Boyd 3G-19H-M368
<b>Project:</b>	DJ Wattenberg	<b>TVD Reference:</b>	WELL @ 5029.0ft (H&P 522)
<b>Site:</b>	S19-T3N-R68W (Bohrer/Boyd)	<b>MD Reference:</b>	WELL @ 5029.0ft (H&P 522)
<b>Well:</b>	Boyd 3G-19H-M368	<b>North Reference:</b>	True
<b>Wellbore:</b>	Hz	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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	
6,073.0	7.50	216.50	6,003.9	-654.4	-566.4	1,317,708.55	3,124,297.75	40.204644	-105.055008	
6,105.0	8.20	199.90	6,035.6	-658.2	-568.5	1,317,704.71	3,124,295.75	40.204633	-105.055015	
6,137.0	9.00	184.30	6,067.2	-662.8	-569.4	1,317,700.07	3,124,294.80	40.204620	-105.055019	
6,168.0	10.00	171.70	6,097.8	-667.9	-569.2	1,317,694.98	3,124,295.04	40.204607	-105.055018	
6,200.0	11.30	161.60	6,129.3	-673.7	-567.8	1,317,689.27	3,124,296.46	40.204591	-105.055013	
6,231.0	12.00	150.90	6,159.6	-679.4	-565.3	1,317,683.58	3,124,299.01	40.204575	-105.055004	
6,263.0	12.00	140.10	6,190.9	-684.8	-561.5	1,317,678.14	3,124,302.79	40.204560	-105.054991	
6,294.0	12.00	129.40	6,221.2	-689.3	-557.0	1,317,673.64	3,124,307.37	40.204548	-105.054974	
6,326.0	13.10	117.40	6,252.5	-693.1	-551.2	1,317,669.89	3,124,313.18	40.204537	-105.054954	
6,357.0	15.00	110.30	6,282.6	-696.1	-544.3	1,317,666.92	3,124,320.08	40.204529	-105.054929	
6,388.0	17.20	105.70	6,312.3	-698.8	-536.1	1,317,664.33	3,124,328.27	40.204522	-105.054900	
6,420.0	19.10	103.70	6,342.8	-701.3	-526.5	1,317,661.86	3,124,337.92	40.204515	-105.054865	
6,451.0	20.30	102.60	6,371.9	-703.6	-516.3	1,317,659.53	3,124,348.11	40.204508	-105.054829	
6,483.0	22.10	102.70	6,401.8	-706.2	-505.0	1,317,657.05	3,124,359.42	40.204501	-105.054788	
6,514.0	23.90	103.70	6,430.3	-709.0	-493.2	1,317,654.34	3,124,371.22	40.204494	-105.054746	
6,546.0	26.70	102.70	6,459.2	-712.1	-479.9	1,317,651.30	3,124,384.55	40.204485	-105.054698	
6,578.0	29.90	101.70	6,487.4	-715.3	-465.1	1,317,648.17	3,124,399.39	40.204477	-105.054645	
6,609.0	33.00	101.20	6,513.8	-718.5	-449.2	1,317,645.04	3,124,415.26	40.204468	-105.054589	
6,641.0	36.30	99.20	6,540.2	-721.7	-431.3	1,317,641.93	3,124,433.18	40.204459	-105.054525	
6,672.0	39.80	97.60	6,564.6	-724.5	-412.4	1,317,639.24	3,124,452.09	40.204451	-105.054457	
6,704.0	43.30	96.20	6,588.5	-727.0	-391.4	1,317,636.81	3,124,473.17	40.204444	-105.054381	
6,735.0	46.50	94.20	6,610.5	-729.0	-369.6	1,317,634.95	3,124,494.97	40.204439	-105.054303	
6,766.0	49.50	93.20	6,631.2	-730.5	-346.6	1,317,633.58	3,124,517.96	40.204435	-105.054221	
6,798.0	52.20	92.80	6,651.4	-731.8	-321.8	1,317,632.41	3,124,542.75	40.204431	-105.054132	
6,830.0	55.30	91.90	6,670.3	-732.8	-296.0	1,317,631.48	3,124,568.54	40.204428	-105.054040	
6,861.0	58.10	92.30	6,687.4	-733.8	-270.2	1,317,630.66	3,124,594.42	40.204426	-105.053947	
6,893.0	60.80	92.60	6,703.6	-734.9	-242.6	1,317,629.62	3,124,621.96	40.204423	-105.053849	
6,924.0	64.00	92.20	6,718.0	-736.1	-215.2	1,317,628.61	3,124,649.41	40.204419	-105.053751	
6,956.0	66.90	92.20	6,731.3	-737.2	-186.1	1,317,627.64	3,124,678.49	40.204416	-105.053647	
6,988.0	69.10	93.20	6,743.3	-738.6	-156.5	1,317,626.39	3,124,708.13	40.204413	-105.053540	
7,019.0	71.10	93.60	6,753.8	-740.3	-127.4	1,317,624.81	3,124,737.24	40.204408	-105.053436	
7,051.0	73.50	93.60	6,763.5	-742.2	-97.0	1,317,623.05	3,124,767.67	40.204403	-105.053327	
7,082.0	75.90	93.30	6,771.7	-744.0	-67.1	1,317,621.40	3,124,797.52	40.204398	-105.053221	
7,114.0	76.70	93.20	6,779.3	-745.8	-36.1	1,317,619.79	3,124,828.57	40.204393	-105.053109	
7,145.0	77.90	93.10	6,786.1	-747.5	-5.9	1,317,618.28	3,124,858.78	40.204388	-105.053001	
7,177.0	80.60	92.50	6,792.1	-749.0	25.5	1,317,616.91	3,124,890.18	40.204384	-105.052889	
7,208.0	83.50	92.20	6,796.4	-750.3	56.2	1,317,615.80	3,124,920.86	40.204381	-105.052779	
7,250.0	86.50	91.60	6,800.0	-751.6	98.0	1,317,614.63	3,124,962.68	40.204377	-105.052629	
7,307.0	87.30	91.50	6,803.1	-753.2	154.9	1,317,613.38	3,125,019.58	40.204372	-105.052426	
7,402.0	87.10	91.60	6,807.7	-755.8	249.8	1,317,611.29	3,125,114.44	40.204365	-105.052086	
7,496.0	86.10	91.70	6,813.3	-758.5	343.6	1,317,609.06	3,125,208.25	40.204358	-105.051750	
7,590.0	85.50	90.30	6,820.2	-760.1	437.3	1,317,607.89	3,125,301.99	40.204354	-105.051415	
7,685.0	86.10	88.90	6,827.2	-759.4	532.0	1,317,609.03	3,125,396.72	40.204355	-105.051076	
7,780.0	84.90	88.20	6,834.6	-757.0	626.7	1,317,611.91	3,125,491.38	40.204362	-105.050737	
7,874.0	86.30	88.80	6,841.8	-754.6	720.4	1,317,614.83	3,125,585.06	40.204369	-105.050401	
7,969.0	89.20	88.30	6,845.6	-752.2	815.3	1,317,617.71	3,125,679.93	40.204375	-105.050061	
8,063.0	90.50	88.90	6,845.8	-749.9	909.2	1,317,620.48	3,125,773.89	40.204381	-105.049725	
8,158.0	90.20	90.10	6,845.2	-749.1	1,004.2	1,317,621.79	3,125,868.88	40.204384	-105.049385	
8,253.0	91.10	90.20	6,844.1	-749.3	1,099.2	1,317,622.02	3,125,963.87	40.204383	-105.049045	
8,347.0	90.40	91.80	6,842.9	-750.9	1,193.2	1,317,620.85	3,126,057.85	40.204379	-105.048708	
8,442.0	89.50	91.60	6,843.0	-753.8	1,288.2	1,317,618.52	3,126,152.82	40.204371	-105.048368	
8,537.0	88.20	90.20	6,844.9	-755.3	1,383.1	1,317,617.50	3,126,247.79	40.204367	-105.048028	
8,631.0	87.90	90.90	6,848.1	-756.2	1,477.1	1,317,617.07	3,126,341.73	40.204364	-105.047692	
8,726.0	87.30	91.20	6,852.1	-757.9	1,572.0	1,317,615.81	3,126,436.64	40.204359	-105.047352	
8,820.0	87.30	90.90	6,856.5	-759.6	1,665.8	1,317,614.57	3,126,530.53	40.204355	-105.047016	

# Cathedral Energy Services

## Survey Report - Geographic

<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b> Well Boyd 3G-19H-M368
<b>Project:</b> DJ Wattenberg	<b>TVD Reference:</b> WELL @ 5029.0ft (H&P 522)
<b>Site:</b> S19-T3N-R68W (Bohrer/Boyd)	<b>MD Reference:</b> WELL @ 5029.0ft (H&P 522)
<b>Well:</b> Boyd 3G-19H-M368	<b>North Reference:</b> True
<b>Wellbore:</b> Hz	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL	<b>Database:</b> 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	
8,915.0	87.80	90.40	6,860.6	-760.7	1,760.7	1,317,613.97	3,126,625.44	40.204352	-105.046676	
8,947.0	87.60	88.90	6,861.9	-760.5	1,792.7	1,317,614.32	3,126,657.41	40.204352	-105.046562	
9,010.0	88.50	88.80	6,864.0	-759.2	1,855.7	1,317,615.90	3,126,720.35	40.204356	-105.046337	
9,105.0	90.50	90.00	6,864.8	-758.2	1,950.7	1,317,617.38	3,126,815.33	40.204358	-105.045997	
9,200.0	89.50	89.90	6,864.8	-758.2	2,045.7	1,317,617.94	3,126,910.33	40.204359	-105.045656	
9,294.0	90.00	88.80	6,865.2	-757.1	2,139.6	1,317,619.48	3,127,004.31	40.204362	-105.045320	
9,389.0	90.10	88.00	6,865.2	-754.4	2,234.6	1,317,622.61	3,127,099.26	40.204369	-105.044980	
9,483.0	90.90	89.40	6,864.3	-752.3	2,328.6	1,317,625.22	3,127,193.22	40.204375	-105.044644	
9,578.0	90.60	91.10	6,863.1	-752.7	2,423.6	1,317,625.28	3,127,288.21	40.204373	-105.044303	
9,673.0	88.90	92.70	6,863.5	-755.9	2,518.5	1,317,622.61	3,127,383.16	40.204365	-105.043964	
9,767.0	88.50	90.90	6,865.6	-758.8	2,612.4	1,317,620.13	3,127,477.10	40.204357	-105.043627	
9,862.0	88.00	90.40	6,868.5	-759.9	2,707.4	1,317,619.53	3,127,572.06	40.204354	-105.043287	
9,956.0	88.40	90.70	6,871.5	-760.8	2,801.3	1,317,619.11	3,127,666.01	40.204351	-105.042951	
10,051.0	87.70	90.30	6,874.7	-761.6	2,896.3	1,317,618.76	3,127,760.95	40.204349	-105.042611	
10,146.0	87.70	89.80	6,878.5	-761.7	2,991.2	1,317,619.15	3,127,855.87	40.204349	-105.042271	
10,240.0	87.70	88.30	6,882.3	-760.2	3,085.1	1,317,621.18	3,127,949.77	40.204353	-105.041935	
10,335.0	90.10	88.90	6,884.1	-757.8	3,180.1	1,317,623.98	3,128,044.73	40.204359	-105.041595	
10,429.0	90.90	88.00	6,883.3	-755.3	3,274.0	1,317,627.00	3,128,138.67	40.204366	-105.041259	
10,524.0	90.10	88.70	6,882.5	-752.6	3,369.0	1,317,630.21	3,128,233.61	40.204374	-105.040919	
10,619.0	90.90	91.10	6,881.7	-752.4	3,464.0	1,317,630.86	3,128,328.60	40.204374	-105.040579	
10,713.0	89.60	92.70	6,881.2	-755.5	3,557.9	1,317,628.21	3,128,422.56	40.204365	-105.040242	
10,808.0	89.80	92.50	6,881.7	-759.8	3,652.8	1,317,624.38	3,128,517.48	40.204354	-105.039902	
10,902.0	88.50	93.30	6,883.1	-764.6	3,746.7	1,317,620.10	3,128,611.37	40.204340	-105.039566	
10,997.0	88.40	93.10	6,885.7	-769.9	3,841.5	1,317,615.28	3,128,706.21	40.204326	-105.039227	
11,092.0	86.80	91.60	6,889.7	-773.8	3,936.3	1,317,611.86	3,128,801.06	40.204315	-105.038887	
11,186.0	86.00	88.30	6,895.6	-773.7	4,030.1	1,317,612.42	3,128,894.86	40.204315	-105.038552	
11,245.0	84.90	85.10	6,900.3	-770.3	4,088.8	1,317,616.09	3,128,953.53	40.204325	-105.038342	
<b>Last CES Survey @ 11,245' MD</b>										
11,295.0	84.90	85.10	6,904.7	-766.0	4,138.4	1,317,620.60	3,129,003.13	40.204336	-105.038164	
<b>PTB @ 11,295'</b>										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
Boyd 3G-19H-M368 PBI	0.00	0.00	6,851.5	-757.3	4,170.2	1,317,629.46	3,129,034.81	40.204360	-105.038050	
- actual wellpath misses target center by 62.6ft at 11295.0ft MD (6904.7 TVD, -766.0 N, 4138.4 E)										
- Point										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
11,245.0	6,900.3	-770.3	4,088.8	Last CES Survey @ 11,245' MD	
11,295.0	6,904.7	-766.0	4,138.4	PTB @ 11,295'	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_