

Investigation Report  
Worker Fatality – February 21, 2013

### **The contents of this report**

This document reports OHS' investigation of a fatal accident in February 2013. It begins with a short summary of what happened. The rest of the report covers this same information in greater detail.

### **Incident summary**

Plumbers working for a residential construction contractor in a new single-family home under construction were connecting the residential furnace that had previously been supplied by temporary propane fuel to the permanent natural gas supply line. The conversion of the furnace back to natural gas had been undertaken by the furnace installer prior to the arrival of the plumbers. Two journeyman plumbers/gas fitters and a plumber's helper were in the basement of the single-family structure. During the connection process an explosion and fire occurred in the basement area. All three workers sustained serious burns to their bodies and one later succumbed to his injuries.

### **Background information**

Rosecroft Custom Homes (Rosecroft) is a family business that builds custom homes in the rural areas surrounding Edmonton. Rosecroft hired Rigorous Mechanical (Rigorous) to install temporary furnaces in their homes under construction in a residential subdivision in Fort Saskatchewan.

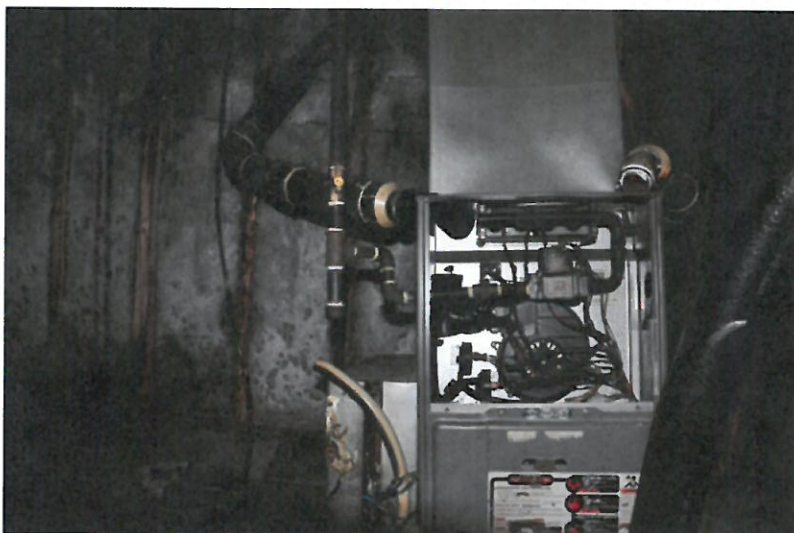
Wil-Flo Plumbing and Heating Ltd. (Wil-Flo) is a small plumbing and gas-fitting company that was contracted to Rosecroft to run interior gas lines, water lines, water fixtures, and plumbing in Rosecroft homes in the subdivision.

Rigorous Mechanical (Rigorous) supplied the furnaces and labour to provide temporary heat in several Rosecroft homes under construction in the subdivision. The furnaces were installed and fitted with gas conversion kits which allowed the furnaces to operate using temporary propane fuel supplies. Rigorous also was contracted to service and convert the furnaces back from propane to natural gas prior to Wil-Flo connecting the natural gas line at the furnace and testing the furnace operation.

### Equipment and materials

Workers were connecting the permanent natural gas supply line to a RUUD Upflow & Downflow/Horizontal High Efficiency Condensing Gas Furnace (RGRA/RGRB/RGTA/RGTS/RGRT Series) (furnace) that had previously been fuelled by propane using an 80% & 90 Plus Gas Furnaces – Gas Conversion Kit (Fig. 1).

**Figure 1**



*RUUD furnace involved in incident February 21 2013.*

**Figure 2**



*Exemplar of similar RUUD furnace installed in another residence.*

The furnace had been fuelled by propane from a 1000 lb (450 L) gas cylinder or pig provided by Canwest Propane (Fig. 3). This cylinder was located at the back of 140 Allard Way.

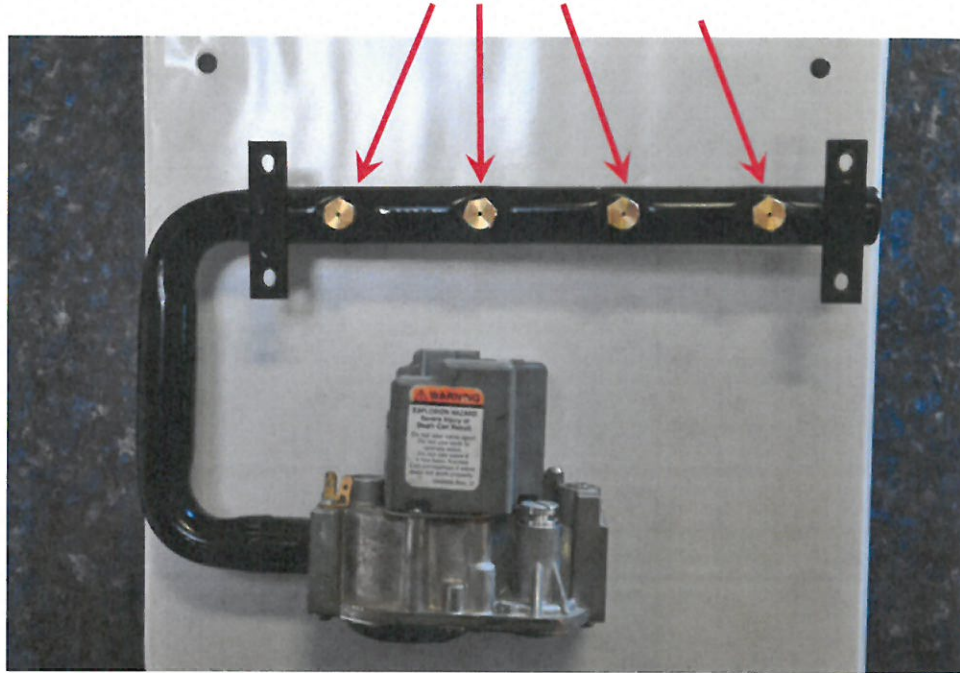
The furnace had originally been converted by Rigorous Mechanical at the time of installation to operate on propane fuel using an 80% & 90 Plus Gas Furnace – Gas Conversion Kit. The furnace had been converted back to natural gas by Rigorous Mechanical prior to the arrival of Wil-Flo personnel.

**Figure 3.**



*View of back of 140 Allard Way Fort Saskatchewan, Alberta showing the location of the propane cylinders for the temporary heating arrangement. Arrow indicates propane cylinder used to supply 140 Allard Way prior to the incident.*

Figure 4.



*Photograph of the orifices in the RUUD Furnace. Arrows indicate the components (orifices and springs) that were replaced as part of the furnace conversion from propane to natural gas. A spring in the valve was also replaced.*

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### Sequence of events

Rigorous Mechanical (Rigorous) was hired by Rosecroft Custom Homes (Rosecroft) to supply and install temporary propane heat via the furnace installed at 140 Allard Way along with other addresses. The furnace had been converted by Rigorous Mechanical to run on propane instead of natural gas.

Rigorous was also hired by Rosecroft to convert the furnace back to natural gas prior to Wil-Flo Plumbing & Heating Ltd. (Wil-Flo) hooking up the natural gas line to the furnace and bleeding the line of air.

Rigorous converted the furnace back to natural gas by shutting the propane tank off, disconnecting the propane hose at the furnace, and re-installing orifices appropriate for natural gas. The propane hose was left in the basement at 140 Allard Way.

Three Wil-Flo employees: two Plumbers/Gas Fitters and a Plumber's Helper came to 140 Allard Way to hook up the natural gas line to the furnace. The Plumbers/Gas Fitters were journeyman plumbers and gasfitters. The Lead Plumber/Gas Fitter smelled propane in the basement and pulled the propane hose outside.

The Lead Plumber/Gas Fitter stated that the gas line needed an additional pipe nipple to align it properly with the furnace. The work was completed and the gas line was hooked up to the furnace.

The Rosecroft Site Superintendent came by the house after observing the Lead Plumber/Gas Fitter removing the propane hose. The propane line had been disconnected and the furnace switched over earlier that morning by Rigorous Mechanical. The Rosecroft Site Superintendent stopped at the landing to the basement, observed that the basement windows were open, and asked if everything was alright. The Lead Plumber/Gas Fitter replied that there were no concerns. The Rosecroft Site Superintendent then left and went next door. A few minutes later an explosion and fire occurred at 140 Allard Way.

Workers nearby ran over and rescued the Plumber's Helper from the basement using a ladder. The two Plumbers/Gas Fitters were able to crawl out of the basement on their own.

EMS responded and took the two Plumbers/Gas Fitters to the University of Alberta hospital burn unit. The Plumber's Helper was transported to Fort Saskatchewan Hospital. The Plumber's Helper succumbed to his injuries a short time later.

An investigation of the incident by the Office of the Fire Commissioner was unable to determine the cause of the explosion.

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**Completion**

A preliminary review of the file was arranged with Alberta Justice on August 20, 2013. On August 23 2013, Alberta Justice reviewed the case and determined the case did not meet the required standard and there would be no charges stemming from this incident.

**Signatures**

ORIGINAL REPORT SIGNED

Lead Investigator

\_\_\_\_\_

Date

ORIGINAL REPORT SIGNED

Manager

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Date

ORIGINAL REPORT SIGNED

Director

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Date