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TECHNICAL NOTE

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PREPARED BY **A. D. Kent**

CHECKED BY

APPROVED BY

PREPARED FOR **Central Mortgage and Housing Corporation**

DATE **December 5, 1951**

SUBJECT

Notes on the Examination of
Oil-Fired Furnaces in Residences
on Eastbourne Ave., Manor Park, Ottawa

On the evening of April 11th at the request of Central Mortgage and Housing Corporation, a visit was made to five houses on Eastbourne Ave., Manor Park, by Messrs. A.C. Wilson and A.D. Kent for the purpose of examining oil-fired furnaces, some of which had been giving trouble.

The houses were built by Peerless Homes and were heated with Crowley warm-air furnaces equipped with fan and filters and fired by Welton oil burners. Automatic controls of various makes consisted of a stack temperature limit control, automatic draft regulator, bonnet high limit control, fan control, and thermostatic burner switch. Installation of the furnaces had been made by Welch and Johnston Ltd. in the fall of 1950 prior to occupancy of the houses.

According to accounts given by Mr. R. A. Prigon and Mr. H. A. Gilbert, both residents of Eastbourne Ave., the trouble began in the early winter before occupancy and consisted of seven or eight minor explosions in some of the furnaces, causing little apparent mechanical damage but creating oily soot films throughout the house so that redecoration in many cases was required. Some explosions occurred before the houses were occupied and some after occupation. In addition to the explosions some furnaces had operated with a loud throbbing or pulsation creating noise and vibration. The view was expressed that the furnaces had been operating continuously without control for some time before occupation.

The installation contractors (Welch and Johnston) had attempted to rectify the trouble by adjusting the automatic dampers to the virtually closed position and by the addition of an adjustable opening at the inspection door above the firebox of each furnace. The baffles in the flue chamber of some of the furnaces had been cut. Since these adjustments and alterations had been made there had been no further cases of explosion reported and the pulsations and vibrations had been reduced.

Through arrangements kindly made by Mr. Gilbert it was possible to inspect four furnaces besides his own. In all five homes the furnace, oil burner, controls and pipes were closely examined while no fire was on and then the burner was started up and the combustion conditions noted. The five homes visited were as follows:

1. Residence of Mr. Gilbert, 763 Eastbourne Ave.
2. Residence of Dr. Horowickz, 786 Eastbourne Ave.
3. Residence of Major Green, 735 Eastbourne Ave.
4. Residence of Mr. Elcock, 733 Eastbourne Ave.
5. Residence of Mr. Paisley, 755 Eastbourne Ave.

Observations of the installations were as follows:

1. 763 Eastbourne Ave.: Minor explosion had occurred before occupation. High limit cut out was set at 250°F. and fan control at 150°F. (upper). Gaps were noticed in the duct work and smoke pipe, and considerable soot had accumulated in the smoke pipe. Combustion air inlet ports on oil burner were almost closed. The fire was observed to be very smoky.
2. 786 Eastbourne Ave.: Minor explosion had occurred before occupation. High limit cut out was set at 250°F. and fan control at 180°F. (upper) and 130°F. (lower). The smoke pipe showed heavy soot deposit inside, and peeling of the galvanized pipe surface outside. The air inlet on the burner was completely closed.
3. 735 Eastbourne Ave.: No explosion had been reported in this installation but there was some soot lying on the top of horizontal runs of smoke pipe. High limit control set at 250°F. with fan control at 170°F. (upper) and 120°F. (lower). Gap was noted at the smoke pipe collar. The smoke pipe was sooty inside and the flame was quite smoky. Air inlet ports on the burner were almost closed. The owner reported that a .85 gal. nozzle was being used, and he was concerned with possible cracking of the fire brick.
4. 733 Eastbourne Ave.: Owner reported serious vibrations (pulsations) but that operation was improved more recently.

High limit control 250°F. Fan control set at 180°F. (upper) and 120°F. (lower). The smoke pipe was sooty and the fire smoky. Some soot was noted on the top of horizontal pipes. Air inlet ports were almost closed.

5. 755 Eastbourne Ave.: The owner reported a replacement furnace had been installed after the original one had an explosion. High limit cut out set at 250°F. with fan control at 140°F. (upper) and 120°F. (lower). The flame was brighter than others examined but was still somewhat smoky. Air inlet ports were completely closed. The owner reported less pulsation noise than with the original unit.

Throughout the investigation Mr. Gilbert was most helpful and offered any further assistance he could give in connection with the problem.