



**DWELLING FIRE**

Bellmore, NY

February 9, 1984



**FIRE  
INVESTIGATIONS**

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"Moving Mankind Toward Safety From Fire"

NATIONAL  
FIRE PROTECTION  
ASSOCIATION  
INTERNATIONAL

Investigation Report

Dwelling Fire  
Bellmore, New York  
February 9, 1984

Prepared by

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National Fire Protection Association

In Cooperation with

Federal Emergency Management Agency/  
United States Fire Administration

and

National Bureau of Standards/  
Center for Fire Research

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## INTRODUCTION

The National Fire Protection Association (NFPA) investigated the Bellmore, New York dwelling fire in order to document and analyze significant factors that resulted in the loss of life. This study was conducted under a Major Fires Investigation Agreement with the Federal Emergency Management Agency/United States Fire Administration (FEMA/USFA) and the National Bureau of Standards/Center for Fire Research (NBS/CFR).

The agreement, funded by all three organizations, provides for the investigation of technically significant fires by the NFPA Fire Investigations and Applied Research Division to document and analyze incident details and report lessons learned for loss prevention purposes.

The NFPA became aware of the fire on the day of occurrence, February 9, 1984. Thomas J. Klem, Director, Fire Investigations and Applied Research Division, traveled to Long Island, New York to document the facts related to the fire. A one-day on-site study and subsequent analysis were the basis for this report and NFPA's analysis of the event. Entry to the fire scene and data collection activities were made possible through the cooperation of the Bellmore Fire Department. This report presents the findings of the NFPA data collection and analysis effort.

This report is another of NFPA's studies of fires having particularly important educational and/or technical interest. The information presented is based on the best data available immediately after the fire incident and that obtained during subsequent follow-up. It is not NFPA's intention that this report pass judgment on, or fix liability for, the loss of life and property at the home.

The assistance of Chief Ray Of, Bellmore Fire Department, Bellmore Fire District Commissioner Andy Messina and Tom Tilley, Supervisor of Fire Investigations, Nassau County Fire Marshal's Office, is acknowledged and appreciated.

## ABSTRACT

All seven family members were killed when a fire swept through their 2 1/2-story frame dwelling on February 9, 1984. The 70-year-old home was located in a residential section of Bellmore, New York. The fire, reported to be the worst residential fire in Long Island's history, originated in the living room on the ground floor level of the residence and was reported to have occurred as a result of a portable kerosene heater being placed too close to combustible materials. Three kerosene heaters were used as the primary sources of heat for the home. Several containers of a combustible liquid were found throughout the interior of the home. The fire was discovered by neighbors and reported to the fire department at approximately 1:20 a.m. Fire fighters described the fire as "well advanced throughout the structure" upon their arrival.

The significant contributing factors to the loss of life in this incident, typical of many of the fatal residential fire scenarios which occur each year in this country, are considered to be:

- The lack of early detection of the fire;
- Misuse of a portable heating device;
- Storage of combustible liquids in the dwelling; and
- A sufficient amount of readily available combustibles for continued growth and spread of the fire.

## BACKGROUND

Bellmore, Long Island, New York, is a small residential community of approximately 18,000 population located in Nassau County. Fire protection for the town is provided by the Bellmore Volunteer Fire Department operating 14 pieces of equipment out of three stations within the Bellmore fire district. The Department has a total of 160 active members.

### The Building

The 2 1/2-story with basement, single-family dwelling is typical of many of the other residences in the neighborhood. The 70-year-old, three bedroom structure was of wood frame construction\* and had overall dimensions of approximately 24 feet by 30 feet. Entrance to the home was gained from a covered front porch. There were other door openings to the building; however, they were reported to be inoperable at the time of the fire - - one was reputed to be nailed closed. The first floor entry level contained the living room, dining room, kitchen and a bathroom which was located at the rear of the home (see Figure 1). An open stairway, just off the living room, provided access to the second floor bedrooms. Each room within the home contained at least one window opening. There were no storm windows covering the double-hung, wood-sash windows. The unfinished basement area contained the utility services for the building, including the dwelling's primary heating unit. Interior partitions for the building were wood studs with plaster on wood lath. Paint was the most common wall finish for the home.

The home's primary heating unit was reported to be a gas-fired, forced air system but it was inoperable at the time of the fire. As a result, three 6,000 Btu portable kerosene heaters provided heat for the home. Several

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\*There were no fire stops provided in exterior, concealed wall spaces from the ground floor to the attic - - a construction method commonly referred to as "balloon construction".

containers of kerosene, presumably for refueling the devices, were found throughout the interior of the home.

Furnishings for the home were considered typical. However, reports indicate that the home was cluttered with bags of clothing, books and other materials which, in one case, obstructed an entrance. There were no smoke detectors found protecting any area of the home.

### The Occupants

The home was occupied by seven family members. In addition to the 52-year-old father and 49-year-old mother, their five children ranging in age from 9 to 24 years, resided at the 407 Brigg Street address.

The parents occupied the upstairs master bedroom, another bedroom was occupied by a 23-year-old female and the final upstairs bedroom was occupied by a 24-year-old male and his 9-year-old brother. The living room contained a daybed which was utilized during sleeping hours by two females, ages 11 and 18. Activities of the family the night of the fire are not known nor is their familiarity with the use of portable kerosene heaters or their knowledge of precautions in the use of the heaters. Apparently, however, this was their first heating season with the devices.

### Portable Heating Equipment

The three 6,000 Btu portable kerosene heaters, located on the ground floor level, were being used as the primary source of heat for the home. One heater was centrally located in the living room area, one at the opening between the dining room and kitchen area, and one located in the first floor bathroom area. All of the heaters were positioned on the floor. The heaters located in the living room and dining room were determined to have been in the "on" position and are presumed to have been operating at the time of the fire. The bathroom heater (identical model to the living room heater) was found in the "off" position.

The living room heater contained a small .8 gallon fuel tank that would enable the heaters to operate approximately 14 hours. During operation



heated air would be distributed along the entire front of the heater. A wire guard was arranged on the front of the heater to help prevent combustible materials from contacting the open flame during operation. Flashlight batteries provided a small amount of current for igniting the kerosene vapors during start-up operations. Once operating, there was a wick adjustment knob to vary the flame height and "cleanliness" of the burning kerosene vapors. Design of the heater (wick's capillary flow) would stop the flow of fuel if the flame were extinguished by some means.

Examination of the heater revealed that it would be necessary to have a spout, funnel or some other device to transfer fuel from one of the containers found in the home to the heater's tank. If such a device were not used, it is likely that fuel would be spilled during a refueling operation. There was no transfer device found during the investigation.

The unvented device was laboratory approved for use on combustible floors with clearances to combustible materials of not less than 36 inches. An automatic shut-off device was present and designed to activate in the event the unit was tipped-over. Another design feature, a lip located along the base of the unit, was provided to retain any fuel spillage. Further, the wide base, and a low center of gravity would help prevent the unit from being easily overturned. Operating precautions included refueling the device outdoors with the device in the "off" position using only K-1 kerosene, and avoiding direct contact with the heater during operation. Three five gallon metal cans of kerosene and two one-gallon glass containers of kerosene were found in the interior of the home. The containers were all located in the kitchen area adjacent to entry doors. The use of portable kerosene heaters in residences is not prohibited in Nassau County, New York.

## FIRE INCIDENT

Weather conditions the night of the fire were reported to have been below freezing, skies were clear and there was no appreciable wind condition. At approximately 1:20 a.m. on February 9, 1984, fire was discovered by a neighbor. The fire was reported issuing from the ground floor living room area and heavy smoke conditions were reported on the second floor. The Bellmore Fire Department received notification of the incident and responded to the scene. Upon their arrival fire officials indicated that the fire had advanced to the second floor and attic area. Fire fighters first used an exterior attack to diminish the intensity of the fire and to gain access for interior fire fighting.

Once access was gained, search and rescue operations were begun by fire fighters with self-contained breathing apparatus (SCBA). Search and rescue operations were reported to have been hampered by the severe fire conditions and the amount of clutter within the interior of the building. Fire fighters were able to rescue a 9-year-old male from the front, second story bedroom area. This victim, however, was pronounced dead on arrival at an area hospital. During the suppression of the fire, fire fighters located an additional six persons within the building. Two victims were found in the first floor living room area and the remaining victims were located in the bedrooms on the second floor.

### Casualties and Damage

All seven members of the family died as a result of the fire. None of the victims were found in their beds. Their locations would indicate that they did become aware of the fire sometime during its development and attempted to evacuate the building. Their close proximity to their beds would appear to indicate that they awakened to untenable conditions.

Damage to the house was extensive. Heavy fire damage was in evidence on both floors and the fire consumed many of the roof support members. Interior materials in the living room area were nearly entirely consumed during the fire. Evidence indicates that the open stairway and the interior wall's stud cavities, typical in "balloon construction", were the means of fire spread to the second floor and attic areas.

#### ANALYSIS

The Nassau County Fire Marshal's office has listed the cause of the fire to be combustible materials too close to a portable kerosene heating device. Investigators determined that the fire originated in the immediate area of the heater located in the living room, and that the heater was in close proximity to combustibles (daybed, etc.). Further, it was determined that the device was not located within the operating clearance distance for the portable kerosene heater as specified in the listing. Combustible materials must not be placed closer than 36 inches to the device. Investigators were unable to obtain any additional information regarding operating procedures utilized by the occupants compared to manufacturer's instructions or other safety practices. Details regarding fuel transfer practices by the occupants are not known; however, fuel transfer equipment was not located by investigators. Additionally, approximately 10 gallons of kerosene were located inside the dwelling and the combustible liquid contributed to the fire spread.

Once ignition took place, the growth of the fire was likely to have been rapid, spreading throughout the living room area. The amount of readily available combustibles from stored items such as bags of clothing and debris would have contributed to the rapid initial growth and spread.

The close proximity of the stairway would have allowed heat and smoke to easily penetrate the second-floor area blocking the second-floor occupants'

primary means of egress. Once the fire penetrated into the balloon frame construction, the fire would have easily progressed throughout the upper portions of the building. Arriving fire fighters noted severe fire conditions throughout the structure, and speculate that the fire had penetrated the structure early in its development.

There were no smoke detectors present in the home for early detection of the fire. NFPA 74, Standard for the Installation, Maintenance and Use of Household Fire Warning Equipment, recommends that each occupied level of a home be equipped with a smoke detector device and that they be positioned outside of each separate sleeping area. In addition, the Standard recognizes the need for planning and practicing a family escape plan. Following this Standard would have provided a detector in the general area of the living room. It is likely that, had smoke detectors been properly installed and maintained, they would have alerted the family and allowed sufficient time to evacuate the building before untenable conditions were reached.

A portable kerosene heater was found in close proximity to combustibles within the living room. Ignition could have been caused as a direct result of this placement, or with other ignition scenarios. Although not determined in this incident, other ignition scenarios involving fuel spillage, flare-up of the unit or other phenomenon associated with the operation of the device could have been possible and would increase the potential for sustained ignition if also associated in proximity to combustibles.

Based on NFPA's investigative study, the following are considered to be major contributing factors to the loss of life in this fire incident:

- The lack of early detection of the fire; smoke detectors were not installed in the dwelling, nor was there evidence of evacuation planning.
- Misuse of a portable heating device; placement of a portable kerosene heater too close to combustible materials.

- Storage of combustible liquid in the dwelling.
- A sufficient amount of readily available combustibles for continued growth and spread of the fire.

### Discussion

Alternative heating devices (electric, LP gas, solid-fuel heaters, etc.) in the United States have increased dramatically during the last several years. From 1976-1982 there has been a three-fold increase in auxiliary heating related multiple death fires.<sup>1</sup>

Today, kerosene heaters are engineered to prevent many common fire scenarios which were linked to the devices in the past. Precautions regarding proximity to combustibles, refueling and fuel storage practices, etc., accompany the distribution of the heaters. If these precautions are ignored, there is increased probability that such action(s) will result in a fire condition.

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<sup>1</sup> Jon C. Jones and Michael Heck, "A Study of Fires Involving Alternative Heating Equipment," Fire Journal, Vol. 77, No. 5, September 1983, p. 11.

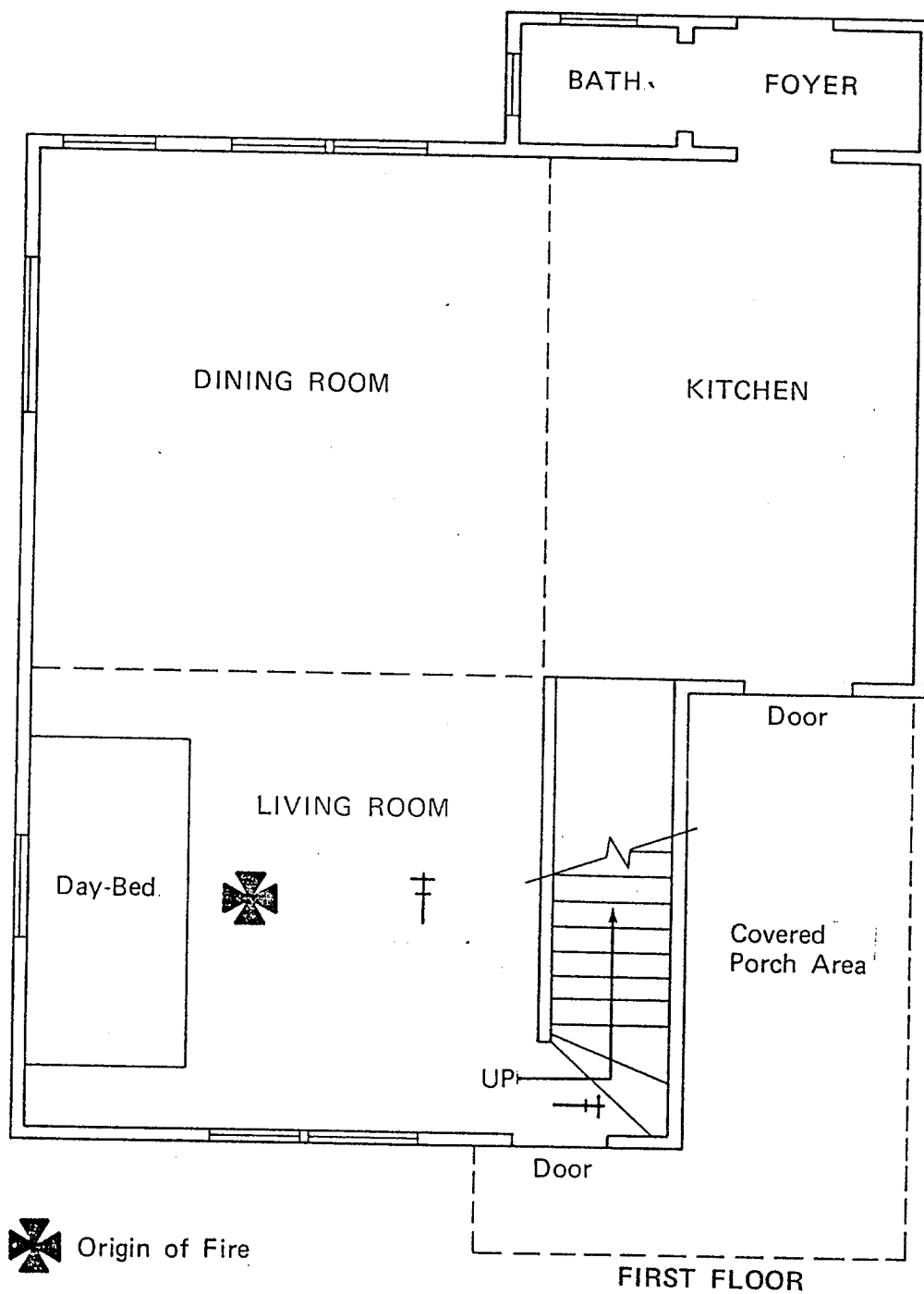
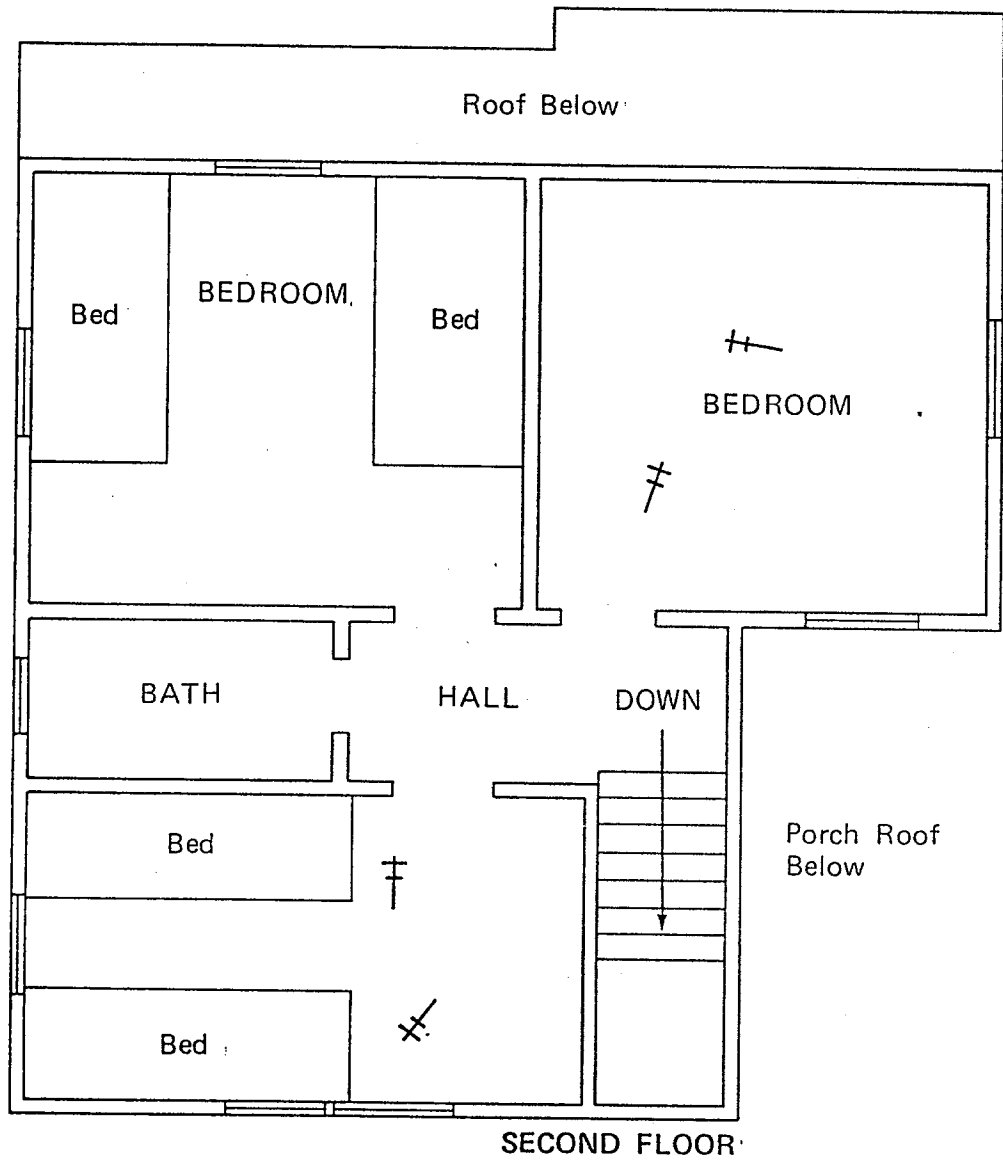


Figure 1. First Floor Plan and Victim Location



← N

⊥ Fatality

Figure 2. Second Floor Plan and Victim Location

Photo 1: Front view from Brigg Street.  
The fire originated on the first floor  
area and extended throughout by the open  
stairway and through voids in exterior  
walls.

Credit: D. E. Waite



Photo 2: Fire in the rear portion of  
the building is being extinguished by fire  
fighters. Significant attic involvement  
is still in evidence.  
Credit: Lee Goldman