

FIREFIGHTER FATALITY REPORT

ENTERPRISE FIRE COMPANY

HAMILTON TOWNSHIP, NJ

NOVEMBER 8, 1994



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STATE OF NEW JERSEY
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DEPARTMENT OF COMMUNITY AFFAIRS
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DIVISION OF FIRE SAFETY
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TABLE OF CONTENTS

INTRODUCTION	Page 1
SUMMARY	Page 2
OVERVIEW	Page 3
COMMENTS	Page 7
RECOMMENDATIONS	Page 9
CONCLUSION	Page 12
AFTERWORD	Page 13

INTRODUCTION

The investigation of this incident was conducted by the New Jersey Division of Fire Safety in conjunction with the New Jersey Department of Labor and the New Jersey Department of Health. This report was prepared in accordance with N.J.S.A. 52:27D - 192 *et. seq.*, Duties of the Division. The purpose of these firefighter casualty investigations is to report the causes of serious firefighter injuries or deaths and identify those measures which may be required to prevent the future occurrence of deaths and serious injuries under similar circumstances. In some cases new information may be developed, or old lessons reinforced, in an effort to prevent similar events in the future. Fire cause and origin investigation are not a part of this report.

The Division acknowledges Enterprise Fire Company Chief Mark Robotin and his firefighters for their assistance in this investigation.

Comments and/or inquiries concerning this report may be addressed to the individual at the address listed below:

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SUMMARY

At 1348 hours on November 8, 1994 a fire in a dwelling was reported at 237 Woodlawn Avenue in Hamilton Township, Mercer County, New Jersey.

During the course of the incident, a 47 year old firefighter and career driver of the Enterprise Fire Company, Brian D. Sutton, Sr., suffered a heart attack and subsequently died. At the time, Sutton was operating the pump of an engine connected to a fire hydrant adjacent to the scene.

Before the fire was extinguished, the building in which the fire originated was totally destroyed and three exposure buildings became involved with fire and were damaged to varying degrees. The initial fire building was subsequently razed.

OVERVIEW

The Municipality

Hamilton Township is a 39.38 square mile¹ municipality located in the western central part of the state in Mercer County. The township borders New Jersey's state capital, Trenton, on the city's east side.

Hamilton Township is classified as suburban with a mix of residential and commercial occupancies. The 1990 census data showed 86,553 year round residents and a population density of 2,197.9 persons per square mile.² Interstate highway routes 95, 195 and 295 traverse the township as well as the Northeast Rail Corridor.

Fire Department

The Enterprise Fire Company (EFC) is one of ten fire companies responsible for providing fire protection for Hamilton Township, and specifically fire district number 4, along with Hamilton Fire Company. The township is divided into nine fire districts. The EFC responds to approximately 300 alarms annually.

The company is comprised of 53 volunteer members and four career drivers. Drivers are scheduled for duty seven days a week, twenty-four hours a day.

The company's station, located at 569 Klockner Road, houses fire apparatus consisting of 2 engines and a mobile light/cascade unit.

The Hamilton Township Police Department (HTPD) provides dispatch service to the fire company and the Hamilton Township Emergency Medical Service (HTEMS) provides primary basic life support (BLS). Advanced life support (ALS) services are provided by paramedics from Saint Francis Medical Center who, along with the members of the HTEMS, staff the HTEMS ambulances.

The department has an active local mutual aid system. They train and drill with various mutual aid fire departments.

The fire department utilizes personal protective equipment (PPE) that complies with the Public Employees Occupational Safety and Health Act (PEOSHA). The department purchases, issues and maintains the following PPE: turnout coats and pants with Nomex III[®] shells and Goretex[®] vapor

¹Square mileage data taken from 1990 Statement of Financial Condition of Counties and Municipalities. Division of Local Government Services, New Jersey Department of Community Affairs

²Population data is taken from Total Resident Population, New Jersey, Counties and Municipalities, 1980 and 1990. State Data Center, New Jersey Department of Labor

barriers, leather gloves, Fiberglass® composite helmets, PBI® hoods, rubber bunker boots and personal alert safety system (PASS) devices.

Fire Location

The fire was located at 237 Woodlawn Avenue in Hamilton Township. The structure was a duplex style two and one half story residential dwelling. The building was equipped with single station battery operated smoke detectors, however fire investigators were unable to ascertain if they were operable. The construction of the building was wood frame platform and was classified as Use Group R-3 and Construction Type 5 according to the BOCA National Building Code. Additionally, the building was not required to be registered with the Division of Fire Safety as it was classified as a Non-Life Hazard Use. With the single exception of smoke detection devices, the building of fire origin was not subject to the New Jersey Uniform Fire Safety Act.

Weather

The weather at the time of the incident was clear and about 60° F. There was a wind blowing toward the northeast at approximately 23 mph. The windy conditions were cited in the post incident report as a contributing factor in the rapid spread of the fire from the initial fire building to the affected exposures.

Communications

The fire company's primary operating frequency is 154.430 MHz. Secondary frequencies available are 154.355, 154.295 and 154.340, which is the mutual aid frequency. No communication problems were noted at this incident.

Water Supply

The water supply in Hamilton Township is provided by a municipal water system, which was used for this incident. Flow problems with the first two hydrants used required more remote hydrants to be used to compensate for the inability to meet flow demand. This delayed the application of the required rate of flow and made it more difficult to put the fire out quickly before adjacent buildings became involved.

Mutual Aid

The fire department utilizes mutual aid from the surrounding fire departments which respond directly to incidents or fill in at vacant stations. For this incident, mutual aid was provided by other fire companies from Hamilton Township including Mercerville Chemical Fire Company

No. 1, Colonial Volunteer Fire Company, Nottingham Volunteer Fire Company, White Horse Volunteer Fire Company and De Cou Hose Company. Additionally, the Lawrence Road Fire Company and Slackwood Fire Company from Lawrence Township and Trenton City Fire Department Engine 6 assisted. The White Horse Volunteer Fire Company and the Lawrence Road Fire Company were utilized to cover fire stations whose apparatus was at the scene of the incident.

Emergency Medical Services

The Hamilton Township Emergency Medical Service (HTEMS) provides Basic Life Support (BLS) for the Fire Department. Paramedics from Saint Francis Medical Center (SFMC), who ride on the HTEMS units, provide Advanced Life Support (ALS). Primary aeromedical evacuation (MEDIVAC) is provided by the New Jersey State Police through South Star. EMS mutual aid is available.

The Incident

The fire at 237 Woodlawn Avenue, Hamilton Township, was reported to the HTPD at 1348 hours which in turn dispatched the EFC. The initial dispatch information reported that the fire was located in the living room area of the Division D³ side of the duplex.

The Incident Commander and first officer on the scene, Assistant District Chief Richard Cope, Jr., reported heavy fire and smoke coming out of the openings on all levels of the structure on the Division D side. He called for an additional engine and an aerial to be dispatched to the scene. When the first due engine had arrived, heavy smoke was noted to be issuing from the Division B side of the duplex. Two 1 $\frac{3}{4}$ " hoselines were deployed and attack operations were commenced. The wind was now beginning to spread the fire to Exposure D1, the left side of an adjacent duplex. At about this time, EFC Engine 14-4, driven by Brian Sutton, arrived and reverse laid a 4" supply line from the fire building to a hydrant located at the intersection of Woodlawn Avenue and Greenwood Avenue. After connecting the engine to the hydrant, Sutton began to charge the 4" supply line. Before the line was fully charged, Sutton was stricken and dropped to the ground. A HTEMS unit was parked next to Engine 14-4 and the crew members witnessed Sutton fall to the ground. They immediately began treatment. A former member of EFC was standing near the engine, and after seeing what had happened, used the radio of Engine 14-4 to broadcast that a "firefighter was down". He also reported that the disabled firefighter was the operator of Engine 14-4 and that a new operator would be needed. At this time, Engine 18-3 was passing by Engine 14-4 and stopped to offer assistance. The driver of Engine 18-3 began operating Engine 14-4 and completed charging the 4" supply line.

³Terminology taken from the *National Fire Academy's Incident Command System*; United States Fire Administration, Emmitsburg, MD

After providing treatment for FF Sutton at the scene, the HTEMS transported him to Saint Francis Medical Center, Trenton, where he was subsequently pronounced dead.

During this time, the wind had aided in spreading the fire from Exposure D1 to Exposure D2, the right side of the duplex and was beginning to spread to Exposure D3, the left side of the next adjacent duplex. The duplex structures were separated by a distance of 10 feet. Additional apparatus was called to the scene to assist in confining the fire. The fire's advance was eventually stopped between Exposures D2 and D3. Shortly afterward, the fire was declared under control and members of EFC were pulled back from the operation as they began to learn of Sutton's death. The mutual aid companies continued overhaul operations and remained at the scene until the incident was mitigated at 2013 hours.

The fire was investigated by the Mercer County Fire Marshal's Office, the Hamilton Police Department Arson Squad, and the Hamilton Township Fire District 4 Fire Marshal. The cause was listed as careless use of smoking paraphernalia, a cigarette lighter. In all, three buildings were heavily damaged or destroyed and a fourth received moderate exterior damage. In addition to FF Sutton's death, four firefighters suffered minor injuries. A forty-two year old female occupant of the dwelling was treated for shock, and a forty-two year old television cameraman who was covering the incident, was treated for smoke inhalation.

The Casualty Scenario

FF Brian Sutton, a 47 year old member of the Enterprise Fire Company, had 28 years of service at the time of his death. During his tenure with the company, he served in various capacities, including holding the office of Fire Chief. His current assignment was that of career apparatus driver.

Prior to FF Sutton's collapse, he, and the crew of engine 14-4 had arrived at their assigned location near Engine 14-1 and reverse laid a 4" supply line from the fire building to a hydrant located at the intersection of Woodlawn Avenue and Greenwood Avenue. It was as Sutton began to charge the line that he was stricken and fell to the ground. The crew members of a HTEMS unit that was parked adjacent to Engine 14-4 immediately began treatment. Realizing that Sutton was not breathing and had no pulse, cardio pulmonary resuscitation (CPR) was initiated. The HTEMS transported him to Saint Francis Medical Center where he was pronounced dead on arrival at 1444 hours.

Through results obtained by an autopsy performed on Brian Sutton by the Mercer County Medical Examiner's Office, it was learned that all of his coronary arteries contained blockages between 80% and 90% due to a buildup of plaque. The official cause of death was listed as acute myocardial infarction (heart attack) due to Occlusive Coronary Arteriosclerosis (coronary artery disease). Obesity was listed as a significant contributing factor to Sutton's death.

COMMENTS

Personal Protective Equipment

An inspection was performed on FF Sutton's Personal Protective Equipment (PPE) which revealed that all components were in full compliance with the New Jersey Public Employees Occupational Safety and Health Act (PEOSHA). The PPE in this case played no role in the outcome.

Physical Condition of Firefighter Sutton

According to information contained in the autopsy report of the Mercer County Medical Examiner's office, Brian Sutton stood 5' 9" tall and weighed 285 lbs. at the time of his death. Obesity was listed as a significant contributing factor to his death. For his age and height, his ideal weight range would have been between 141 lbs. and 179 lbs.⁴

The National Institutes of Health cite the following statistics regarding obesity:⁵

- Hypertension occurs about three times as often in overweight people as in those who are not over weight. Among adults aged 20 through 44, individuals 20 percent or more overweight are 5.6 times as likely as others to have hypertension.
- High blood cholesterol levels occur more than twice as often in overweight people.
- The prevalence of diabetes is nearly three times as high in overweight people.

Critical Incident Stress Debriefing Team Use

Chief Robotin called in the Critical Incident Stress Debriefing (CISD) Team because of this incident. The purpose of a CISD Team is to provide individual counseling, group sessions and, if necessary, referrals to members of an emergency response organization involved in traumatic events. These events could include death or serious injury of a co-worker, multiple deaths or the death of a child. The team is made up of specially trained fire, police and EMS personnel. There are also mental health professionals who provide training and guidance to the team members and assist at the debriefing sessions. CISD Teams are regionalized in New Jersey and are part of a statewide network.

⁴Information obtained from *The Gerontology Research Center: Age-Specific Weight Range for Men and Women.*

⁵Statistics obtained from *The National Institutes of Health*

The Chief reported that the CISD Team provided a significant amount of assistance to the fire department members in dealing with this incident.

This should help avoid future stress related problems. The assistance provided by the CISD Team will help to sensitize the firefighters to the possibility of stress reactions. It allows the members to understand the range of normal reactions and provides a method to deal with the incident and its after effects.

RECOMMENDATIONS

Cardiopulmonary Resuscitation

The Division of Fire Safety recommends that Cardiopulmonary Resuscitation (CPR) certification training be given to all firefighters. The ability to immediately initiate CPR could be vital in reviving a civilian or firefighter at an incident scene, in training, during normal station duties, etc. The first few minutes are critical for providing CPR and if all firefighters are certified in its application there could be an increased chance of survival for any victims that may be encountered.

With the protection from infectious diseases of members who provide EMS treatment being critical, fire departments should also issue each CPR trained member a CPR pocket mask with a one way valve and appropriate gloves, or have them immediately available for use on apparatus.

Fire departments should also consider the purchase of minimum emergency medical services equipment, such as oxygen, blood pressure cuffs and an assortment of bandages and immobilization devices, to allow trained personnel to handle incidents while awaiting the arrival of EMS.

Medical Examinations for Firefighters

The Division of Fire Safety recommends that firefighters be given medical examinations upon entry into the fire service as a condition of their employment or membership. Such examinations, including pulmonary function and stress testing, conducted prior to entry into service will help to ensure that applicants with significant medical conditions will avoid even the rigorous physical demands of training. These examinations will provide the baseline for all future periodic examinations, which are also recommended.

Current members of the fire service should have periodic medical evaluations made available to them by their fire department. This was a provision contained in a previous version of the Public Employees Occupational Safety and Health Act (PEOSHA) regulations that has since been removed. The Division of Fire Safety recommends that the provisions of ANSI Z-88.5-1981, Practice for Respiratory Protection for the Fire Service; Section 3.3, Medical Limitations⁶, be readopted by reference into the PEOSHA regulations and be adopted by all fire departments in order to gauge the medical qualifications of members. Realizing that many members of the fire service have not maintained a suitable level of fitness during their tenure, the Division of Fire Safety recommends that existing members be permitted to decline medical evaluations for at least five years.

⁶American National Standards Institute, Z88.5-1981, Practice for Respiratory Protection for the Fire Service, 1981 edition, American National Standards Institute, New York, NY

Officials from the Enterprise Fire Company were unable to ascertain the exact date of FF Sutton's last medical examination, stating only that it had been several years since he was medically evaluated.

The Division of Fire Safety has urged the NJ Department of Health to commission a study that would determine the relationship between firefighting and the reported increased risk of developing cardiovascular and pulmonary disease. Such a study could be used to provide a basis for changing the laws that govern the administration of the Police and Firemen's Retirement system. Currently, career firefighters are denied disability retirement compensation in excess of 40% of their salary for heart and lung disorders that cannot be related to a singular traumatic event. The Division believes that firefighters suffering from these disorders should be eligible to receive the full percentage of disability retirement compensation. It is important to note that various firefighter mortality studies compiled by the International Association of Fire Fighters⁷ suggest that cardiovascular and pulmonary disease frequently results from exposure over time to periodic elevated levels of stress and varying quantities of toxins encountered at incidents. Consequently, many firefighters who entered the fire service before SCBA became universally available could be expected to be so afflicted.

More information for firefighter breathing apparatus medical qualifications can be found in NFPA Standard 1582; 1992 ed.; *Standard on Medical Requirements for Firefighters*⁸. Additional information may be obtained by contacting the New Jersey Department of Health, Public Employees Occupational Safety and Health Program, CN 360, Trenton, NJ 08625-0360; (609) 984-1863.

Firefighter Physical Fitness

The Division of Fire Safety recommends that fire departments encourage firefighter physical fitness. NFPA Standard 1500; 1992 ed.; *Fire Department Occupational Safety and Health Program*, suggests that fire departments "Establish and provide a physical fitness program to enable members to develop and maintain an appropriate level of fitness to safely perform their assigned functions."⁹ Fire departments are required by the regulations of the Public Employees Occupational Safety and Health Act (PEOSHA) to "Assure that employees who are expected to do interior structural firefighting are physically capable of performing the duties which may be assigned to them during emergencies". Firefighters should be urged to participate in the fire department's physical fitness program in order to rehabilitate and/or improve their physical condition.

The New Jersey Fire Safety Commission has requested the Division of Fire Safety to develop a standard test to measure the physical capability of firefighters.

⁷*International Association of Fire Fighters, AFL-CIO, CLC, Firefighter Mortality Studies, December 24, 1991, International Association of Fire Fighters, Washington, DC*

⁸*National Fire Protection Association Standard 1582, Standard on Medical Requirements for Firefighters, 1992 edition, National Fire Protection Association, Quincy, MA*

⁹*National Fire Protection Association Standard 1500, Fire Department Occupational Safety and Health Program, 1992 edition, National Fire Protection Association, Quincy, MA*

Critical Incident Stress Debriefing Team Use

The use of the CISD Team in this instance was very helpful to the firefighters involved.

The Division of Fire Safety recommends the notification and use of CISD teams when the CISD trigger events are found to be present. Such significant events may include¹⁰:

- line of duty death of a co-worker
- mass casualty incidents
- death of a child
- death occurring after prolonged rescue efforts
- when a victim reminds an emergency worker of a loved one
- during highly dangerous or highly visible events
- when the emergency worker influences death or injury
- co-worker suicides
- any other unspecified highly traumatic event

Further information on critical incident stress debriefing is available from the CISD Network of New Jersey at (201) 592-3528. The statewide emergency contact number for activation of a CISD team is (609) 394-3600.

¹⁰Trigger events information from the Critical Incident Stress Debriefing Network of New Jersey

CONCLUSION

The Enterprise Fire Company exhibited a great deal of professionalism in handling an extremely challenging incident. The lack of an initial water supply capable of providing sufficient flow, coupled with the windy conditions, prevented the firefighters from confining the fire to the building of origin and created the need for a larger water flow than would have ordinarily been required. It must be noted however that appropriate measures were undertaken almost immediately to secure an adequate and reliable water supply. Although hampered by FF Sutton's collapse, this action, combined with aggressive firefighting tactics and strategy, most certainly prevented the conflagration from growing larger. The officers and firefighters of the EFC, as well as mutual aid companies, did a commendable job in mitigating the incident.

During the course of this investigation, no violations were noted with regard to the New Jersey Uniform Fire Safety Act, and/or regulations of the New Jersey Departments of Health and Labor.

AFTERWORD

Events such as these can prove trying to fire department members. However, it must be remembered that in such instances, the department administrators must take the responsibility from the outset to make certain the proper actions are initiated to provide needed assistance to the firefighter's family and to ensure that investigating agencies will have the necessary documents, information and evidence to conduct a thorough assessment of the incident. The Enterprise Fire Company fulfilled their obligation in this respect.

As a reminder, in the event of a line of duty firefighter serious injury or death, fire departments should immediately contact the Division of Fire Safety to report the casualty and obtain necessary information regarding actions to take. Equipment that was involved with the injury or death and all firefighter protective clothing and equipment, including SCBA, should be impounded to preserve it for evidence. Written statements and/or depositions should be obtained from firefighters who may have been involved and from any other witnesses to the incident.

The Division of Fire Safety has made available to all fire departments in the state the *Firefighter Line of Duty Death and Serious Injury Guidelines*. If your department has not received a copy and would like one, please call the Fire Department Programs Unit at (609) 633-6071.

Following these guidelines will help ensure that the family of the fallen firefighter will receive the benefits and assistance they are entitled to and will aid in the process of any investigations that may follow.