

Firefighter Fatalities

in the United States in 2001



FEMA



U.S. Fire Administration

Firefighter Fatalities
in the United States in 2001

August 2002

In memory of all firefighters who
answered their last call in 2001

To their families and friends

To their service and sacrifice

U.S. Fire Administration Mission Statement

As an entity of the Federal Emergency Management Agency, the mission of the United States Fire Administration is to reduce life and economic losses due to fire and related emergencies, through leadership, advocacy, coordination, and support. We serve the Nation independently, in coordination with other Federal agencies, and in partnership with fire protection and emergency service communities. With a commitment to excellence, we provide public education, training, technology, and data initiatives.

ACKNOWLEDGEMENTS

This study of firefighter fatalities would not have been possible without the cooperation and assistance of many members of the fire service across the United States. Members of individual fire departments, chief fire officers, the National Interagency Fire Center, United States Forest Service personnel, the United States military, the Department of Justice, NFPA International, and many others, contributed important information for this report.

The ultimate objective of this effort is to reduce the number of firefighter deaths through an increased awareness and understanding of their causes and how they can be prevented. Firefighting, rescue, and other types of emergency operations are essential activities in an inherently dangerous profession, and unfortunate tragedies do occur. This is the risk all firefighters accept every time they respond to an emergency incident. However, the risk can be greatly reduced through efforts to increase firefighter health and safety.

Photographic Acknowledgments

The United States Fire Administration (USFA) would like to extend its thanks to the following individuals for providing photographs for this report:

- Mike Rieger, FEMA News Photo7**
New York, NY, September 25, 2001 - A firefighter surveys the remaining shell and tons of debris of the World Trade Center (WTC). Clearing the rubble from the collapsed twin towers and other surrounding buildings is a daunting task for the hundreds of workers at the site of the terrorist attack.
- Jennifer Compston, The Intelligencer, Wheeling, West Virginia12**
Brake failure caused a tanker to leave the road and roll down a steep hillside. The passenger in the tanker, Firefighter Clifford Andrew White, Jr., of the Cameron Volunteer Fire Department, West Virginia, was killed.
- Paul Ramirez, Phoenix Fire Department19**
Phoenix Paramedic Firefighter Bret R. Tarver was killed when he ran out of air and became disoriented inside of a supermarket.
- Glenn Hartong, The Cincinnati Enquirer22**
Firefighters provide treatment and move Firefighter William "Doc" Ellison toward medical transportation after rescuing him from the interior of a residential structure fire. Firefighter Ellison was a member of the Miami Township Fire Department in Ohio. He survived for 12 days before succumbing to burn injuries.

Darrell Wong, The Fresno Bee.....23

The cab of this engine was crushed when a water tank became overpressurized and exploded. The tank rocketed upward and struck the roof of the apparatus. Engineer Kirk James Shafer of the North Central Fire Protection District in California was killed.

Andrea Booher, FEMA News Photo43

New York, NY, September 16, 2001 - Members of the New York Fire Department continue their search for survivors amongst the wreckage.

Jerry Sowden, The Derrick, Oil City, Pennsylvania.....43

An empty set of turnout gear forms the base for a memorial outside of the Rocky Grove Volunteer Fire Department in Pennsylvania. Lieutenant Andrew John White died on January 11, 2001 when he became disoriented in a fire involving a manufactured home.

Glenn Hartong, The Cincinnati EnquirerFinal Page

Bagpipers play during funeral services for Firefighter William "Doc" Ellison of the Miami Township Fire Department.

Front Cover Photographic Acknowledgements

Glenn Hartong, Jerry Sowden, Andrea Booher, Darrell Wong

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BACKGROUND

For 25 years, the United States Fire Administration (USFA) has tracked the number of firefighter fatalities and conducted an annual analysis. Through the collection of information on the causes of firefighter deaths, the USFA is able to focus on specific problems and direct efforts toward finding solutions to reduce the number of firefighter fatalities in the future. This information is also used to measure the effectiveness of current programs directed toward firefighter health and safety.

One of the USFA's main program goals is a 25 percent reduction in firefighter fatalities in 5 years and a 50 percent reduction within 10 years. The emphasis placed on these goals by the USFA is underscored by the fact that these goals represent one of the four major objectives that guide the actions of the USFA.

In addition to the analysis, the USFA provides a list of firefighter fatalities to the National Fallen Firefighters Foundation. If Memorial criteria are met, the fallen firefighter's next of kin, as well as members of the individual fire department, are invited to the annual Fallen Firefighters Memorial Service. The service is normally held at the National Emergency Training Center in Emmitsburg, Maryland, annually, during Fire Prevention Week. Due to the large numbers of firefighters killed in the line-of-duty in 2001, the 2002 ceremony will be held in Washington, DC. Additional information regarding the Memorial Service can be found on the Internet at <http://www.firehero.org/> or by calling the National Fallen Firefighters Foundation at (301) 447-1365.

Other resources and information regarding firefighter fatalities, including current fatality notices, the National Fallen Firefighters Memorial database, and links to the Public Safety Officer Benefit (PSOB) program can be found at <http://www.usfa.fema.gov/dhtml/inside-usfa/ffmem.cfm>

INTRODUCTION

This report continues a series of annual studies by the USFA of on duty firefighter fatalities in the United States.

The specific objective of this study is to identify all on duty firefighter fatalities that occurred in the United States in 2001 and to analyze the circumstances surrounding each occurrence. The study is intended to help identify approaches that could reduce the number of firefighter deaths in future years.

In addition to the 2001 overall findings, this study includes assessments of trends over the past 6 years, as well as special analysis on actions that can immediately impact cardiac health and firefighter safety during emergency operations.

Who is a Firefighter?

For the purpose of this study, the term firefighter covers all members of organized fire departments in all States, the District of Columbia, and the Territories of the United States. It includes career and volunteer firefighters; full-time public safety officers acting as firefighters; State, Territory, and Federal government fire service personnel, including wildland firefighters; and privately employed firefighters, including employees of contract fire departments and trained members of industrial fire brigades, whether full- or part-time. It also includes contract personnel working as firefighters or assigned to work in direct support of fire service organizations.

Under this definition, the study includes not only local and municipal firefighters, but also seasonal and full-time employees of the United States Forest Service, the Bureau of Land Management, the Bureau of Indian Affairs, the Bureau of Fish and Wildlife, the National Park Service, and State wildland agencies. The definition also includes firefighters employed by other governmental agencies such as the United States Department of Energy; military personnel performing assigned

As this document was going to print, USFA was notified that the Department of Justice (DOJ) had approved payment of benefits under the Public Safety Officers' Benefits (PSOB) Program for three Fire Safety Directors who died in the World Trade Center incident based on the Report of Public Safety Officers Death submitted by FDNY. Qualification for PSOB benefits meets the established "on-duty" criteria for inclusion in this report; therefore, the total loss in firefighter lives for the WTC incident is hereby adjusted to 344 and the 2001 national total to 446.

The names of the firefighters approved for benefits are:

*James J. Corrigan, Fire Safety Director, OCS Group
Phillip T. Hayes, Deputy Fire Safety Director, OCS Group
William Wren, Fire Safety Director, OCS Group*

fire suppression activities; civilian firefighters working at military installations; and prison inmates serving on firefighting crews.

The Fire Department City of New York (FDNY) lost 343 members on September 11, 2001. Two of these members were full-time Emergency Medical Service (EMS) workers that did not have any firefighting responsibilities. This study includes the 341 members of the FDNY that were assigned to the firefighting component of the department.

What Constitutes an On Duty Fatality?

On duty fatalities include any injury or illness sustained while on duty that proves fatal. The term "on duty" refers to being involved in operations at the scene of an emergency, whether it is a fire or nonfire incident; responding to or returning from an incident; performing other officially assigned duties such as training, maintenance, public education, inspection, investigations, court testimony, and fund raising; and being on-call, under orders, or on standby duty except at the individual's home or place of business. An individual who experiences a heart attack or other fatal injury at home as he or she prepares to respond to an emergency is considered on duty when the response begins. A firefighter that becomes ill while performing fire department duties and suffers a heart attack shortly after arriving home or at another location may be considered on duty since the inception of the heart attack occurred while the firefighter was on duty.

A fatality may be caused directly by an accidental or intentional injury in either emergency or nonemergency circumstances, or it may be attributed to an occupationally-related fatal illness. A common example of a fatal illness incurred on duty is a heart attack. Fatalities attributed to occupational illnesses would also include a communicable disease contracted while on duty that proved fatal when the disease could be attributed to a documented occupational exposure.

Injuries and illnesses are included even when death is considerably delayed after the original incident. When the incident and the death occur in different years, the analysis counts the fatality as having occurred in the year that the incident took place.

Two firefighters died in 2001 as the result of injuries that they suffered in previous years. Also in 2001, the USFA was notified of the deaths of 2 additional firefighters from years previous to 2001 that were not known or included in the firefighter fatality reports for those years. For statistical purposes, each firefighter death is counted in the year in which the incident occurred. Information about these 4 deaths is included in the appendix of this report, but they are not addressed in the body of the report unless the death impacts retrospective statistical comparisons.

There is no established mechanism for identifying fatalities that result from illnesses that develop over long periods of time, such as cancer, which may be related to occupational exposure to hazardous materials or products of combustion. It has proven to be very difficult over the years to provide a complete evaluation of an occupational illness as a causal factor in firefighter deaths due to the following limitations: the exposure of firefighters to toxic hazards is not sufficiently tracked, the often delayed long-term effects of such toxic hazard exposures, and the exposures firefighters may receive while off duty.

Sources of Initial Notification

As an integral part of its ongoing program to collect and analyze fire data, USFA solicits information on firefighter fatalities directly from the fire service and from a wide range of other sources. These sources include the Public Safety Officers' Benefit (PSOB) program administered by the Department of Justice (DOJ), the National Institute for Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), the United States military, the National Interagency Fire Center, and other Federal agencies.

The USFA receives notification of some deaths directly from fire departments, as well as from such fire service organizations as the International Association of Fire Chiefs (IAFC), the International Association of Fire Fighters (IAFF), National Fire Protection Association (NFPA) International, the National Volunteer Fire Council (NVFC), State Fire Marshals, State training organizations, other State and local organizations, fire service Internet sites, news services, and fire service publications. The USFA also keeps track of fatal fire incidents as part of its Major Fires Investigation Program and performs an ongoing analysis of data from the National Fire Incident Reporting System (NFIRS).

Procedure for Including a Fatality in the Study

In most cases, after notification of a fatal incident, initial telephone contact is made with local authorities by the USFA to verify the incident, its location and jurisdiction, and the fire department or agency involved. Further information about the deceased firefighter and the incident may be obtained from the chief of the fire department or his or her designee over the phone or by other data collection forms.

Information that is requested routinely includes NFIRS-1 (Incident) and NFIRS-3 (Fire Service Casualty) reports, the fire department's own incident reports and internal investigation reports, copies of death certificates or autopsy results, special investigative reports, police reports, photographs and diagrams, and newspaper or media accounts of the incident. Information on the incident also may be gathered from NFPA International, the USFA, or NIOSH reports on an incident.

After obtaining this information, a determination is made as to whether the death qualifies as an on duty firefighter fatality according to the previously described criteria. The same criteria were used for this study as in previous annual studies. Additional information may be requested, either by follow-up with the fire department directly, from State vital records offices, or other agencies. The determination as to whether a fatality qualifies as an on duty death for inclusion in this statistical analysis is made by the USFA. The final determination as to whether a fatality qualifies as a line-of-duty death for inclusion in the Fallen Firefighters Memorial Service is made by the National Fallen Firefighters Foundation.

Explanation of Figures

In order to conduct a comparison of firefighter deaths in 2001 with firefighter deaths in previous years, we occasionally separate the firefighter losses of September 11, 2001, from the analysis of the perennial killers of firefighters each year -- heart attacks, internal trauma, asphyxiation, and others. For this reason, deaths occurring at the World Trade Center (WTC) are not included in some figures.

2001 FINDINGS



Four hundred and forty-three firefighters died while on duty in 2001. This is the largest single-year loss ever experienced in the history of the fire service in the United States. Three hundred and forty-one firefighters¹ died at the World Trade Center (WTC) towers in New York City on September 11, 2001. This is the largest loss of firefighters' lives on any single incident in the history of the United States, and for all of recorded worldwide fire service history. The next highest loss of firefighters' lives in the United States on a single incident was the explosion of two ships in Texas City, Texas, on April 16, 1947. Twenty-seven firefighters were killed. The only other incident to claim more than 20 firefighters' lives was an incident in Chicago on December 22, 1910².

351 Firefighters were murdered in 2001:

- 341 in the terrorist attacks on the World Trade Center*
- 9 in arson-caused or suspicious fires*
- 1 at the hands of a gunman*

On September 11th, the firefighters who died had over 4,448 years of collective fire service experience, an average of 13 years.

The 443 firefighters who died on duty in 2001 had over 5,942 years of collective fire service experience, an average of 13.4 years.

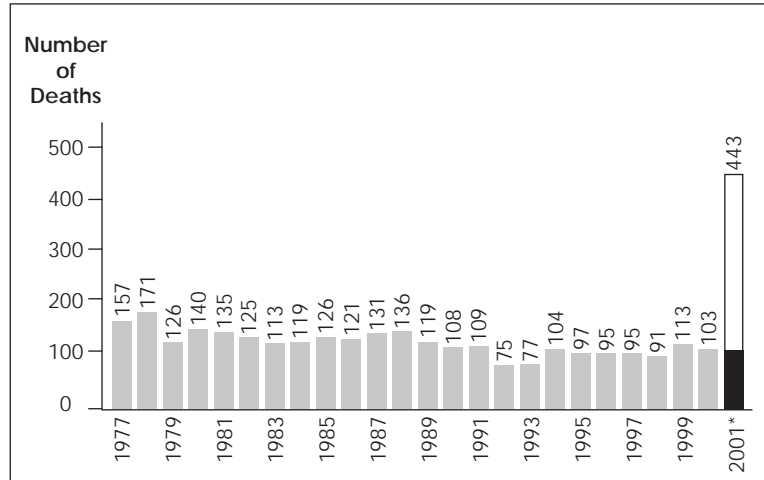
¹ The City and State of New York classified Father Judge, FDNY Chaplin, as a firefighter.

² Hank Przybylowicz, Line of Duty Death Research Service.

During the course of the year, 102 firefighters died while on duty in the United States in 91 other incidents. Six of the 102 firefighters were FDNY firefighters that died in 4 separate incidents unrelated to the WTC incident.

The total of 443 firefighter fatalities is the fourth time in the last 10 years and the ninth time within the last 15 years when the total number of firefighter fatalities has exceeded 100. Even if the WTC deaths are not included in the 2001 total, this would be true. The lowest years on record were 1992 with 75 fatalities and 1993 with 77 fatalities (Figure 1).

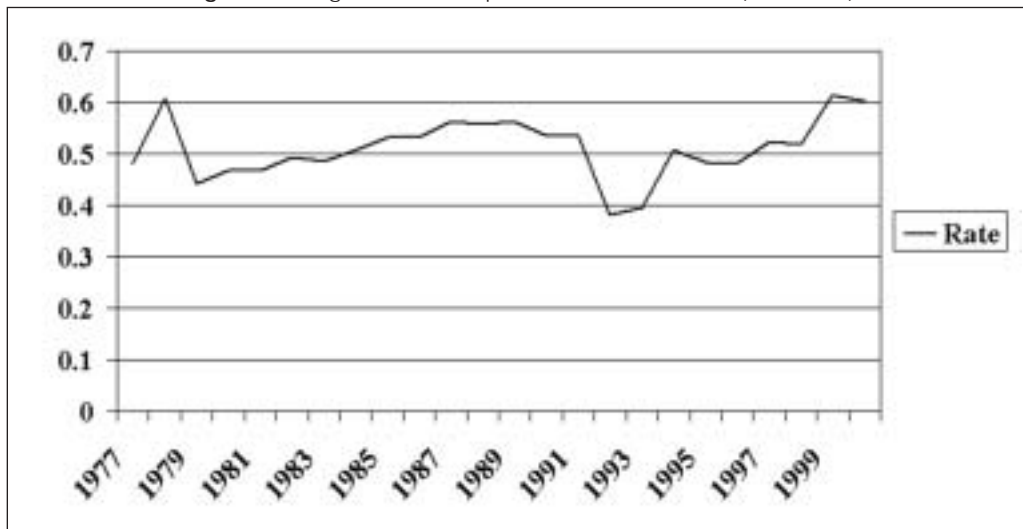
Figure 1. On Duty Fatalities (1977-2001)



*The 102 non-WTC fatalities are represented in black.

While the total number of firefighter fatalities has been trending downward over the past 20 years, the number of firefighter deaths per fire incident has risen. Figure 2 compares the total number of firefighter fatalities each year and the total number of fire incidents reported by NFPA International through 2000 (2001 data is not yet available). While firefighters die in many nonfire situations, the fatalities in Figure 2 are compared to fire incidents only. This information suggests that firefighting is getting more hazardous. A retrospective study of firefighter fatalities that covers the period 1990-2000 was recently published by USFA and sheds more light on this subject. The retrospective study of firefighter fatalities is available from the USFA Publications Center.

Figure 2. Firefighter Fatalities per 10,000 Fire Incidents (1977-2000)



Career and Volunteer Deaths

The 2001 firefighter fatalities included 75 volunteer firefighters and 368 career firefighters (Table 1). Among the volunteer firefighter fatalities, 63 were from local or municipal volunteer fire departments, and 12 were seasonal or contract members of wildland fire agencies. All of the career firefighters that died were members of local or municipal fire departments. Four hundred and thirty-eight of the fatalities were men and 5 were women.

Table 1. Career vs. Volunteer Fatalities

TOTAL (443)	
Career (368)	Volunteer (75)
Metro Depts (361)	Suburban/Urban VFD (26)
Other Depts (7)	Rural VFD (37)
	Wildland Seasonal/Part-time (12)

Multiple Firefighter Fatality Incidents

The 443 deaths resulted from 92 incidents. There were 8 multiple firefighter fatality incidents resulting in the deaths of 359 firefighters (Table 2). If the WTC deaths are not included, there were 7 multiple firefighter fatality incidents resulting in the deaths of 18 firefighters.

Table 2. Multiple Fatality Incidents

Year	Number of Incidents	Total Number of Fatalities
2001	8	359
2001 w/o WTC	7	18
2000	5	10
1999	6	22
1998	10	22
1997	8	17
1996	3	8

In 2001, 341 New York City firefighters died in the attack on and subsequent collapse of the WTC; 4 Washington firefighters were killed when a wildland fire progressed rapidly and overran their position; an Oregon-based helicopter crew of 3 was killed in the crash of a firefighting helicopter in Montana; 3 New York City firefighters were killed in the explosion of a hardware store; 2 Illinois firefighters were killed when they were trapped by rapid fire progress in a residential basement fire; 2 Missouri firefighters died when they became disoriented and trapped in a residential structure fire; 2 Pennsylvania firefighters died as they attempted to recover the body of a boater in rapidly flowing water; and 2 California air tanker pilots were killed in a mid-air collision.

Wildland Firefighting Deaths

The number of deaths associated with brush, grass, or wildland firefighting in 2001 was 15 (Table 3). In 2001, there were 6 firefighter deaths associated with aircraft firefighting duties (2 multiple fatality incidents claimed 5 firefighters and one crash claimed a single firefighter). This total includes fixed-wing aircraft and helicopters (Table 4).

Table 3. Fatalities Associated with Wildland Firefighting

Year	Total Number of Fatalities
2001	15
2000	19
1999	28
1998	13
1997	10
1996	5

Four Washington firefighters were killed when a rapidly advancing fire overran their position; an Oregon-based wildland helicopter crew of 3 were killed when their aircraft crashed during a return-to-service maintenance flight in Montana; 2 wildland air tanker pilots were killed when their aircrafts collided in midair while fighting a fire in California; 2 firefighters were killed in separate tanker rollovers while responding to wildland fires in Kentucky and West Virginia; a Washington firefighter died of a heart attack caused by an abnormal heart rhythm while operating a tanker (tender) at a wildland fire; the pilot of a single-engine air tanker was killed in a crash in Idaho; a Tennessee wildland firefighter was trapped by fire progress; and a Montana firefighter was struck and killed by a falling tree.

Table 4. Wildland Firefighting Aircraft Fatalities

Year	Total Number of Fatalities
2001	6
2000	6
1999	0
1998	3
1997	5
1996	0

TYPE OF DUTY

In 2001, 407 on duty firefighter deaths were associated with emergency incidents, accounting for 92 percent of the 443 fatalities (Table 5 and Table 6). This includes all firefighters who died while responding to an emergency, while at the emergency scene, or while returning from the emergency incident. Nonemergency activities accounted for 36 fatalities (8 percent). Nonemergency duties include training, administrative activities, or performing other functions that are not related to an emergency incident. Six-year historical perspectives concerning the percentage of firefighter deaths that occurred during emergency duty are presented in Table 7 and Table 8.

Table 5. Fatalities While Performing Emergency Duty without WTC

Type of Duty	Number	Percent
Emergency	66	65%
Nonemergency	36	35%

Table 6. Fatalities While Performing Emergency Duty Including the WTC

Type of Duty	Number	Percent
Emergency	407	92%
Nonemergency	36	8%

Table 7. Emergency Duty Fatalities without WTC

Year	Percentage of All Fatalities
2001	65%
2000	71%
1999	87%
1998	77%
1997	81%
1996	72%

Table 8. Emergency Duty Fatalities Including WTC

Year	Percentage of All Fatalities
2001	92%
2000	71%
1999	87%
1998	77%
1997	81%
1996	72%

The number of deaths by type of duty being performed in 2001 is shown in Figure 3 and Table 9. As in previous years, the largest number of deaths occurred during fireground operations. There were 379 fireground deaths, which accounted for 85.5 percent of the fatalities. This number is impacted by the 341 New York City firefighters killed at the WTC.

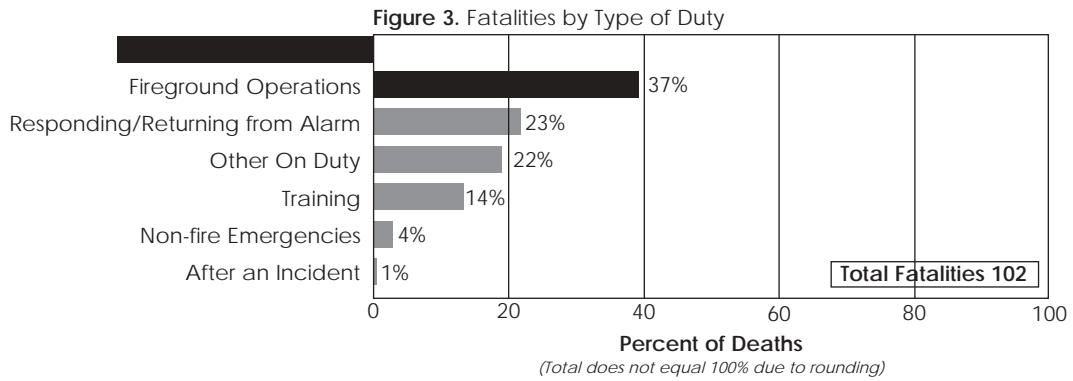


Table 9. Fatalities by Type of Duty Including WTC

Type of Duty	Number	Percent
Fireground Operations	379	86%
Responding/Returning from Alarm	23	5%
Other On Duty	22	5%
Training	14	3%
Nonfire Emergencies	4	1%
After an Incident	1	0%
Total	443	100%

Fireground Operations

Of the 379 fireground deaths, 341 were New York City firefighters who were crushed in the collapse of the WTC towers. Three additional firefighters were killed when they were crushed by building collapses, 2 in New York City on Father's Day and 1 in a Wisconsin restaurant fire that was caused by arson. Asphyxiation claimed the lives of 14 firefighters and 12 were killed by heart attacks suffered on the fireground. Four firefighters were fatally burned. Internal trauma from injuries received on fire incident scenes claimed the lives of 5 firefighters in 2001 -- 3 firefighters were killed in 2 wildland aircraft crashes; 1 firefighter was struck and killed by a falling tree at a wildland fire; and 1 firefighter was struck by a vehicle at the scene of a vehicle fire.



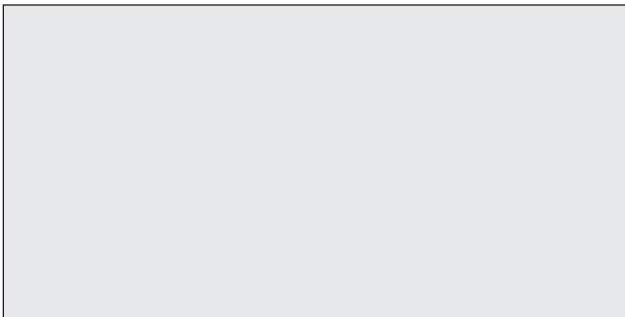
Table 10. Fatalities While Responding to or Returning from an Incident

Year	Number of Fatalities
2001	23
2000	19
1999	26
1998	14
1997	21
1996	22

Responding/Returning

Twenty-three firefighters died while responding to or returning from emergency incidents in 2001 (Table 10). This has been the second leading type of duty in which firefighter deaths have occurred each year

since 1993. In 2001, 20 of the 23 firefighter deaths that occurred while responding to or returning from an incident involved volunteer firefighters. Three career firefighters died while responding or returning -- a Florida firefighter suffered a heart attack when his station was dispatched on an incident. He was exercising in a field next to the station and ran toward the station when he heard the alert tone. A



Connecticut firefighter died of a heart attack as he was backing vehicles into the station after a response and an Illinois firefighter was killed when he was crushed by his engine company apparatus as it backed down a bridge at the conclusion of an incident.

Of the 20 volunteer firefighters who died while responding or returning, 11 were deaths due to trauma. Five firefighters died of injuries received while responding to incidents in their personal vehicles; 3 firefighters were killed in tanker (tender) collisions while responding in Kentucky, Missouri, and West Virginia; 2 firefighters were killed while responding to incidents in fire department vehicles other than tankers; and 1 firefighter died when he was struck by a passing vehicle as he directed traffic at a fire station to allow returning fire apparatus to back into the station.

Heart attacks claimed 9 volunteer firefighters as they were responding to or returning from incidents. Four deaths involved firefighters who experienced heart attacks while responding in fire apparatus; 3 volunteer firefighters killed by heart attacks were fire police officers responding to incidents; 1 firefighter collapsed in the fire station as he prepared for a response; and 1 firefighter experienced a heart attack in his personal vehicle after leaving the fire station after an extended incident.

The USFA is presently engaged in two project initiatives that will provide information about the safe operation of emergency vehicles (<http://www.usfa.fema.gov/dhtml/inside-usfa/vehicle.cfm>). A project on the safe operation of fire department tankers (tenders) will examine firefighter deaths in tanker crashes and recommend steps to be taken to improve the safety of firefighters responding in tankers; operating tankers safely at the scene of an emergency; and design steps that will improve tanker safety. A second initiative will address the safety of firefighters in all emergency vehicles, including ambulances, fire apparatus, and privately owned vehicles, as well as safety on the scene of an incident in proximity to a roadway. Completion of the tanker project is expected in 2002, and the second project should be complete in 2003.

Other On Duty

Twenty-two deaths occurred in 2001 during other on duty activities. This total includes 9 firefighters who died of heart attacks while working in or around the fire station while on duty; 3 firefighters who were injured in falls; 3 firefighters who were killed during a maintenance check flight of their helicopter; 1 firefighter who was killed when a large portion of a tree fell on her ambulance as firefighters were checking fire hydrants; 1 firefighter who was electrocuted while working on an electrical fixture in the fire station; 1 firefighter who suffered head trauma while cleaning up

after a fire department carnival; 1 firefighter who was killed when a tire blew out on a tanker (tender) that he was driving back to his district after maintenance; 1 firefighter who was shot and killed by another firefighter as he prepared to escort the firefighter to a meeting; 1 firefighter who was killed in a vehicle collision while driving to a meeting; and 1 firefighter who was struck and killed by a water tank that went airborne after being overpressurized.

Training

Fourteen firefighters died in 2001 during training activities (Table 11). Nine of the training deaths involved heart attacks that were suffered during training, including 2 deaths during physical fitness training and 2 deaths during return to duty or annual recertification tests. One firefighter was killed when he fell from an aerial ladder during training; 1 firefighter drowned during dive rescue training; 1 firefighter injured his back during training and died of surgical complications; 1 firefighter was killed in a motorcycle collision as he returned to the fire station after an offsite training session; and 1 firefighter was caught and trapped by fire progress in a structural live-fire training exercise.

Table 11. Fatalities During Training

Year	Number of Fatalities
2001	14
2000	13
1999	3
1998	12
1997	5
1996	6

Nonfire Emergencies

Four firefighters were killed in 2001 in association with their duties on the scene on nonfire emergencies. Two firefighters drowned while they were attempting to recover the body of a boater in a rapidly flowing stream; 1 firefighter suffered severe head pain at the scene of a motor vehicle crash, went home, and experienced a fatal CVA (stroke); and 1 firefighter was struck by a vehicle as he directed traffic at a vehicle crash.

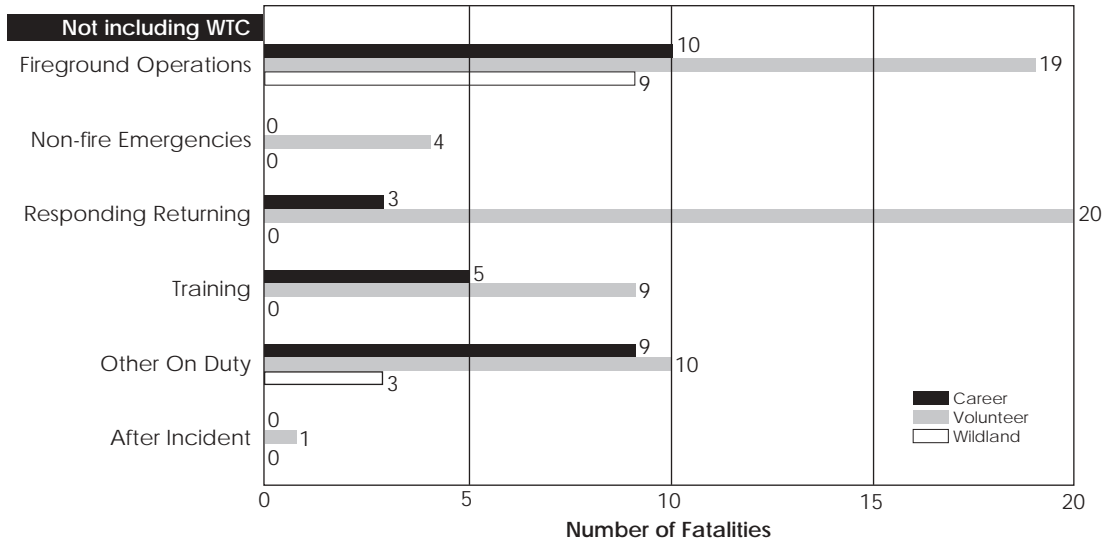
After an Incident

One firefighter died in 2001 after the conclusion of an incident. The firefighter died of a heart attack. The firefighter had returned home from a small structural fire, got ready for work, and departed for work in his personal vehicle. He suffered a heart attack, ran off the road, and hit a fence.

Career, Volunteer, and Wildland Deaths by Type of Duty

Figure 4 and Table 12 depict career, volunteer, and wildland firefighter deaths by type of duty. Wildland career, wildland seasonal, and wildland contractor deaths are grouped together. As in past years, there was a disproportionate number of fatalities experienced by volunteer firefighters responding to and returning from alarms as compared to career and wildland firefighters. In 2001, over 31 percent of volunteer firefighter deaths occurred while responding to or returning from emergencies. In comparison, 11 percent of the non-WTC career deaths and none of the wildland deaths occurred while responding or returning.

Figure 4. Career, Volunteer & Wildland Fatalities by Type of Duty



The large number of career firefighter deaths while on duty, but not involved in an incident or training activity, may be attributed to the fact that career firefighters are on duty for longer periods of time than volunteer firefighters. The on duty periods for volunteer firefighters generally are related to an emergency incident or other official functions such as training. Some volunteer fire departments staff stations overnight (similar to a career department) but their numbers are small when compared to the total number of volunteer fire departments.

Table 12. Career, Volunteer & Wildland Fatalities by Type of Duty Including WTC

Type of Duty	Career	Volunteer	Wildland
Fireground Operations	351	19	9
Nonfire Emergencies	0	4	0
Responding Returning	3	20	0
Training	5	9	0
Other On Duty	9	10	3
After Incident	0	1	0

Type of Emergency Duty

In 2001, 402 firefighters died while engaged directly in emergency service delivery. This number includes deaths that were the result of injuries sustained on the incident scene or en route to the incident scene, and firefighters that became ill on an incident scene and later died. It does not include firefighters who became ill or died while returning from an incident (such as a vehicle collision while returning from an incident). Figure 5 and Table 13 show the percentage of firefighters killed in firefighting, emergency medical services, technical rescue-related incidents, and other emergency incidents.

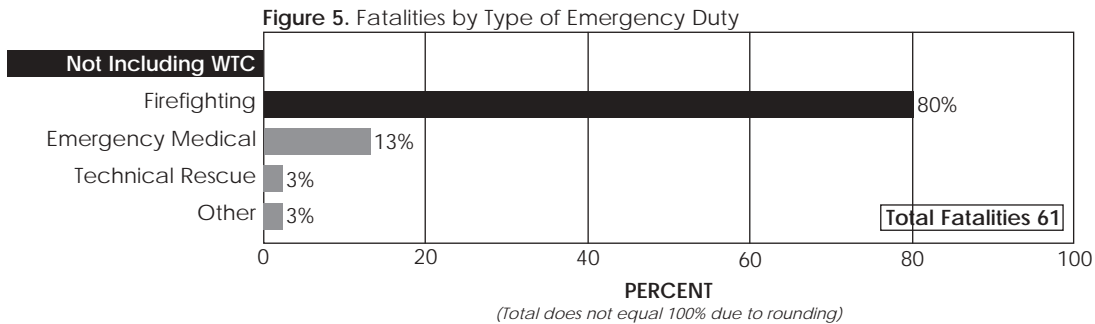


Table 13. Fatalities by Type of Emergency Duty Including WTC

Type of Emergency Duty	Number	Percent
Emergency Medical	8	2%
Technical Rescue	2	1%
Firefighting	390	97%
Other	2	1%
Total	402	101%*

*Total does not equal 100% due to rounding.

Forty-nine firefighters were killed in relation to fires; 8 firefighters were killed in relation to EMS calls; 2 firefighters were killed while engaged in a technical rescue; 1 firefighter died while responding to a false alarm; and 1 firefighter died when a tree crushed his vehicle as he responded to a severe weather standby. The 341 firefighters killed in the WTC incident raises the number of firefighters killed in association with fire incidents to 390.

CAUSE OF FATAL INJURY

The term *cause of injury* refers to the action, lack of action, or circumstances that resulted directly in the fatal injury; the term *nature of injury* refers to the medical cause of the fatal injury or illness, often referred to as the physiological cause of death. A fatal injury usually is the result of a chain of events, the first of which is recorded as the cause.

In 2001, a firefighter in California was struck and killed by a water tank. The fire apparatus that he was operating was parked next to a water storage tank. Pressure from the pump on the pumper over pressurized the water tank, causing it to fail at the bottom, rocket into the air, and then fall on top of the cab of the pumper. The firefighter was hit by the falling tank. The cause of his fatal injury is recorded as "struck by a falling object," and the nature of the fatal injury is listed as "trauma."

Similarly, if a wildland firefighter was overrun by a fire and died of burns, the cause of death would be listed as "caught/trapped" by fire progress, and the nature of death would be "burns." This follows the convention used in the NFIRS casualty reports.

Figure 6 and Table 14 shows the distribution of deaths by cause of fatal injury or illness.

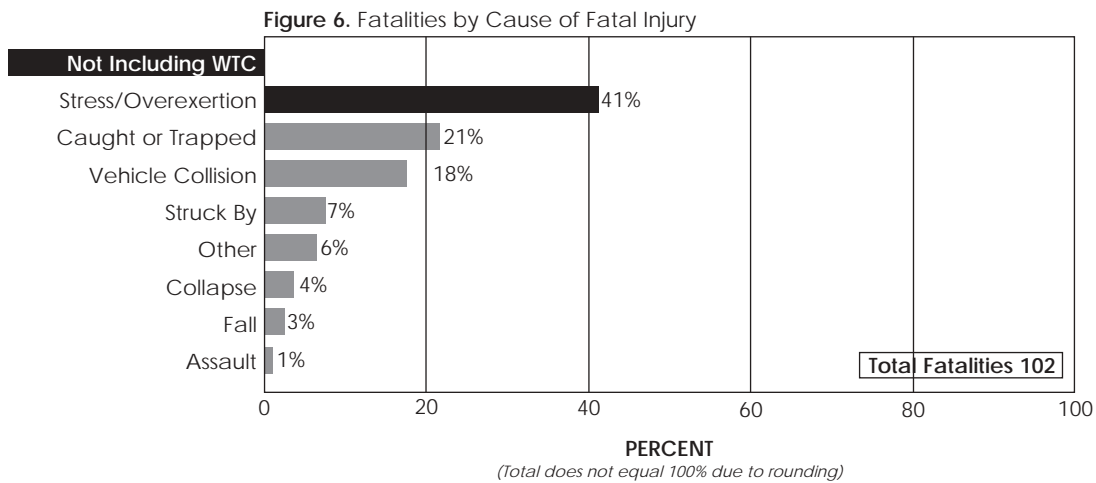


Table 14. Fatalities by Cause of Fatal Injury Including WTC

Cause	Number	Percent
Stress/Overexertion	345	78%
Caught or Trapped	42	10%
Vehicle Collision	21	5%
Struck By	18	4%
Other	7	2%
Collapse	6	1%
Fall	3	0%
Assault	1	0%
Total	443	100%

Of the 341 firefighters killed in the WTC incident, all are assumed to have been killed by the structural collapse of the two towers. Certainly, the possibility exists that many firefighters were struck with falling objects and killed prior to being struck by the towers or firefighters may have died of heart attacks shortly before the collapses. Details about the exact circumstances of the firefighters killed that day may never be known.

Stress or Overexertion

If the deaths of 102 firefighters across the United States are analyzed, the largest cause category is stress or overexertion, which was listed as the primary factor in 41.2 percent of the deaths -- the lowest percentage since at least 1997 (Table 15). Firefighting is extremely strenuous physical work and is likely one of the most physically demanding activities that the human body performs.

Most firefighter deaths attributed to stress result from heart attacks. Of the 42 stress-related fatalities in 2001, 41 firefighters died of heart attacks, and 1 died of a CVA (stroke). Eighteen of the 41 deaths for which the cause of the fatal injury is listed as stress/overexertion occurred during nonemergency activities.

These issues will be explored in more detail in the Special Topics section of this report.

Caught or Trapped

The second leading cause of firefighter fatal injuries in 2001 was being caught or trapped. Twenty-one firefighters were killed when caught or trapped in 2001³. This number is dramatically higher than the total for any of the past 5 years (Table 16).

In 2001, 4 Washington firefighters were killed when they were trapped by the rapid progress of a wildland fire. The fire overcame their position; the firefighters deployed their fire shelters,

Table 15. Fatalities Caused by Stress or Overexertion

Year	Number	Percent of Fatalities
2001	42	41%*
2000	45	44%
1999	54	49%
1998	42	46%
1997	40	43%
1996	47	50%

*WTC fatalities not included

Table 16. Fatalities Caused by Being Caught or Trapped

Year	Number	Percent of Fatalities
2001	21	21%*
2000	16	16%
1999	11	10%
1998	16	18%
1997	11	12%
1996	7	7%

*WTC fatalities not included

³ Does not include the firefighter fatalities of September 11th in New York City.

and while many in the group survived, four did not. Two Illinois firefighters were killed as they worked in the basement of a house searching for fire. When the ceiling was pulled, the fire progressed quickly and trapped both firefighters. Two Missouri firefighters were killed when they became disoriented in a residential structure fire and became lost. Two Pennsylvania firefighters drowned while attempting a body recovery in a fast moving stream, and 1 firefighter drowned during dive rescue training. A New York firefighter was killed when a structural training fire progressed quickly and trapped him and 2 other firefighters in the second story of an acquired structure. Two firefighters, 1 in New Jersey and 1 in Ohio, were killed after falling through floors in residential occupancies and becoming trapped in the basement. Five firefighters in separate incidents became disoriented and lost inside structures that were involved with fire. A South Carolina firefighter was trapped by a falling garage door and sustained fatal burns.



A Tennessee wildland firefighter received fatal burns when a fire spread rapidly and overcame his position.

Vehicle Collisions

The third leading cause of fatal injury for firefighters who died in 2001 was vehicle collisions. This cause is usually the second most common cause of firefighter fatalities.

Six wildland aircraft firefighters were killed in 2001 in 3 separate incidents. Three firefighters were killed when their helicopter crashed during a maintenance flight; 2 firefighters died when their air tankers collided over a fire; and 1 firefighter was killed in the crash of a single-engine air tanker.

Twelve firefighters were killed as the result of nonaircraft crashes. Six firefighters were killed in collisions involving their personal vehicles. Four firefighters were killed in tanker (tender) collisions. One firefighter was killed in a crash involving a pumper, and 1 died in the crash of a command vehicle responding to an Emergency Medical Services (EMS) incident.

Struck by Object

Being struck by an object was the fourth leading cause of fatal firefighter injuries in 2001. There were 7 deaths in this category, including 3 firefighters who were struck and killed by vehicles as they directed traffic. Three firefighters were killed by falling trees -- a firefighter in Ohio was killed when a large portion of a tree fell on her ambulance; a Montana firefighter was killed when a dead tree fell and struck him on the head and shoulder; and a Michigan firefighter was killed when a tree fell on his personal vehicle as he responded to a storm watch call out.

A California firefighter was killed when an overpressurized water tank exploded and crashed into the cab of the fire truck he was operating.

Structural Collapse

Outside of the 341 firefighters killed by structural collapses in New York City on September 11, 4 firefighters were killed due to collapses in 2001. Three New York City firefighters were killed when a major explosion occurred in a hardware store and resulted in collapse of the building; 1 firefighter was trapped in the basement and 2 firefighters were killed by a falling wall. A Wisconsin firefighter was killed when he was trapped under debris from a structural collapse.

Falls

Three firefighters died in 2001 as the result of falls. Two firefighters fell while performing station duties, and 1 firefighter was killed when he fell backwards from a fire department aerial ladder during training.

Assault

One firefighter died in an assault. The Colorado assistant chief arrived at the home of a captain to escort him to a prearranged meeting with the fire chief. The assistant chief was shot by the captain, who then turned the gun on himself.

Other

Six firefighters died in circumstances that do not fit into any of the categories discussed above. A Missouri firefighter slipped on ice as he entered the fire station; surgery was necessary to repair damage from the fall and a surgical error claimed his life. A Florida firefighter was electrocuted as he worked on a lighting fixture in the fire station; an Illinois firefighter was killed when he was crushed by his engine company as the apparatus was backed down a bridge after an incident; a New Jersey firefighter was killed when he slid down a rain-soaked carnival ride at a fire department function and sustained a fatal head injury; a Missouri firefighter died in his sleep of a seizure; and a firefighter in Washington died of an abnormal heart rhythm at a wildland fire.

NATURE OF FATAL INJURY

Figure 7 and Table 17 show the distribution of fatalities by the medical nature of the fatal injury or illness. Due to the WTC tragedy, the leading nature of firefighter deaths for 2001 was crushing traumatic injuries. In addition to the 341 firefighters who were presumed to have been crushed in the collapse of the towers, 6 other firefighters were killed when they were crushed in 2001.

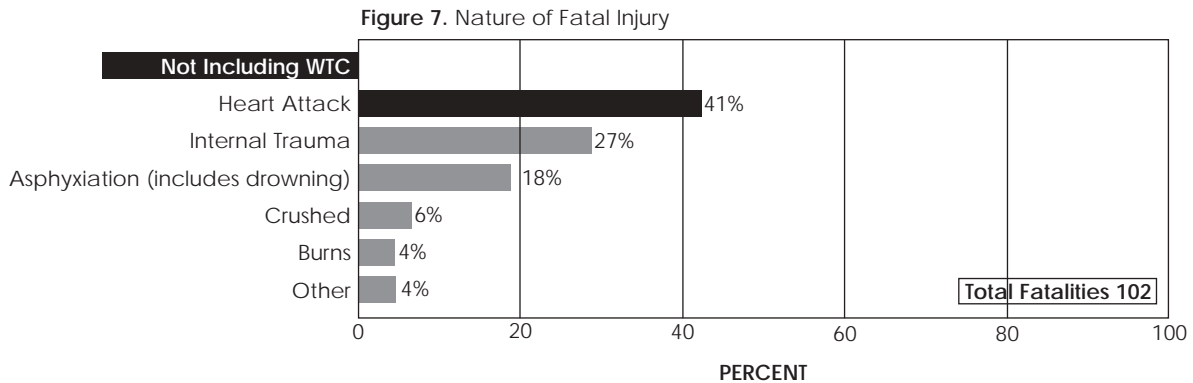
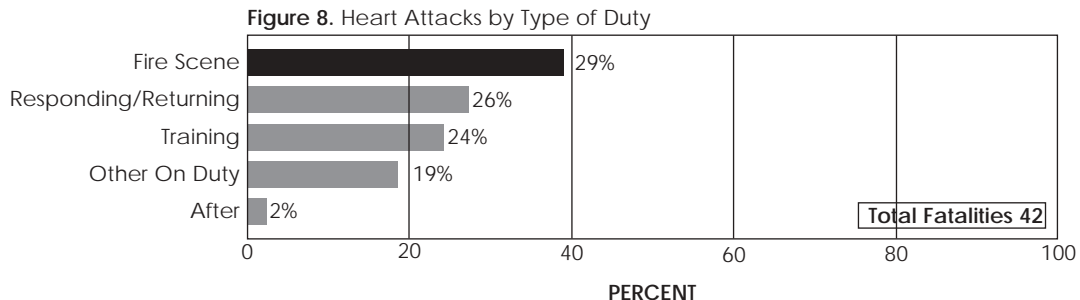


Table 17. Nature of Fatal Injury Including WTC

Nature	Number	Percent
Crushed	347	78%
Heart Attack	42	10%
Internal Trauma	28	6%
Asphyxiation (includes drowning)	18	4%
Burns	4	1%
Other	4	1%
Total	443	100%

Heart Attacks

The leading nature of death in 2001 outside of the WTC tragedy was heart attacks, which accounted for 42 firefighter fatalities (Figure 8).



Twelve of the heart attacks occurred at the fire scene. Eleven occurred as firefighters were responding to or returning from incidents, several of which resulted in subsequent crashes. Ten heart attacks occurred during training, up sharply from the seven deaths in 2000 and the single such event in 1999. Eight heart attacks occurred during other on duty situations, and 1 occurred after an incident. In 2001, there were no heart attacks at nonfire emergencies, down from 6 such deaths in 2000.



Internal Trauma

Internal trauma was the next leading nature of death, responsible for 28 deaths (Table 18). This total includes 18 firefighters killed in apparatus, personal vehicles, and aircraft crashes; 3 firefighters struck by vehicles; 3 firefighters killed in falls; 1 firefighter struck by an exploding water tank; 1 firefighter killed by gunfire; 1 wildland firefighter who was struck and killed by a falling tree; and 1 firefighter killed on a carnival ride.

Table 18. Internal Trauma Fatalities

Year	Number of Fatalities
2001	28
2000	36
1999	25
1998	27
1997	32
1996	32

Asphyxiation

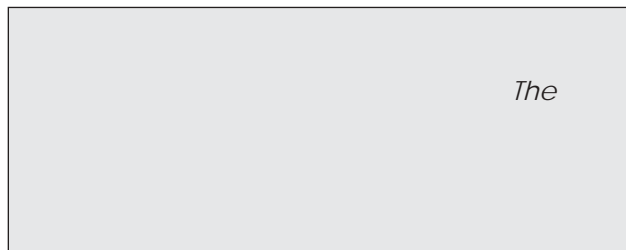
Asphyxiation was the third leading medical reason for firefighter deaths in 2001 if the WTC deaths are not included. Eighteen firefighters died due to asphyxiation in 2001 (see Table 19). Four firefighters were killed while fighting a wildland fire in Washington when their positions were overrun: all 4 died of asphyxiation. Two firefighters died in each of two residential structure fires in Illinois and Missouri. Two firefighters drowned in Pennsylvania during an attempted body recovery, and 1 firefighter drowned while training. Six firefighters died in separate incidents when they became lost or trapped by fire progress in structure fires. One New York firefighter was killed in a structural training burn.

Table 19. Fatalities Due to Asphyxiation

Year	Number of Fatalities
2001	18
2000	13
1999	16
1998	15
1997	15
1996	5

Burns

Four of the 102 non-WTC firefighter fatalities that occurred in 2001 were attributed to burns. Two firefighters fell into burning basements when the floor on the ground level broke through. One firefighter was trapped under a fallen garage door in a residential structure



fire and fatally burned. A Tennessee firefighter was killed when fire overran his position and he was unable to escape to a safe zone.

Crushed

The WTC incident claimed the lives of 341 firefighters who were crushed when the towers collapsed. Six other firefighters were killed in 2001 when they were crushed. Two New York City firefighters were crushed by a collapsing wall at a hardware store fire; 1 firefighter was crushed by a falling tree as she rode in the front right seat of an ambulance; 1 firefighter was crushed by a falling tree as he responded in his personal vehicle to a storm call out; 1 firefighter was crushed by his apparatus as he directed the driver off of a bridge at the conclusion of an incident; and a Wisconsin firefighter was crushed under debris at a restaurant fire.



Other

Four firefighters were killed in situations where the nature of their fatal injuries does not fit into any of the categories described above. A New Mexico firefighter suffered a CVA (stroke) after returning home from an extended vehicle crash incident; a Florida firefighter was electrocuted while working on a lighting fixture; a Missouri firefighter fell on ice as he was walking into the fire station and died later from a surgical error that was made during surgery to repair broken bones; and a Missouri firefighter died of a seizure.

FIREFIGHTERS' AGES

Figure 9 shows the distribution of firefighter deaths by age and nature of the fatal injury and Table 20 provides counts of firefighter fatalities by age and the nature of the fatal injury.

As in most years, younger firefighters were more likely to have died as a result of traumatic injuries such as injuries from an apparatus accident or after becoming caught or trapped during fire-fighting operations. Stress plays an increasing role in firefighter deaths as age increases as shown in Figure 9.

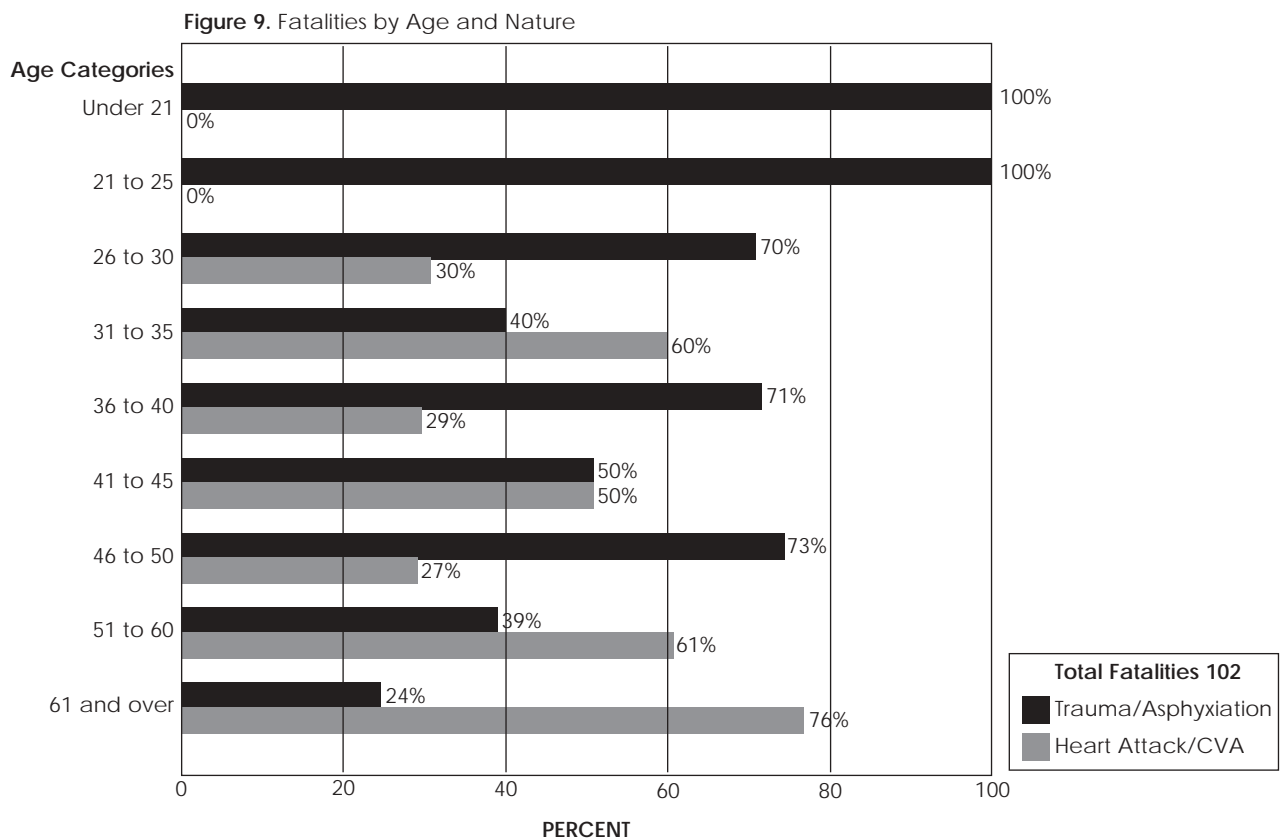


Table 20. Firefighters' Ages and Nature of Fatalities Including WTC

	AGE								
	Under 21	21 to 25	26 to 30	31 to 35	36 to 40	41 to 45	46 to 50	51 to 60	61+
WTC Deaths	0	6	36	69	74	76	47	27	6
Non-WTC Deaths	3	7	10	5	17	10	15	18	17
Non-Trauma Total	0	0	3	3	5	5	4	11	13
Trauma Total	3	13	43	71	86	81	58	34	10

The median age of the 443 firefighters killed in 2001 was 41.6.

The youngest firefighter killed in 2001 was Karen Lee FitzPatrick of Washington at age 18.

FIXED PROPERTY USE FOR STRUCTURAL FIREFIGHTING DEATHS

There were 27 firefighter fatalities in 2001 where the firefighter became ill or was injured on the scene or engaged in structural firefighting and the fixed property use was known. Table 21 shows the distribution of these deaths by fixed property use. As in most years, residential occupancies accounted for the highest number of these fireground fatalities, with 17 deaths.

Table 22 shows the number of firefighter deaths in residential occupancies for the last 6 years. Residential occupancies usually account for 70 to 80 percent of all structure fires and a similar percentage of the civilian fire deaths each year.⁴ Historically, the frequency of firefighter deaths in relation to the number of fires is much higher for nonresidential structures.

Table 21. Structural Firefighting Fatalities by Fixed Property Use

Fixed Property Use	Number	Percent
Residential	17	63%
Commercial	10	37%

Table 22. Firefighter Fatalities in Residential Occupancies

Year	Number of Firefighter Fatalities
2001	17
2000	21
1999	23
1998	17
1997	16
1996	19

⁴ Complete 2001 NFIRS fire incidence data were not available at the time of this report, but residential fires typically account for between 70 and 80 percent of all civilian fatalities each year.

TYPE OF ACTIVITY

Figure 10 and Table 23 show the types of fireground activities firefighters were engaged in at the time they sustained their fatal injuries or illnesses. This total includes all firefighting duties such as wildland firefighting and structural firefighting.

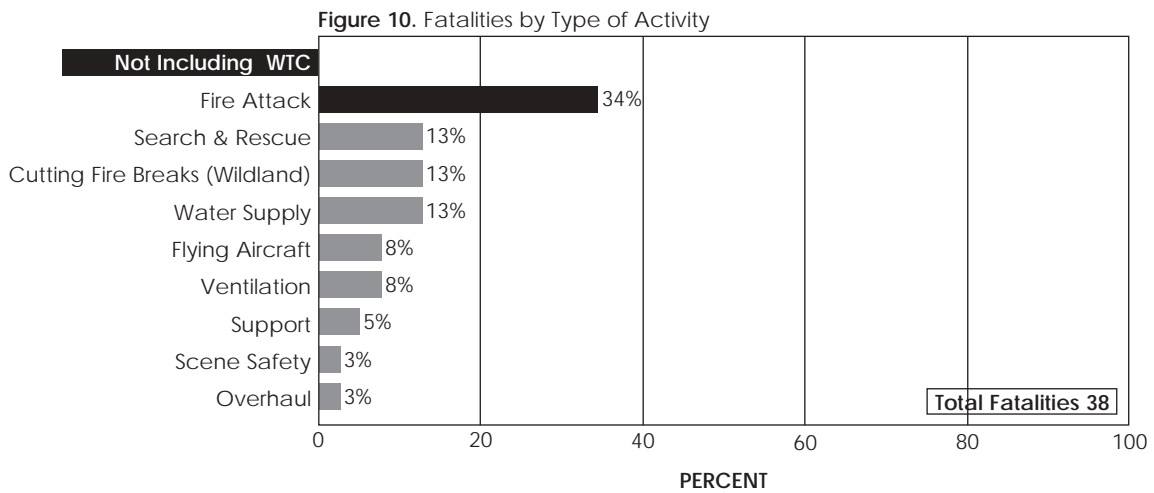


Table 23. Fatalities by Type of Activity Including WTC

Nature	Number	Percent
Search and Rescue	346	91%
Fire Attack	13	3%
Cutting Fire Breaks (Wildland)	5	1%
Water Supply	5	1%
Flying Aircraft	3	1%
Ventilation	3	1%
Support	2	1%
Scene Safety	1	0%
Overhaul	1	0%
Total	379	99%*

**Total does not equal 100% due to rounding.*

Search and Rescue

Thirty-eight firefighters died on the fireground in 2001 in incidents other than the WTC.

Five firefighters died in 2001 while engaged in search and rescue activities. A Houston Captain was killed as he searched for occupants in a residential highrise fire; a New Jersey firefighter became trapped by fire progress as he searched for fire victims on the third floor of a residential occupancy; a New York City firefighter was trapped by an explosion in a hardware store as he searched; and two firefighters, one in Ohio and one in New Jersey, were trapped in burning basements after falling through the floor in residential fires.

Fire Attack

Thirteen firefighters were killed as they engaged in direct fire attack, such as advancing or operating a hoseline at a fire scene. In years past, most fireground firefighter deaths occur while the firefighter is engaged in fire attack (see Table 24). All 13 deaths in 2001 occurred at structure fires.

Table 24. Fatalities While Engaged in Fire Attacks

Year	Number of Fatalities
2001	13
2000	13
1999	16
1998	18
1997	21
1996	9

Cutting Fire Breaks

Five firefighters died in 2001 cutting fire breaks engaged in wildland firefighting. Four Washington firefighters took refuge from their duties as the fire approached, but their position was overrun. One Tennessee firefighter was burned when a fire progressed rapidly up a natural drainage and overran his position.

Water Supply

Five firefighters died in 2001 while engaged in water supply duties. All five deaths were heart-related. All five were operating fire apparatus -- a Washington firefighter was assigned pump operations duties at a boat fire and collapsed of a heart attack; a Pennsylvania firefighter suffered a heart attack as he made hose connections to a pumper; a Washington firefighter died of an abnormal heart rhythm while operating a tanker (tender) at a wildland fire; a Florida firefighter died while operating a pump at a fire involving a manufactured house; and a Wisconsin firefighter suffered a heart attack at the scene of a vehicle fire.

Operating Aircraft

Three firefighters died while operating aircraft. Two air tankers collided in midair during a wildfire in California and a single-engine air tanker crashed during an Idaho wildland firefight. The three firefighters who died when their helicopter crashed are not included in this total since they were performing maintenance duties.

Ventilation

Three firefighters died while performing ventilation duties. All three were New York City firefighters. Two firefighters were killed on Father's Day when the wall of a hardware store collapsed on

them as the result of an explosion. A New York City firefighter died of a heart attack after completing ventilation duties at the scene of an apartment building fire.

Support

Two firefighters were killed in 2001 as they supported firefighting efforts. A Montana firefighter was killed by a falling tree as he cut down trees in preparation for work in the area by hand crews. A Maryland firefighter collapsed of a heart attack as he opened gates for firefighters responding to a mulch fire near a facility where he was employed as a caretaker.

Scene Safety

One firefighter was killed as he assured the safety of a fire scene. A New York firefighter was killed when he was struck by a passing vehicle as he directed traffic at a vehicle fire.

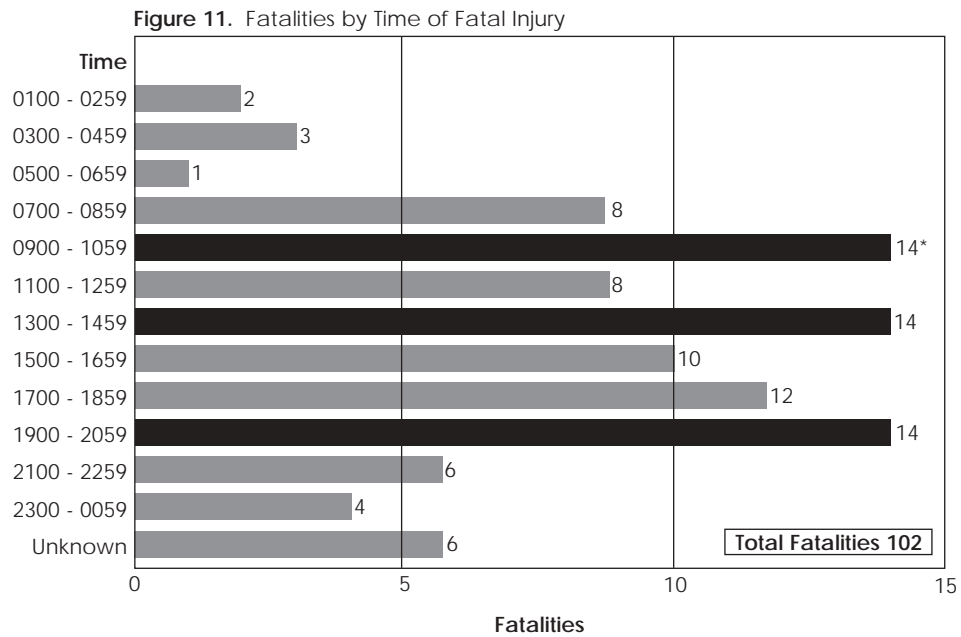


Overhaul

One firefighter suffered a fatal heart attack as he performed overhaul of a lightning-caused structure fire in New York.

TIME OF INJURY

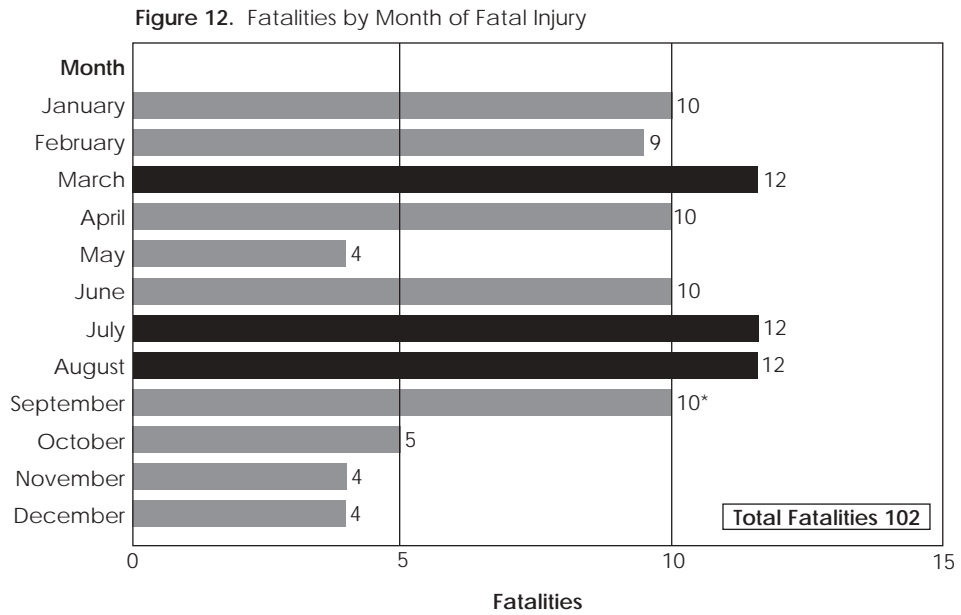
The distribution of all 2001 firefighter deaths according to the time of day when the fatal injury occurred is illustrated in Figure 11 (six incident times were unable to be determined).



*Does not include 341 WTC fatalities.

MONTH OF INJURY

Figure 12 shows firefighter fatalities by month of the year. March, July, and August tied for the most firefighter fatalities in a month when the WTC incident is not included.

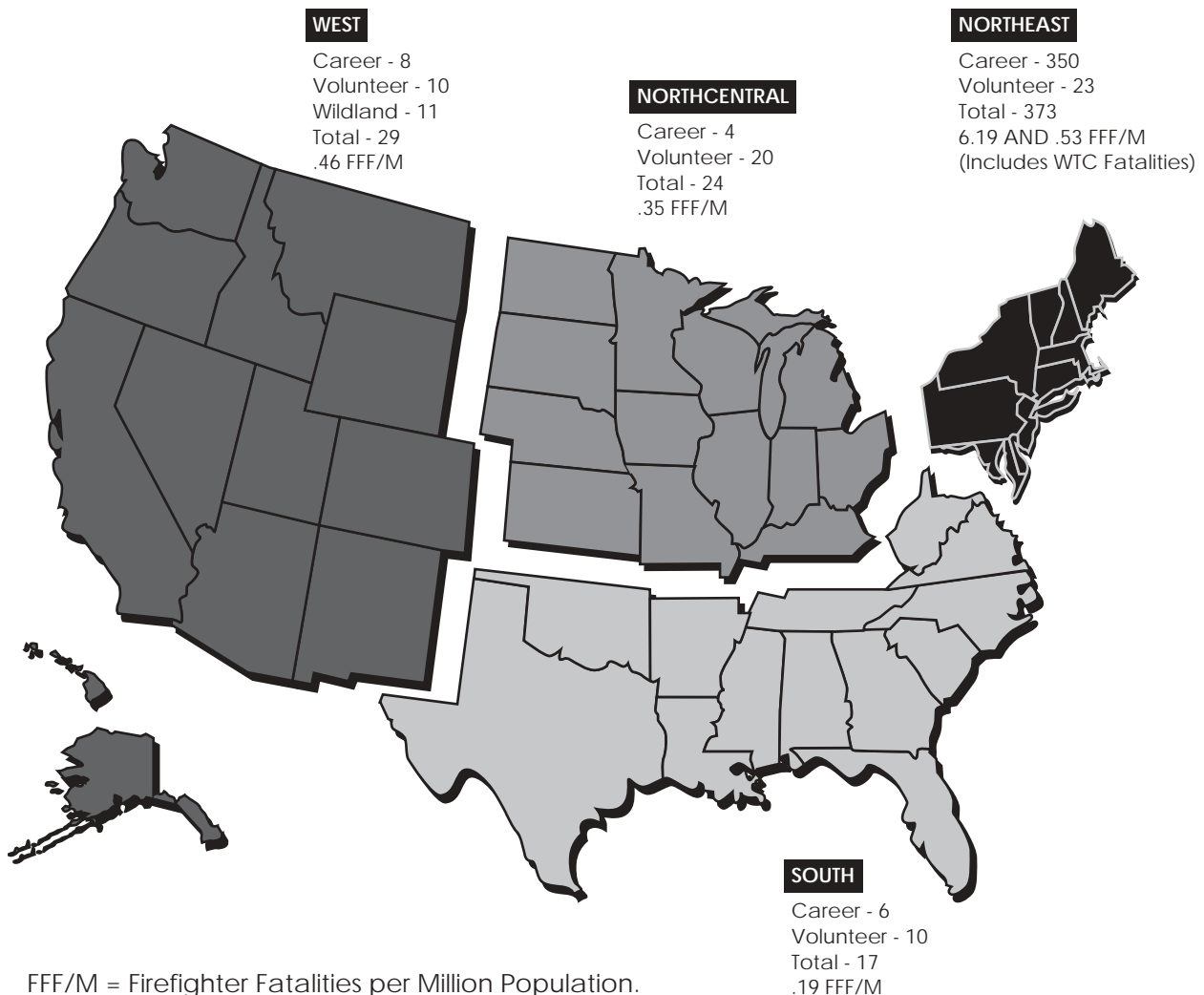


STATE AND REGION

The distribution of firefighter deaths by State is shown in Figure 14. Thirty-three States each had at least 1 firefighter fatality. New York had the highest number of deaths, even if the WTC incident is not included. Figure 13 shows the firefighter fatalities divided by region of the country and their status as career, volunteer, or wildland firefighters.

Figure 13 also provides information on the ratio of firefighter fatalities per million population in each region. Firefighter fatalities for the South are a third of the rate in the Northeast and half the rate of the West.

Figure 13. Firefighter Fatalities by Region



Fig

2001 On Duty Firefighter Fatalities

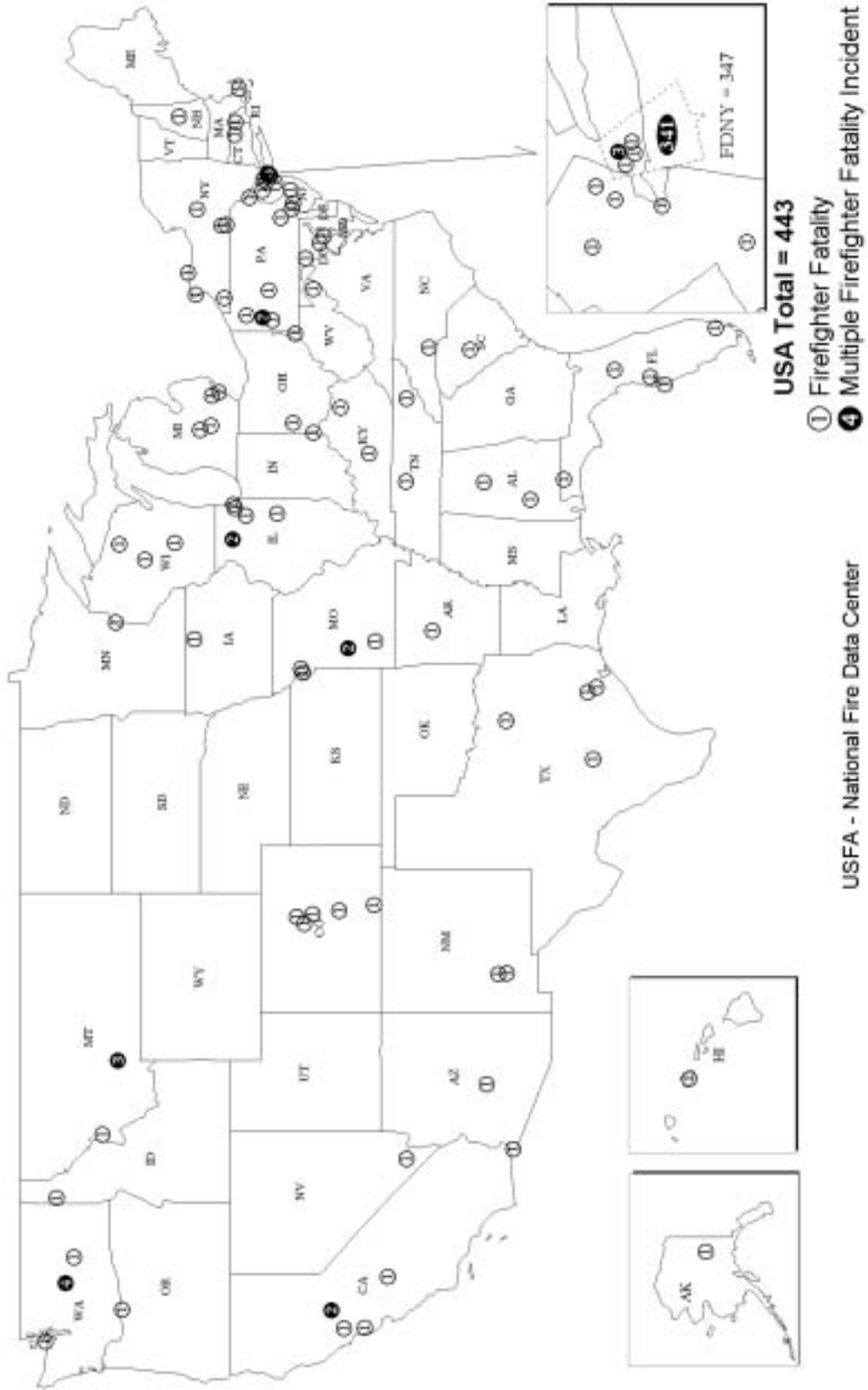


Table 25 lists fatalities according to the State in which the fire department or unit is based, as opposed to the State in which the death occurred. They are listed by those States for statistical purposes, and for the National Fallen Firefighters Memorial at the National Emergency Training Center.

Table 25. Fatalities by State

2	Alabama	0.45%
1	Alaska	0.22%
2	Arizona	0.45%
1	Arkansas	0.22%
5	California	1.12%
5	Colorado	1.12%
1	Connecticut	0.22%
4	Florida	0.90%
1	Hawaii	0.22%
1	Idaho	0.22%
6	Illinois	1.35%
1	Iowa	0.22%
2	Kentucky	0.45%
3	Maryland	0.67%
4	Michigan	0.90%
5	Missouri	1.12%
1	Montana	0.22%
1	Nevada	0.22%
1	New Hampshire	0.22%
6	New Jersey	1.35%
2	New Mexico	0.45%
353	New York	79.6%
1	North Carolina	0.22%
2	Ohio	0.45%
4	Oregon	0.90%
8	Pennsylvania	1.80%
1	Rhode Island	0.22%
1	South Carolina	0.22%
2	Tennessee	0.45%
4	Texas	0.90%
6	Washington	1.35%
2	West Virginia	0.45%
4	Wisconsin	0.90%

ANALYSIS OF URBAN/RURAL/SUBURBAN PATTERNS IN FIREFIGHTER FATALITIES

The United States Bureau of the Census defines *urban* as a place having a population of at least 2,500 or lying within a designated urban area. *Rural* is defined as any community that is not urban. *Suburban* is not a census term but may be taken to refer to any place, urban or rural, that lies within a metropolitan area defined by the Census Bureau, but not within one of the central cities of that metropolitan area.

Fire department areas of responsibility do not always conform to the boundaries used for the census. For example, fire departments organized by counties or special fire protection districts may have both urban and rural coverage areas. In such cases, it may not be possible to characterize the entire coverage area of the fire department as rural or urban, and firefighter deaths were listed as urban or rural based on the particular community or location in which the fatality occurred.

The following patterns were found for 2001 firefighter fatalities (Table 26). These statistics are based on answers from the fire departments and, when no data from the department were available, the data are based upon population and area served, reported by the fire departments.

Table 26. Fatalities by Coverage Area Type

Coverage Area	Deaths
Urban/Suburban	391
Rural	40
Federal or State Parks/Wildland	12
Total	443

CONCLUSIONS

The year 2001 was truly a horrific year for the fire service in the United States. This loss was felt by average citizens in the United States, members of the fire service around the world, and citizens of many nations around the world. Words cannot adequately express this loss.

Four hundred and forty-three firefighters died while on duty in the United States in 2001. This total is more than four and one-half times the average annual number of firefighter deaths for the last decade and is the worst total since the USFA began tracking firefighter fatalities in 1977.

In early 2002, Fire Administrator R. David Paulison said, "2001 was an unprecedented year for America's fire service. In addition to the many local heroes who died serving their communities nationwide, the eyes of the world turned to New York City on September 11th. The United States Fire Administration is committed to helping firefighters and fire departments respond more safely to emergencies that occur in their communities. Terrorism has changed our world forever and the old killers of firefighters are still around."

The USFA has set two major goals for reductions in firefighter fatalities:

- A 25 percent reduction in on duty firefighter fatalities within 5 years.
- A 50 percent reduction in on duty firefighter fatalities within 10 years.

This report contains two special topics sections that propose some immediate impact steps that can be taken to reduce firefighter deaths due to heart disease and operational situations.



SPECIAL TOPICS

IMMEDIATE IMPACT - HEART DISEASE

In 2001, 43 firefighters died as the result of heart attacks that were suffered on duty. Other than the WTC tragedy in 2001, heart attacks are the single largest killer of on duty firefighters, causing the deaths of 256 firefighters since 1996. Heart attacks claim nearly as many firefighters as are killed by internal trauma and asphyxiation combined.

A commonly held opinion states that drastic lifestyle changes are needed to make any improvement towards the healthiness of a person's heart. This is untrue. There are a number of steps that can be taken to immediately improve heart health. The steps proposed in this section are neither expensive nor require major changes in the way that many live their lives.

IMMEDIATE HEART HEALTH ACTION #1 HAVE A MEDICAL EXAM

The key to early discovery and treatment of heart disease is a physical examination or evaluation. Avoiding an appointment with a physician or other medical professional will not make heart disease go away by itself.

Annual medical evaluations are required by NFPA 1582, *Standard on Medical Requirements for Fire Fighters*, and Information for Fire Department Physicians. The medical evaluation consists of a medical history, an occupational and exposure history, measurements of height and weight, a blood pressure check, and a heart rate and rhythm check. The annual evaluation does not necessarily need to be performed by a physician. The standard allows the evaluation to be performed by a qualified person and reviewed by a physician.

A more thorough medical check is also required by the standard, although the frequency is less than annually for younger firefighters. The frequency of this check is dependent upon the firefighter's age. A medical examination is required at least every 3 years for firefighters aged 29 and

In 2002, President George W. Bush kicked off a campaign to provide Americans with timely, accurate, free health information.



An internet site has been established at www.healthierus.gov

The site provides information on physical fitness, disease prevention, nutrition, and avoiding risky behaviors and making healthy choices. The site also provides links to other government sites that provide health information.

under; at least every 2 years for firefighters aged 30 to 39; and every year for firefighters aged 40 and above. A physician must perform the medical examination.

The NFPA 1582 standard also requires that medical evaluations and examinations be performed at no cost to the fire department member. Medical evaluations are also required prior to becoming a firefighter and prior to returning to duty after an extended absence due to illness or other reasons.

High blood pressure and high cholesterol are the two easiest-to-discover heart disease indicators.

National Cholesterol Education Project Guidelines

Total Cholesterol (mg/dl)	Classification
240 or greater	High
200-239	Borderline High
Less than 200	Desirable

Many fire departments provide free blood pressure checks for the public. Firefighters should also take advantage of that service. Blood pressure checks for the on duty crew should be a regular routine in career fire departments. Volunteer fire departments should check blood pressure for all members on drill nights or at fire company meetings. Automatic blood pressure machines are also standard equipment for many pharmacies and workplace health stations.

Cholesterol checks should be a standard part of any health examination. Home test kits are also available in drug stores (pharmacies) and through the Internet. The cost of these at-home kits is generally less than 10 dollars.

Wellness Initiatives

USFA has several project efforts in support of reducing firefighter fatalities from heart disease and stress. USFA is partnering with the International Association of Fire Chiefs (IAFC) and the International Association of Fire Fighters (IAFF) in two separate projects to support the expansion of use of the Fire Service Joint Labor Management Wellness-Fitness Initiative to additional fire departments. USFA is supporting the expansion of the use of this initiative that has been successfully tested in several fire departments throughout the United States.

USFA also is partnering with the National Volunteer Fire Council (NVFC) to develop a Volunteer Fire Service Fitness and Wellness Program. This effort will involve research and development of effective programs aimed at the needs of the volunteer firefighter addressing fitness and exercise (aerobic, flexibility, strength, training, etc.); diet; smoking cessation; and other areas that will have a positive impact on the volunteer fire service community. Further information on these projects can be found on the following page on the USFA Web site: <http://www.usfa.fema.gov/dhtml/inside-usfa/fitness.cfm>.

IMMEDIATE HEART HEALTH ACTION #2

MODIFY EATING HABITS

Any steps that are taken to reduce fat intake and avoid foods high in sodium and salt will have a positive effect on health.

High fat diets lead to high blood cholesterol levels. High blood cholesterol levels lead to plaque in the arteries, including those that provide blood to the heart. Plaque restricts blood flow and can eventually lead to heart disease.

A diet that is lower in fat can reduce the level of cholesterol in the blood stream and can eventually absorb some arterial plaques. The American Heart Association (AHA) recommends that no more than 30 percent of a person's daily caloric intake be from fat. The amount of calories from fat is listed on food packaging.

Salt and sodium have been shown to have links to high blood pressure. Firefighters should monitor their intake of salt and sodium. Food package labels list the amount of sodium per serving. The AHA recommends that the intake of sodium and salt be limited to no more than 6 grams per day for healthy persons. Salt and sodium intake for those who have been diagnosed with high blood pressure may be lower.

Salt and sodium are pervasive in the American diet. Many processed foods are high in sodium and salt. However, there are also many foods, such as canned tomato paste, that are offered for sale in reduced sodium versions.

The AHA (<http://www.americanheart.org>) has produced a cookbook with recipes for heart healthy foods. The American Heart Association Cookbook is available on line for a nominal cost.

IMMEDIATE HEART HEALTH ACTION #3

CONSIDER SUPPLEMENTS

There is no clear consensus on what vitamins and dietary supplements will help prevent heart disease. There has been a great deal of attention paid to the positive role of Vitamin E, aspirin, multivitamins, and fish oil.

It is extremely important to point out that the benefits, side effects, and possible allergic reactions to all of these supplements should be discussed with a physician (see #1 above) prior to taking any supplement.

Vitamin E - Vitamin E is an antioxidant that may reduce the chances of developing heart disease. The AHA does not recommend that Vitamin E be taken as a supplement. The AHA recommends that those interested in increased antioxidant intake eat foods that are rich in antioxidants such as grains and fruits.

Aspirin - Aspirin has been used for over a century to relieve pain. A daily dose of aspirin may also have some benefits in the prevention of clot development and reduce the likelihood of strokes. Aspirin has also been shown to help heart attack sufferers in the minutes after a heart attack. To

prevent side effects such as indigestion, aspirin should be coated or taken with food when taken as a supplement. If aspirin is taken by someone experiencing a heart attack, it should be chewed or broken down to aid in its rapid absorption.

For more information about aspirin as a part of a daily supplement routine, please see the official Web site of the AHA at www.americanheart.org and HeartCenterOnline at www.heartcenteronline.com

Multivitamins - Many Americans, and likely many firefighters, do not follow the daily dietary recommendations of the AHA or other health organizations. One of the benefits of a multivitamin is that it may replace vitamins that are missed when an imperfect diet is consumed. If a multivitamin is used as a supplement, studies show that generic or name brands may be used. For additional information, please see the Web site sponsored by HeartCenterOnline at www.heartcenteronline.com

Fish Oil - The AHA recommends eating fish twice a week. Certain types of fish such as mackerel, lake trout, herring, sardines, albacore tuna, and salmon are also high in omega-3 fatty acids. Various studies have shown that omega-3 fatty acids have positive effects in regulating the heart's rhythm, reduce inflammation, and lowering triglycerides in the blood. At this time, the AHA is not recommending fish oil supplements for general use until their positive effects are confirmed through further research.

For more information about the benefits of eating fish and the possible benefits of fish oil supplements, please see the official Web site of the American Heart Association www.americanheart.org and www.ornish.com, a site that features the writings of Dr. Dean Ornish, a fish oil supplement proponent.

IMMEDIATE HEART HEALTH ACTION #4

TAKE A WALK

"A journey of a thousand miles begins with one step." Ancient Chinese philosopher Lao Tzu, (6th Century, B.C.).

The road to a proper level of physical activity also begins with one step. One does not need to run marathons to benefit from the good outcomes of physical exercise. Walking the dog or taking a morning or evening walk around the neighborhood will have positive impacts on your health and sense of well-being. Start a daily physical activity program.

IMMEDIATE HEART HEALTH ACTION #5

QUIT SMOKING

If a firefighter smokes cigarettes, the single most effective step that he or she can take to prevent heart disease is to stop smoking. While smoking cessation is not easy by any means, there are a number of resources available to help:

It makes one less able

NFPA 1500, *Standard on Fire Department*

Occupational Safety and Health Program, requires that fire departments provide their members with information on the hazards of tobacco use, including smoking. The standard also requires that the fire department provide a smoking cessation program to its members.

Advances in medications used to help smokers quit have allowed many people to stop the habit. Nonetheless, nicotine dependency is a very difficult problem to overcome. Help is available from two well-known organizations: the American Cancer Society and the American Lung Association. Contact information for both organizations appears at the end of this section. A program entitled the "Quit Smoking Action Plan" is available from the American Lung Association through the Internet. The Internet sites of both organizations offer a wealth of information on smoking cessation programs, the benefits of smoking cessation, and studies on the effectiveness of different approaches. Use the site search features and search on the term "smoking cessation."

The good news is that studies have shown that an individual who quits smoking cuts his/her risk of heart disease in half after 1 year of non-smoking. Former smokers that have stopped smoking have approximately the same risk of heart disease as a non-smoker after 15 years smoke free.

American Cancer Society

1599 Clifton Road, N.E.

Atlanta, GA 30329

800-ACT-2345

www.cancer.org

American Heart Association

National Center

7272 Greenville Avenue

Dallas, TX 75231

800-AHA-USA1

www.americanheart.org

American Lung Association

1840 Broadway

New York, NY 10019

800-586-4872

www.lungsusa.org

IMMEDIATE IMPACT - INCIDENT OPERATIONS

Every year, a number of firefighters are killed in situations that could have been prevented through some simple action or through the provision of an inexpensive piece of equipment.

The year 2001 was no different than previous years. This section will explore some inexpensive ways to make an immediate impact on firefighter safety. This section is based on a similar section that appeared in the "Report on Firefighter Fatalities in the United States in 2000" and will likely be a part of future reports.

Another new resource that has become available on the Internet is a Web site where firefighters can exchange close call stories without the need to reveal themselves. There is a direct statistical correlation between close calls and incidents that result in injury and death to firefighters. Firefighters are encouraged to visit the site, read the stories that are there, learn from the mistakes of others, and keep the learning going by sharing personal stories of close calls. The service is free and can be found at www.firefighterclosecall.com

The following list of immediate impact ideas most certainly would have saved the lives of firefighters in 2001, and these same ideas can certainly save the lives of firefighters in the future.

Most of the ideas proposed in this section can be done without cost.

IMMEDIATE IMPACT INCIDENT OPERATIONS #1

SEAT BELT USE

Five potential saves in 2001:

A USFA study of water tanker (tender) crashes from 1990 through 2000, found that 73 percent of the firefighters killed in these crashes were not wearing their seat belts. Another USFA study of all firefighter fatalities from 1990 through 2000 found that only 21 percent of the firefighters who were killed in vehicle crashes were wearing seat belts.

Firefighters preach the benefits of seat belt use to the public but we often fail to take our own advice.

The following are suggestions to improve the use of seat belts by firefighters:

- Adopt a fire department policy that mandates the use of seat belts in all fire department vehicles and in the personal vehicles of volunteer firefighters during their response to an incident and their return from an incident.
- Make company and chief officers responsible for the seat belt use of firefighters under their command.
- Place signs in vehicles that remind firefighters of their responsibility to use seat belts.

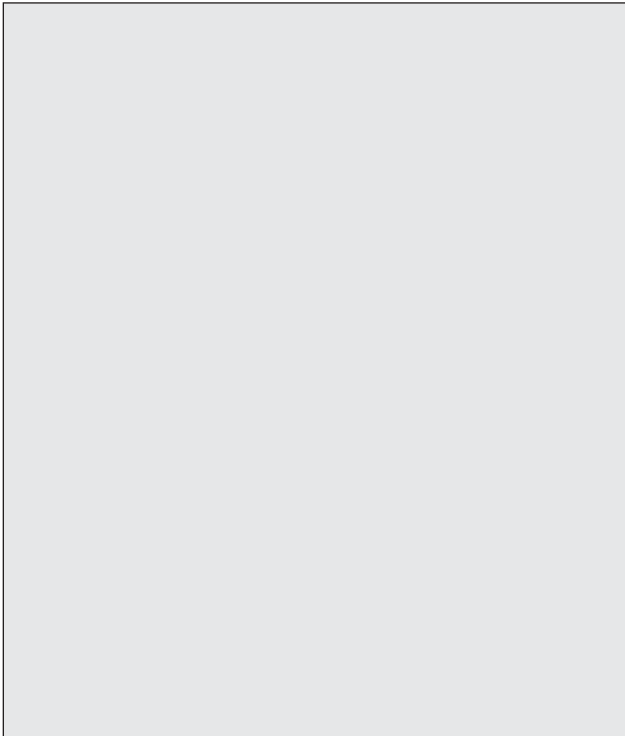
IMMEDIATE IMPACT INCIDENT OPERATIONS #2 MEDICAL SUPPORT

Two potential saves in 2001:

In 2001, there were two situations where a firefighter complained of being ill in association with an incident response or training. Both firefighters had to be talked into seeking medical aid. One firefighter died later of a CVA (stroke) and the other died of a heart attack.

A firefighter that exhibits distress in any manner should be evaluated by an ALS-level EMS provider and transported to the hospital if there is any question about the firefighter's health. It should be the responsibility of the company and chief officers on the scene to direct a distressed firefighter to submit to treatment.

Many fire departments have EMS standby on the scene of incidents and training. These resources should be used to provide care for firefighters and civilians. EMS personnel can also be used as part of an onscene rehabilitation system. The rehabilitation (rehab) system should check the medical vital signs of firefighters as they rest and provide them with water to assure adequate hydration.



IMMEDIATE IMPACT INCIDENT OPERATIONS #3 WORK IN TEAMS

Three potential saves in 2001:

OSHA and NFPA standards require that firefighters working in hazardous areas work in teams of at least two. In three instances in 2001, firefighters were working alone and were cut off from escape by falling debris or fire progress.

One of the main purposes of having firefighters work in teams is to allow each firefighter to monitor the safety of the other firefighter and be able to provide assistance if the other firefighter gets into trouble. If sufficient staffing has not arrived on the scene to allow firefighters entering the hazardous zone to do so in teams of at least two firefighters, no one should enter the hazardous zone.

IMMEDIATE IMPACT INCIDENT OPERATIONS #4 RESPONSE POLICIES FOR PERSONAL VEHICLES

Four potential saves in 2001:

Each year, including 2001, firefighters are killed in collisions involving their personal vehicles as they respond to emergencies. The vast majority of these firefighters are volunteers. By their very nature, volunteer fire departments deploy as firefighters respond from their homes or places of business to the fire station or directly to the incident scene.

Depending upon State laws, firefighters may be granted permission to have warning lights and sirens on their personal vehicles, they may be allowed to display a courtesy light which requests the right of way from other drivers, or they may not be allowed any warning devices at all. Some States allow firefighters in properly equipped personal vehicles to obey the same traffic laws that apply to other emergency vehicles. Courtesy lights do not usually allow firefighters to proceed through red traffic signals or perform other maneuvers reserved for emergency vehicles.

A natural inclination exists to get to the fire station or the fire scene quickly. Many of the firefighter deaths while responding in personal vehicles are the result of excessive speed or traffic maneuvers, such as crossing the centerline to pass another vehicle.

The following suggestions may help to improve the safety of firefighters as they respond in their personal vehicles:

- Adopt a fire department policy on responses in emergency vehicles and provide information on the policy to all firefighters. The policy should include information on permissible actions and those that are not permitted during responses.
- Company and chief officers who observe unsafe driving should remind the offending firefighter of the department's policy on response. Firefighters who do not obey the policy should face disciplinary action that may include suspension from emergency response.
- Radio messages that remind firefighters to respond safely may be included in the dispatch message.
- Limit response speed to the posted speed limit. The maximum speed should be lower than the posted limit in situations, such as extreme weather, when driving may be more difficult.

APPENDIX A

SUMMARY OF 2001 INCIDENTS

If additional information is available regarding a firefighter fatality, the reader is directed to these sources. Where possible, hyperlinks that direct the reader to additional information are provided. Hyperlinks operate in the digital version of this report and appear in all versions as underlined text. If links have expired or if the reader does not have Internet access, contact information for these sources is provided at the end of the Appendix when available.

January 1, 2001- 2:45 a.m.

James Thomas Heenan, Firefighter

Age 37, Volunteer

Verga Fire Company #1, West Deptford Township, New Jersey

Firefighters were dispatched to reports of a structure fire in a 1½ -story residence. Upon his arrival, the Fire Chief observed a glow from the basement, heavy smoke conditions, and fire visible from the rear kitchen windows. A car parked in front of the house and reports from neighbors that the house was occupied led the Chief to believe that rescue was needed.

Upon the arrival of the first engine company, the Chief ordered two firefighters to enter the rear of the structure to perform a primary search of the structure. Firefighter Heenan was first through the door. As soon as he entered the kitchen, the floor collapsed into the basement. Firefighter Heenan, who was wearing full protective clothing and Self-Contained Breathing Apparatus (SCBA), fell into the burning basement.

Rescue efforts were begun immediately by firefighters who entered the basement through an outside door. Firefighter Heenan was located immediately, but his removal was delayed by the fact that Firefighter Heenan was trapped under the debris of the kitchen that had fallen into the basement. Firefighters were assisted in locating Firefighter Heenan by the sounding of his Personal Alert Safety System (PASS) device. Firefighter Heenan was conscious and guided rescuers.

After significant efforts lasting approximately 20 minutes, Firefighter Heenan was removed from the structure. Advanced Life Support (ALS) medical care was provided, and he was transported to the hospital. Firefighter Heenan had severe burns over 74% of his body. He was conscious and alert upon his arrival at the hospital.

Firefighter Heenan underwent at least nine surgeries related to his injuries including the amputation of his hands. His condition progressively worsened and he died on March 25, 2001.

Firefighter Heenan's family was at his side at the time of his death.

The structure fire that claimed Firefighter Heenan's life was a rekindle of an earlier dryer fire. The residents had extinguished the earlier fire and had not called the fire department. At approximately 11:30 p.m., after the original fire was thought to be extinguished, the residents left the house.

January 4, 2001 - 9:00 a.m.

Gregg J. McLoughlin, Firefighter First Grade

Age 39, Career

Fire Department City of New York, New York

Firefighter McLoughlin worked the overnight shift on January 3rd at Engine 302 in Queens. On the morning of January 4th, he was found by other firefighters in the basement workout room of the fire station on the treadmill that he had been using for his workout. It is unknown how long he had been ill prior to discovery.

Firefighter McLoughlin was provided with medical care in the fire station and in the ambulance en route to the hospital. Emergency room staff worked for 30 minutes to try to save Firefighter McLoughlin but their efforts were fruitless. Firefighter McLoughlin died of a heart attack.

Firefighter McLoughlin had no personal or family history of heart disease and had passed a full medical exam in March of 2000.

January 9, 2001 - 5:22 p.m.

Richard Douglas Buongiorno, Firefighter

Age 48, Volunteer

Kendall Fire Department, New York

Firefighter Buongiorno was directing traffic around a single vehicle collision, which did not cause any injuries, but power lines were down.

A rescue truck was positioned near the roadway, and its emergency lights were activated. Firefighter Buongiorno was wearing dark pants and a dark blue winter jacket.

Firefighter Buongiorno leaned into a van to speak to a driver who had stopped to request permission to turn. As Firefighter Buongiorno stepped back from the van, a passing truck struck him. The impact knocked Firefighter Buongiorno to the ground; he slid over 30 feet and stopped under a parked pickup truck.

Firefighters, who arrived on the scene after a report that Firefighter Buongiorno had been struck, lifted the pickup off of him. He was transported by ambulance to a local hospital and then later moved to a regional trauma center.

Firefighter Buongiorno was pronounced dead at 3:23 a.m. on January 10, 2001. The cause of death was multiple trauma.

The 22-year-old male driver of the vehicle that struck Firefighter Buongiorno was not charged.

January 10, 2001 - 7:00 p.m.

Gilmore W. "Butch" Stitley III, Firefighter

Age 54, Volunteer

Independent Hose Company / Citizens Truck Company, Frederick, Maryland

Firefighter Stitley lived at the Frederick County Fairgrounds and was maintenance supervisor for the facility. A fire was reported in a municipal mulch yard next door to the fairgrounds. Firefighter Stitley opened gates to the fairgrounds to allow access for firefighters and met fire apparatus as it arrived on the scene.

Firefighter Stitley was donning his protective clothing when he suffered a heart attack. ALS medical aid was provided at the scene, and Firefighter Stitley was transported to a local hospital. He was pronounced dead shortly after arriving at the hospital.

January 11, 2001 - 11:10 a.m.

Andrew John White, Lieutenant

Age 27, Volunteer

Rocky Grove Volunteer Fire Department, Pennsylvania

Lieutenant White responded to a structure fire involving a manufactured home situated on top of a basement. Lieutenant White assisted firefighters operating a hoseline into the basement. When the line was withdrawn from the basement, Lieutenant White helped to reposition the line and then he and another firefighter advanced the line into the interior of the structure at the first floor.

Conditions in the interior of the structure began to deteriorate, and the decision was made to back out. As the firefighters attempted to exit the structure, they became disoriented due to loops in the hoseline, heavy smoke, and heat conditions. The firefighters got off the line and crawled into a room that had been added to the structure. The firefighters became separated. The firefighter who had been with Lieutenant White broke through a window and made it to the outside. When he emerged from the structure, the injured firefighter was transported to the hospital. Unknown to firefighters on the scene, Lieutenant White remained in the addition.

A firefighter from another fire department found Lieutenant White's helmet and gave it to a chief officer from Lieutenant White's fire department. A search for Lieutenant White was initiated. Firefighters searched the building, and a local hospital was contacted on the chance that Lieutenant White had left the scene.

After 30 to 40 minutes of searching, Lieutenant White's boots were seen a few feet inside the doorway to the addition. Lieutenant White was found bent backwards over the top of a desk. Firefighters, including Lieutenant White's father, removed Lieutenant White from the structure. It was determined that Lieutenant White had expired.

Lieutenant White's air supply had been depleted. He was wearing a PASS device, but it was found to be in the "off" position. Other firefighters had passed Lieutenant White's position several times during the search but were unable to see him due to smoke conditions. Lieutenant White carried a portable radio; it was found in a pocket in the "off" position.

The cause of death was listed as asphyxiation due to oxygen depletion within the SCBA.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-04. (<http://www.cdc.gov/niosh/face200104.html>)

January 12, 2001 - 2:20 p.m.

William Lawrence "Willy" Thompson, Firefighter

Age 21, Volunteer

Hillsboro Fire Department, Kentucky

Firefighter Thompson was the sole occupant and driver of a tanker (tender) responding to a grass fire. As the tanker reached a right curve, the vehicle swerved from the right side of the road. Firefighter Thompson steered it back onto the road surface, crossed the road, and veered to the left side of the roadway. The apparatus struck an embankment and a telephone pole and rolled over. Firefighter Thompson was ejected from the vehicle, and the tanker came to rest on top of him. Firefighter Thompson was not wearing a seat belt.

Firefighter Thompson was the son of Hillsboro Fire Chief William A. Thompson.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-06.

January 13, 2001 - 8:50 p.m.

Donald L. Franklin, Firefighter First Grade

Age 42, Career

Fire Department City of New York, New York

Firefighter Franklin and his ladder company were dispatched to a fire in an apartment building. Upon their arrival, firefighters found a working fire on the fourth floor of the building. Firefighter Franklin was assigned the roof position on his company. He ascended the aerial ladder of another ladder company and went to the roof along with the roof position firefighter from a different ladder company.

The two firefighters forced open the bulkhead door of the fire building and then cut holes in the roof to provide ventilation. The crew from the other ladder company cut the holes with a power

saw. Firefighter Franklin assisted with pulling back roofing materials and pushing ceilings down inside the structure. After roof operations were complete, Firefighter Franklin descended the stairs to the fire floor and assisted with overhaul for approximately 10 to 15 minutes.

After overhaul was complete, Firefighter Franklin left the building and talked with other firefighters on the street. He discussed the difficulty in opening the roof and announced that he was tired and then dropped to his knees. A firefighter offered Firefighter Franklin oxygen, but he declined the offer and walked to a rehab unit that was set up a block away. After getting a drink at the rehab unit, Firefighter Franklin returned to his apparatus and sat down.

A short time later, Firefighter Franklin called to a nearby firefighter for oxygen and said that he was not feeling well. Emergency Medical System (EMS) workers on the scene were summoned. Firefighter Franklin's condition deteriorated rapidly and he was transported to the hospital by ambulance but efforts to aid him were unsuccessful. Firefighter Franklin was pronounced dead at 9:39 p.m. The cause of death was listed as hypertensive and arteriosclerotic cardiovascular disease with smoke inhalation as a contributing cause. Two civilians were killed in the fire.

January 18, 2001 - approximately 1:00 a.m.

Christopher Towne, Lieutenant

Age 52, Career

Detroit Fire Department, Michigan

Lieutenant Towne was on duty as the company officer for an engine company. During the shift, the company responded to five incidents. Four of the incidents were fire alarms and one was a car fire. At approximately 11:30 p.m., Lieutenant Towne went to bed. At 1:18 a.m., Lieutenant Towne's engine company was dispatched on a box alarm.

Crew members waited for a few minutes prior to their response but left without Lieutenant Towne when he failed to appear. Upon their return to the station, firefighters found Lieutenant Towne unconscious in his bedroom. EMS personnel quartered in the same station were summoned and found that Lieutenant Towne was dead. No resuscitation was attempted since Lieutenant Towne had obviously been dead for over an hour.

An autopsy revealed significant coronary artery disease and the cause of death was arteriosclerotic cardiovascular disease.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-21. (*fire department Web site www.ci.detroit.mi.us/fire/fire.htm*) (*<http://www.cdc.gov/niosh/face200121.html>*)

January 25, 2001 - 7:25 p.m.

Johnny C. McKinley, Firefighter

Age 54, Volunteer

Pine Hill Volunteer Fire Department, Alabama

Firefighter McKinley and members of his department responded to a report of a structural fire in an abandoned service station. Firefighter McKinley ascended a portable ladder to apply water through the gable end of the structure when he was stricken with a heart attack.

Firefighter McKinley fell about 12 feet to the ground. Firefighters immediately went to his assistance, and emergency medical personnel were called. Firefighter McKinley was transported to a local hospital where he was pronounced dead.

The fire in the service station was a warming fire started by a transient. The 20-year-old man was arrested and later charged with arson.

January 27, 2001 - 4:10 p.m.

Cecil Frank Smith, Firefighter

Age 76, Volunteer

Meredith Volunteer Fire Department, New Hampshire

Firefighter Smith was responding to the fire station to handle dispatch duties for a structural fire response. Firefighter Smith's wife was a passenger in the vehicle. He was displaying a red flashing light on the dashboard of his personal vehicle. Firefighter Smith approached an intersection and prepared to make a left-hand turn to the north. As he arrived at the intersection, the signal turned red.

A driver that had stopped in the southbound lane motioned for Firefighter Smith to proceed through the intersection. As he did so, Firefighter Smith's vehicle collided with a second southbound vehicle. The vehicle whose driver had motioned Firefighter Smith into the intersection blocked the view of both drivers of the other cars.

The damage to both vehicles was minor to moderate. Firefighter Smith had a cut on his hand, and he had struck his head against his wife's head when the vehicles collided. He refused medical aid other than a bandage for his hand.

Firefighter Smith returned to his home and in less than an hour after the collision, Firefighter Smith's wife placed a call to the local ambulance service. Upon their arrival, EMS personnel found Firefighter Smith unconscious. He was transported by ambulance to a local hospital and then flown by air ambulance to a regional hospital. Firefighter Smith underwent surgery at the regional hospital but died the following day. No autopsy was conducted.

The cause of death was listed as a blunt impact injury to the head with subdural hematoma. (fire department Web site www.fire-ems.net/firedept/view/MeredithNH)

February 5, 2001 - 10:50 a.m.

Matthew D. Smith, Firefighter

Age 33, Career

Redwood City Fire Department, California

Firefighter Smith and the members of his crew had begun the daily on duty routine. One of the components of this routine was an exercise program. All three members of the crew began the workout in the fitness area of the fire station. The company officer and the other firefighter momentarily left the workout area. When the firefighter returned to the workout area, Firefighter Smith was discovered on the floor in a fetal position. The firefighter called for assistance to the company officer. An ambulance and an additional engine company were summoned. The company officer and the firefighter provided ALS medical care to Firefighter Smith, including the application of a defibrillator.

Firefighter Smith was found to be in ventricular fibrillation. A total of 11 shocks were given in the field. Lifesaving efforts continued at the emergency room for another 30 minutes but were unsuccessful in reviving Firefighter Smith.

Firefighter Smith was diagnosed with idiopathic cardiomyopathy (IDC), a heart disease.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-24. (*fire department Web site www.ci.redwood-city.ca.us/fire/index.htm*) (*<http://www.cdc.gov/niosh/face200124.html>*)

February 7, 2001 - 4:16 p.m.

Ray Walters Lloyd, Firefighter

Age 65, Volunteer

Marion County Fire-Rescue, Florida

Firefighter Lloyd and members of his department responded to a report of a fire involving an abandoned double-wide mobile home. The first unit on the scene reported that the structure was 50% involved and exterior firefighting operations were initiated.

Firefighter Lloyd had set up the pump on his engine company and was gathering equipment when he fell face-first to the ground. Medical treatment began immediately and ALS-level care arrived on the scene. Despite these efforts, Firefighter Lloyd died from a heart attack. Firefighter Lloyd had a history of heart disease.

February 12, 2001 - 9:10 p.m.

James Franklin Isberner, Firefighter

Age 60, Volunteer

Montello Joint Fire District, Wisconsin

Firefighter Isberner and members of his department responded to a report of a fire in a residential structure. Upon their arrival, firefighters found a working fire in the basement of the house.

The first-arriving engine crew stretched a line to the basement and began to fight the fire.

Firefighter Isberner was assisting with the deployment of a backup line. He began to feel ill and told the incident commander that he was short of breath and having sharp chest pains. The incident commander took Firefighter Isberner by the shoulder and sat him down while waiting for the responding ambulance to arrive at the incident. The incident commander directed a law enforcement officer to have Firefighter Isberner checked by the ambulance crew as soon as they arrived.

Upon the arrival of the ambulance, Firefighter Isberner was walked to the ambulance and treated. He was transported to a local hospital and then airlifted to a regional care facility.

Despite treatment in the hospital, Firefighter Isberner died on February 19, 2001. Firefighter Isberner's son, a captain, was operating an interior attack line on the scene of the incident when his father became ill. The cause of death was congestive heart failure complicated by an arrhythmia. (fire department Web site www.fire-ems.net/firedept/view/MontelloWI)

February 17, 2001 - 10:26 a.m.

Clint Anderson Talley, Lieutenant/EMT
Age 27, Volunteer
Ashton Fire Department, Illinois

Michael L. McKean, Firefighter
Age 32, Volunteer
Ashton Fire Department, Illinois

Lieutenant Talley and Firefighter McKean responded with members of their fire department to a report of a basement fire in a single-story residence. Upon their arrival on the scene, firefighters searched the basement for fire and found none. The search was continued on the first floor and again, nothing was found. Firefighters returned to the basement with a thermal-imaging camera and a hoseline. A small fire was discovered and firefighters began extinguishment.

The basement ceiling was pulled and a wave of heat and smoke descended on the five firefighters in the basement, including Lieutenant Talley and Firefighter McKean. Fire had been burning for some time in the concealed space between the basement ceiling and the first floor and fire now spread rapidly to the basement. Three firefighters were able to escape the basement immediately but Lieutenant Talley and Firefighter McKean were trapped.

Firefighter McKean was not heard from after the rapid fire progression. Lieutenant Talley was in communication with the incident commander and relayed the fact that he was low on air and that his exit path had been cut off by fire progress. Mutual-aid companies and EMS resources were called to the scene. Firefighters cut a hole in the first floor in an attempt to make access to the basement for rescue but the conditions in the hole prevented their entry.

After the fire was knocked down, both firefighters were removed and transported by medical helicopters to a hospital. Both were pronounced dead shortly after their arrival.

The air supply in the SCBA worn by each firefighter was depleted. Both firefighters wore activated PASS devices. The cause of the fire was an electrical short at the panel.

The cause of death for both firefighters was listed as asphyxiation. Lieutenant Talley's carboxyhemoglobin level was 58%, and Firefighter McKean's carboxyhemoglobin level was 59%.

February 18, 2001 - 3:15 p.m.

Donald L. Nester, Chief Engineer

Age 56, Volunteer

Amity Fire Company, Douglassville, Pennsylvania

Chief Engineer Nester was in the fire station performing paperwork tasks associated with his responsibilities as the Chief Engineer. He was at the top of the stairs speaking to two firefighters in the engine bay below. When the conversation ended, Chief Engineer Nester slipped or lost his balance and fell down the stairs.

Chief Engineer Nester struck his head on the concrete floor at the bottom of the stairs. Firefighters came to his aid immediately and summoned EMS responders. Chief Engineer Nester was flown by air ambulance to a regional care facility. His condition did not improve, and he died on February 19, 2001.

The cause of death was listed as a subdural hematoma.

February 18, 2001 - 8:30 p.m.

Barry Wollman, Firefighter

Age 53, Career

Eagleville Fire Department, Connecticut

Firefighter Wollman and members of his department responded to a small fire in a local shopping mall. After standing by at the scene, Firefighter Wollman drove back to the fire station in his assigned apparatus. When he returned to the fire station, he parked the engine-tanker (tender) in its appropriate spot and then proceeded to move a rescue truck into its appropriate spot.

A police officer stopped by the fire station about an hour and a half later and found Firefighter Wollman slumped over the wheel of the rescue apparatus. Firefighter Wollman had suffered a heart attack.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-14. (<http://www.cdc.gov/niosh/face200114.html>)

February 19, 2001 - 4:15 p.m.

Lloyd E. Curtis, Fire Police Officer

Age 75, Volunteer

Vestal Fire Department, New York

Fire Police Officer Curtis was the passenger in a brush truck responding to an automatic fire alarm

in a nursing home. The driver of the truck looked over and saw Fire Police Officer Curtis slumped over in his seat. The driver diverted their response to a fire station and called for EMS assistance.

Upon their arrival at the fire station, Cardio-Pulmonary Resuscitation (CPR) was initiated. Fire Police Officer Curtis was transported to a local hospital where he died a short time later. The cause of death was a heart attack.

February 25, 2001 - 8:00 a.m.

Dana Raymond Johnson, Assistant Fire Chief

Age 46, Paid-on-Call

Grantsburg Volunteer Fire Department, Wisconsin

A husband and wife were involved in a domestic dispute. The husband set fire to the wife's place of employment, a restaurant. After setting the fire, the husband returned home and brought his wife back to the scene. The wife attempted to extinguish the fire on the exterior of the restaurant. She then attempted to leave the scene. The husband shot out the tires on their vehicle. The wife left the scene by foot and noticed that the interior of the restaurant was filling with smoke. The wife walked and then was given a ride to the local courthouse. When she arrived at the courthouse, she reported the fire and relayed the fact that her husband was in the area and armed with a handgun.

Law enforcement officers and firefighters were notified of the incident. Due to the fact that a gunman was loose in the area, firefighters were directed to stage away from the scene. After the area was secured, firefighters were allowed to proceed to the scene. The delay since the time of the alarm was approximately 45 minutes, but the fire had been in progress in excess of an hour. When firefighters reached the scene, the fire was well developed.

Assistant Chief Johnson and the members of the Grantsburg Volunteer Fire Department were called for mutual aid about an hour after firefighters were allowed access to the scene. Assistant Chief Johnson and his firefighters were directed by the incident commander to relieve firefighters on hoselines. The Assistant Chief and another firefighter walked toward a nozzle that had been left by other firefighters near the breezeway between two buildings. Assistant Chief Johnson and the other firefighter decided that their present position was not safe and began to exit. As they turned to leave, loud cracking sounds were heard when areas of the wall and the building's roof collapsed on Assistant Chief Johnson and the other firefighter.

Assistant Chief Johnson was completely buried; the other firefighter was buried to his shoulders. Firefighters removed debris and extricated the firefighter. Assistant Chief Johnson was pinned in the rubble. Airbags and high-lift jacks were used to lift structural members, and he was removed after being trapped for approximately 25 minutes.

After he was removed, Assistant Chief Johnson was found to be unresponsive. He was transported by ambulance to a local hospital where a pulse was regained. He was then transferred by air ambulance to a regional care facility where he expired the next day.

The cause of death was listed as anoxic encephalopathy and chest compression asphyxia. Despite the best efforts of firefighters on the scene, Assistant Chief Johnson had been without oxygen too long to survive. The man who set the fire committed suicide not far from the structure fire, prior to the arrival of law enforcement and firefighters.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-09. (<http://www.cdc.gov/niosh/face200109.html>)

March 3, 2001 - 10:00 a.m.

Mark Lee Edwards, Engineer

Age 41, Volunteer

Gower Fire Protection District, Missouri

Engineer Edwards stopped by the fire station to pick up some equipment. As he approached the station, he slipped on ice and fell. As a result of the fall, Engineer Edwards broke two bones of one leg just above the ankle.

Surgery was required to repair the damage to Engineer Edwards' leg. During surgery, an incident occurred that deprived Engineer Edwards of oxygen. He fell into a coma and was eventually transferred to a long-term care facility. Engineer Edwards died on January 29, 2002.

March 6, 2001 - 3:00 p.m.

Christopher Donald Kobierowski, Assistant Fire Chief

Age 41, Volunteer

Delta Junction Volunteer Fire Department, Alaska

Assistant Chief Kobierowski was the driver of a 1,000-gallon pumper/tanker that was responding to a garage fire. As the apparatus neared the scene, the vehicle began to fishtail. Assistant Chief Kobierowski overcorrected and the right rear wheels of the apparatus went off the road. The vehicle traveled into the opposing lane of traffic, and Assistant Chief Kobierowski overcorrected again. The apparatus left the right side of the road, rolled onto the driver's side, and collided into a tree. Impact with the tree crushed the cab roof of the apparatus down to the dashboard and seats. The trunk diameter of the tree was approximately 36 inches.

Responders on the scene of the structure fire witnessed the crash and ran to the scene to render aid. Assistant Chief Kobierowski and another firefighter were trapped in the cab. The windshield of the apparatus was removed, and the winch from an electrical utility service truck was used to remove the tree and to pull the roof of the cab open to allow access to the injured firefighters. Assistant Chief Kobierowski was removed and found to have a massive head injury. The other firefighter received minor injuries.

CPR was begun on Assistant Chief Kobierowski and continued on-scene for approximately 20 minutes until he was pronounced dead.

The law enforcement report on the crash cited excessive speed and icy conditions as contributing to the incident. Neither Chief Kobierowski nor the passenger in the pumper/tanker were wearing seat belts.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-17. (<http://www.cdc.gov/niosh/face200117.html>)

March 8, 2001 - 12:31 p.m.

William A. "Doc" Ellison III, Firefighter

Age 38, Part-Time (Paid)

Miami Township Fire Department, Ohio

Firefighter Ellison and members of his department were dispatched to a report of a structural fire in a residence with persons trapped. As firefighters approached the scene, smoke was visible. Upon their arrival, firefighters reported heavy black smoke and moderate fire coming through the left front side of the building.

The first-arriving crew forced entry through the front door of the residence and found two bedrooms with fire involvement. The first floor of the structure was searched, and fire in the bedrooms was controlled with a handline. There was still a significant amount of fire in the attic, and the incident commander gave the order to evacuate the building. An exterior attack was made on the fire with handlines and a master stream.

After the fire was knocked down, three firefighters, including Firefighter Ellison, made entry into the first floor. One firefighter was forced to leave due to difficulties with his SCBA. Firefighter Ellison was on the nozzle. As the firefighters pulled walls and applied water, they moved through a first-floor hallway. A soft spot in the floor was noted as firefighters worked their way down the hall. An additional group of firefighters were working to control a fire in the basement. Firefighter Ellison and the other firefighter working with him agreed that conditions were worsening on the first floor and that they needed to leave the structure. As they turned to exit, Firefighter Ellison fell through the soft spot in the floor into the basement.

The firefighter that had been working with Firefighter Ellison attempted to reach down through the hole and pull Firefighter Ellison back to the first floor. After four unsuccessful attempts, the firefighter left the building and alerted other firefighters to the situation. Further attempts were made to pull Firefighter Ellison from the hole, but crews were unable to complete the task. A portable ladder was placed into the hole to facilitate rescue, but smoke and fire conditions would not allow it to be used. In the course of these attempts, Firefighter Ellison's gloves came off.

Three crews entered the basement through the rear of the structure in an attempt to reach Firefighter Ellison. Two handlines were advanced, and the basement fire was knocked down. Firefighter Ellison was found in a seated position; his helmet was off and his hood was pulled back. Firefighter Ellison's facepiece was in-place and he was breathing. Firefighters removed him from the building, and his protective clothing was removed. Medical care was provided on-scene, and Firefighter Ellison was flown to a regional medical facility.

Firefighter Ellison sustained second and third degree burns to 60% of his body, including his hands, head, chest, back, and legs. Intensive medical care was provided at the hospital, but he was not able to respond and died of complications from his thermal burns on March 20, 2001.

Firefighter Ellison was a part-time firefighter with the Miami Township Fire Department and a full-time career firefighter with the Anderson Township Fire Department.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-16. (<http://www.cdc.gov/niosh/face200116.html>)

March 10, 2001 - 7:12 p.m.

Gerald Wayne Fields, Driver/Engineer

Age 53, Career

Dallas Fire & Rescue, Texas

Driver/Engineer Fields completed his regular shift at his home fire station and began an overtime shift at another Dallas fire company, Engine 16. His regular shift had been normal with 5 responses completed during the 24-hour shift.

After breakfast, the crew went to a grocery store to shop for the day; worked out; cleaned the station and the apparatus; and performed other normal fire station tasks. Driver/Engineer Fields had agreed to cook for the day, and the crew ate dinner at approximately 5:00 p.m. After the meal, Driver/Engineer Fields sat in the television room while the rest of the crew cleaned the kitchen.

At approximately 7:00 p.m., a box alarm was dispatched in the area of town normally worked by Driver/Engineer Fields. Engine 16 was not dispatched to the incident. The company officer of Engine 16 went out to the engine to get a portable radio to monitor the box alarm response and he returned inside the station and sat down to watch television.

The company officer heard a sound and turned to see Driver/Engineer Fields leaning back in the chair, breathing loudly, and shaking. The company officer immediately used his portable radio to request an EMS response. The company officer called to the other members of the crew for assistance. CPR was begun immediately and an Automatic External Defibrillator (AED) was applied. The AED delivered several shocks and firefighters provided ventilation. An ALS ambulance arrived at the fire station and continued care while transporting Driver/Engineer Fields to the hospital.

Despite all efforts, Driver/Engineer Fields was pronounced dead at the hospital. The cause of death was listed as hypertensive and arteriosclerotic cardiovascular disease.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-22. (<http://www.cdc.gov/niosh/face200122.html>)

March 11, 2001 - 1:45 p.m.

William "Bill" James, Firefighter

Age 65, Volunteer

Caballo Fire and Rescue Department, New Mexico

Firefighter James was engaged in a Firefighter I certification training session. The class completed the morning session, went to lunch, and returned for the afternoon session. Firefighter James was practicing ladder carries in full structural protective clothing when he suddenly set the ladder down, grabbed his chest, and fell to the ground. Other firefighters rushed to his aid and began CPR immediately. ALS-level care was provided within 10 minutes and Firefighter James was transported to the hospital by ambulance. He was later flown by air ambulance to a regional hospital where he expired three days after becoming ill.

March 14, 2001 - 9:30 a.m.

Dan Hupe, Firefighter

Age 54, Paid-on-Call

Stratford Fire Department, Wisconsin

Firefighter Hupe was working around the fire station performing general maintenance duties, including hose rolling for storage, sweeping, and maintenance on a brush truck. As he talked with another firefighter in the station, he suddenly collapsed. The other firefighter, who was certified as an Emergency Medical Technician (EMT), aided Firefighter Hupe and summoned the local ambulance squad. Despite their efforts, Firefighter Hupe died of a heart attack. In addition to his work with the fire department, Firefighter Hupe also served his community as a police officer.

March 14, 2001 - 5:36 p.m.

Bret Richmond Tarver, Firefighter/Paramedic

Age 40, Career

Phoenix Fire Department, Arizona

On Wednesday, March 14, 2001, a report of a debris fire was received by the Phoenix Fire Department Regional Dispatch Center. The caller reported fire in a pile of debris at the rear of a hardware store. An engine company was dispatched to the fire reported by the caller.

Based on the volume and nature of the smoke he was seeing as he drove through his district, Battalion 3 ordered additional fire department resources dispatched to assist. Battalion 3 also responded to the incident.

The unit that is normally closest to the fire location is Engine 14. Engine 14 became available after the dispatch of the initial units. The captain of Engine 14 added his unit to the incident by computer and informed Battalion 3 of their arrival on the scene.

Battalion 3 ordered Engine 14's crew to enter businesses that back up to the debris fire to evacuate occupants and to determine if fire had spread to the inside of these businesses. Engine 14's crew searched a barber shop that was adjacent to a supermarket, found it to be unoccupied and clear of fire, and moved on to the next business - the supermarket.

When they entered the supermarket, Engine 14's crew found only light smoke at the ceiling of the main store. The crew moved through the building and entered a storage area. They found heavy smoke and moderate heat in the storage area. They reported this fact to Battalion 3 and went back to the front of the store to get a hoseline from another unit that had arrived at the front of the store. A hoseline was extended to the storage room, and water was applied to the fire. Visibility in the storage area was near zero and the ability to see in the supermarket deteriorated quickly.

Firefighter Tarver, a member of the Engine 14 crew, told his captain that he was running low on air in his SCBA and needed to leave the building. The captain gathered his crew together and told them to follow the hoseline out to the exterior.

As the two Engine 14 firefighters, including Firefighter Tarver, turned to leave, they became disoriented and ran into a wall. They got back up, turned in the direction that they thought was the correct way to go, and ran into another wall. Somehow both firefighters ended up in the rear portion of the main supermarket space. Firefighter Tarver called for help on his radio. The firefighter who was with Firefighter Tarver became separated from him and later exited the building with the assistance of other firefighters.

The Engine 14 captain emerged from the building and looked for the other members of his crew, as well as the engineer of Engine 14. Battalion 3 could see that fire was developing in the supermarket and began to order crews out of the building. Firefighter Tarver heard these radio transmissions and repeated his call for help.

The Engine 14 captain heard Firefighter Tarver's request for help and he notified Battalion 3 that he had two firefighters that were unaccounted for. The Engine 14 captain quickly spoke to the captain of another crew and told him to follow Engine 3's line to Firefighter Tarver's last known location.

The captain and two firefighters entered the building immediately and followed the hoseline. Visibility in the supermarket had dropped to zero. They came upon Firefighter Tarver. He was lost, out of air, standing on his feet, and calling for help. The captain brought Firefighter Tarver down to the hoseline and instructed him to follow it to the exterior. Firefighter Tarver had become incapacitated by the smoke and did not obey the instructions of the captain. Firefighter Tarver crawled a short distance, then stood up, turned, and disappeared in the smoke.

The captain and his firefighters were low on air at this point and had to leave the building.

When Battalion 3 heard that there were two Engine 14 firefighters missing, he immediately activated two Rapid Intervention Crews (RIC's). An engine crew and a ladder crew entered the supermarket with extra breathing air equipment to search for Firefighter Tarver and the other firefighter from Engine 14. While the RIC crews were unable to locate the Engine 14 firefighters, they

did remove other firefighters from the building. As they left the supermarket, the interior of the supermarket became fully involved with fire. Further entry from their direction was impossible.

After much effort, Firefighter Tarver was located and moved into a large storage room. The crew that discovered Firefighter Tarver was relieved by a series of other crews that moved Firefighter Tarver, with great difficulty, to the exit of the supermarket storage room.

The movement of Firefighter Tarver was made extremely difficult by the smoke conditions in the storage room, the water that was falling as a result of fire suppression efforts, the heat of the fire, and obstacles that blocked the path to the exit and caught on Firefighter Tarver's clothing and protective equipment. His removal was further complicated by falling debris, the limited air supply in the firefighters' breathing apparatus, and Firefighter Tarver's physical size.

Firefighter Tarver was transported to the hospital by ambulance but all efforts to revive him on the scene, in the ambulance, and at the hospital were futile. The cause of death was listed as thermal burns and smoke inhalation. Firefighter Tarver's carboxyhemoglobin level was 61%.

A full report on Firefighter Tarver's death may be downloaded from the Phoenix Fire Department Web site - www.phoenix.gov/fire

March 16, 2001 - 3:31 p.m.

Robert J. "Bob" Winner, Firefighter

Age 54, Volunteer

Perrysville Volunteer Fire Company, Pennsylvania

Firefighter Winner was the driver of the second-due engine company responding to a residential structure fire. Firefighter Winner was assigned to pump the hydrant supplying the attack pumper at the scene of the fire.

While Firefighter Winner was setting up his unit to pump, he began to experience chest pains. He used a radio to call for EMS assistance. Medical personnel, including a doctor, were at his side in minutes.

Despite efforts at the scene and en route to the hospital, Firefighter Winner died of a heart attack.

March 17, 2001 - 2:00 p.m.

Jay Shaffer, Captain

Age 47, Volunteer

Larkspur Fire Protection District, Colorado

Captain Shaffer was halfway toward completion of a 3-mile pack test to become certified to fight wildfires when he collapsed of an apparent heart attack. Firefighters were called to the scene, and they provided emergency medical care. Captain Shaffer was transported to a local hospital. He was pronounced dead 10 minutes after his arrival at the emergency room.

March 18, 2001 - 12:55 a.m.

Jonathon David Mullaney, Lieutenant

Age 36, Volunteer

Sac-Osage Fire Protection District, Missouri

Earl Franklin Whitby, Engineer

Age 39, Volunteer

Sac-Osage Fire Protection District, Missouri

Firefighters were dispatched to a report of an electrical smell and smoke in the second story of a two-story residential occupancy. Upon their arrival, two firefighters entered the structure with a hoseline and extinguished a small fire on the stairwell that led from the first floor to the second floor. Smoke conditions worsened, and the firefighters who were not wearing SCBA were forced to leave the structure.

Lieutenant Mullaney, Engineer Whitby, and a chief officer donned SCBA and reentered the structure on a hoseline to continue firefighting efforts. As the team proceeded into the building, the low air alarms for Engineer Whitby and the chief officer began to sound. The chief instructed Lieutenant Mullaney to lead Engineer Whitby out of the structure by following the hoseline. The chief remained on the nozzle and continued to suppress fire.

After about three minutes, the chief officer began to withdraw the hoseline from the structure. As he neared the exit, he was knocked down by falling debris. Unable to move on his own, he threw his helmet through the front door to get the attention of a firefighter on the exterior. Firefighters were able to remove the chief; he suffered second and third-degree burns to his head, face, and hands.

Lieutenant Mullaney and Engineer Whitby had not exited the structure. No functional SCBA were available to mount a rescue effort until the arrival of mutual-aid firefighters. Mutual-aid firefighters arrived approximately one hour after the initial alarm and they assisted with firefighting and rescue efforts. Lieutenant Mullaney and Engineer Whitby were discovered in a laundry room and removed from the structure. Both firefighters died from asphyxiation. It is unknown if either firefighter was equipped with a PASS device.

Additional information about this incident is available in NIOSH Fire Fighter Fatality Investigation and Prevention Program report F2001-15. (www.cdc.gov/niosh/face200115.html)

March 20, 2001 - 1:10 p.m.

Arthur C. Griffiths, Sr., Fire Police Captain

Age 65, Volunteer

Spangler Fire Department, Northern Cambria, Pennsylvania

Fire Police Captain Griffiths had been working in the fire station kitchen for approximately 3½ hours while assisting with the fire department bingo fund raiser. He left the station to pick up supplies and was struck with a fatal heart attack.

April 2, 2001 - 7:45 a.m.

Thomas Michael Paz, Engineer

Age 52, Career

Federal Fire Department, Pearl Harbor, Hawaii

Engineer Paz was preparing to go off duty, when, at approximately 6:30 a.m., he informed his captain that he was experiencing tightness in his chest. He was transported to the hospital but later died of a heart attack.

April 2, 2001 - 8:20 a.m.

Dale Franklin Simpson, Firefighter

Age 38, Volunteer

Clear Lake Fire Department, Iowa

Firefighter Simpson and members of his department responded to a fire that involved a small storage building in a cemetery. Firefighter Simpson drove an engine apparatus to the scene, assisted with hose deployment, and operated the pump on his engine. The fire was reported at 6:45 a.m. and Firefighter Simpson's unit left the scene at 7:28 a.m.

After returning to the fire station, Firefighter Simpson assisted with placing the engine back in-service and departed the station at approximately 8:00 a.m. He returned home, called a coworker to inform him that he would be late for work, and then prepared for work.

Firefighter Simpson departed his residence for work. A short time later, a 9-1-1 call reported that a vehicle had run off the road and into a fence. Arriving law enforcement officers found Firefighter Simpson unconscious behind the wheel. Firefighter Simpson was removed from the car and CPR was started. ALS-level care was provided at the scene, and Firefighter Simpson was transported to the hospital by ambulance. Despite efforts at the scene, en route to the hospital, and at the hospital, Firefighter Simpson was pronounced dead at 10:39 a.m. The cause of death was listed as severe arteriosclerotic coronary artery disease.

Additional information about this incident is available in NIOSH Fire Fighter Fatality Investigation and Prevention Program report F2001-30. (<http://www.cdc.gov/niosh/face200130.html>)

April 8, 2001 - 3:00 a.m.

Brian Steven Richter, Firefighter

Age 34, Volunteer

Pottsville Volunteer Fire Department, Arkansas

Firefighter Richter was responding in his personal vehicle to a report of a structure fire. His vehicle left the right side of the road, traveled 116 feet on the right shoulder, and rolled over as Firefighter Richter attempted to return the vehicle to the roadway. Firefighter Richter was ejected through the vehicle's moon roof. Firefighter Richter died of massive skull fractures.

April 8, 2001 - 8:00 p.m.

Anthony Vaughn Murdick, Assistant Fire Chief

Age 25, Volunteer

Unionville Volunteer Fire Company, PA

Scott Brian Wilson, Firefighter/Paramedic

Age 25, Volunteer

Unionville Volunteer Fire Company, PA

Members of the Unionville Volunteer Fire Company responded to perform a body recovery of a kayaker who had drowned and become trapped under water about 20 feet from shore in 15 feet of water. The department responded to the request of officials at the McConnell's Mills State Park. After arrival on-scene and an assessment of several recovery scenarios, Assistant Chief Murdick and Firefighter/Paramedic Wilson entered the water to perform the recovery. The firefighters were tethered together and secured to a rope line held by firefighters on shore. Both firefighters were wearing wet suits and buoyancy control devices called "back inflates."

Within minutes of entering the water, Firefighter/Paramedic Wilson's safety rope became entangled with an underwater object. Assistant Chief Murdick also became entangled. The rapid current made working in the water difficult. Ropes were thrown from shore to the two firefighters, but these efforts were unsuccessful. Firefighters on shore attempted to pull the struggling firefighters to shore, but this effort was also unsuccessful. After approximately 20 minutes of rescue efforts, both firefighters submerged. When it became apparent that the firefighters could not be pulled from the water, the safety line was cut.

Approximately ten minutes after being cut free, the bodies of both firefighters appeared about 200 yards downstream. Both firefighters were pulseless and not breathing. ALS-level medical care was provided on-scene and en route to the hospital by air ambulance. Despite these efforts, both firefighters were pronounced dead at the hospital. The cause of death for both firefighters was listed as drowning.

The firefighters were not equipped with knives that might have allowed them to free themselves. Darkness and a faster than expected stream current were cited as contributing to the firefighters' deaths.

April 9, 2001 - 8:14 p.m.

Richard C. Canouse, Firefighter/Fire Police Officer

Age 69, Volunteer

Milford Fire Department, Pennsylvania

Fire Police Officer Canouse and members of his department responded to a report of a structural fire with reports of fire from the roof of a building. Upon their arrival, firefighters found no active fire but discovered that lightning had struck a tree behind the building in which the fire was reported. Firefighters theorized that the report of fire had actually been the lightning strike. All fire department units were placed in-service and cleared to return to their station.

Fire Police Officer Canouse was discovered unconscious in the driver's seat of his personal vehicle. He was removed from the vehicle and CPR was started by police officers. EMS crews arrived

and attached an Automatic External Defibrillator (AED). No shockable rhythm was detected. Fire Police Officer Canouse was transported by ambulance to a local hospital while CPR was continued during the transport. Despite all efforts, Fire Police Officer Canouse was pronounced dead at the hospital.

April 10, 2001 - 9:30 a.m.

Brian Eugene Reed, Firefighter II

Age 39, Career

West Manatee Fire & Rescue, Florida

Firefighter Reed was in the process of repairing a lighting fixture mounted above the apparatus bays of his fire station. Firefighter Reed had experience as an electrician and had performed electrical maintenance tasks in fire stations in the past. The problem with the lighting fixture had been discovered by a previous shift when the tubes in the fixture had been changed.

Firefighter Reed was working with his back to a 24-foot extension ladder, which had been extended to a length of approximately 18 feet. A firefighter was at the base of the ladder to keep it from moving as Firefighter Reed worked.

As Firefighter Reed was working on the fixture, he leaned forward and fell to the floor of the apparatus bay, a distance of 15 feet. Firefighter Reed impacted the floor with his head and shoulder. After one attempt to rise from the floor, Firefighter Reed stopped breathing and his heart stopped. ALS-level EMS care was provided immediately by other firefighters, and Firefighter Reed was transported to the hospital. Firefighter Reed was pronounced dead upon his arrival at the hospital.

An autopsy revealed electrical burns on Firefighter Reed's right hand and a possible exit wound on the back of his arm. The cause of death was listed as electrocution.

(fire department Web site www.wmfr.org)

April 19, 2001 - 2:30 p.m.

Woodrow Wilson "Woody" Poland, Sr., President

Age 72, Volunteer

North River Valley Volunteer Fire Company, West Virginia

One of President Poland's responsibilities was to oversee the maintenance for his department's fire stations and community building. President Poland often performed these tasks personally.

President Poland was in the process of installing a cold water line to the front of the fire station. The fire chief stopped by the station at 12:30 p.m. and observed the work. At 4:40 p.m., a junior firefighter stopped by the station after school and found President Poland lying unconscious on the floor. Emergency medical help was summoned immediately, but President Poland had already expired. The cause of death was listed as multiple traumatic injuries especially cranio-cerebral traumatic injuries from a fall.

April 22, 2001 - Time Unknown

Gary L. Cruise, Engineer

Age 48, Career

South San Francisco Fire Department, California

Engineer Cruise suffered a back injury when he bent over to disconnect a hose coupling during training. As a result of his back injury, Engineer Cruise underwent major lumbar fusion surgery on September 6, 2001. On October 17, 2001, Engineer Cruise's wife awoke and found Engineer Cruise suffering seizures. He then became unresponsive. CPR was initiated, and Engineer Cruise was transported to the hospital. Engineer Cruise remained on life support until his death on November 3, 2001. The cause of death was listed as heart attack/respiratory failure.

April 23, 2001 - 8:30 p.m.

James Alan Rupkey, Lieutenant

Age 58, Volunteer

Troy Fire Department, Michigan

Lieutenant Rupkey and other members of his department were engaged in search and rescue training using full structural protective clothing, including SCBA. A mannequin was hidden in a room being used for the training, and teams of two firefighters searched for the mannequin while advancing a hoseline. The facepieces of both firefighters were covered with a black hood to reduce visibility.

Lieutenant Rupkey and his partner searched one room and found no victim, so they moved to the second room. Lieutenant Rupkey remained by the door as his partner searched. The partner discovered the victim and called to Lieutenant Rupkey for assistance. Lieutenant Rupkey stated, "I've got to get out of here" a couple of times and left.

Observers saw Lieutenant Rupkey rise from the floor, lean on a wall, and attempt to remove his facepiece. Other firefighters assisted Lieutenant Rupkey by removing his facepiece and loosening his SCBA. Lieutenant Rupkey took a couple of breaths and collapsed against the wall. Firefighters found that Lieutenant Rupkey was not breathing and that he had no pulse. CPR was begun immediately and medical aid was summoned.

CPR continued and ALS-level medical care was provided. Lieutenant Rupkey was transported to the hospital but was pronounced dead shortly after his arrival.

The cause of death was listed as an acute myocardial infarction due to arteriosclerotic cardiovascular disease.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-31. (<http://www.cdc.gov/niosh/face200131.html>)

May 9, 2001 - 8:40 p.m.

Alberto Tirado, Firefighter

Age 40, Career

Passaic Fire Department, New Jersey

Firefighter Tirado and members of his department were dispatched to a report of a fire in an occupied three-story apartment building. The first-arriving engine company reported a working fire and Firefighter Tirado responded as the tiller driver of the first-arriving ladder company.

Firefighters on-scene received reports that children were trapped in the building. Firefighter Tirado and another firefighter from his company proceeded to the second floor of the building to conduct a search. A search of the second floor was conducted and all of the apartments on that floor were found to be clear. Firefighter Tirado and the other firefighter proceeded to the third floor to continue their search. On their way to the third floor, the team encountered heavy smoke and high heat. Both firefighters went back to the second-story landing. Firefighter Tirado's partner told Firefighter Tirado to wait on the landing while he retrieved additional lighting from the apparatus.

A few minutes later, Firefighter Tirado called on the radio and said that he was trapped on the third floor. This transmission was not heard on the fireground and a second request for help was also not heard. He called a third time and reported that he was trapped on the third floor and needed help. Firefighter Tirado's exit path had been blocked by fire, and he was unable to find his way out.

A defective throttle on the pumper supplying the initial attack line created water supply and pressure problems. Firefighters were unable to advance to the third floor to rescue Firefighter Tirado. The fire on the third floor grew to a point where it was impossible for firefighters to control it with handlines. An aerial master stream was used to darken down the fire and allow firefighters to access the third floor. After a number of attempts, Firefighter Tirado was discovered in a third-story bedroom.

The cause of death was listed as asphyxiation. Firefighter Tirado's carboxyhemoglobin level was found to be 65%. The fire was caused by an unsupervised 12 year old girl that was attempting to light a stove. The children that were reported trapped were actually out of the building.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-18. (<http://www.cdc.gov/niosh/face200118.html>)

May 14, 2001 - 8:10 p.m.

Willard Charles Christoffer, Probationary Firefighter

Age 54, Paid-on-Call

Western Springs Fire Department, Illinois

Firefighter Christoffer was engaged in a regularly scheduled training night. He was involved in an activity that had firefighters ascend a fully extended 105-foot aerial ladder, lock into the tip with

a ladder belt, use the steps at the top of the ladder, and then descend the ladder. The ladder was elevated to 65 degrees.

Firefighter Christoffer climbed the ladder and paused for a moment three-quarters of the way up and firefighters on the ground asked if everything was "okay," and he responded that he was fine. Firefighter Christoffer continued to the tip of the ladder and deployed the steps. Firefighter Christoffer began his descent and at the 65-foot level, he appeared to fall backward. He made no attempt to catch himself or call for help.

Firefighter Christoffer fell down the bed of the ladder and landed on the turntable. Medical aid was provided immediately, and Firefighter Christoffer was transported to a nearby hospital. He was pronounced dead at the hospital.

The cause of death was listed as multiple injuries that resulted from a fall from height. Coronary arteriosclerosis was also listed as a contributing factor.

May 16, 2001 - Time Unknown

Ritchie J. Eutsler, Captain

Age 30, Career

Republic Fire Department, Missouri

Captain Eutsler died in his sleep in the fire station while on-duty. His death was discovered by the oncoming shift at approximately 6:40 a.m. The cause of death was a seizure. Captain Eutsler had a history of seizures.

May 22, 2001 - 3:56 p.m.

Lawrence James Webb, Firefighter

Age 36, Career

Newark Fire Department, New Jersey

Firefighter Webb responded as a member of an engine company to a reported fire in a 2½-story wood-frame building. Upon arrival, Firefighter Webb's company officer reported a working fire on the top floor of the building.

Firefighter Webb stretched a 1¾-inch handline to the fire floor and operated the line at that location. An order to evacuate the building was given, but Firefighter Webb either did not hear or was unable to comply with the order. He was found face down with his facepiece off and not breathing. He was removed from the building while receiving CPR, and he was transported to the hospital.

The cause of death was listed as asphyxiation due to smoke inhalation. Firefighter Webb's carboxyhemoglobin level was 43%.

The fire was electrical in nature and ruled accidental.

June 2, 2001 - 4:15 a.m.

Travis Lee Brown, Firefighter

Age 30, Volunteer

Dearborn Area Fire Protection District, Edgerton, Missouri

Firefighter Brown was the right front seat passenger in a 1,000-gallon tanker responding to a mutual-aid request for assistance at a structure fire.

As the tanker responded, it met another fire department vehicle responding in the other direction. Although the approaching apparatus stayed in its lane, the driver of the tanker moved to the right to allow the other vehicle to pass. In the process of moving to the right, the right wheels of the tanker left the roadway. The tanker traveled 140 feet on the right shoulder before the driver steered left to bring the truck back on the road. The tanker crossed the road, veered to the left side of the road, and impacted a grassy/rocky hill. The tanker overturned and came to rest 105 feet from the point at which it left the roadway. Firefighter Brown was ejected.

A firefighter from a local fire department was charged with setting the structure fire. Firefighter Brown was not wearing a seat belt. The cause of death was multiple trauma.

June 10, 2001 - Time Unknown

James A. Clingenpeel, Captain

Age 38, Volunteer

Rosehill Fire Department, Texas

Captain Clingenpeel developed chest pains while participating in a hose and pumping training evolution. He was transported to the hospital and admitted. A bypass operation was performed, but Captain Clingenpeel did not recover. Captain Clingenpeel died on June 20, 2001.

(fire department online www.fire-ems.net/firedept/view/TomballTX)

June 15, 2001 - 10:45 a.m.

Carl Vernon Cook, Sr., Captain

Age 55, Career

Birmingham Fire and Rescue Service, Alabama

Captain Cook was participating in a job task analysis (physical agility test) prior to returning to duty after being off for health reasons. He completed the test and was assisted by other firefighters in removing his protective clothing and SCBA. After he complained about not feeling well, firefighters provided Captain Cook with oxygen.

A few moments later, Captain Cook became unresponsive and was found to be pulseless and not breathing. CPR and ALS medical care was provided at the scene and on the way to the hospital. Despite these steps, he did not recover and was pronounced dead 43 minutes after he became ill. The cause of death for Captain Cook was listed as cardiac arrest.

The illness that forced Captain Cook off regular duty was cardiac related. He had undergone cardiac catheterization and had been released back to work by his personal physician.

For additional information on this incident, refer to NIOSH Fire Fighter Fatality Investigation F2001-25. (*fire department online www.ci.bham.al.us/fire*) (*<http://www.cdc.gov/niosh/face200125.html>*)

June 16, 2001 - 5:00 p.m.

Jeffrey Vaden Chavis, Firefighter

Age 22, Career

Lexington County Fire Service, South Carolina

Firefighter Chavis and members of his department were dispatched to a report of a residential structure fire. When firefighters arrived on scene, the patio style home was well involved and fire was extending to a second home.

Firefighter Chavis relieved another firefighter who had run low on air. He entered an open garage with a charged hoseline and began to apply water to the fire. The garage was situated below the living area above. Five minutes after taking over the handline, Firefighter Chavis was knocked to the ground by a partial collapse of the floor/ceiling assembly above the garage. Firefighter Chavis began to crawl toward the garage door opening with burning debris on top of him. As he neared safety, the remainder of the garage floor/ceiling assembly and the garage door fell on top of him.

Firefighter Chavis' SCBA high-pressure line burned through and he was exposed to direct flame contact for over a minute. Other firefighters and civilians on scene came to Firefighter Chavis' aid. He was transported to the hospital by a medical helicopter. He suffered 2nd and 3rd degree burns over 50% of his body.

Firefighter Chavis died of complications of his burns on July 12, 2001.

The Lexington County Fire Service was fined \$3,250 by the South Carolina State Occupational Safety and Health Administration for work safety violations that occurred at the fire where Firefighter Chavis was injured. The major violations included lack of supervision by a commander and lack of communications between the interior and exterior of the hazard zone. A lack of staffing was also cited, 30 minutes into the incident only 5 firefighters were on the scene.

June 17, 2001 - 2:30 p.m.

John J. Downing, Firefighter First Grade

Age 40, Career

Brian D. Fahey, Firefighter First Grade

Age 46, Career

Harry S. Ford, Firefighter First Grade

Age 50, Career

Fire Department City of New York, New York

Fire companies were dispatched to a report of a fire in a hardware store. The first-arriving engine company, which had been flagged down by civilians in the area prior to the dispatch, reported a working fire with smoke venting from a second-story window.

A bystander brought the company officer from the first-arriving engine company to the rear of the building where smoke was observed venting from around a steel basement door. The first-arriving command officer was also shown the door and ordered an engine company to stretch a line to the rear of the building. A ladder company was ordered to the rear to assist in opening the door; Firefighter Downing was a member of this company. The first-due rescue company, including Firefighters Fahey and Ford, searched the first floor of the hardware store and assisted with forcible entry on the exterior.

The incident commander directed firefighters at the rear of the building to open the rear door and attack the basement fire. Firefighters on the first floor were directed to keep the interior basement stairwell door closed and prevent the fire from extending. The rear basement door was reinforced, and a hydraulic rescue tool was employed to open it. Once the first door was opened, a steel gate was found inside, further delaying fire attack.

Firefighters Downing and Ford were attempting to open basement windows on the side of the building, and Firefighter Fahey was inside of the structure on the first floor.

An explosion occurred and caused major structural damage to the hardware store. Three firefighters were trapped under debris from a wall that collapsed on the side of the hardware store; several firefighters were trapped on the second floor; firefighters who were on the roof prior to the explosion were blown upwards with several firefighters riding debris to the street below; and firefighters on the street were knocked over by the force of the explosion.

The explosion trapped and killed Firefighters Downing and Ford under the collapsed wall; their deaths were immediate. Firefighter Fahey was blown into the basement of the structure. He called for help on his radio, but firefighters were unable to reach him in time.

The cause of death for Firefighters Downing and Ford was internal trauma, and the cause of death for Firefighter Fahey was listed as asphyxiation. Firefighter Fahey's carboxyhemoglobin level was found to be 63%.

In addition to the three fatalities, 99 firefighters were injured at this incident. The fire was caused when children - two boys, ages 13 and 15 - knocked over a gasoline can at the rear of the hard-

ware store. The gasoline flowed under the rear doorway and was eventually ignited by the pilot flame on a hot water heater.

June 18, 2001 - 2:16 p.m.

Jeremy Chandler, Firefighter

Age 27, Volunteer

Grant County Fire District #5, Washington

Firefighter Chandler was operating a water tanker (tender) at the scene of a 20-acre wildland fire where he was unloading the hose when he suddenly collapsed. Other firefighters came to his aid and provided CPR. The cause of Firefighter Chandler's death was an abnormal heart rhythm. (*fire department Web page <http://www.fire-ems.net/firedept/view/MosesLakeWA/>*)

June 24, 2001 - 6:00 p.m.

Jack Hamilton Fowler, Jr., Fire Chief

Age 46, Career

Pueblo West Fire Department, Colorado

Chief Fowler was returning to the fire station after the completion of response team training. He was driving his personal motorcycle and was involved in a collision with a car. He sustained critical injuries and was pronounced dead at a local hospital upon his arrival.

June 30, 2001 - 12:10 a.m.

Joseph Miles Vargason, Fire Police Officer

Age 69, Volunteer

Maine Fire Department, New York

Fire Police Officer Vargason was directing traffic at the scene of a motor vehicle fire. He was equipped with an orange helmet and vest, as well as a flashlight. As he directed traffic, Fire Police Officer Vargason was struck by a pickup truck. Fire Police Officer Vargason was cared for by firefighters at the scene and en route to the hospital, but he died later that morning.

The pickup truck driver was charged with driving while intoxicated. The motor vehicle fire occurred about 40 feet from Fire Police Officer Vargason's house.

July 10, 2001 - 8:01 a.m.

Cynthia J. Verberg, Firefighter-EMT

Age 47, Part-Time (Paid)

Clayton Fire Department, Ohio

Firefighter-EMT Verberg and three other firefighters were conducting standard fire hydrant maintenance duties. The first team of two firefighters removed the caps and opened each hydrant.

Firefighter-EMT Verberg and another firefighter closed each hydrant when the water ran clear and then lubricated and reinstalled the caps.

After completing maintenance on a hydrant, Firefighter-EMT Verberg took her seat on the passenger side of their ambulance and the other firefighter drove. As they proceeded out of a dead end street, a large portion of a dead tree fell onto the cab of the ambulance. Firefighter-EMT Verberg was killed and her partner was injured.

Removal of the tree to gain access to Firefighter-EMT Verberg was very difficult (the tree was later weighed and found to be in excess of 3,700 pounds). Firefighters were eventually able to access Firefighter-EMT Verberg's neck and hands and found no pulse. It is believed that she died instantly.

The cause of death was listed as compressional asphyxia.

July 10, 2001 - 11:45 a.m.

Douglas William Gilbert, Pilot

Age 52, Wildland Contract

Craigmont Air Services under contract to the Idaho Department of Lands

Pilot Gilbert was operating a single-engine air tanker while fighting a 500-acre fire. The Cottonwood Creek Fire was located in the Idaho backcountry south of the Salmon River.

Pilot Gilbert was preparing to make his second retardant drop of the day and was in radio contact with firefighters on the ground and with other aircraft. For reasons unknown, the aircraft crashed.

The National Transportation Safety Board is investigating the incident.

(The NTSB report is available online at http://www.nts.gov/nts.gov/query.asp#query_start -- use NTSB Accident Number SEA01FA127)

July 10, 2001 - 5:24 p.m.

Thomas Lee Craven, Squad Boss

Age 30, Wildland Part-Time

Karen Lee FitzPatrick, Firefighter

Age 18, Wildland Part-Time

Jessica Lynn Johnson, Firefighter

Age 19, Wildland Part-Time

Devin Andrew Weaver, Firefighter

Age 21, Wildland Part-Time

United States Department of Agriculture, Forest Service, Washington

The Thirtymile Fire began when a picnic cooking fire was abandoned and spread to the surrounding forest. The fire was located in the Chewuch River Canyon, about 30 miles north of Winthrop, Washington.

The Northwest Regulars #6, a 21-person Type 2 crew from the Okanogan-Wenatchee National Forest, was dispatched to the fire in the early morning hours of July 10, 2001. The crew arrived at the fire at approximately 9:00 a.m. After a safety briefing, the crew went to work at 11:00 a.m.

The crews worked until approximately 3:00 p.m. when they stopped to eat, rest, and sharpen their tools. About 4:00 p.m., they responded to a request for help from another crew in the area; two of the three squads were sent to assist. The fire began to develop quickly, and the decision was made to leave the area. The road to safety was cut off by fire progress.

The incident commander selected a site near the river that was rocky and had less vegetation than other areas in the canyon. Although several firefighters congregated above the road to monitor the fire, they were not prepared for the suddenness with which it arrived. Six firefighters, including the four that died, deployed their fire shelters above the road.

After the fire passed, it was learned that Squad Boss Craven and Firefighters Fitzpatrick, Johnson, and Weaver had been killed. The cause of death for all four firefighters was asphyxia due to inhalation of superheated products of combustion.

The Forest Service conducted a detailed assessment of the incident. The major findings of the report were:

- The combination of weather and fuel conditions created extraordinary circumstances for fire growth on July 10th.
- Potential fire behavior was consistently underestimated throughout the incident.
- In spite of the readily available water, relatively little water was applied to the fire during the initial attack phase. This was largely due to operational problems with pumps and hoses, as well as delays in availability of a Type III helicopter.
- The fatalities and injuries all occurred during fire shelter deployment. Failure to adequately anticipate the severity and timing of the burnover, and failure to use the best location and proper deployment techniques contributed to the fatalities and injuries.
- Leadership, management, and command and control were all ineffective due to a variety of factors, such as the lack of communications and miscommunications, fatigue, lack of situational awareness, indecisiveness, and confusion about who was in control.
- Two civilians were involved in the entrapment due to a failure to properly close a potentially hazardous area.
- All 10 Standard Fire Orders were violated or disregarded at some time during the course of the incident.
- Ten of the 18 Watch Out Situations were present or disregarded at some time during the course of the incident.

- Records indicated that personnel on the Thirtymile Fire had very little sleep prior to their assignments, and mental fatigue affected vigilance and decision making.
- District fire management personnel did not assume incident command when the size and complexity of the fire exceeded the capacity of the Northwest Regulars #6.
- The Northwest Regulars #6 crew commander served both as incident commander and crew boss. Command roles on the Thirtymile Fire were unclear and confusing to those in command of the incident, to the rest of the crew, and to others associated with the fire.

The complete report is available online at <http://www.fs.fed.us/r6/wenatchee/fire/thirtymile-reports.html>

July 16, 2001 - 2:02 p.m.

Eddie Dean Mathis, Lieutenant

Age 45, Volunteer

Dallas Volunteer Fire Department, North Carolina

Lieutenant Mathis was responding to a car/pedestrian incident from his place of work in a nearby community. As Lieutenant Mathis rounded a left-hand curve, a vehicle traveling in the opposite direction crossed the center line and impacted the motorcycle operated by Lieutenant Mathis.

The motorcycle left the roadway, and Lieutenant Mathis was thrown over 16 feet past the final resting place of the motorcycle. The crash was reported and local emergency personnel responded. When EMS and fire department personnel arrived, Lieutenant Mathis was alert and oriented. His left leg had been amputated below the knee. His condition was serious, so he was transported to the hospital by medical helicopter.

During transport to the hospital, Lieutenant Mathis' condition worsened. Vital signs were lost during the flight, and he was pronounced dead shortly after his arrival at the hospital.

Lieutenant Mathis was wearing a helmet at the time of the collision. The cause of death was listed as multiple blunt trauma.

July 17, 2001 - Time Unknown

Jeffrey T. White, Captain

Age 26, Volunteer

South Amboy Fire Department, New Jersey

Captain White was assisting other firefighters with cleanup after the close of the department's annual carnival. The firefighters took a break and decided to try out a three-story slide ride. Rain water made the slide more slippery than expected. Captain White traveled so quickly that he bounced and became airborne. Captain White sustained a severe head injury.

EMS personnel on the scene attended to him, and he was transported to a local hospital in critical condition. Captain White was on life support in the hospital but died on July 19, 2001.
(fire department Web address www.southamboyfire.org)

July 22, 2001 - 5:00 a.m.

Donald Dean Myrick, Firefighter

Age 49, Volunteer

Ludlow Fire Protection District, Illinois

Firefighter Myrick was responding from his residence to a report of a vehicle crash requiring extrication.

As he responded, the right wheels of Firefighter Myrick's personal vehicle left the roadway. Firefighter Myrick oversteered to the left and the vehicle began to slide. The vehicle turned onto its left side and slid off the road. After leaving the road, the vehicle rolled onto its top.

Firefighter Myrick was not wearing a seat belt. At some point during the crash, Firefighter Myrick's head was crushed between the road and the door frame. The crash was not discovered until morning. Firefighter Myrick was pronounced dead at the scene.

(fire department Web site www.fire-ems.net/firedept/view/Ludlow2IL)

July 23, 2001 - Time Unknown

William Karnes, Firefighter

Age 45, Volunteer

Summersville Fire Department, Kentucky

Firefighter Karnes was assisting other firefighters with the disassembly of a tent that had been used for a fire department fish fry fundraiser. He started to feel ill and was given oxygen by an EMT. He was transported to the hospital but died of a heart attack.

July 26, 2001 - 2:00 p.m.

Kirk James Shafer, Engineer

Age 36, Career

North Central Fire Protection District, California

Engineer Shafer was becoming acquainted with a new engine apparatus that had recently been delivered to his department. The engine was not yet in service. Another firefighter had brought his child to the fire station and had requested and received permission to allow the child to operate a small hoseline off of the new unit.

The apparatus was parked near a 500-gallon water storage tank. A 2½-inch hose line was connected to a discharge on the water tank and to a discharge on the new engine to fill the engine's booster tank. Connecting a fill line to the discharge side of a pump was an unwritten

practice for members assigned to this fire station.

The high-pressure booster pump was engaged to charge the hoseline. The pump-to-tank valve (tank fill) was closed. The booster pump produced pressure that fed back through the fill line and over pressurized the water storage tank.

The tank failed near its bottom causing it to become airborne. Witness accounts estimated that the tank rose as high as 100 feet in the air. At the same moment, Engineer Shafer was either climbing into or out of the cab of the apparatus. The tank landed on the roof of the engine and struck Engineer Shafer.

Engineer Shafer received a severe head injury. Other firefighters came immediately to his aid, and ALS-level EMS care was provided. Despite these efforts, Engineer Shafer died the next day. A check valve present on the water tank discharge or associated with the booster pump would have prevented this incident. The practice of attaching a fill hose to the discharge side of the pump has been discontinued.

July 28, 2001 - 11:01 a.m.

Lazaro Martinez, Firefighter

Age 70, Volunteer

Fisher's Peak Fire Protection District, Colorado

Firefighter Martinez was participating in a live fire training exercise where he had been in a building in full structural protective clothing.

Firefighter Martinez left the building complaining of heat-related symptoms and was assessed by a paramedic. He appeared to be fine and was walking around talking with other firefighters while he drank water. Firefighter Martinez sat down and became unconscious.

Firefighters and paramedics onscene went to his aid immediately. At first, Firefighter Martinez had a weak pulse and agonal respirations. He then became pulseless and stopped breathing. ALS-level care was provided, including the administration of cardiac drugs and at least six defibrillation attempts. Firefighter Martinez was transported to the hospital where he later died.

The cause of death was listed as a heart attack. The carboxyhemoglobin level of Firefighter Martinez' blood, drawn at the hospital, was 22% and may have been a contributing factor to his death.

August 1, 2001 - 8:45 a.m.

Ralph "Warren" Blackmar, Firefighter

Age 66, Volunteer

South Foster Volunteer Fire Company, Rhode Island

Firefighter Blackmar was driving an engine back to the fire station after being cancelled while responding to a mill fire. Firefighter Blackmar became unconscious, the apparatus left the roadway, rolled over, and struck a utility pole.

A firefighter who had been following the engine and other rescue personnel responded to the scene. Firefighter Blackmar was found to be unresponsive. He was removed from the apparatus, CPR was initiated, and he was then transported to a local hospital. Firefighter Blackmar had been wearing his seat belt.

The cause of death was listed as a heart attack. Although they were likely not a factor in this incident, the rear brakes were found to be well out of adjustment in a post-collision inspection.

August 10, 2001 - 10:15 a.m.

James Monroe Pelton, Fire Chief

Age 58, Career

Mason Fire Department, Michigan

Chief Pelton was traveling to a meeting in his personal vehicle. The use of his personal vehicle and his attendance at the meeting were approved in advance by his department.

The driver of a compact car ran a stop sign on a road that intersected with the road that Chief Pelton was traveling. The compact car impacted a Sport Utility Vehicle (SUV) that was traveling toward Chief Pelton's vehicle. The SUV went airborne and landed on top of Chief Pelton's pickup. Chief Pelton was killed instantly.

After the collision, the SUV rolled off Chief Pelton's vehicle and impacted another car. Chief Pelton's pickup continued through the intersection, left the roadway, and impacted a house.

The driver of the compact car was charged with negligent homicide.

August 13, 2001 - 4:00 p.m.

Ronald T. Kreamer, Firefighter

Age 34, Volunteer

Frontier Volunteer Fire Company, Niagara Falls, New York

A lightning strike caused a fire in a three-story apartment complex for the elderly. Firefighter Kreamer and members of his department responded.

Firefighter Kreamer initially assisted with the evacuation of the building and then joined firefighting efforts. About an hour into the incident, during overhaul on the third floor, Firefighter Kreamer collapsed.

Firefighters carried Firefighter Kreamer to the second-floor landing where paramedics began to care for him. CPR and ALS-level medical services were provided. Firefighter Kreamer was transported by ambulance to the hospital where he later died.

The cause of death was listed as a heart attack resulting from arteriosclerotic heart disease. (fire department Web site is <http://members.tripod.com/~FrontierFire/home.html>)

August 18, 2001 - 7:30 a.m.

Richard D. "Rick" Shoaf, Jr., Firefighter/EMT

Age 43, Volunteer

Swarthmore Fire & Protection Association, Pennsylvania

Firefighter/EMT Shoaf responded to his fire station for a medical emergency where he was scheduled to be the driver of the ambulance. Upon his arrival at the fire station, Firefighter/EMT Shoaf collapsed of an apparent heart attack.

Firefighters and medical personnel in the station began treatment and summoned paramedics. Firefighter Shoaf was transported to the hospital in the ambulance that he was originally supposed to drive. Firefighter Shoaf was pronounced dead at the hospital some time later.

August 19, 2001 - 12:45 p.m.

John Robert Hazlett, Firefighter

Age 52, Volunteer

Odell Fire District, Oregon

Firefighter Hazlett was returning to his fire district with a 2,000-gallon tanker (the water tank was empty) that had undergone water tank repairs. Firefighter Hazlett was the driver and sole occupant of the tanker.

As Firefighter Hazlett drove on a freeway at a speed estimated at 60 miles per hour, the right front tire of the tanker experienced a blowout. The tanker veered to the right, crossed the shoulder, and went into a level field of grass and rocks. The tanker traveled at an angle through the field for about 300 feet before striking a number of large boulders and a tree.

The cab of the tanker was severely damaged, and Firefighter Hazlett was trapped in the vehicle. Responding firefighters removed him from the tanker, where he was pronounced dead at the scene.

Firefighter Hazlett was not wearing a seat belt. The cause of death was listed as blunt force trauma to the head, abdomen, the upper extremities, and the lower extremities.

August 27, 2001 - 6:35 p.m.

Lawrence L. Groff, Air tanker Pilot

Age 55, Wildland Contract

Lars B. Stratte, Air tanker Pilot

Age 45, Wildland Contract

San Joaquin Helicopters under contract to the California Department of Forestry and Fire Protection

Eight air tankers and three helicopters were working a 270-acre wildland fire south of Ukiah, California. The fire began near a suspected methamphetamine lab. Air tanker Pilots Groff and Stratte were operating air tankers carrying 800 gallons of fire retardant each.

The two aircraft collided above the fire as one prepared to make a drop while the second was joining the rotation orbit of ready aircraft. Both pilots were killed and both aircraft were completely destroyed.

Two men were charged with arson, murder, and drug production charges in relation to the origin of the fire.

(The NTSB reports are available online at http://www.nts.gov/ntsb/query.asp#query_start -- use NTSB Accident Numbers LAX01GA291A and LAX01GA291B)

August 28, 2001 - 2:00 p.m.

Michael Gorumba, Firefighter

Age 27, Career

Fire Department City of New York, New York

Firefighter Gorumba's engine company and a number of other fire companies were fighting a large fire in an auto shop. Firefighter Gorumba had assisted with handline deployment and had assisted with stretching a line to supply a tower ladder.

After a structural collapse, Firefighter Gorumba could not be accounted for. A Mayday was transmitted, and he was found in the cab of his engine company, still dressed in his gear.

CPR was begun immediately and Firefighter Gorumba was treated by paramedics onscene and en route to the hospital. Despite all efforts, Firefighter Gorumba was pronounced dead at the hospital. Firefighter Gorumba had graduated from the Fire Department City of New York (FDNY) training academy in late July of 2001.

Firefighter Gorumba had undergone extra heart tests before becoming a firefighter. He had a heart murmur as a child and the tests revealed a condition known as "mitral valve prolapse." The condition, however, was not seen as serious enough to prevent Firefighter Gorumba from working as a firefighter.

August 29, 2001 - 8:20 p.m.

Darryl J. Dzugen, Captain

Age 36, Career

Hillsborough County Fire Rescue, Florida

Captain Dzugen was exercising by walking in a parking lot next to the fire station. He had a portable radio with him. He heard the tones go off inside his station, began to run toward the station, and suddenly collapsed. The dispatch was for another company so firefighters did not think to look for him.

Workers from a nearby business ran into the fire station and told on-duty firefighters that Captain Dzugen had collapsed. Firefighters immediately ran to his aid and provided ALS-level care. Captain Dzugen was transported to a local hospital where efforts to revive him continued. Unfortunately, these efforts were not successful and Captain Dzugen did not recover.

The cause of death was arteriosclerotic and hypertensive heart disease.

August 31, 2001 - 9:00 a.m.

Richard Hernandez, Chief Pilot

Age 37, Wildland Contract

Santi Arovitx, Co-Pilot

Age 28, Wildland Contract

Kip Krigbaum, Assistant Chief Maintenance Mechanic

Age 45, Wildland Contract

Columbia Helicopters of Oregon, under contract to the United States Forest Service

The three firefighters were aboard a large helicopter performing mechanical testing prior to replacement (of the helicopter) for firefighting duties.

The helicopter was a Vertol 107-II, capable of hauling 11,000 gallons of water. The bucket was attached to the bottom of the aircraft.

For reasons unknown, the helicopter crashed and burned, killing all three on board. Witnesses to the crash reported that the aircraft was "wobbling," and one witness reported seeing one of the rotors come off just before the crash.

(The NTSB report is available online at http://www.nts.gov/ntsb/query.asp#query_start -- use report number SEA01MA163)

September 3, 2001 - 10:15 a.m.

David Ray Rendek Jr., Firefighter

Age 24, Wildland Part-Time

United States Forest Service, Bitterroot National Forest, Montana

At approximately 1:00 a.m., Firefighter Rendek and other wildland firefighters were organized as a crew and sent to size up a wildland fire near Sula, Montana. When they arrived, they found that it was too dangerous to fight the fire in the dark due to steep terrain and a large amount of dead wood. The decision was made to wait until morning to fight the fire. The crew spent the night laying hose and cold trailing hot spots outside of the main fire area.

The next morning, Firefighter Rendek was cutting down dangerous trees (falling snags) with a chain saw. A helicopter equipped with a bucket was working the fire but was not in the same area where Firefighter Rendek was working.

Handcrews were about to begin work. Firefighter Rendek said that he only needed a few more minutes to work and then he was going to rest. As he walked downhill to his work area, a pine tree with a diameter of 11 inches fell and struck Firefighter Rendek on the head and shoulders.

When other firefighters reached Firefighter Rendek, he was not breathing and a pulse could not be found. CPR was initiated and then stopped when Firefighter Rendek began to breathe on his own. Firefighter Rendek's condition deteriorated and CPR was reinitiated.

Firefighter Rendek was removed from the remote area where he was injured via a pickup truck and All Terrain Vehicle (ATV). CPR was in-progress until Firefighter Rendek was placed on a medical helicopter; a total of approximately one hour and 45 minutes later. Firefighter Rendek died in flight. The cause of death was listed as blunt force injuries to the head.

The fire was caused by a lightning strike.

September 4, 2001 - 7:11 a.m.

William E. Bennett, Fire Chief

Age 49, Volunteer

Kennedy Volunteer Fire Department, New York

Chief Bennett was responding to a medical emergency in his fire department command vehicle, a 2001 Dodge pickup. Chief Bennett's vehicle and an ambulance were responding together. When the ambulance lost sight of Chief Bennett's vehicle, they began to search for it.

Chief Bennett had entered a left-hand curve and drove off of the right side of the road. He attempted to bring the vehicle back on the road but the rear end came around and the vehicle began to roll. The pickup rolled several times and came to rest on its wheels in a field. Chief Bennett was ejected at some point and sustained severe head injuries. He was transported to the hospital where he was pronounced dead a short time later.

The police report cited excessive speed and slippery pavement as factors in the collision. Severe thunderstorms were in the area at the time of the crash.

(fire department Web site www.geocities.com/kennedyfire)

September 6, 2001 - 3:52 p.m.

Robert A. Augustyn, Lieutenant

Age 57, Career

Cicero Fire Department, Illinois

Lieutenant Augustyn and his engine company responded to a vehicle crash on a bridge. Upon their arrival, fire department ambulance staff released the engine from the call. Lieutenant Augustyn had one firefighter move a law enforcement vehicle so that the engine could back down from the bridge. Lieutenant Augustyn was on the driver's side of the engine and motioned the driver to back up. He also used his portable radio to speak with the driver. The driver began to slowly back up the apparatus.

Lieutenant Augustyn either stumbled or was hit by the back step of the engine. He ended up perpendicular to the apparatus and was crushed underneath.

Bystanders and other firefighters yelled and honked their horns to get the driver's attention. The apparatus was stopped. Firefighters from Lieutenant Augustyn's company and from the ambulance began treatment immediately. The apparatus was raised with airbags from a responding truck company and Lieutenant Augustyn was transported to the hospital.

Lieutenant Augustyn died the next day. The cause of death was multiple trauma.

September 8, 2001 - 9:57 p.m.

Allan MaCrae "Mac" Marriott, Firefighter

Age 46, Volunteer

Port Townsend Fire Department, Washington

Firefighter Marriott was assigned as the engine operator for an engine company that responded to a report of a boat fire on a dock. The area was very crowded due to a boating festival that was underway.

Firefighter Marriott was assigned to attach a supply line to a hydrant and then to extend a 2½-inch line wye'd off into two 1¾-inch lines as soon as additional firefighters arrived to assist him. Firefighter Marriott was walking past the pump panel on his engine when he was struck with a heart attack. Other firefighter/EMT's and firefighter/paramedics were very close by and immediately began treatment. Firefighter Marriott received ALS-level care and was transported to a nearby hospital. He was later pronounced dead by an emergency room physician.

The report of a boat fire turned out to be a barbeque aboard a boat.

September 13, 2001 - 8:50 a.m.

Charles Rawls Drennan, Jr., Assistant Fire Chief

Age 50, Career

Denver Fire Department, Colorado

Assistant Chief Drennan went to the home of a fire captain to bring the captain to a meeting with the fire chief. Assistant Chief Drennan and the captain had been friends for a number of years. The captain had called Assistant Chief Drennan the night before to discuss personal problems with paranoia and depression and they had agreed to meet the next morning.

Shortly after Assistant Chief Drennan arrived at the captain's home, the captain walked into the room armed with a high-caliber pistol. Assistant Chief Drennan and the captain's wife tried to convince the captain to put the weapon down, but the captain fired. Assistant Chief Drennan was hit twice in the chest and was dead upon arrival of law enforcement officials.

The captain's wife was able to escape. The captain killed himself prior to the arrival of law enforcement officials. Assistant Chief Drennan's son is a member of the Denver Fire Department. Press accounts cited the tragedies of September 11th as a possible contributor to the captain's recent depression.

September 14, 2001 - 9:31 p.m.

George F. "June" Danielson, Jr., Firefighter

Age 77, Volunteer

Mine Hill Fire Department, New Jersey

Firefighter Danielson had responded to the fire station for a chimney fire incident. When he arrived, the first two pieces of apparatus were already dispatched. He stayed at the station to stand-by in case another piece of apparatus was needed. Firefighters completed the incident and returned to the station.

Firefighter Danielson and another firefighter attempted to stop traffic in front of the fire station to allow the returning apparatus to back into the station. Firefighter Danielson was equipped with a flashlight with an orange wand extension.

Firefighter Danielson was struck by a car, thrown over the hood, and then into the roadway. Firefighters came immediately to his aid, and he was transported to a local hospital where he remained in the hospital until his death on November 8, 2001. The cause of death was listed as an anoxic brain injury, aspiration, and multiple blunt force trauma.

The driver of the vehicle was not charged. The police report on the collision cites dark clothing worn by Firefighter Danielson and the numerous flashing lights on the apparatus waiting to back into the station as factors in the incident.

September 16, 2001 - Time Unknown

Willie Barns, Fire Police Lieutenant

Age 66, Volunteer

Country Lakes Fire Company #1, New Jersey

Fire Police Lieutenant Barns was responding to perform traffic control duties near the scene of an electrical transformer fire. Lieutenant Barns was driving his personal vehicle.

At some point during the response, Lieutenant Barns became ill and pulled to the side of the road. Firefighters returning from the original incident saw his car on the side of the road and, thinking that he was having mechanical difficulties, discovered him slumped over the wheel.

Firefighters provided medical care, and Lieutenant Barns was transported to the hospital where he was later pronounced dead of a heart attack.

(fire department Web page www.fire-ems.net/firedept/view/BrownsMillsNJ)

September 25, 2001 - 1:00 a.m.

Clarence Kreitzer, Firefighter

Age 78, Volunteer

Bowie Volunteer Fire Department, Company 19, Maryland

A tornado struck the campus of the University of Maryland at College Park. The tornado destroyed several buildings being used as the temporary home of the Maryland Fire & Rescue Institute (MFRI).

The Bowie Volunteer Fire Department was called out to, among other things, provide incident scene lighting for the recovery activities. Firefighter Kreitzer operated a specialized floodlight unit on-scene. Once clear of the scene, Firefighter Kreitzer returned to the fire station, told others that he was not feeling well, and headed home.

A short distance from the fire station, Firefighter Kreitzer experienced a heart attack. His car left the road and struck a guard rail. Firefighters in the station were alerted by a passerby and ran to the scene. Firefighter Kreitzer was rushed back to the fire station, and emergency medical care was provided. Unfortunately, Firefighter Kreitzer did not recover.

The tornado also killed the two college-age daughters of past Fire Chief and MFRI Assistant Director F. Patrick Marlatt. Chief Marlatt was trapped in the debris of the MFRI buildings and had to be extricated. His daughters had just left his office; their car was thrown 600-900 feet.

September 25, 2001 - 7:15 p.m.

Bradley P. Golden, Firefighter

Age 19, Volunteer

Westmoreland Fire District - Lairdsville Fire Department, New York

Firefighter Golden was participating in live fire structural firefighting training at an old farmhouse that had been acquired by the department for training. Firefighter Golden was instructed to go to the second story of the structure and play the role of a victim. A burn barrel full of Class "A" materials was present on the second floor.

A couch was ignited at the bottom of the stairs that led from the bottom floor to the second floor. The fire in the couch developed quickly and spread to the second story, trapping Firefighter Golden and two other firefighters. Firefighter Golden, who was wearing full structural protective clothing and SCBA, was trapped and disoriented.

Firefighters were summoned from a staging area and removed one trapped firefighter. Firefighter Golden was not immediately removed and died of asphyxiation.

Firefighter Golden joined his department three weeks prior to the fatal training incident. An assistant fire chief was charged and convicted of criminally negligent homicide for lighting the couch on fire.

September 26, 2001 - 9:30 p.m.

Daniel Neil Woodward, Captain

Age 32, Volunteer

Blackman Volunteer Fire Department, Florida

Captain Woodward was at home speaking with his wife on the telephone when he noticed smoke coming from a bathroom and evacuated his 5 year old daughter. The fire department was notified and arrived on-scene.

Captain Woodward assisted responding firefighters with the extinguishment of the fire. Once the home was cleared of smoke, Captain Woodward and other firefighters entered the residence to assess the damage. Firefighter Woodward began to complain of chest pains and collapsed while walking to a nearby ambulance.

He was treated at the scene and en route to the hospital but died of a heart attack. The fire was accidental and began in a bathroom exhaust fan.

At the time of the incident, Captain Woodward's wife was in New York City as a part of a disaster medical assistance team.

October 13, 2001 - 4:48 a.m.

Jay Paul Jahnke, Captain

Age 40, Career

Houston Fire Department, Texas

Captain Jahnke and his engine company were dispatched to a report of a fire in a 40-story residential high-rise. Upon their arrival, Captain Jahnke reported a working fire on the fifth floor of the building and requested a second alarm. While Captain Jahnke's driver attached lines to the building's fire department connection, Captain Jahnke and his firefighter climbed the stairs to the fire floor.

Upon their arrival on the fire floor, Captain Jahnke and his firefighter were joined by the captain and firefighter from a ladder company. The four firefighters entered the fire occupancy and began to apply water to the fire. The two firefighters ran low on air and exited to change their cylinders, leaving the two captains to fight the fire.

When the firefighters opened the stairway door to exit, conditions in the fire occupancy worsened dramatically. The captains decided to leave the apartment by following their hose line but soon became separated. Captain Jahnke became separated from the line and disoriented. The other captain was found in the stairwell by other firefighters and removed from the building.

Captain Jahnke called for help on his portable radio. Firefighters responding to his request were guided to his location by the sound of his PASS device. Despite their efforts, Captain Jahnke died of asphyxiation due to smoke inhalation.

There are a number of Jahnke's that serve the Houston Fire Department. The department's training academy is named for Captain Jahnke's uncle.

A full report on Captain Jahnke's death may be downloaded from the Houston Fire Department Web site - www.ci.houston.tx.us/hfd/index.html

October 13, 2001 - 11:00 a.m.

Kenneth James Frayne, Firefighter

Age 28, Volunteer

Channahon Fire Protection District, Illinois

Firefighter Frayne and other firefighters were participating in a dive rescue training exercise. Firefighter Frayne was performing the third exercise of the day. When he and his partner descended to a depth of 50 feet, Firefighter Frayne signaled his partner to accept a rope bag and then signaled that it was time to surface.

When Firefighter Frayne's partner reached the surface, he did not see Firefighter Frayne but assumed that he had gone to shore. Upon his arrival at the beach, the partner alerted an officer that he could not locate Firefighter Frayne. A search for Firefighter Frayne, on land and in the water, began.

Firefighter Frayne was found on the bottom of the lake and brought to the surface. When he was found, his mask and regulator were not in-place and his air cylinder was empty. Firefighter Frayne was brought to shore and ALS-level care was provided at the scene and en route to the hospital. Upon his arrival at the hospital, Firefighter Frayne received aggressive care but was pronounced dead after more than 40 minutes of resuscitative efforts.

The cause of death was listed as drowning. Over an hour passed from the time that Firefighter Frayne was discovered missing until he was found.

October 14, 2001 - 7:50 p.m.

Robert H. Marsh, Firefighter

Age 78, Volunteer

Cal-Nev-Ari Fire Department, Clark County Fire Department, Nevada

Firefighter Marsh responded to a report of a vehicle crash on a highway just over the California line. Firefighter Marsh was the sole occupant of a light rescue vehicle that was stationed at his home.

Firefighter Marsh spoke to other responding firefighters about three miles into California and reported that he had not located the crash. A few minutes later, all responding units were cancelled. The crew of an ambulance that had responded to the initial incident became concerned when Firefighter Marsh did not acknowledge the cancellation.

The ambulance retraced the route taken by Firefighter Marsh and found his apparatus off the side of the road approximately six miles into California. All of the vehicle's emergency lights were operating, and Firefighter Marsh was buckled into his seat belt.

The crew of the ambulance found that Firefighter Marsh had died. The cause of death was listed as a heart attack. He had undergone a department physical two months prior to his death. The exam was within normal limits with the notation that Firefighter Marsh had a history of coronary artery disease, respiratory disease, and hearing loss.

October 24, 2001 - 9:30 p.m.

Michael Gene Elliott, Firefighter

Age 46, Volunteer

Maple Rapids Fire Department, Michigan

Firefighter Elliott and members of his department were paged to respond to their station due to severe weather in the area. In accordance with department standard operating procedures, Firefighter Elliott was en route to pick up his daughter to ensure her safety prior to reporting to the fire station.

As he drove down a local road, a tree fell onto the cab of Firefighter Elliott's vehicle and crushed him. Local residents and rescuers used chain saws to remove the tree. Firefighter Elliott was most likely killed immediately.

October 25, 2001 - 11:32 a.m.

William Howzdy, Firefighter/President

Age 71, Volunteer

Glenn Dale Volunteer Fire Association, Maryland

Firefighter Howzdy was at the fire station organizing leftover materials from the department's annual open house. Each year, the Glenn Dale Fire Department constructs a fully furnished three-room house, then burns the house so that residents of their area can get a first-hand look at the damage caused in a residential fire. Firefighter Howzdy was sorting leftover materials and making arrangements to store them until the next year.

While working, he collapsed of an apparent heart attack. Other firefighters found him and began CPR immediately. Additional assistance was called and Firefighter Howzdy was transported to the hospital where he was pronounced dead less than an hour after becoming ill.

November 2, 2001 - 2:30 p.m.

Dennis Alan "Denny" Dart, Senior Firefighter

Age 62, Volunteer

Sugar Camp Volunteer Fire Department, Wisconsin

Firefighter Dart and members of his department responded to a report of a vehicle fire. Upon their arrival, they discovered a fully involved pickup truck. Firefighter Dart was running the pump panel and an attack line was advanced. Firefighters were having trouble opening the hood, so the chief began to don an SCBA to allow him to assist them.

Firefighter Dart walked to the rear of the truck to retrieve a pry bar. He walked about 10 feet back toward the front of the truck and suddenly collapsed. The fire chief went immediately to Firefighter Dart's side and found that he was not breathing. Firefighting efforts were stopped and all fire department members on-scene began to assist Firefighter Dart. CPR was begun until the arrival of an ambulance. Firefighter Dart died of a heart attack.

November 10, 2001 - 6:31 p.m.

Hairold "Bear" Strode, Firefighter

Age 46, Wildland Part-Time

Tennessee Department of Agriculture, Division of Forestry

Firefighter Strode was a member of a four-person hand crew constructing a fire break along the right flank of a fire near the head of a small, steep drainage on the Daddy Ridge Fire. The initial fire had been contained the day before but escaped its control line.

The members of the hand crew were using two leaf blowers and two rakes to move loosely compacted hardwood leaf litter in depths varying between six inches to over two feet. A spot fire made an extremely fast run up the drainage where Firefighter Strode was located. A firefighter working side-by-side with Firefighter Strode noticed fire advancing toward them up the drainage.

The firefighter tapped Firefighter Strode on the shoulder, pointed upward to their escape route, and told Firefighter Strode to leave the area immediately. The firefighter ran about 75 feet into a burned area and received a minor burn; Firefighter Strode was not with him.

Firefighters could not come to the assistance of the injured crew members for 3 - 3½ hours due to fire conditions. Firefighter Strode was killed when the fire burned over his position. The cause of death was listed as asphyxiation and burns.

November 19, 2001 - 2:14 p.m.

Clifford Andrew White, Jr., Firefighter

Age 21, Volunteer

Cameron Volunteer Fire Department, West Virginia

Firefighter White was the passenger in a 2,000-gallon tanker (tender) responding to a mutual-aid brush fire. The driver of the tanker negotiated several turns and changes in grade during the initial response. As the driver attempted to slow down in a turn, the brake pedal went to the floor and no braking effort was accomplished. The driver tried to pump the pedal but was not able to slow the vehicle. The driver told Firefighter White to jump from the vehicle but Firefighter White refused and buckled his seat belt.

The driver drove into a ditch on the side of the road in an attempt to slow the truck while he increased the engine RPMs in an attempt to get the truck into gear. The tanker came to the end of the ditch at a sharp turn and jumped back up onto the roadway. The apparatus crossed the roadway and then plunged down a 40-50 foot embankment. The truck flipped end over end; the chassis and the water tank separated. The driver and Firefighter White were trapped in the cab.

An engine company was responding on the same incident and was nearly struck by the water tank as it rolled downhill. After witnessing the crash, the engine firefighters went to the aid of the trapped firefighters. Both firefighters were talking when they reached the truck but Firefighter White stopped breathing shortly thereafter. Both firefighters were extricated from the crushed cab. The driver was transported to the hospital by medical helicopter.

The police report cited excessive speed and failure to maintain control as contributing factors in the crash. An inspection of the remains of the tanker found that the rear brakes were out of adjustment.

Firefighter White died of internal trauma.

November 20, 2001 - 5:30 p.m.

Paula Jane Varble, Fire Chief

Age 40, Volunteer

Arrey Derry Fire Department, New Mexico

Chief Varble responded to the report of a vehicle collision on a local highway. Since the scene of the collision was only about a mile from her house, she was the first fire department member on-scene. Chief Varble discovered that a vehicle that was being towed had separated from the tow vehicle and crashed. There were no injuries at the scene, so she told other responding firefighters to return to quarters. Chief Varble remained on-scene to wait for law enforcement. She spent about an hour at the crash site.

Upon returning home, Chief Varble complained to her husband that she was experiencing a severe headache. After some convincing, Chief Varble was transported to a local hospital in her personal vehicle. After an initial assessment at the local hospital, Chief Varble was flown by medical helicopter to a regional care facility.

By the time that Chief Varble's husband reached the regional care facility by ground, Chief Varble's condition had worsened. Chief Varble died on November 21, 2001. The cause of death was listed as a CVA (stroke).

December 11, 2001 - 10:45 p.m.

Debra Sinard, Firefighter

Age 43, Volunteer

White Pine Volunteer Fire Department, Tennessee

Firefighter Sinard was participating in simulated structural firefighting training. The training involved hoseline advancement in full structural protective clothing, including SCBA, but did not involve live fire. After completing the training, Firefighter Sinard complained of shortness of breath. She was placed on oxygen and took a breathing treatment. She refused the urging of other firefighters to go to the hospital but agreed to be driven home by other firefighters.

She was visited at home by other firefighters and stated that she was still experiencing difficulty breathing and was anxious. While other firefighters were in her home, Firefighter Sinard collapsed and went into cardiac and respiratory arrest. CPR was begun immediately and EMS was summoned.

Upon their arrival, EMS responders provided Firefighter Sinard with care, including three shocks from a defibrillator. Firefighter Sinard was transported to the hospital and was pronounced dead after her arrival. Firefighter Sinard died of a heart attack.

December 14, 2001 - 3:00 p.m.

Ralph E. Vance, Firefighter

Age 68, Volunteer

Elk Creek Fire Protection District, Conifer, Colorado

Firefighter Vance was the driver and sole occupant of a 2,500-gallon tanker (tender) responding to a report of a chimney fire. As the tanker began to round a left-hand curve, Firefighter Vance suffered a heart attack. The apparatus left the roadway, slid down a 100-foot embankment, collided with several trees and dirt berms, and came to rest on its left side.

Firefighter Vance was trapped in the cab of the truck and had to be extricated. Once removed, he was flown by medical helicopter to a regional hospital. He was pronounced dead some time later. Firefighter Vance was wearing his seat belt.

The incident to which Firefighter Vance had been responding was a false report.

December 15, 2001 - 11:45 a.m.

Darrell Dean "Ricky" Thomas, Assistant Fire Chief

Age 48, Career

Somerton/Cocopah Fire Department, Arizona

Assistant Chief Thomas was filling the water tank on a 500-gallon brush truck when he collapsed to the ground. The collapse was witnessed by another firefighter who summoned help and began CPR.

Despite efforts onscene and en route to the hospital, Assistant Chief Thomas died of a heart attack.

December 24, 2001 - 10:20 a.m.

David Butler, Firefighter

Age 43, Volunteer

Spring Branch Volunteer Fire Department, Texas

Firefighter Butler was responding to a structure fire in a fire department command unit pickup truck. When Firefighter Butler experienced a heart attack, the truck crossed into a median, ran over two road signs, drove along in the median for a third of a mile, and then drove into the opposing lanes of traffic and over a bridge. The truck was involved in a crash seven-tenths of a mile from the point at which it originally left the roadway. The truck then veered from the left side of the roadway and crashed into some trees and a rock wall before coming to rest.

A passerby, who was a retired EMT from a nearby city, found Firefighter Butler lying across the seat unrestrained and unresponsive. Firefighter Butler was treated at the scene and then flown by medical helicopter to a local hospital. The cause of death was listed as arteriosclerotic cardiovascular disease.

Pre-2001 Incidents

December 23, 1995, 2:08 p.m.

Donald E. "Snuffy" Souza, Captain

Age 59, Career

Centerville-Osterville- Marstons Mills Department of Fire-Rescue and Emergency Services, Massachusetts

Captain Souza was performing search and rescue duties at a two-alarm residential fire. As he was headed down the stairs into the basement, his right hand came into contact with an electrical circuit and his glove was blown off. The shock was severe enough to fracture Captain Souza's thumb into several pieces.

Captain Souza was removed from the building by other firefighters and transported to a local hospital.

The electrocution caused cardiac problems that forced Captain Souza's early retirement. The fire was caused by hot stove ashes that were left in a plastic bucket in the mudroom of the house.

Captain Souza died on May 30, 2001, as a result of cardiac complications.

July 9, 1997, 6:24 p.m.

Thomas Chester Gentry, Firefighter

Age 54, Volunteer

Largaro Volunteer Fire Department, Sandia, Texas

Firefighter Gentry was the driver and sole occupant of a 1,000-gallon pumper/tanker responding to a grass fire. As the pumper/tanker approached another fire truck, Firefighter Gentry applied the brakes and skidded 58 feet. The right wheels of the pumper/tanker left the roadway and produced approximately 91 feet of skid marks on the right shoulder. Firefighter Gentry steered left, leaving 27 feet of right wheel skid on the pavement. The rear end of the truck came around in a counter clockwise direction and the pumper/tanker began to roll.

The pumper/tanker crossed the centerline of the roadway and rolled into the opposing lane, the water tank separated from the truck, and the chassis continued into the ditch on the left side of the road. Firefighter Gentry was ejected.

Firefighter Gentry was transported to a local hospital where he was pronounced dead. The cause of death was severe head injuries. Firefighter Gentry was not wearing a seat belt.

May 22, 1999, Time Unknown
Linda A. Hernandez, Firefighter
Age 34, Career
Miami-Dade Fire Rescue, Florida

Firefighter Hernandez and her crew were performing ventilation duties on the roof of a fire-involved structure. Firefighter Hernandez was exposed to smoke during the incident. The fire involved a two-story apartment complex and eventually went to two alarms.

The smoke exposure caused her to contract chemically-induced asthma. Firefighter Hernandez was treated for her respiratory problems and worked light duty for the department.

The medications that were used to treat her asthma either caused a reaction that damaged her liver or directly damaged her liver. In June of 2000, Firefighter Hernandez received a liver transplant.

Firefighter Hernandez died of pneumonia on September 18, 2001.

January 17, 2000 - 12:03 p.m.
Charles E. Klick, Sr., Incident Commander
Age 67, Volunteer
Fiske Union Volunteer Fire Department, Louisiana

Firefighter Klick was the first firefighter to arrive on the scene of a wildland fire. When the first pumper arrived, Firefighter Klick pulled a hoseline and began to attack the fire. When the fire chief arrived at the scene in another pumper, Firefighter Klick told the chief that he was having difficulty breathing and complained of pain in his left arm and leg. Firefighter Klick was provided with oxygen and advised to go to the doctor.

Later that night, an ambulance responded to Firefighter Klick's home and transported him to the hospital. He had suffered a small stroke (CVA) and then suffered a major stroke a few days later in the hospital.

Firefighter Klick entered a coma and was on life support until his death on February 23, 2000. The death was caused by complications of his strokes. The wildland fire was caused when a trash burning fire got out of control.

Sources of Additional Information

Additional information about many of the firefighter fatalities presented in this Appendix is available from the sources below. Where known, the report number for each incident is listed in the Appendix along with the incident description. Many reports are available through the mail and the Internet.

NFPA International

1 Batterymarch Park

P.O. Box 9101

Quincy, MA 02269

(617) 770-3000

<http://www.nfpa.org>

National Institute for Occupational Safety and Health (NIOSH)

Fire Fighter Fatality Investigation and Prevention Program

1095 Willowdale Road

Mail Stop P-180

Morgantown, WV 26505-2888

<http://www.cdc.gov/niosh/firehome.html>

(800) 35-NIOSH

National Transportation Safety Board (NTSB)

Aviation Accident Database

<http://www.ntsb.gov/NTSB/Query.asp>

(Use the NTSB Accident Number field to search for a particular incident.)

APPENDIX B

FIRE DEPARTMENT CITY OF NEW YORK MEMBERS LOST ON SEPTEMBER 11, 2001

On September 11, 2001, terrorists attacked the World Trade Center in New York City.

The first attack came at 8:48 a.m. A hijacked American Airlines Boeing 767 airliner crashed into the North Tower. Numerous FDNY units witnessed the attack and a third alarm assignment was immediately dispatched.

Upon their arrival at the incident scene, the focus of the firefighters' efforts was the rescue of civilians trapped in the burning tower. Most elevators were damaged in the attack, so firefighters were forced to climb stairs crowded with escaping building occupants.

At 9:02 a.m., a second hijacked airliner struck the South Tower. Firefighters immediately began to climb to the upper floors of the second tower to evacuate trapped civilians.

At 9:50 a.m., the South Tower collapsed, killing scores of people. The North Tower collapsed at 10:28 a.m., killing many more.

The toll for the Nation was in excess of 3,000 people killed. This total includes occupants of both towers, people on the ground when the attacks occurred, firefighters, law enforcement officers, EMS workers, and others. Many others died at the Pentagon, where another hijacked airliner struck, and in a field in rural Pennsylvania where a fourth hijacked airliner crashed after its passengers refused to be used as weapons.

The toll in firefighters' lives on September 11th, , 2001, was 341. Firefighters ranging from the Chief of the Department to probationary members, with a few months on the job, were killed.

A listing of each firefighter killed by the attacks of September 11, 2001, follows:

Joseph Agnello, Lieutenant	35	Ladder 118
Brian G. Ahearn, Lieutenant	43	Engine 230
Eric T. Allen, Firefighter	44	Squad 18
Richard D. Allen, Firefighter	31	Ladder 15
James M. Amato, Battalion Chief	43	Squad 1
Calixto "Charlie" Anaya, Jr., Firefighter	35	Engine 4
Joseph J. Angelini, Sr., Firefighter	63	Rescue 1
Joseph J. Angelini, Jr., Firefighter	38	Engine 4
Faustino Apostol, Jr., Firefighter	55	Battalion 2

David G. Arce, Firefighter	36	Engine 33
Louis Arena, Firefighter	32	Ladder 5
Carl F. Asaro, Firefighter	39	Battalion 9
Gregg T. Atlas, Lieutenant	44	Engine 10
Gerald T. Atwood, Firefighter	38	Ladder 21
Gerald Baptiste, Firefighter	35	Ladder 9
Gerard A. Barbara, Assistant Chief	53	Citywide Tour Commander
Matthew E. Barnes, Firefighter	37	Ladder 25
Arthur T. Barry, Firefighter	35	Ladder 15
Steven J. Bates, Lieutenant	42	Engine 235
Carl J. Bedigian, Lieutenant	35	Engine 214
Stephen E. Belson, Firefighter	51	Ladder 24
John P. Bergin, Firefighter	39	Rescue 5
Paul Michael Beyer, Firefighter	37	Engine 6
Peter A. Bielfeld, Firefighter	44	Ladder 42
Brian E. Bilcher, Firefighter	37	Squad 1
Carl V. Bini, Firefighter	44	Rescue 5
Christopher J. Blackwell, Firefighter	42	Rescue 3
Michael Leopoldo Bocchino, Firefighter	45	Battalion 48
Frank J. Bonomo, Firefighter	42	Engine 230
Gary R. Box, Firefighter	37	Squad 1
Michael Boyle, Firefighter	37	Engine 33
Kevin H. Bracken, Firefighter	37	Engine 40
Michael E. Brennen, Firefighter	27	Ladder 4
Peter Brennen, Firefighter	30	Rescue 4
Daniel J. Brethel, Captain	43	Ladder 24
Patrick J. Brown, Captain	48	Ladder 3
Andrew Christopher Brunn, Firefighter	28	Ladder 5
Vincent E. Brunton, Captain	43	Ladder 105
Ronald P. Bucca, Fire Marshal	47	Fire Marshal
Greg J. Buck, Firefighter	37	Engine 201
William F. Burke, Jr., Captain	46	Engine 21
Donald J. Burns, Assistant Chief	61	Citywide Tour Commander
John P. Burnside, Firefighter	36	Ladder 20
Thomas M. Butler, Firefighter	37	Squad 1
Patrick D. Byrne, Firefighter	39	Ladder 101
George C. Cain, Firefighter	35	Ladder 7
Salvatore B. Calabro, Firefighter	38	Ladder 101
Frank J. Callahan, Captain	51	Ladder 35
Michael F. Cammarata, Firefighter	22	Ladder 11
Brian Cannizzaro, Firefighter	30	Ladder 101
Dennis M. Carey, Firefighter	51	Hazmat 1
Michael S. Carlo, Firefighter	34	Engine 230
Michael T. Carroll, Firefighter	39	Ladder 3
Peter J. Carroll, Firefighter	42	Squad 1
Thomas A. Casoria, Firefighter	29	Engine 22

Michael J. Cawley, Firefighter	32	Ladder 136
Vernon P. Cherry, Firefighter	49	Ladder 118
Nicholas P. Chiofalo, Firefighter	39	Engine 235
John G. Chipura, Firefighter	39	Engine 219
Michael J. Clarke, Firefighter	27	Ladder 2
Steven Coakley, Firefighter	36	Engine 217
Tarel Coleman, Firefighter	32	Squad 252
John M. Collins, Firefighter	42	Ladder 25
Robert Cordice, Firefighter	28	Squad 1
Ruben D. Correa, Firefighter	44	Engine 74
James R. Coyle, Firefighter	26	Ladder 3
Robert J. Crawford, Firefighter	62	Safety Battalion
John A. Crisci, Lieutenant	48	Hazmat 1
Dennis A. Cross, Battalion Chief	60	Battalion 57
Thomas P. Cullen, III, Firefighter	31	Squad 41
Robert Curatolo, Firefighter	31	Ladder 16
Edward A. D'Atri, Lieutenant	38	Squad 1
Michael D. D'Auria, Firefighter	25	Engine 40
Scott M. Davidson, Firefighter	33	Ladder 118
Edward J. Day, Firefighter	45	Ladder 11
Thomas De Angelis, Battalion Chief	51	Battalion 8
Martin De Meo, Firefighter	47	Hazmat 1
Manuel Del Valle, Lieutenant	32	Engine 5
David P. DeRubbio, Firefighter	38	Engine 226
Andrew J. Desperito, Lieutenant	43	Engine 1
Dennis L. Devlin, Battalion Chief	51	Battalion 9
Gerard P. Dewan, Firefighter	35	Ladder 3
George DiPasquale, Firefighter	33	Ladder 2
Kevin W. Donnelly, Lieutenant	43	Ladder 3
Kevin C. Dowdell, Lieutenant	46	Rescue 4
Raymond M. Downey, Battalion Chief	63	Special Operations Command
Gerard J. Duffy, Firefighter	53	Ladder 21
Martin J. Egan, Jr., Captain	36	Division 15
Michael J. Elferis, Firefighter	27	Engine 22
Francis Esposito, Firefighter	32	Engine 235
Michael A. Esposito, Captain	41	Squad 1
Robert E. Evans, Firefighter	36	Engine 33
John J. Fanning, Battalion Chief	54	Hazmat Operations
Thomas J. Farino, Battalion Chief	37	Engine 26
Terrence P. Farrell, Firefighter	45	Rescue 4
Joseph D. Farrelly, Battalion Chief	47	Division 1
William M. Feehan, First Deputy Commissioner	71	Administration
Lee S. Fehling, Firefighter	28	Engine 235
Alan D. Feinberg, Firefighter	48	Battalion 9
Michael C. Fiore, Firefighter	46	Rescue 5
John R. Fischer, Captain	46	Ladder 20

Andre G. Fletcher, Fire Marshal	37	Rescue 5
John J. Florio, Firefighter	33	Engine 214
Michael N. Fodor, Lieutenant	53	Ladder 21
Thomas J. Foley, Firefighter	32	Rescue 3
David J. Fontana, Lieutenant	37	Squad 1
Robert J. Foti, Firefighter	42	Ladder 7
Andrew A. Fredericks, Lieutenant	40	Squad 18
Peter L. Freund, Lieutenant	45	Engine 55
Thomas Gambino, Jr., Firefighter	48	Rescue 3
Peter J. Ganci, Jr., Chief of Department	54	Administration
Charles W. Garbarini, Lieutenant	44	Battalion 9
Thomas Gardner, Firefighter	39	Hazmat 1
Matthew D. Garvey, Firefighter	37	Squad 1
Bruce H. Gary, Firefighter	51	Engine 40
Gary P. Geidel, Firefighter	44	Rescue 1
Edward F. Geraghty, Deputy Chief	45	Battalion 9
Denis P. Germain, Firefighter	33	Ladder 2
Vincent F. Giammona, Captain	39	Ladder 5
James A. Giberson, Firefighter	43	Ladder 35
Ronnie E. Gies, Lieutenant	43	Squad 288
Paul J. Gill, Firefighter	34	Engine 54
John F. Ginley, Lieutenant	37	Engine 40
Jeffrey J. Giordano, Firefighter	45	Ladder 3
John J. Giordano, I, Firefighter	47	Engine 37
Keith A. Glascoe, Firefighter	38	Ladder 21
James M. Gray, Firefighter	34	Ladder 20
Joseph Grzelak, Battalion Chief	52	Battalion 48
Jose Antonio Guadalupe, Firefighter	37	Engine 54
Geoffrey E. Guja, Lieutenant	47	Battalion 43
Joseph P. Gullickson, Lieutenant	37	Ladder 101
David Halderman, Lieutenant	40	Squad 18
Vincent G. Halloran, Lieutenant	43	Ladder 8
Robert W. Hamilton, Firefighter	43	Squad 41
Sean S. Hanley, Firefighter	35	Ladder 20
Thomas P. Hannafin, Firefighter	36	Ladder 5
Dana R. Hannon, Firefighter	29	Engine 26
Daniel E. Harlin, Firefighter	41	Ladder 2
Harvey L. Harrell, Lieutenant	49	Rescue 5
Stephen G. Harrell, Lieutenant	44	Battalion 7
Timothy S. Haskell, Firefighter	34	Squad 18
Thomas T. Haskell, Jr., Battalion Chief	37	Division 15
Terence S. Hatton, Captain	41	Rescue 1
Michael H. Haub, Firefighter	34	Ladder 4
Michael K. Healey, Lieutenant	42	Squad 41
John F. Heffernan, Firefighter	47	Ladder 11
Ronnie L. Henderson, Firefighter	52	Engine 279

Joseph P. Henry, Firefighter	25	Ladder 21
William L. Henry, Firefighter	49	Rescue 1
Thomas J. Hetzel, Firefighter	33	Ladder 13
Brian C. Hickey, Battalion Chief	47	Rescue 4
Timothy B. Higgins, Lieutenant	43	Special Operations
Jonathon R. Hohmann, Firefighter	48	Hazmat 1
Thomas P. Holohan, Firefighter	36	Engine 6
Joseph G. Hunter, Firefighter	31	Squad 288
Walter G. Hynes, Captain	46	Ladder 13
Jonathon L. Ielpi, Firefighter	29	Squad 288
Frederick J. III, Jr., Captain	49	Ladder 2
William R. Johnston, Firefighter	31	Engine 6
Andrew B. Jordan, Firefighter	36	Ladder 132
Karl H. Joseph, Firefighter	25	Engine 207
Anthony M. Jovic, Lieutenant	39	Battalion 47
Angel L. Juarbe, Jr., Firefighter	35	Ladder 12
Mychal Judge, Chaplain	68	Fire Department Chaplain
Vincent D. Kane, Fire Marshal	37	Engine 22
Charles L. Kasper, Deputy Chief	54	Special Operations Command
Paul H. Keating, Firefighter	38	Ladder 5
Thomas W. Kelly, Firefighter	50	Ladder 105
Thomas Richard Kelly, Lieutenant	39	Ladder 105
Richard J. Kelly, Jr., Firefighter	50	Ladder 11
Thomas J. Kennedy, Firefighter	36	Ladder 101
Ronald T. Kerwin, Lieutenant	42	Squad 288
Michael Vernon Kiefer, Firefighter	25	Ladder 132
Robert King, Jr., Firefighter	36	Engine 33
Scott Kopytko, Firefighter	32	Ladder 15
William E. Krukowski, Firefighter	36	Ladder 21
Kenneth B. Kumpel, Fire Marshal	42	Ladder 25
Thomas J. Kuveikis, Firefighter	48	Squad 252
David J. LaForge, Firefighter	50	Ladder 20
William D. Lake, Firefighter	44	Rescue 2
Robert T. Lane, Firefighter	28	Engine 55
Peter Langone, Firefighter	41	Squad 252
Scott A. Larsen, Firefighter	35	Ladder 15
Joseph G. Leavey, Lieutenant	45	Ladder 15
Neil J. Leavy, Firefighter	34	Engine 217
Daniel F. Libretti, Firefighter	43	Rescue 2
Robert T. Linnane, Firefighter	33	Ladder 20
Michael F. Lynch, Firefighter	30	Engine 40
Michael F. Lynch, Lieutenant	33	Ladder 4
Michael J. Lyons, Firefighter	32	Squad 41
Patrick Lyons, Lieutenant	34	Squad 252
Joseph Maffeo, Firefighter	30	Ladder 101
William J. Mahoney, Firefighter	37	Rescue 4

Joseph E. Maloney, Firefighter	45	Ladder 3
Joseph R. Marchbanks, Jr., Deputy Chief	47	Battalion 57
Charles J. Margiotta, Lieutenant	44	Battalion 22
Kenneth Joseph Marino, Firefighter	40	Rescue 1
John D. Marshall, Firefighter	35	Ladder 27
Peter C. Martin, Lieutenant	43	Rescue 2
Paul R. Martini, Lieutenant	37	Engine 201
Joseph A. Mascali, Firefighter	44	Tactical Support 2
Keithroy M. Maynard, Firefighter	30	Engine 33
Brian G. McAleese, Firefighter	36	Engine 226
John K. McAvoy, Firefighter	47	Ladder 3
Thomas Joseph McCann, Firefighter	46	Battalion 8
William E. McGinn, Captain	43	Squad 18
William J. McGovern, Battalion Chief	49	Battalion 2
Dennis P. McHugh, Firefighter	34	Ladder 13
Robert D. McMahan, Firefighter	35	Ladder 20
Robert W. McPadden, Firefighter	30	Engine 23
Terence P. McShane, Firefighter	37	Ladder 101
Timothy P. McSweeney, Firefighter	37	Ladder 3
Martin E. McWilliams, Firefighter	35	Engine 22
Raymond M. Meisenheimer, Firefighter	46	Rescue 3
Charles R. Mendez, Firefighter	38	Ladder 7
Steve J. Mercado, Firefighter	38	Engine 40
Douglas C. Miller, Firefighter	34	Rescue 5
Henry A. Miller, Jr., Firefighter	51	Ladder 105
Robert J. Minara, Firefighter	54	Ladder 25
Thomas Mingione, Firefighter	34	Ladder 132
Paul T. Mitchell, Lieutenant	46	Battalion 1
Louis J. Modafferi, Battalion Chief	45	Rescue 5
Dennis Mojica, Lieutenant	50	Rescue 1
Manuel Mojica, Firefighter	37	Squad 18
Carl E. Molinaro, Firefighter	32	Ladder 2
Michael G. Montesi, Firefighter	39	Rescue 1
Thomas C. Moody, Captain	45	Division 1
John M. Moran, Battalion Chief	42	Battalion 49
Vincent Morello, Firefighter	34	Ladder 35
Christopher M. Mozzillo, Firefighter	27	Engine 55
Richard T. Muldowney, Jr., Firefighter	40	Ladder 7
Michael D. Mullan, Firefighter	34	Ladder 12
Dennis M. Mulligan, Firefighter	32	Ladder 2
Raymond E. Murphy, Lieutenant	46	Ladder 16
Robert B. Nagel, Lieutenant	55	Engine 58
John P. Napolitano, Lieutenant (promo fm FF)	33	Rescue 2
Peter A. Nelson, Firefighter	42	Rescue 4
Gerard T. Nevins, Firefighter	46	Rescue 1
Dennis Patrick O'Berg, Firefighter	28	Ladder 105

Daniel O'Callaghan, Captain	42	Ladder 4
Douglas E. Oelschlager, Firefighter	36	Ladder 15
Joseph J. "Jay" Ogren, Firefighter	30	Ladder 3
Thomas G. O'Hagan, Lieutenant	43	Battalion 4
Samuel P. Oitice, Firefighter	45	Ladder 4
William S. O'Keefe, Captain	48	Division 15
Patrick J. O'Keefe, I, Firefighter	44	Rescue 1
Eric T. Olsen, Firefighter	41	Ladder 15
Jeffrey J. Olsen, Firefighter	31	Engine 10
Steven J. Olson, Firefighter	37	Ladder 3
Kevin M. O'Rourke, Firefighter	44	Rescue 2
Michael J. Otten, Firefighter	42	Ladder 35
Jeffrey A. Palazzo, Firefighter	33	Rescue 5
Orio J. Palmer, Deputy Chief	45	Battalion 7
Frank Palombo, Firefighter	46	Ladder 105
Paul J. Pansini, Fire Marshal	35	Engine 10
John M. Paolillo, Deputy Chief	51	Battalion 11
James Pappageorge, Firefighter	29	Engine 23
Robert E. Parro, Firefighter	35	Engine 8
Durrell V. Pearsall, Jr., Firefighter	34	Rescue 4
Glenn C. Perry, Lieutenant	41	Battalion 12
Philip S. Petti, Lieutenant	43	Battalion 7
Kevin J. Pfeifer, Lieutenant	42	Engine 33
Kenneth J. Phelan, Lieutenant	41	Engine 217
Christopher J. Pickford, Firefighter	32	Engine 201
Shawn E. Powell, Firefighter	32	Engine 207
Vincent A. Princiotta, Firefighter	39	Ladder 7
Kevin M. Prior, Firefighter	28	Squad 252
Richard A. Prunty, Battalion Chief	57	Battalion 2
Lincoln Quappe', Firefighter	38	Rescue 2
Michael T. Quilty, Lieutenant	42	Ladder 11
Leonard J. Ragaglia, Firefighter	36	Engine 54
Michael Paul Ragusa, Firefighter	29	Engine 279
Edward J. Rall, Firefighter	44	Rescue 2
Adam D. Rand, Firefighter	30	Squad 288
Donald J. Regan, Firefighter	47	Rescue 3
Robert M. Regan, Lieutenant	48	Ladder 118
Christian Reganhard, Firefighter	28	Ladder 131
Kevin O. Reilly, Firefighter	28	Engine 207
Vernon A. Richard, Captain	53	Ladder 7
James C. Riches, Firefighter	29	Engine 4
Joseph R. Rivelli, Jr., Firefighter	43	Ladder 25
Michael Edward Roberts, Firefighter	31	Engine 214
Michael Edward Roberts, Firefighter	30	Ladder 35
Anthony Rodriguez, Firefighter	36	Engine 279
Matthew S. Rogan, Firefighter	37	Ladder 11

Nicholas P. Rossomando, Firefighter	35	Rescue 5
Paul G. Ruback, Firefighter	50	Ladder 25
Stephen Russell, Firefighter	40	Engine 55
Michael T. Russo, Lieutenant	44	Special Operations
Matthew L. Ryan, Battalion Chief	54	Battalion 1
Thomas E. Sabella, Firefighter	44	Ladder 13
Christopher A. Santora, Firefighter	23	Engine 54
John A. Santore, Firefighter	49	Ladder 5
Gregory T. Saucedo, Firefighter	31	Ladder 5
Dennis Scauso, Firefighter	46	Hazmat 1
John A. Schardt, Firefighter	34	Engine 201
Fred C. Scheffold, Battalion Chief	57	Battalion 12
Thomas Gerard Schoales, Firefighter	27	Engine 4
Gerard P. Schrang, Firefighter	45	Rescue 3
Gregory R. Sikorsky, Firefighter	34	Squad 41
Stephen G. Siller, Firefighter	34	Squad 1
Stanley S. Smagala, Jr., Firefighter	36	Engine 226
Kevin J. Smith, Firefighter	47	Hazmat 1
Leon Smith, Jr., Firefighter	48	Ladder 118
Robert W. Spear, Jr., Firefighter	30	Engine 50
Joseph P. Spor, Jr., Firefighter	35	Ladder 38
Lawrence T. Stack, Battalion Chief	58	Battalion 50
Timothy M. Stackpole, Captain	42	Division 11
Gregory M. Stajk, Firefighter	46	Ladder 13
Jeffrey Stark, Firefighter	30	Engine 230
Benjamin Suarez, Firefighter	34	Ladder 21
Daniel T. Suhr, Firefighter	37	Engine 216
Christopher P. Sullivan, Lieutenant	39	Ladder 111
Brian E. Sweeney, Firefighter	29	Rescue 1
Sean P. Tallon, Firefighter	26	Ladder 10
Allan Tarasiewicz, Firefighter	45	Rescue 5
Paul A. Tegtmeier, Firefighter	41	Engine 4
John Patrick Tierney, Firefighter	27	Ladder 9
John J. Tipping, II, Firefighter	33	Ladder 4
Hector L. Tirado, Jr., Firefighter	30	Engine 23
Richard Bruce Van Hine, Firefighter	48	Squad 41
Peter A. Vega, Firefighter	36	Ladder 118
Lawrence G. Veling, Firefighter	44	Engine 235
John T. Vigiano II, Firefighter	36	Ladder 132
Sergio G. Villanueva, Firefighter	33	Ladder 132
Lawrence J. Virgilio, Firefighter	38	Squad 18
Robert F. Wallace, Lieutenant	43	Engine 205
Jeffrey P. Walz, Lieutenant	37	Ladder 9
Michael P. Warchola, Lieutenant	51	Ladder 5
Patrick J. Waters, Captain	44	Special Operations
Kenneth T. Watson, Firefighter	39	Engine 214

Michael T. Weinberg, Firefighter	34	Engine 1
David M. Weiss, Firefighter	41	Rescue 1
Timothy M. Welty, Firefighter	34	Squad 288
Eugene M. Whelan, Firefighter	31	Engine 230
Edward J. "Teddy" White, Firefighter	30	Engine 230
Mark P. Whitford, Firefighter	31	Engine 23
Glenn E. Wilkinson, Lieutenant	46	Engine 238
John A. Williamson, Battalion Chief	46	Battalion 6
David T. Wooley, Captain	54	Ladder 4
Raymond York, Firefighter	45	Engine 285
James J. Corrigan, Fire Safety Director	60	OCS Group
Philip T. Hayes, Deputy Fire Safety Director	69	OCS Group
William Wren, Fire Safety Director	61	OCS Group



