

STATE FIRE MARSHAL'S OFFICE

Firefighter Fatality Investigations



ANNUAL REPORT

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Executive Summary

During state fiscal year 2006, the State Fire Marshal's Office (SFMO) conducted three firefighter fatality investigations. These investigations were conducted under the authority of Texas Government Code Chapter 417.0075.

The SFMO utilizes expertise provided by the following Texas fire service associations and fire-related state agencies in an investigation, review, and advisory capacity:

- State Firemen's & Fire Marshals' Association of Texas;
- Texas State Association of Fire Fighters;
- Texas Fire Marshal's Association;
- Texas Fire Chief's Association;
- Texas Commission on Fire Protection;
- Texas Forest Service; and
- Texas Engineering Extension Service, Emergency Services Training Institute, Texas A&M University System

In addition to these organizations, major Texas metropolitan fire departments contribute to this program by participating on the Firefighter Fatality Investigation Program Advisory Committee and by supplying specific expertise during investigations. Contributing fire departments include Austin, Dallas, El Paso, Fort Worth, Houston and San Antonio.

Unlike previous year's fatalities where the causes of death varied, all FY2006 firefighter fatalities that were investigated by the SFMO were caused by water tanker vehicle incidents. Operator training, overloading of the tankers and failure to wear seat belts contributed to each firefighter's death. In addition to the three fatal vehicle incidents, the State Fire Marshal's Office was made aware of two other tanker/tender incidents that resulted in serious injuries. One near fatal accident occurred in New Summerfield when a tanker collided with a railroad train while responding to an alarm. The second involved a tanker tender rollover in Chambers County. Due to the lack of adequate funds needed to obtain standardized fire apparatus, many small departments rely on surplus or donated vehicles which are then modified to meet specific needs.

The following table provides a snapshot of each FY 2006 Texas firefighter fatality incident:

Firefighter Name	Date of Death	Incident Description
Clint Dewayne Rice – Carlton VFD	11/22/2005	Motor Vehicle Incident
Chad Ernest Wessels – Briggs VFD	12/ 11/2005	Motor Vehicle Incident
James McMorries – Howardwick VFD	4/9/2006	Motor Vehicle Incident

Overview of the Texas Fire Service

The Texas fire service comprises paid, volunteer and combination departments. The Texas Forest Service, a component of the Texas A&M University System, published results of a survey of 1,852 fire departments. The survey revealed:

- Of the 1,852 departments, 81 percent were volunteer, 6 percent were fully paid and 13 percent reported being a combination of paid and volunteer firefighters.
- 61,347 firefighters were identified, with 68 percent being volunteers and 32 percent being paid. Of the volunteers, approximately 72 percent reported being “active.”

FY2006 Investigation Summaries

Firefighter Clint Dewayne Rice, age 28, died in a motor vehicle incident while driving a tractor-trailer water tender to a wildfire in Hamilton County on November 22, 2005. Firefighter Rice was a member of the Carlton Volunteer Fire Department (CVFD). CVFD was providing mutual aid to the Hamilton, Texas fire department in fighting a large grass fire. At approximately 2:10 p.m., Firefighter Rice lost control of his vehicle while rounding a turn on Farm-to-Market Road 219, causing the truck to overturn. Rice was ejected from the truck cab and was pronounced dead at the scene. He was not wearing a seat belt. The posted speed limit was 40 mph. Firefighter Rice served in the Carlton Volunteer Fire Department for three months. He is survived by his wife.

Firefighter Chad Ernest Wessels, age 31, died in a motor vehicle incident while driving a 1,200-gallon water tender to a structure fire in Burnet County on December 11, 2005. Firefighter Wessels was a member of the Briggs Volunteer Fire Department (BFD). At 12:37 a.m., Firefighter Wessels lost control of his vehicle while exiting a curve on Ranch Road 963, causing the truck to leave the roadway twice. Wessels was killed in a post-crash fire and was pronounced dead at the scene. He was not wearing a seat belt. Firefighter Wessels served in the

Briggs Volunteer Fire Department for eight years. He is survived by his wife and two children.

Fire Fighter James McMorries, age 62, Howardwick Volunteer Fire Department died as result of injuries sustained when he was ejected when the fire truck he was driving overturned. He was not wearing a seat belt. Howardwick VFD Capt. Jeff Cook and Firefighter Joseph Garcia were seriously injured in the same incident. The incident occurred on March 12, 2006 at approximately 11:07 a.m. during wild land fire fighting operations that originated in Donley County and continued into Gray County. Firefighter McMorries died on April 9, 2006. Firefighter James McMorries joined the fire department in January 2006 after a wild fire came close to his residence in Howardwick earlier that month. He is survived by his wife and children.

National Firefighter Death Composite

The United States Fire Administration (USFA) released “Firefighter Fatalities in the United States” in July 2006. This report provides an in-depth analysis of 117 on-duty deaths that occurred in the United States during 2005. In the publication, USFA reports that:

- 53.9 percent of nationally reported 2005 firefighter on-duty deaths were due to “stress or overexertion” with heart attacks and strokes being the attributed causes of death.
- 21.8 percent of the 2005 deaths were the result of vehicle collisions, including firefighters that were struck by, or fell from, vehicles.
- 7.8 percent of the 2005 deaths were attributed to structural collapse during fire attacks or being “caught or trapped” during fire suppression activities.
- The remaining deaths were attributed to other fire and non-fire related events.

Recommendations

Based on the conditions found during firefighter fatality investigations and national trends, the SFMO makes the following general recommendations. Incident-specific recommendations are incorporated into each firefighter fatality report.

Fire Department Vehicles

**It is important to note that all FY2006 fatalities were caused by motor vehicle incidents. In addition to this human toll, fire service and fire service personnel should be aware that they may incur liability to others for property damage, personal injury, and death resulting from the operation of a motor vehicle, including injuries or damages resulting from defective equipment.*

- Vehicle conversion for fire fighting operation should be engineered and constructed in accordance with fire department vehicle standards and inspected for safe performance
- Training for vehicle operators should include off-road as well as on-road driving and operational training.
- Fire department vehicles, including ambulances and utility vehicles, should not be loaded beyond the manufacturer's gross vehicle weight rating listed on the label attached to the vehicle. Overloading vehicles may affect handling and could result in excessive braking distance. Weight calculations should include the maximum number of passengers, their personal equipment, and full water and fuel tanks. *(For further information on the above recommendations see NFPA 1901, Standard for Automotive Fire Apparatus)*
- All fire department members who drive fire service vehicles should meet the objectives specified in NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualifications.* Chapter Two applies to all fire department vehicles, including administrative vehicles and ambulances. Other chapters of NFPA 1002 contain objectives for operators of specialized apparatus such as pumpers, aerial apparatus, etc.
- Drivers and passengers should wear safety belts whenever the vehicle is in motion. *(See NFPA 1500, Standard on Fire Department Occupational Safety and Health Program and § 545.413 Texas Transportation Code)*

- All fire departments should receive the National Fallen Firefighter Foundation's "Courage to be Safe" training from a qualified instructor.
- State funding to local fire departments should require compliance with minimum safe vehicle operating standards.

Medical Screening/Firefighter Fitness

- Fire departments should make every reasonable effort to screen firefighters for heart disease in an effort to reduce the number of heart attack deaths.
- Fire departments must encourage applicants to be forthright in disclosing medical conditions that may endanger their lives or the lives of other firefighters or civilians.
- If an applicant indicates a medical condition that poses a significant risk of injury or death, the department may choose to assign the applicant to non-emergency duties that would not subject the applicant to undue stress or physical exertion. Medical screening may be required to make a final decision allowing applicants to undergo firefighting training and assignment as active firefighters.
- Active firefighters and applicants that will operate fire apparatus should undergo periodic medical screening to detect conditions that could cause them to become incapacitated and lose control of the vehicle. (*See NFPA 1582, Standard on Comprehensive Occupational Medical Program for Fire Departments*)
- Nationally, a majority of firefighter deaths are attributed to heart attack or stroke. Ventricular fibrillation (VF), in which the heart becomes engaged in a dangerous abnormal contraction rhythm, is a common cause of cardiac death. Studies from the American Heart Association consistently show that immediate bystander CPR plus defibrillation within 3-5 minutes of collapse can dramatically increase survival from sudden cardiac arrest. Fire departments are encouraged to acquire portable automated external defibrillators (AEDs), make them readily available, and ensure that all firefighters are properly trained to use them.
- The U.S. Department of Homeland Security (DHS), through its U.S. Fire Administration and Office of Domestic Preparedness, offers grant funding

to fire departments for wellness/fitness programs. This funding, a component of the Assistance to Firefighters Grant Program, emphasizes periodic health screenings, entry physical examinations, and an immunization program. Grants may be used for the procurement of medical services to ensure that the firefighting personnel are physically able to carry out their duties. Further information regarding the Assistance to Firefighters Grant Program can be found on DHS' Internet web site at <http://www.firegrantsupport.com/>.

Firefighting Strategy and Tactics

- Pre-Fire Planning

A pre-fire planning program should be implemented to enhance tactical decision making on the fire ground. The use of pre-fire plans will enable responding personnel to determine the most accessible water supply and geographical building layout, including means of access, potential exposure problems, occupancy hazards, proper positioning for offensive and defensive operations, etc. (See *NFPA 1620, Recommended Practice for Pre-Incident Planning*)

- Incident Management System

Officers assigned the responsibility for a specific tactical level management component at an incident should directly supervise and account for the companies and/or crews operating in their specific area of responsibility. (See *NFPA 1561, Standard on Emergency Services Incident Management System*)

The Incident Management System should be utilized at all emergency incidents. The adoption of the Incident Management System is recommended to ensure the effective use of common terminology during large-scale and mutual aid incidents. Command must provide strong and clear direction for the incident. (See *NFPA 1201, Standard for Providing Emergency Services to the Public*)

- Personnel Accountability

A Safety or Accountability Officer should be assigned to ensure that accountability is accomplished. (See *NFPA 1521, Standard for Fire Department Safety Officer*)

Company unity must be maintained to facilitate accountability. All supervisors shall maintain a constant awareness of the position and function of all personnel assigned to operate under their supervision. This awareness shall serve as the basic means of accountability that shall be required for operational safety. (See *NFPA 1561, Standard on Emergency Services Incident Management System*)

The incident commander should initiate an accountability and inventory worksheet at the beginning of operations and should maintain that system throughout operations. (See *NFPA 1500, Personal Accountability During Emergency*)

- Rapid Intervention Teams

The incident commander should evaluate the situation and the risks to operating crews and should provide one or more rapid intervention teams commensurate with the needs of the situation. (See *OSHA HAZWOPER Standard, CFR 1910.134*)

A Rapid Intervention Team (RIT) replacement team should be assembled when the original RIT is assigned to conduct a rescue effort during a prolonged fire attack.

Consideration should be given to establishing RIT teams for each division/sector actively involved in firefighting or high-risk activities.

- Emergency Scenes on or Adjacent to Roadways

Fire departments should develop, implement, and enforce standard operating procedures (SOPs) regarding emergency operations for highway incidents.

Fire departments should ensure that personnel wear appropriate protective clothing, such as a high-visibility reflective safety vest, while operating at an emergency scene at or adjacent to a roadway.

Fire departments should ensure that fire fighters establish a protected work area before turning their attention to the emergency.

Fire departments should consider limiting or restricting the response of their members in their privately owned vehicles to high-volume, limited access highway incidents.

Fire departments should develop and implement pre-incident plans regarding traffic control for emergency service incidents. (See *NFPA 1500, Standard on fire Department Occupational Safety and Health Programs*)

Protective Equipment

- Protective clothing and protective equipment shall be used whenever firefighters are exposed or potentially exposed to hazards. All personnel, including engineers, support personnel, fire prevention, and medics, should be required to wear full protective equipment when operating in or around the fire ground. (See *NFPA 1500, Standard on fire Department Occupational Safety and Health Programs*)
- SCBA air cylinders should be maintained at not less than 90 percent full. Full extra cylinders should be kept on emergency response vehicles. Low air cylinders should be segregated from full cylinders until filled.

NFPA 1852, Standard on Selection, Care, and Maintenance of Open-Circuit Self-contained Breathing Apparatus (SCBA)

Buildings and Fire Protection Systems

- Installation of floor-level exit signs and illumination of exit paths may help occupants and firefighters escape when standard exit signs and lights are obscured by smoke.

Texas Firefighter Fatality Investigation Authority

Effective September 1, 2001, provisions of House Bill 1450 amended Chapter 417, Texas Government Code, by adding Section 417.0075 requiring the State Fire Marshal's Office (SFMO) to conduct an investigation if a firefighter dies in the line of duty in connection with a fire-fighting incident in this state.

The statute requires the SFMO to investigate the circumstances surrounding firefighter deaths to determine factors that may have contributed to the death. These factors include:

- The cause and origin of the fire;
- The condition of the structure; and
- The suppression operation.

The State Fire Marshal is required to coordinate the investigative efforts of local government officials and may enlist established fire service organizations and private entities to assist in the investigation.

Texas Firefighter Investigation Program Impact

Since the inception of this program in September 2001, the State Fire Marshal's Office has conducted twenty-four firefighter fatality investigations. Assessment of these investigations has revealed usable information that has led to revision of operational procedures and a strengthening of firefighter safety awareness within the Texas fire service.

While we believe that individual firefighter fatality investigation reports are helpful to the affected fire departments, it is the more universal information drawn from this experience that will enable the fire service to implement safety measures that benefit all Texas firefighters. The firefighting profession is an inherently dangerous one, and while the collective fire service bears responsibility for overall firefighter safety, the individual firefighter plays an equally important role. All firefighters are strongly urged to take personal responsibility for their own safety. To that end, they should follow safety procedures and utilize all available tools and training to reduce the likelihood of an accident.

Fortunately, the State Fire Marshal's Office has the support of many organizations in communicating fire service safety messages. Professional organizations are vital communication partners. Likewise, state and federal agencies have a significant role in communicating safety information and public policies affecting firefighter safety. The following information illustrates firefighter safety policies and initiatives resulting from analysis of the investigation reports:

- The State Fire Marshal's Office continued its policy of encouraging members of the Firefighter Fatality Investigation Program Advisory Committee to ensure that "lessons learned" were taken back to their respective organizations and "optimally integrated" as appropriate. These efforts include direct contact with the affected fire department, improvements to training and operational plans, firefighter certification requirements, equipment design, standards/policy development, and professional organization outreach.

- The State Fire Marshal's Office is updating the online survey available on its web site. This survey, which is designed to seek fire service input, evaluates the impact of firefighter fatality investigation reports on the Texas Fire Service since the inception of this program.
- The State Fire Marshal's Office has learned that several major fire departments are incorporating information gained from reports into their formal training programs.
- The International Association of Fire Chiefs and the International Association of Fire Fighters sponsored a Firefighter Safety Stand Down. Nineteen other national fire service organizations partnered in the effort. In Texas, the majority of fire service organizations and state agencies with fire safety responsibilities supported the Stand Down. Texas Engineering Extension Service, Emergency Services Training Institute, (TEEX) led with training programs in safe vehicle operation which were available on line and by TEEX instructors in the field. Seventeen off-site classes for 624 students were conducted during the Stand Down period. The entire program was also made available as a PowerPoint presentation for department download. During the program, 237 departments accessed the downloadable materials.
- The US Fire Administration published a report on safe operation of water tankers.
- The State Fire Marshal issued a bulletin to all fire departments and fire service organizations on safe water tanker operation.

National Firefighter Fatality Summit

The National Fallen Firefighters Foundation (NFFF) hosted the first national firefighter line-of-duty death prevention summit in March 2004. Attendees at the summit promulgated a listing of 16 initiatives that, when implemented, will substantially reduce the number of firefighter fatalities. These initiatives will continue to be included in annual reports to emphasize their importance. These are:

- Define and advocate the need for cultural change within the fire service relating to safety, incorporating leadership, management, supervision, accountability and personal responsibility.

- Enhance the personal and organizational accountability for health and safety throughout the fire service.
- Focus greater attention on the integration of risk management with incident management at all levels, including strategic, technical, and planning responsibilities.
- Empower all firefighters to stop unsafe practices.
- Develop and implement national standards for training, qualifications, and certification (including regular recertification) that are equally applicable to all firefighters, based on the duties they are expected to perform.
- Develop and implement national medical and physical fitness standards that are equally applicable to all firefighters, based on the duties they are expected to perform.
- Create a national research agenda and data collection system that relates to the initiatives.
- Utilize available technology wherever it can produce higher levels of health and safety.
- Thoroughly investigate all firefighter fatalities, injuries, and near misses.
- Ensure that grant programs support implementation of safe practices and/or mandate safe practices as an eligibility requirement.
- Develop and champion national standards for emergency response policies and procedures.
- Develop and champion national protocols for response to violent incidents.
- Provide firefighters and their families with access to counseling and psychological support.
- Provide public education with more resources and champion it as a critical fire and life safety program.
- Strengthen advocacy for the enforcement of codes and installation of home fire sprinklers.
- Make safety be a primary consideration in the design of apparatus and equipment.

Firefighter Fatality Investigation Report Distribution

Upon release, firefighter fatality investigation reports are sent to the affected fire departments and placed on the agency's Internet site for access by the fire service, media and the public. There has been considerable national interest and the reports are accessed frequently. Since the inception of firefighter fatality investigation reporting in September 2001, there have been more than 32,000 individual report downloads, including 9,900 downloads in FY 2006.