



Firefighter Fatality Investigation

**Pump Operator/Engineer Juan Pablo Casanova
Brownsville Fire Department**

Investigation FFF FY 13-09

Brownsville, Texas
August 10, 2013



The subsequent investigation of this incident provides valuable information to the fire service by examining the lessons learned, to prevent future loss of life and property.

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Executive Summary

On Tuesday, July 16, 2013, Pump Operator/Engineer Juan Pablo Casanova was on duty when he experienced shortness of breath and chest pain after performing the morning check of Engine 2 at Fire Station 2 located at 536 West St. Charles Street, Brownsville, Texas. Casanova was transported to the Valley Baptist Medical Center in Brownsville and was later transferred to St. Luke's Medical Center in Houston, Texas. Casanova experienced severe cardiac complications and passed away on Saturday, August 10, 2013, at St. Luke's Medical Center in Houston, Texas.

Pump Operator/Engineer Juan Casanova joined the Brownsville Fire Department in 1993.

This report is intended to honor Pump Operator/Engineer Juan Pablo Casanova by providing information of any lessons learned through the examination of this loss to prevent future firefighter injuries or deaths.



Pump Operator/Engineer Juan Pablo Casanova
Brownsville Fire Department

Introduction

On August 11, 2013, the Texas State Fire Marshal's Office (SFMO) received notification from Brownsville Fire Department Fire Chief Lenny Perez of the death of Pump Operator/Engineer Juan Pablo Casanova on August 10, 2013.

The SFMO commenced the firefighter fatality investigation under the authority of Texas Government Code § 417.0075.

- (a) *In this section, the term "firefighter" includes an individual who performs fire suppression duties for a governmental entity or volunteer fire department.*
- (b) *If a firefighter dies in the line of duty or if the firefighter's death occurs in connection with an on-duty incident in this state, the state fire marshal shall investigate the circumstances surrounding the death of the firefighter, including any factors that may have contributed to the death of the firefighter.*
- (c) *In conducting an investigation under this section, the state fire marshal has the same powers as those granted to the state fire marshal under Section 417.007. The state fire marshal will coordinate the investigative efforts of local government officials and may enlist established fire service organizations and private entities to assist in the investigation.*
- (d) *The state fire marshal will release a report concerning an investigation conducted under this section on completion of the investigation.*
- (e) *Not later than October 31 of each year, the state fire marshal will deliver to the commissioner a detailed report about the findings of each investigation conducted under this section in the preceding year.*

- (f) *Information gathered in an investigation conducted under this section is subject to Section 552.108.*
- (g) *The authority granted to the state fire marshal under this section will not limit in any way the authority of the county or municipal fire marshal to conduct the county or municipal fire marshal's own investigation into the death of a firefighter within the county or municipal fire marshal's jurisdiction.*

Deputy State Fire Marshal Ramon Garcia, Jr., was assigned to conduct the Firefighter Fatality Investigation.

Firefighter Fatality Investigation

On Tuesday, July 16, 2013, Pump Operator/Engineer Juan Pablo Casanova was on duty when he experienced shortness of breath and chest pain after performing the morning check of Engine 2 at Fire Station 2, located at 536 West St. Charles Street, Brownsville, Texas.

Casanova was the Acting Lieutenant on Engine 2 on Tuesday, July 16, 2013. After receiving the morning report from the out-going Engine 2 crew, the on-coming Engine 2 crew began performing the morning check of the truck and equipment. Crew members remember that Casanova seemed to be in good spirits and did not complain of any distress. The morning check of Engine 2 and all the equipment lasted approximately 15 minutes. Casanova checked his air pack, the computer at the front passenger seat, the generator on the passenger side of Engine 2, and then walked inside.

The firefighters completed the check of Engine 2 and began to go into the living quarters. Casanova had entered the office near the bay door on the north side of the building. A crew member then walked inside and noticed Casanova sitting in front of the desk. He appeared to be in some distress. The crew member asked Casanova if he was okay and Casanova stated he was having shortness of breath and needed oxygen. The crew member immediately went to the truck, retrieved the oxygen kit, and administered oxygen with a nasal cannula at 4 liters per minute. The crew member called for help and vital signs were taken. Casanova began complaining of chest pain and EMS was called to the station.

The ambulance arrived and transported Casanova to the Valley Baptist Medical Center in Brownsville, Texas. Casanova was admitted to the hospital the same day. While in the

emergency room, Casanova suffered a heart attack and was placed into the intensive care unit. He was diagnosed with cardiogenic shock and a myocardial infarction, and required mechanical ventilation. Casanova was intubated and an intra-aortic balloon pump was inserted.

On Monday, July 22, 2013, Pump Operator/Engineer Casanova was transferred from Valley Baptist Medical Center in Brownsville, Texas, to St. Luke's Medical Center in Houston, Texas, for advanced heart failure therapy. His condition did not improve, and he continued on a ventilator and was treated for ventricular tachycardia. Casanova was eventually placed on continuous venovenous hemodialysis for renal failure.

While at St. Luke's Medical Center, Casanova suffered additional heart attacks and required full code support with advanced cardiac life support. Casanova suffered anoxic injury to the brain and he remained unresponsive. Casanova continued to have a dismal neurological prognosis, with no response, and no cranial nerve reflexes.

Support was withdrawn, and Pump Operator/Engineer Casanova passed away at 11:30 p.m. on August 10, 2013. Diagnosis at the time of death was cardiogenic shock.

Medical Background of Firefighter

Firefighter Juan Pablo Casanova, 53, joined the Brownsville Fire Department in 1993. Casanova had a medical history of diabetes and coronary artery disease. In 2004, Casanova had quadruple bypass surgery. According to co-workers, Casanova recovered and went back to work without incident.

Casanova was a former smoker who had quit on July 7, 2013.

His medical history also included cardiomyopathy and hypertension.

Findings and Recommendations

The State of Texas has adopted minimum training standards for paid fire departments. All fire department personnel should know and understand nationally recognized consensus standards, and all fire departments should create and maintain SOGs and SOPs to ensure effective, efficient, and safe firefighting operations.

The Brownsville Fire Department has an established fitness program recommended for fire personnel as part the department's Wellness and Fitness Standard Operating Procedures. This program is voluntary. The program is modeled after the International Association of Fire Fighters¹ and International Association of Fire Chiefs² wellness-fitness initiative and is in accordance with **National Fire Protection Association 1500**, *Standard on Fire Department Occupational Safety and Health*; **NFPA 1582**, *Standard on Comprehensive Occupational Medical Program for Fire Departments*; and **NFPA 1583**, *Standard on Health-Related Fitness Programs for Fire Department Members*.

There is no indication that the following recommendations could have prevented the death of Firefighter Juan Pablo Casanova; nevertheless, the State Fire Marshal's Office offers these recommendations to reduce the risk of heart attacks and sudden cardiac arrest among firefighters. All fire departments should be aware of the content of the following standards and are encouraged to develop programs based on them to increase the level of safety for fire department personnel.

¹ <http://www.iaff.org/HS/Well/wellness.html>

² <http://www.iafc.org/Programs/content.cfm?ItemNumber=1167>

1. Consider mandatory pre-placement and annual medical evaluations for all firefighters, consistent with **NFPA 1582, Standard on Comprehensive Occupational Medical Program for Fire Departments**, to determine their medical ability to perform duties without presenting a significant risk to the safety and health of themselves or others.
2. Consider an annual physical performance evaluation to ensure firefighters are physically capable of performing the essential job tasks of structural firefighting.
3. Ensure that firefighters are cleared for duty by a physician knowledgeable about the physical demands of firefighting, the personal protective equipment used by firefighters, and the various components of **NFPA 1582, Standard on Comprehensive Occupational Medicine Program for Fire Departments**.
4. Fire departments should establish physical performance requirements for firefighters and develop physical fitness programs. **NFPA 1583, Standard on Health-Related Fitness Programs for Fire Fighters**, is an excellent resource.
5. All Texas firefighters must complete a “Courage to be Safe” course, as adopted by the Texas Commission on Fire Protection and the State Firemen’s and Fire Marshals’ Association. The National Fallen Firefighters Foundation has developed a course that details **“16 Firefighter Life Safety Initiatives”** so Everyone Goes Home®³.

There are many resources available to assist fire departments and firefighters in providing information regarding firefighter fitness and establishing a fitness / wellness program. The following sites are just a few that were noted.

- “Heart Disease And Firefighters: How And Why?” By John Hofman, *Fire Engineering*, 09/18/2012. <http://www.fireengineering.com/content/fe/en/articles/2012/09/heart-disease-and-firefighters-how-and-why.html>
- Recommendations for Reducing the Number of Line-of-Duty Deaths, State Fire Marshal’s Office. <http://www.tdi.texas.gov/fire/fmloddprevent.html>

³<http://www.lifesafetyinitiatives.com>

- “Firefighter Health and Wellness Initiatives.” <http://firehouseexpo.com/z-pdf/2012/handouts/Firefighter-Health-and-Wellness-flyer-Bill-Troup.pdf>
- “Does Your Fire Department Have A Health & Wellness Program?” *Fire Engineering*, 10/25/2012. <http://www.fireengineering.com/articles/2012/10/does-your-fire-department-have-a-health-wellness-program.html>
- “Wellness And Fitness: Is It About Time For A Mandatory Program?” By Peter Bryan. *Fire Engineering*, 01/16/2013. <http://www.fireengineering.com/articles/2013/01/firefighter-wellness-and-fitness-is-it-about-time-for-a-mandator.html>
- NIOSH Alert: Preventing Fire Fighter Fatalities Due To Heart Attacks and Other Sudden Cardiovascular Events. <http://www.cdc.gov/niosh/docs/2007-133/>. NIOSH [2007].
- *Firefighters And On-Duty Deaths From Coronary Heart Disease: A Case Control Study*. *Environ Health: A Global Access Science Source*. 2:14. <http://www.ehjournal.net/content/2/1/14>. Kales SN, Soteriades ES, Christoudias SG, Christiani DC [2003].
- “Developing a Wellness Program,” By [Michael Ong](#), 5/4/2011. <http://www.firefighternation.com/article/firefighter-fitness-health/developing-wellness-program>
- “Heart-Healthy Firefighter Program.” <http://www.mvfc.org/programs/heart-healthy-firefighter-program>
- U.S. Fire Administration Health and Wellness Guide for the Volunteer Fire and Emergency Services: FA-321/February 009. http://www.usfa.fema.gov/downloads/pdf/publications/fa_321.pdf

³ <http://www.lifesafetyinitiatives.com>

Appendix 1: State Fire Marshal's Office Bulletin

The following is a copy of a previous bulletin issued by the State Fire Marshal. It can be found on the State Fire Marshal's website at <http://www.tdi.texas.gov/fire/fmloddpresent.html>.

The State Fire Marshal's Office has investigated more than 30 on-duty fatalities of firefighters in Texas since September 2001. These investigations have revealed some vital facts every Texas fire official needs to know.

Heart attacks or related cardiac problems have caused 12 of the 33 deaths investigated through the end of fiscal year 2011.

Since 1995, heart attacks have been the leading cause of on-duty deaths of Texas firefighters.

Every fire department (paid and volunteer), fire chief, and firefighter must take the initiative in reducing the number of on-duty heart attack deaths.

When it comes to physical fitness and overall health, every little bit of effort counts.

Extensive research has shown that you can improve your overall health, thus preventing disease and premature death, by making small adjustments and improvements in your daily activities, including physical activity, nutrition, and behavior.

Five chronic diseases associated with obesity:

- Heart disease
- Cancer
- Stroke
- Chronic obstructive pulmonary disease (e.g., bronchitis, emphysema, asthma)
- Diabetes

They account for more than two-thirds of all deaths in the United States. They claim more than 1.7 million American lives each year and hinder daily living for more than one of every 10 Americans. More than 100 million Americans live with chronic disease, and millions of new cases are diagnosed each year.

These chronic diseases are among the most prevalent and deadly health problems facing our nation, but some of them are very preventable. Firefighters and their families can take simple, affordable steps to work physical activity, good nutrition, and behavior changes into their daily routine. You don't have to become a marathon runner or buy a health club membership to improve personal fitness. Your health will improve with modest but regular physical activity and better eating habits.

There are four keys for a healthier America:

- Be Physically Active Every Day.
- Eat a Nutritious Diet.
- Get Preventive Screenings.
- Make Healthy Choices.

The State Fire Marshal's Office also recommends that fire departments and firefighters adopt physical exercise regimens that will best prepare firefighters for the strenuous, often prolonged physical effort involved in fighting fires.

Here are some excellent resources:

Volunteer Fire Service Fitness and Wellness Program: The U.S. Fire Administration (USFA) and the National Volunteer Fire Council (NVFC) have created the Volunteer Fire Service

Fitness and Wellness Project, a partnership initiative to reduce loss of life among volunteer firefighters from heart attack and stress. USFA is a part of the Federal Emergency Management Agency. You can find out more at http://www.usfa.dhs.gov/downloads/pdf/publications/fa_321.pdf.

The National Fallen Firefighters Foundation (NFFF) and Pennell Corporation have established a website, www.everyonegoeshome.com, for the nationwide Firefighter Life Safety Initiatives program.

Appendix 2: State Fire Marshal's Office Alert

An alert issued by the State Fire Marshal's Office in 2005 remains relevant today as cardiovascular disease continues to plague the Texas fire service as the leading cause of death.

ALERT

HEART ATTACKS: LEADING CAUSE OF ON-DUTY TEXAS FIREFIGHTER DEATHS

The State Fire Marshal's Office has investigated eight line-of-duty deaths of firefighters in Texas since September 2001. These investigations have revealed some vital facts every Texas fire official needs to know:

- Heart attacks have caused five of the eight deaths and remain the leading cause of on-duty deaths among Texas fire service personnel.
- Of the line-of-duty deaths not caused by heart attacks, autopsies revealed two of these three firefighters had early stages of heart disease.
- Four firefighters that died of heart attacks had a history of some form of heart disease.
- Four out of the five heart attack deaths occurred during the performance of emergency duties.
- All five firefighters that died of heart attacks were less than 52 years old.

Every firefighter (paid and volunteer) and every fire officer must take the initiative in reducing the number of on-duty heart attack deaths. The State Fire Marshal recommends the following:

- Fire departments should make every reasonable effort to screen firefighters and fire officers for heart disease in an effort to reduce the number of heart attack deaths.
- Departments must encourage applicants to be forthright in disclosing medical conditions that may endanger their lives or the lives of other firefighters or civilians.
- Periodic medical examinations of firefighters should be conducted as outlined in NFPA 1582, *Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians*.
- Fire departments should establish physical performance requirements for firefighters and fire officers and develop physical fitness programs. NFPA 1583, *Standard on Health-Related Fitness Programs for Fire Fighters* is an excellent resource.
- Fire departments should implement SOPs to address these fitness issues.

The Annual Line-of-Duty Death Report and individual investigation reports may be viewed at the State Fire Marshal web site: <http://www.tdi.state.tx.us/fire>

ALERT

First Responders at Risk

Analysis of recent firefighter line-of-duty deaths revealed that three-fourths of deaths occurred responding to, or within ten minutes of arrival on the scene.

Appendix 3: Firefighter Health and Wellness Initiatives

U.S. FIRE ADMINISTRATION

Firefighter Health and Wellness Initiatives

The leading cause of firefighter on-duty deaths is stress and cardiac-related, which historically have accounted for nearly half of all firefighter fatalities. Effective health and wellness programs can reduce this number-one cause of firefighter deaths. To support this, the U.S. Fire Administration (USFA) has developed the following partnerships and programs:

Fire Service Joint Labor Management Wellness-Fitness Initiative

USFA partnered with the International Association of Fire Chiefs (IAFC) and the International Association of Fire Fighters (IAFF) to support expanding the use of the *Fire Service Joint Labor Management Wellness-Fitness Initiative* to additional fire departments. The *Initiative* was developed by the IAFC and the IAFF to enhance firefighter wellness, health, and safety and has been implemented successfully in many fire departments throughout the United States. With the IAFC, USFA supported an ongoing program to develop best practices in firefighter health and wellness for the fire service. The partnership with the IAFF supported the development of the Peer-Credentialing Program for fire department Peer Fitness Trainers that is recognized by the American Council on Exercise (ACE), the largest nonprofit fitness certification and education provider in the world. Many fire department Peer Fitness Trainers have been certified through this program.

Volunteer Fire Service Fitness and Wellness

Partnership efforts between USFA and the National Volunteer Fire Council (NVFC) involved research and development of effective health and wellness programs aimed at the needs of volunteer firefighters. Through this partnership, the *Health and Wellness Guide for the Volunteer Fire and Emergency Services* was developed and updated.

Study of Cancer among Firefighters

USFA and the National Institute for Occupational Safety and Health (NIOSH) partnered on a study to examine the potential for increased risk of cancer among firefighters due to occupational exposures from smoke, soot, and other contaminants in the line of duty. This will be a formal epidemiological study with medical oversight. This study is intended to fill gaps in current knowledge to further characterize the potential cancer risk associated with these exposures.

Study of Fire Service Respiratory Disease

USFA partnered with the IAFF in support of their study of *Respiratory Disease and the Fire Service* that provides the results of a long-term initiative aimed to enhance the occupational health of the fire service. The goal of this project is to research the long-term effects and post exposure mitigation of occupational respiratory exposure to firefighters and develop a report based on this research. This effort involved renowned experts in respiratory medicine. This study also assisted in recognizing and quantifying the impact of, and need for, strategies and programs to deal with occupational respiratory disease for firefighters, their families, and fire departments.

Emergency Incident Rehabilitation

USFA, in partnership with the IAFF, updated the *Emergency Incident Rehabilitation* manual, incorporating the latest information on the care of firefighters engaged in emergency scene and training operations through effective rehabilitation. The manual also provides case studies illustrating the need for effective emergency responder rehabilitation. An effective emergency incident rehabilitation program supports firefighter health and wellness.

Study of the Impact and Mitigation of Sleep Deprivation in Emergency Services

USFA worked with the IAFC in studying the impact of sleep deprivation on human performance and developing mitigation measures related to the fire and emergency services. It examined this issue and its impact on cardiac stress as well as human performance issues such as vehicle operations, firefighting, providing medical care, and managing and commanding incidents. This research resulted in the report and accompanying video presentation—*The Effects of Sleep Deprivation on Firefighters and EMS Responders*.

Study of Emerging Health and Safety Issues of the Volunteer Fire Service

This partnership effort between USFA and the NVFC involved the study of emergent issues related to firefighter occupational health and safety occurring in the volunteer fire service, and developed a comprehensive report detailing programs and strategies on how firefighter fatalities among volunteers may be reduced.

Further information on the projects listed above may be found on the USFA website at www.usfa.dhs.gov/fireservice/research/safety