

# STATE FIRE MARSHAL'S OFFICE

## Line of Duty Death Investigation



**Investigation Number 03-254-03**

**Firefighter Stephen Leigh McGregor**

Baird Volunteer Fire Department

March 8, 2003

Texas Department of Insurance  
Austin, Texas

# TABLE OF CONTENTS

Summary	3
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## ***The Investigation***

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Introduction	3
Origin and Cause Investigation	4
Building Structure and Systems	5
Death Investigation	5
Personal Protective Equipment Evaluation	7
Medical Background of Firefighter	7

## ***Findings/ Recommendations***

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Findings	8
Recommendations	8

## Summary

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Stephen Leigh McGregor, age 62, died of sudden cardiac death while operating a farm tractor to construct fire lines at a field fire on March 8, 2003. McGregor was a member of the Baird Volunteer Fire Department (VFD).

Firefighters on the scene observed McGregor's tractor turn into an area of the field that had been burned over and stop. When the fire was brought under control, firefighters noticed the tractor had not moved and that McGregor was slumped over in the tractor cab.

Firefighter McGregor failed to respond to initial resuscitation efforts by on-scene firefighters and ACLS treatment during the trip to the hospital and he was pronounced dead on arrival at the hospital. The hospital medical records attributed the cause of death to sudden cardiac death.

Firefighter Stephen Leigh McGregor served in the Baird Volunteer Fire Department for two and one-half years. He is survived by his wife Sally and his adult son Jim.

## Introduction

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The Texas State Fire Marshal's Office was notified of the death of Baird firefighter Stephen McGregor on March 13, 2003. State Fire Marshal's Office (SFMO) Arson Investigator Donald Turk was assigned as the lead investigator. Turk traveled to the Baird Volunteer Fire Department on March 13, 2003 to conduct an investigation of the incident.

The SFMO commenced an LODD investigation under the authority of Texas Government Code Section 417.0075. The statute requires SFMO to investigate the circumstances surrounding the death of the firefighter, including the cause and origin of the fire, the condition of the structure, and the suppression operation, to determine the factors that may have contributed to the death of the firefighter. 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.

The National Fallen Firefighter's Foundation and the National Institute for Occupational Safety and Health (NIOSH) Fire Fighter Fatality Investigation and Prevention Program were notified.

## Origin and Cause Investigation

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Baird Fire Chief Russell Robbins conducted a preliminary examination of the scene of the field fire on March 8, 2003. Chief Robbins stated the fire was accidental in origin.

On March 13, 2003 SFMO Investigator Turk Met with Chief Robbins regarding the origin and cause of the fire.

Robbins stated that on March 8, 2003 at approximately 2:26 p.m. Baird firefighter Stephen McGregor called Chief Robbins on his personal cellular phone to request a fire truck to help him with some grass that was burning out of control on his property. McGregor stated he had accidentally set his coastal hay field on fire and thought one fire truck would be able to handle the fire. McGregor had talked with Chief Robbins several times regarding burning of coastal hay fields on his 200 acre farm west of Baird, Texas.

Chief Robbins immediately called Callahan County Sheriff's Office Dispatch and requested the dispatch of Baird Volunteer Fire Department to McGregor's property at 3377 Private Road 2831 in rural Callahan County. The fire department was paged at 2:28 p.m.

Upon arrival at the fire scene, one acre of coastal hay field and approximately 200 large round bales of hay were on fire. Robbins observed McGregor in his tractor using the front end loader to cut a fire line around the leading edge of the field fire.

The fire was brought under control after a short time. Firefighters later burned off a small additional portion of the field to provide a buffer around the burning round bales and prevent further spread due to forecast strong north winds. Firefighters remained on the scene until 7:30 p.m. to insure the burning round bales did not ignite any other fires in the area.

SFMO Investigator Turk and Chief Robbins traveled to the fire scene on March 20, 2003 to conduct a secondary examination of the fire scene. After obtaining consent to enter the property from Mrs. McGregor, Turk and Robbins determined the fire originated approximately 30 yards south from the gate at the corner of the north and west fence lines on the 200 acre property.

The fire spread into the bales of hay stored along the west fence line north of the point of origin. The fire then spread into the field north, east, and south of the point of origin.

Turk and Robbins examined McGregor's tractor located on the property. The tractor was equipped with a front end loader and a platform on the rear with a water spray rig and propane fired weed burner.

Mrs. Sally McGregor was interviewed and she stated that she was aware her husband, Stephen, was working in the hay fields the day of the fire, clearing fence lines.

McGregor had advised her he wanted to burn the coastal hay field. She did not observe Mr. McGregor working in the fields or the start of the fire.

SFMO investigator Turk determined the origin of the fire was approximately 30 yards south of the intersection of the north and west fence lines.

## **Building Structure and Systems**

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No buildings were a factor in the fatality.

## **Investigation of the Death of the Firefighter**

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Chief Robbins immediately called Callahan County Sheriff's Office Dispatch and requested the dispatch of Baird Volunteer Fire Department to McGregor's property at 3377 Private Road 2831 in rural Callahan County. The fire department was paged at 2:28 p.m.

Baird VFD brush truck 707 with Chief Robbins and firefighter Royce McWhorter departed the fire station at 2:30 p.m. and arrived at the fire scene at 2:35 p.m. Upon arrival, Chief Robbins observed approximately one acre of coastal hay field and approximately 200 large round bales of hay on fire. Robbins observed McGregor in his tractor using the front end loader to cut a fire line around the leading edge of the field fire. Robbins categorized the smoke as heavy and his report stated he could barely see McGregor's tractor as it cut fire lines around the burning area. Firefighter McWhorter operated a hose line on the head of the fire at the north end of the west fence line to prevent the fire from crossing the fence into a wooded area. McGregor drove his tractor to the south end of the fire and began driving north, using his tractor front loader bucket to cut a fire break.

Brush truck 708 with firefighters Jeff Hammett and Bill Cartwright departed the station at 2:31 p.m. and arrived at the fire at 2:37 p.m. Chief Robbins instructed 708 to go to the south end of the fire and return back to the north, extinguishing the line of burning hay until it met back up with brush truck 707 along the line of fire.

After extinguishing the head fire, Robbins and McWhorter on 707 drove south, extinguishing fire. They met 708 about halfway down the line, and both turned back and retraced their path, extinguishing any remaining spot fires.

As 707 drove north toward its original location, Chief Robbins observed McGregor in his tractor at the north end of the fire line. McGregor turned his tractor into the burned area of the field and stopped. As 707 passed the tractor, Robbins observed McGregor leaning to the right side of the tractor cab. Robbins stated it appeared that McGregor was bent over doing something in the floorboard area of the tractor.

As 707 approached the far north end of the fire line, Robbins looked back at McGregor's tractor and observed McGregor had not moved from his bent over position in the tractor cab.

Robbins parked brush truck 707 and proceeded on foot to McGregor's tractor. He observed the tractor was still running and not moving. The left tractor cab door was latched open. McGregor did not respond when Robbins called out his name. Robbins climbed onto the tractor step and called out McGregor's name a second time and did not get a response.

Robbins entered the tractor cab and moved McGregor to an upright position in the tractor seat and found him unresponsive. Robbins applied sternum rubs to McGregor and he did not respond to the painful stimuli. Robbins did not observe any signs of breathing and could not detect a pulse.

Firefighter McWhorter arrived at the tractor and Robbins instructed him to enter the tractor cab and prepare to remove McGregor. Robbins called Callahan County Sheriff's Dispatch at 2:43 p.m. and requested an ambulance. Robbins returned to the tractor and McWhorter confirmed that McGregor had no detectable vital signs. Robbins and McWhorter removed McGregor from the tractor cab and moved him approximately 15 yards to an unburned portion of the hay field. McGregor did not have a pulse or spontaneous breathing after he was moved. Robbins and McWhorter initiated cardiopulmonary resuscitation (CPR) on McGregor and advised the Sheriff's dispatcher of the situation.

After being unable to contact brush truck 708 by radio, Chief Robbins attracted their attention with hand signals and summoned them to his location to assist with CPR. Firefighter McGregor aspirated stomach contents while receiving CPR and Chief Robbins reported that it was difficult to maintain an open airway.

Brush truck 709 with Captain Edward Konczak and firefighter Chad Franke departed the Baird fire station at 2:37 p.m. and arrived at the fire scene at 2:47 p.m. Upon arrival at the fire scene, they met Chief Robbins and assisted with the emergency care for firefighter McGregor.

Baird VFD rescue unit 704 with firefighter Billy Harris was dispatched at the time the ambulance was requested at 2:43 p.m. and arrived at the scene at 2:54 p.m. The rescue truck carries emergency medical supplies and rescue equipment. Oxygen was obtained and administered to McGregor via a bag-valve-mask. An Automatic External Defibrillator (AED) was connected to McGregor. The AED advised defibrillation was

required, and firefighters administered one shock with no success in restoring McGregor's heartbeat. Per instructions from the AED, no additional shocks were administered and firefighters continued CPR.

The Citizens Emergency Medical Service ambulance arrived at 2:56 p.m., just as the fire department AED was finishing the analysis of McGregor's cardiac inactivity. Ambulance paramedics began advanced cardiac life support (ACLS) measures immediately. After not being able to intubate McGregor successfully, paramedics inserted an esophageal obturator airway to provide a protected route for the administration of oxygen.

McGregor failed to respond and CPR continued as he was loaded into the ambulance, which departed the fire scene at 3:00 p.m. CPR and ACLS measures, including administration of cardiac drugs and defibrillation, continued as the victim firefighter was transported by ambulance.

The ambulance arrived at Hendrick Medical Center in Abilene at 3:25 p.m. Firefighter McGregor never responded to the ACLS measures and CPR administered during the 43 minutes from the time he was found unresponsive to the time of his arrival at the hospital trauma center. Based on the time elapsed since McGregor's was stricken and his failure to respond to treatment, trauma room physician Dr. J. Jackson pronounced McGregor dead on arrival at 3:29 p.m. Dr. Jackson noted "sudden cardiac death" and hypertension as his diagnosis in the trauma center treatment records. The local Justice of the Peace was notified. No autopsy was performed.

## **Personal Protective Equipment Evaluation**

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Firefighter McGregor was not wearing any firefighter protective equipment during the period he was conducting wildland fire control operations.

## **Medical Background of Victim**

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The Baird Volunteer Fire Department membership application submitted by Stephen McGregor does not have any questions regarding physical or medical conditions. McGregor was accepted for membership on August 3, 2000 when he was 59 years old.

Baird VFD requires firefighters to attend at least one meeting out of every nine held in order to maintain active membership. No training records for McGregor were obtained by SFMO investigator Turk.

Hospital records and Mrs. McGregor stated that Mr. McGregor had a history of high blood pressure (hypertension). McGregor was taking prescription medicine for his hypertension, including HCTZ and Lisinopril.

Hospital records stated McGregor had a family history of heart disease, but Mrs. McGregor stated that other than the hypertension, she was not aware of any other medical problems or conditions. The trauma center record stated McGregor weighed 230 pounds.

## Findings

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**Finding 1:** Based on medical history information provided by the firefighter's family and by medical facility records, Firefighter McGregor suffered from hypertension.

## Recommendations

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**The following recommendations are based upon nationally recognized consensus standards for the fire service. All fire departments should be aware of the content of the standards and should develop programs based on them to increase the level of safety for fire department personnel. Volunteer fire departments are not required by state statute to comply with these standards.**

- Fire departments should make every reasonable effort to screen firefighters for heart disease and related diseases in an effort to reduce the number of deaths caused by heart attack and related deaths.

The State Fire Marshal's Office recommends that all fire departments use NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, as a guide for all fire protection operations.

NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Chapter 10.1.3 states: "Candidates and members who will engage in fire suppression shall meet the medical requirements specified in NFPA 1582, *Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians*, prior to being medically certified for duty..."

- The periodic medical evaluations recommended in NFPA 1582 are designed to evaluate the person's continued ability to perform his or her duties and to detect any other significant changes in the condition of his or her health. The latter includes possible changes or abnormalities related to conditions to which the firefighter is exposed.

NFPA 1582 recommends the following: "Every year, each member will be medically evaluated by the fire department physician. This medical evaluation includes an update on the member's medical history, including any significant changes, a brief review of symptoms, and a report on any significant firefighting-related exposures experienced during the past year. Height, weight, visual acuity,

and blood pressure are measured and recorded. The extent of the medical evaluation and additional testing will depend on the member's medical condition.

A more thorough evaluation, including a medical examination, is conducted on a periodic basis. For individuals less than 30 years of age, the medical evaluation and examination is conducted at least every three years; for those 30 to 39 years of age, at least every two years; and for those 40 years of age or over, every year." This evaluation should include those items listed in Appendix B of NFPA 1582.

- NFPA 1582 recommends periodic treadmill testing on members at age 40. "In those with one or more coronary artery disease risk factors [premature family history (less than age 55), hypertension ...], testing should be started by age 35. The frequency of testing should increase with age, but at the minimum the test should be done at least every two years.

NFPA 1582, *Standard on Medical Requirements for Fire Fighters and Information for Fire Department Physicians*, states: "Hypertension is a progressive illness leading to functional impairment with the potential for sudden incapacitation."

NFPA 1582 describes a history of hypertension as a Category B Medical Condition. This is a medical condition that, "based on its severity or degree, could preclude a person from performing as a member in a training or emergency operational environment by presenting a significant risk to the safety and health of the person or others."