Nine Career Firefighters Injured at Residential Structure Fire – Texas

Executive Summary

Photo 1: View of the rear of structure, post-fire.
(Courtesy of the fire department)

On August 30, 2025, two firefighters were seriously injured and seven sustained minor injuries while operating at a residential structure fire. At 21:10 hours, the city public safety answering point (PSAP) received a 911 call from an occupant reporting a fire in the master bedroom of a residential home. At 21:11 hours, the PSAP dispatched Tiller 11, Medics 3 and 11, Trucks 3 and 5, Engine 7, and Battalion Chief 2 (BC2) for a residential structure fire. At 21:17 hours, Tiller 11 and Medic 11 arrived on scene. Tiller 11 gave a size-up of a two-story residence with heavy smoke coming from the front door on Side Alpha. Captain 11 reported he was unable to conduct a 360 size-up, there was a hydrant on Side Alpha, and his crew would conduct a fast attack with a pre-connect. Captain 11 assigned Medic 11 firefighters to conduct search operations as both crews entered the structure, proceeding to the second division. Truck 3 and Medic 3 arrived on scene. BC2 arrived on scene with his incident command technician (ICT) and assumed command as the incident commander (IC). Truck 3 deployed a secondary hoseline and entered the structure. Between 21:20 and 21:33 hours, all interior crews worked on the second division in zero visibility conditions but were unable to locate the fire. Exterior crews deployed hoselines on Side Delta after locating the fire on the first division at the Side Charlie/Delta corner. At 21:34 hours, Tiller 11 and Medic 11 firefighters on the second division became low on air and decided to exit. Captain 3 (Truck 3 officer) reported that his crew was still operating on the second division but they were headed to Side Charlie sector as flames were visible. Tiller 11 firefighter ran out of air, and Captain 3 called a Mayday. Captain 11 then ran out of air. Medic 5 entered the structure as the rapid intervention team (RIT) and located Tiller 11 firefighter. They began to extricate him and, with the assistance of Truck 5, cleared the structure at 21:49 hours – followed by the remaining interior crews. Tiller 11 firefighter and Captain 11 were transported to a local hospital for treatment of significant smoke inhalation. Seven additional firefighters were

transported to the local hospital and evaluated for smoke inhalation, an overexertion injury, and extreme dehydration.

Contributing Factors

- *Scene size-up and risk assessment*
- *Supervision of interior operations*
- *Fire behavior, dynamics, and tactics*
- *Air management and firefighter survival*
- *Clear communication of assignments*
- *Communication of critical information*
- *Resources for responding to Mayday*
- *Staged and available emergency medical services (EMS)*
- *Psychological safety*

Key Recommendations

Fire departments should:

- *Ensure the first arriving resource completes an initial scene size-up and risk assessment to inform a risk-benefit analysis before committing firefighters to interior operations.*
- *Ensure ICs immediately establish divisions/groups with a supervisor to communicate conditions and provide accountability.*
- *Ensure each apparatus has established riding assignments to designate a crew officer.*
- *Train firefighters and fire officers to select interior fire attack strategies and tactics based on fire conditions present.*
- *Ensure firefighters and fire officers are properly trained in and use principles of air management and survival procedures for out-of-air emergencies.*
- *Train firefighters and fire officers to use Task-Location-Objective assignments for clear communication of expectations.*
- *Educate personnel on use of radio communication processes for sharing critical information, such as conditions and actions.*
- *Ensure a rapid intervention team/crew is dedicated and in place during structural firefighting operations to immediately respond to a firefighter emergency.*
- *Employ an on-deck crew in a forward staged position throughout the incident to be assigned to developing needs.*

Nine Career Firefighters Injured at Residential Structure Fire – Texas

- *Ensure EMS with transport capability is on scene at any fire or special operation location to provide emergency medical care and transport.*
- *Develop and implement a professional development program that promotes psychological safety, and effective safety communication during incidents as a key element for improving worker empowerment and decision making on the fireground.*

For further information, visit the program at www.cdc.gov/niosh/firefighters/fffipp/ or call 1-800-CDC-INFO (1-800-232-4636).

Nine Career Firefighters Injured at Residential Structure Fire – Texas

Introduction

On August 30, 2025, two firefighters were seriously injured and seven sustained minor injuries while operating at a residential structure fire. On September 9, 2025, the fire department notified the National Institute for Occupational Safety and Health (NIOSH) of this incident. On September 22-24, 2025, two investigators representing the NIOSH Fire Fighter Fatality Investigation and Prevention Program (FFFIPP) initiated a virtual investigation into this incident. The NIOSH investigators conducted interviews with command officers, fire officers, and firefighters who were on scene at the time of the incident. The investigators reviewed fire department standard operating procedures (SOPs), training records, dispatch records, witness statements, and investigation documents.

Fire Department

The career fire department in this incident has a 62-square-mile jurisdiction, serves a population of 230,000 residents, annually responds to an average of 20,000 calls, and provides EMS at the advanced life support (ALS) level. The fire department is comprised of 270 personnel with 212 in operations. It maintains three shifts: A, B, and C. Each shift is staffed with a minimum of 57 personnel on-duty per shift, across the 10 fire stations. Shifts operate 48 hours on with 96 hours off. The fire department's leadership contains a fire chief, three assistant chiefs, battalion chiefs, and captains.

Training, Education, and Professional Development

The fire department in this incident provides initial training for recruits and professional development for fire officers. Firefighters are sent to a local fire academy to train and test for national certification as NFPA 1010 Fire Fighter I and II as well as NFPA 1072 Hazardous Materials Responder at the awareness level. Firefighters are also trained to receive certification as State of Texas paramedics. BC2 (IC) had 26 years of total fire service experience at the department. Tiller 11 firefighter (seriously injured) had two months of fire service with the department and three years at a previous department. Captain 11 (seriously injured) had 21 years of fire service with the department.

Apparatus, Staffing, and Communications

At 21:11 hours, the following units were dispatched for a fire (see Table 1):

Table 1. Units dispatched and arrival time

Apparatus	Staffing	Arrival On Scene
Tiller 11	4	21:17
Medic 11	2	21:17
Truck 3	4	21:18
Medic 3	2	21:18
BC2 (IC and ICT)	2	21:18
Truck 5	3	21:21
Engine 7	4	21:25
Medic 5	2	21:41

The city PSAP dispatches for EMS, fire, and law enforcement emergency and non-emergency requests for service. The PSAP includes communications manager and telecommunicators which include shift supervisors. Fire departments are dispatched on one channel and operate on multiple fireground channels. The PSAP dispatches fire department stations based on geographic location and type of emergency incident.

Building Construction

This incident involved a type V, large-area residential structure that was built in 2016 (**see Photo 2**). It was two stories, contained 4,450 sq ft of living space, and included a surrounding security fence. The structure contained high ceilings and a winding staircase to the second division (**see Photo 3**). The structure layout included five bedrooms and a raked (sloped floor) media (theater) room (**see Photo 4**).

Photo 2: View of structure, pre-incident.
(Courtesy of the fire department)

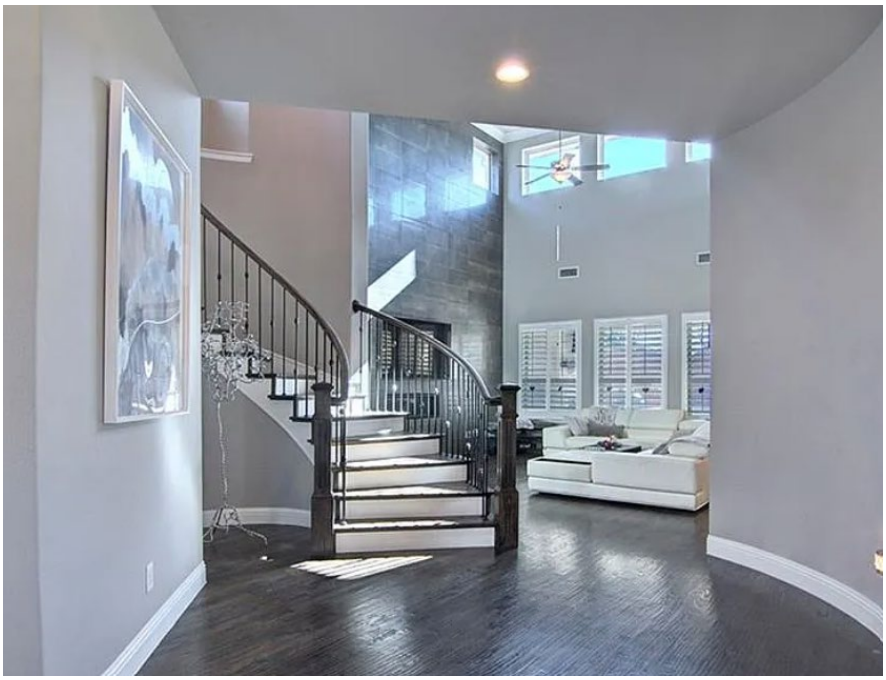

Photo 3: Winding staircase, pre-incident.
(Courtesy of the fire department)

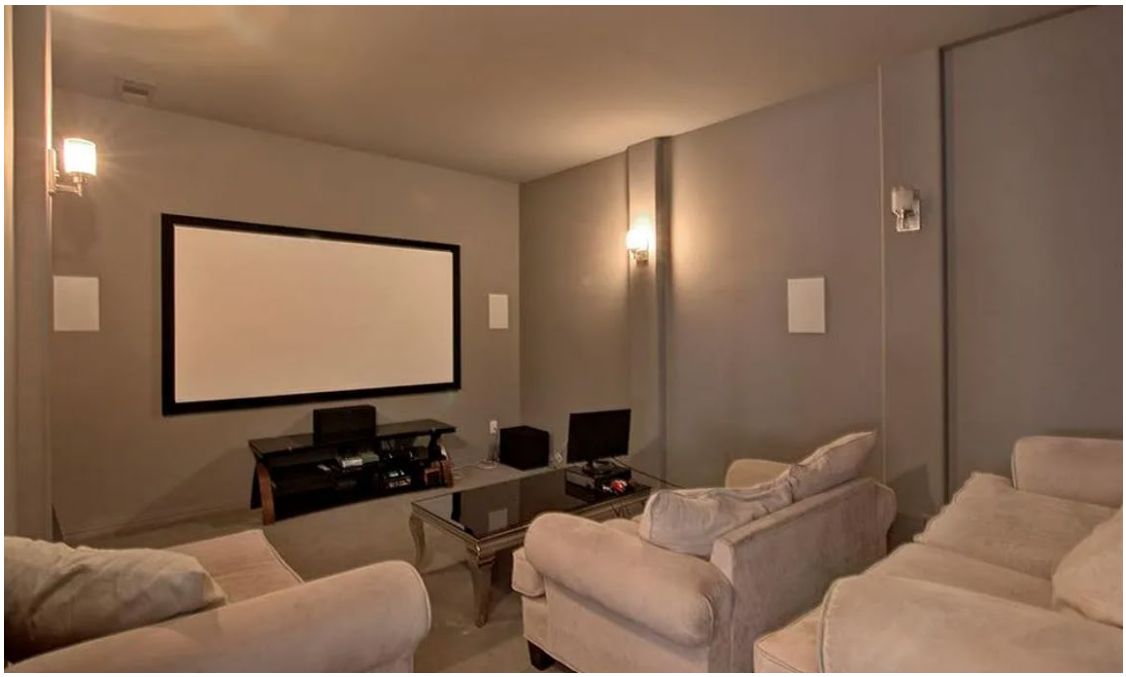

Photo 4: Media room, pre-incident.
(Courtesy of the fire department)

Nine Career Firefighters Injured at Residential Structure Fire – Texas

Incident Timeline

The following timeline is a summary of events that occurred as the incident evolved shortly after 21:11 hours on August 30, 2025. Not all incident events are included in this timeline. The times are to the minute and were taken from the fire department's *National Fire Incident Reporting System* (NFIRS) fire reports, dispatch log, on scene accountability documentation, and interview notes.

Time August 30, 2025	Fireground Operations, Response, and Details
21:10 Hours	• PSAP received a 911 call from an occupant reporting a fire in the master bedroom of a residential home. The occupant stated that everyone was out and the home was filling with smoke.
21:11 Hours	• PSAP transmitted an alarm assignment for a residential structure fire. • Tiller 11, Medics 3 and 11, Trucks 3 and 5, Engine 7, and BC2 (IC and ICT) were dispatched and assigned fireground 1.
21:17 Hours	• Tiller 11 and Medic 11 arrived on scene. • Captain 11 gave a size-up of a two-story residence with heavy smoke coming from the front door on Side Alpha but was unable to conduct a 360 size-up. • Captain 11 reported they had a hydrant on Side Alpha, and that his crew would be conducting a fast attack with a pre-connect.
21:18 Hours	• Truck 3 and Medic 3 arrived on scene. • Captain 11 assigned Medic 11 firefighters to conduct search operations as both crews entered the structure and proceeded to the second division. • BC2 arrived on scene.
21:19 Hours	• BC2 assumed command as IC.
21:20 Hours	• Captain 3 gave a size-up of heavy smoke showing on Sides Bravo, Charlie, and Delta. • BC2 ordered Captain 3 to get a secondary hoseline in place. • Captain 3 and Truck 3 crews entered the structure and proceeded to the second division.
21:21 Hours	• Truck 5 arrived on scene, cut the security fence on Side Delta for access, deployed a hoseline, and reported fire on Side Charlie.
21:23 Hours	• Captain 11 reported that his crew was operating on the Side Charlie/Delta corner inside the structure.
21:25 Hours	• Engine 7 arrived on scene, reported that there was fire above a garage on Side Charlie/Delta corner, and deployed a hoseline to Side Delta.
21:30 – 21:33 Hours	• Captain 3 reported heat and heavy smoke but no source of fire yet. • BC2 reported that water was on the fire with Engine 7 hitting the bulk of it on Side Delta.

Nine Career Firefighters Injured at Residential Structure Fire – Texas

Time	Fireground Operations, Response, and Details
21:34 Hours	• Tiller 11 firefighter and Medic 11's end-of-service time indicators (EOSTIs) began to sound. • Captain 11 reported that Tiller 11 and Medic 11 were coming out to recycle.
21:35 Hours	• Engine 7 reported two hoselines on the fire with conditions improving but extension on Side Charlie/Delta corner.
21:36 Hours	• Captain 3 reported that his crew was still operating on the second division but they were headed to Side Charlie sector as flames were visible (area of the media room). • Tiller 11 firefighter ran out of air.
21:38 Hours	• Captain 3 called a Mayday, stating a firefighter was out of air on the second division. • BC2 responded requesting emergency tones and emergency traffic only. • Captain 11 ran out of air.
21:41 Hours	• Medic 5 entered the scene and requested orders after hearing the Mayday. • BC2 ordered them to take the RIT pack to the second floor and assist with the Mayday. • BC2 requested a second alarm.
21:43 Hours	• Truck 3 firefighters exited the building with their EOSTIs sounding. • Medic 5 reported that they were entering the structure as RIT.
21:46 Hours	• Medic 5 located and began to extricate the Tiller 11 firefighter. • Truck 5 reported that they were relocating to Side Alpha to assist with RIT. • Medic 5 requested Truck 5 assist with removing the Mayday firefighter (Tiller 11 firefighter).
21:49 – 21:53 Hours	• Engine 7 reported that the Mayday firefighter and RIT were out of the building. • Medic 11 firefighters assisted in removing Tiller 11 firefighter from his SCBA and structural firefighting turnout gear. • BC2 initiated a personnel accountability report (PAR) and ordered a defensive strategy.
21:55 Hours	• BC2 confirmed to the PSAP that the Mayday was clear and all firefighters accounted for.
21:59 Hours	• Tiller 11 firefighter and Captain 11 were transported to a local hospital for treatment of significant smoke inhalation.
August 31, 2025	
00:01 – 06:25 Hours	• The fire was under control with on-scene units working on hot spots.

Time	Fireground Operations, Response, and Details
	• Seven additional firefighters were transported to the local hospital and evaluated for smoke inhalation, overexertion injury, and extreme dehydration.
06:25 Hours	• Last unit cleared the scene.

Personal Protective Equipment

At the time of the incident, all firefighters were wearing full structural firefighting turnout gear and a NIOSH Approved® SCBA. The fire department contacted the SCBA manufacturer and the NIOSH National Personal Protective Technology Laboratory to report adverse conditions involving multiple SCBAs that firefighters experienced at the incident, per the requirements of NFPA 1850.

Weather Conditions

At 20:53 hours on August 30, 2025, the outdoor temperature was 76°F, dewpoint was 71°F, the wind was out of the east at 3 mph, there had been no precipitation in the last 24 hours, and conditions were cloudy [Weather Underground 2025].

Investigation

At approximately 21:10 hours, the PSAP received a 911 call from an occupant reporting a fire in the master bedroom of a residential home. The occupant stated that everyone was out and the home was filling with smoke. At 21:11 hours, the PSAP transmitted an alarm assignment for a residential structure fire. Tiller 11, Medics 3 and 11, Trucks 3 and 5, Engine 7, and BC2 (IC and ICT) were dispatched and assigned fireground 1. While en-route, Captain 11 (acting officer of Tiller 11) accessed an electronic aerial map of the scene to get details on the location as well as the location of the nearest hydrant.

At 21:17 hours, local law enforcement arrived on scene reporting significant smoke and that everyone safely evacuated the structure. At the same time, Tiller 11 and Medic 11 arrived on scene, observing smoke on Sides Alpha, Charlie, and Delta. Tiller 11 parked in front of the structure and gave a size-up of a two-story residence with heavy smoke coming from the front door on Side Alpha, which was open. Upon exiting the apparatus, Captain 11 observed smoke coming from the eaves of Side Alpha. He found fences on both sides of the structure as well as a pad locked gate at the driveway and reported to the PSAP that he was unable to conduct a 360 size-up. He announced that they had a hydrant on Side Alpha and that his crew would conduct a fast attack with a pre-connect from Tiller 11. Tiller 11's drivers began to establish a water supply, while the Tiller 11 firefighter stretched a 200 ft 1 ¾-inch pre-connect in the front yard.

Captain 11 ordered Tiller 11 firefighter to control the front door as they prepared to enter the structure. When Tiller 11 firefighter turned on his cylinder, he heard a rush of air. Captain 11 noticed that Tiller 11 firefighter's quick connect was disengaged from the SCBA cylinder, which allowed air to flow directly out and not into the SCBA. Captain 11 helped resolve the SCBA issue.

At 21:18 hours, Truck 3, Medic 3, and BC2 arrived on scene. At the same time, Captain 11 assigned Medic 11 firefighters to conduct search operations as both crews entered the structure through the front door into the hallway. Tiller 11 firefighter entered first, observing smoke that was not banked to the floor, with a heavy exhaust movement at the ceiling on the first division. He proceeded down a hallway and encountered the winding staircase on the left-hand side. He proceeded up the staircase to the second division. Seeing Tiller 11 firefighter proceed to the second division, the Medic 11 firefighters assisted him in taking the hoseline up the staircase, followed by Captain 11. Halfway up the staircase, both crews entered zero visibility conditions in thick black smoke.

At 21:19 hours, BC2 assumed command as IC. He parked on the opposite side of the road from the fire building, but his view was obstructed by Tiller 11. He performed command from the car with his ICT for the incident. Captain 3 (Truck 3 officer) gave a size-up at 21:20 hours of heavy smoke showing on Sides Bravo, Charlie, and Delta as they arrived on scene. BC2 ordered Captain 3 to get a secondary hoseline in place, and Truck 3 firefighters began to establish a 200 ft 1 ¾-inch hoseline from another discharge on Tiller 11.

As a crew of four, Truck 3 entered the structure, following Tiller 11's hoseline to the second division. Truck 3 left one firefighter at the bottom of the staircase for hose management. As they reached the top of the staircase, Captain 3 began a left-hand search towards the Side Charlie/Delta corner while two Truck 3 firefighters remained to protect egress. Tiller 11, Medic 11, and Captain 3 began pulling ceiling as they believed the fire was in the attic. Tiller 11 firefighter and Truck 3 began spraying water towards the ceiling where the others were making holes. All firefighters on the second division began bumping into each other in the zero visibility conditions. The firefighters noticed that the second division was loud with no clear explanation and their SCBA voice amplifiers were not working. This required them to get closer to each other and yell for communication. All firefighters on the second division attempted to use their personal thermal imaging cameras and continued to pull ceiling but could not locate the fire. All thermal imaging camera screens were either white or blue with no useful readings to display.

At 21:21 hours, Truck 5 arrived on scene and began to stage. Due to a car in the driveway in front of the pad locked gate, the Truck 5 crew used a saw to cut the security fence on Side Delta for access. They pulled a 1 ¾-inch hoseline down Side Delta for exterior suppression. The Truck 5 crew observed fire on Side Charlie and requested a secondary hoseline deployed down Side Delta. At 21:23 hours, Captain 11 reported that his crew was operating on the Side Charlie/Delta corner inside the structure. He did not report that they were operating on the second division. With no fire found, he ordered Tiller 11 firefighter to spray water to cool the space.

At 21:25 hours, Engine 7 arrived on scene and reported fire above a garage on Side Charlie/Delta corner (**see Photo 5**). Upon arrival, they deployed a 2 ½-inch hoseline down Side Delta to assist Truck 5 with exterior suppression. At 21:30 hours, Captain 3 reported heat and heavy smoke but no source of fire yet. He ordered the two hoselines on the second division to stop flowing water until the fire was located. BC2 reported water on the fire, with Engine 7 hitting most of it on Side Delta. When departing the local hospital and hearing the structure fire call, Medic 5 staged at the intersection near the scene. They texted BC2 to inform him they were close in case he needed them to respond to the scene.

Nine Career Firefighters Injured at Residential Structure Fire – Texas

Photo 5: Fire conditions on Side Charlie/Delta corner.
(Courtesy of the fire department)

At 21:34 hours, Tiller 11 firefighter was told by a Medic 11 firefighter that his EOSTI was sounding and was running low on air. Captain 11 noticed Medic 11's EOSTIs sounding and radioed that Tiller 11 and Medic 11 were coming out to recycle. Captain 11 told the Medic 11 firefighters to wait at the stairs while he located the Tiller 11 firefighter. At 21:35 hours, Engine 7 reported two hoselines on the fire with conditions looking better and extension on the Side Charlie/Delta corner. Medic 3 responded that they were going to assist Engine 7 with the extension on Side Charlie. The Medic 11 firefighters followed the hoseline to the bottom of the staircase. Since they were running low on air, they exited the structure to change cylinders.

At 21:36 hours, Captain 3 reported that his crew was still operating on the second division but moving to Side Charlie sector as flames were visible (area of the media room). As they moved towards this side of the structure, a Truck 3 firefighter bumped into Tiller 11 firefighter, knocking him off the hoseline and onto the floor. Tiller 11 firefighter became disoriented, ending up in the raked media room on the second division. As Captain 11 attempted to stand him up, both fell to the floor in the media room. As Captain 11 attempted to stand, he felt heat and believed the floor was burnt out.

Captain 3 located Tiller 11 firefighter, who was running out of air in the media room. With conditions worsening, Captain 3 ordered his crew to exit the structure. Tiller 11 firefighter ran out of air. He unplugged his regulator from his facepiece, covered the connection point with his gloved hand, and laid on the floor. At 21:38 hours, Captain 3 called a Mayday stating a firefighter was out of air on the second division. BC2 responded, requesting emergency tones and emergency traffic only. Captain 11 attempted to connect his buddy breather to Tiller 11 firefighter's SCBA. However, Captain 11 ran out of air. He immediately removed his regulator, but heat and smoke burned his throat. He loosened his facepiece enough to draw in air through his hood and plugged the regulator back in. As they waited for help, Captain 3 told the Tiller 11 firefighter to stay on the floor. After hearing the Mayday, the Medic 11 firefighters went to the front door, where they began to shine lights and make noise with their tools to indicate the exit direction for the interior crews. EMS1 did not allow unassigned personnel to reenter.

At 21:41 hours, Medic 5 entered the scene and requested orders after hearing the Mayday. BC2 ordered them to take the RIT pack to the second floor and assist with the Mayday. BC2 requested a second alarm. At 21:43 hours, Truck 3 firefighters exited the building with their EOSTIs sounding. They

informed Medic 5 of the last known location of Captain 3 and that the Mayday was on the second division. Medic 5 reported entering the structure as RIT. BC2 responded, telling Medic 5 to turn left at the top of the stairs. As Medic 5 entered, they followed the hoselines to the second division, where they located Captain 3 at 21:46 hours. Fire was visible at the ceiling of the media room as Captain 3 helped Medic 5 apply the regulator of the RIT pack to Tiller 11 firefighter. Although still conscious, Tiller 11 firefighter was unable to self-extricate, requiring Medic 5 to physically move him to the stairs. Captain 11 and Captain 3 followed shortly after.

Truck 5 reported that they were relocating to Side Alpha to assist with RIT. They entered the structure and reported that they were on the staircase. Medic 5 responded, requesting that Truck 5 assist with removing the Mayday firefighter. During extrication, Tiller 11 firefighter became unconscious and more difficult to move. They reported that they were on the left side of the staircase on the second division and had fire overhead. At 21:47 hours, BC2 ordered all units to withdraw from the structure. Medic 11 responded that they would be EMS and began doffing their equipment to prepare for medical treatment.

At 21:49 hours, Engine 7 reported that the Mayday firefighter and RIT were out of the building. Medic 11 firefighters assisted in removing Tiller 11 firefighter from his SCBA and structural firefighting turnout gear. They put him onto the stretcher and began patient assessment. Captain 11 and Captain 3 exited the structure. At 21:53 hours, BC2 initiated a PAR and ordered a defensive strategy (**see Photo 6**). He confirmed to the PSAP that the Mayday was cleared and all firefighters were accounted for at 21:55 hours. Minutes later, interior crews transported Tiller 11 firefighter and Captain 11 to a local hospital for treatment of significant smoke inhalation.

Photo 6: Defensive operations on Side Alpha, post-extrication.
(Courtesy of the fire department)

The next day, the fire was under control with on scene units still working on hot spots. The last unit cleared the scene at 06:25 hours.

Fire Cause and Origin

The fire department cause and origin investigation determined that the fire started in the master bedroom on the first division and was classified as accidental.

Cause of Injuries

The Tiller 11 firefighter and Captain 11 sustained significant smoke inhalation injuries requiring them to be off duty for recovery. Seven additional firefighters were transported to the local hospital and evaluated for smoke inhalation, an overexertion injury, and extreme dehydration.

Contributing Factors

Occupational injuries and fatalities are often the result of one or more contributing factors or key events in a larger sequence of events. NIOSH investigators identified the following items as key contributing factors in this incident that ultimately led to the serious injury of two firefighters:

1. Scene size-up and risk assessment
2. Supervision of interior operations
3. Fire behavior, dynamics, and tactics
4. Air management and firefighter survival
5. Clear communication of assignments
6. Communication of critical information
7. Resources for responding to Mayday
8. Staged and available EMS
9. Psychological safety

Recommendations

Recommendation #1: Fire departments should ensure the first arriving resource completes an initial scene size-up and risk assessment to inform a risk-benefit analysis before committing firefighters to interior operations.

In this incident, Captain 11 relayed that he was unable to complete a 360 size-up of the structure due to fences on Sides Bravo and Delta. The fire was on the first division of the Side Charlie/Delta corner. Later-responding personnel also did not attempt to perform a 360 size-up before committing to interior operations. The 360 size-up and risk assessment is essential to determine the possible survivability of occupants, fire dynamics, and firefighter safety information [NFPA 1700 2026].

This information lays the foundation for the entire operation. A risk assessment can help determine whether a strategy should be offensive or defensive and help with the tactics development to achieve the desired objective(s). Some of the primary considerations in conducting a size-up and risk assessment include fire department assets, life hazard, fire development (and forecasting), time of day, building type/occupancy, and building condition [NIOSH 2025a; NFPA 1700 2026]. Other considerations include an evaluation of factors such as the fire size and location, length of time the fire has been

burning, fuel load and presence of combustible or hazardous materials, exposures, and weather conditions. Information on the structure itself can affect whether an offensive or defensive strategy is employed. This includes size, construction type, age, condition (evidence of deterioration, weathering, etc.), evidence of renovations, lightweight construction, loads on roof and walls (air conditioning units, ventilation ductwork, utility entrances, etc.), and available pre-plan information. [NIOSH 2008; NFPA 1700 2026]. It is important to get fire department resources to Side Charlie as quickly as possible.

A risk/benefit analysis uses hazard identification and situation assessment from the scene-size up to weigh the potential risks compared to potential benefits. ICs should collect current, accurate, and relevant information for a risk/benefit analysis to inform effective initial and ongoing actions [NIOSH 2025a; NFPA 1700 2026]. A sound risk management plan ensures that risks are evaluated and matched with appropriate actions and conditions. NFPA 1550 [2024] states the IC should determine the life safety profile of the incident and level of risk consistent with the established principles. Risk management should follow these principles [NFPA 1550 2024]:

- Limit activities that present a significant risk to the safety of members to situations where there is potential to save endangered lives.
- Recognize activities that are routinely employed to protect property as risks to the safety of members. Limit, reduce, or avoid these risks when possible.
- No risk that threatens the safety of members is acceptable when there is no possibility to save lives or property.
- In situations where risk to fire department members is excessive, limit all activities to defensive operations.

Continuous communication supports effective risk assessments. It also allows the IC and all personnel operating at an incident to be aware of changing conditions and adjust to avoid hazards or mitigate risks. A 360 assessment is an important component of the scene size-up and assists with a complete risk assessment. In fact, the International Association of Fire Chiefs' *Rules of Engagement for Structural Firefighting* recommends that the first rule for ICs is to rapidly conduct or obtain a 360 size-up of the incident. This provides the IC and personnel knowledge of the building layout, construction, access/egress points, fire location and direction of spread, and obstacles or hazards [NIOSH 2025a].

Many incidents contain obstacles that prevent viewing all sides of a structure. Obstacles occur most often at incidents with large geographical areas. These large areas may include commercial buildings or scenes with access issues that hamper the ability to do a 360 size-up. Consequently, the IC needs to employ a tactical-level management to inform their scene size-up and risk/benefit analysis. This strategy can be supported by establishing divisions or groups to direct operations in specific geographic areas or manage incident functions [NIOSH 2025a; IFSTA 2015].

Recommendation #2a: Fire departments should ensure ICs immediately establish divisions/groups with a supervisor to communicate conditions and provide accountability.

In this incident, multiple units were operating on the second division. These units were unable to locate the fire, which caused confusion and disorientation. There were zero visibility conditions, increased heat,

and poor communications between units. Multiple personnel were freelancing with water application as well as probing ceilings and walls.

Within a division/group, firefighters advise their supervisor of work progress and provide accountability for crew members engaging in task-level activities. The IC should assign divisions/groups to a supervisor early. This is especially important when firefighters are operating from tactical positions that the IC has little or no direct control over (e.g., out of sight). All requests for more resources or assistance within a division/group are directed to the supervisor, who is responsible for communicating with the IC. Supervisors can provide ongoing conditions, actions, and needs reports to the IC of all four sides and the interior of an incident, which may influence tactics and strategy [SKCFTC 2023]. Division/group supervisors can assist in providing PARs when requested by the IC, Incident Safety Officer or operations. When the IC does not establish divisions/groups with a supervisor, firefighters should follow set fireground operations reporting procedures while operating in the incident and hazard zone, such as the immediately dangerous to life and health (IDLH) environment [NIOSH 2025b].

Recommendation #2b: Fire departments should ensure each apparatus has established riding assignments to designate a crew officer.

In this incident, multiple Medic units with two personnel arrived on scene and were assigned interior operations. Firefighters from these units interviewed by NIOSH expressed confusion about which personnel were considered the crew officer for their unit.

Fire departments can establish riding assignments for each apparatus to designate initial responsibilities and assignments based on the seat a firefighter occupies. This pre-designation minimizes the amount of direction required for individual personnel to understand expectations for work when arriving on the fireground. Additionally, riding assignments facilitate coordination of actions upon arrival. Riding assignments may include responsibilities such as company officer, water supply, search, forcible entry, suppression, or other duties. Fire departments can establish riding assignments through the development of SOPs. This can include riding position charts and related training for each apparatus [NIOSH 2016]. Specific to this incident, a pre-established riding assignment may have dictated that the passenger front seat was the officer of the Medic unit and thus in charge of their crew.

Recommendation #3: Fire departments should train firefighters and fire officers to select interior fire attack strategies and tactics based on fire conditions present.

In this incident, Tiller 11 firefighters entered the building and encountered a moderate amount of smoke on the first division. They proceeded to the second division, where the smoke became heavy and banked to the floor as they went up the stairs. A second hoseline was deployed to the second division. The fire was located in the rear of the first division. All firefighters interviewed by NIOSH noted that their TICs did not aid in assessing conditions.

To ensure a successful outcome of each incident, firefighters should match suppression actions to the conditions present. These decisions are largely influenced by understanding and evaluating fire behavior/dynamics to employ the appropriate tactics. Research has been conducted by the Fire Safety

Research Institute (FSRI) on modern fire dynamics involving heat release rates, new building construction techniques, and the composition of modern home furnishings. The understanding of these modern fuel loads led to tactical considerations outlined in NFPA 1700 [NIOSH 2025c].

Firefighters on scene should continually evaluate smoke production and characteristics throughout the incident and make tactical adjustments as needed based on changing or deteriorating conditions. Smoke and fire conditions can assist in locating the source of the fire [NFPA 1700 2026]. Water should be applied to the fire as quickly as possible using the reach of an effective fire stream that delivers an appropriate volume of water to overcome the heat energy. In some cases, it may be appropriate to introduce water from the exterior of a structure through a window/door with an attack line or begin the fire attack from the exterior with a coordinated attack flowing a minimum 150 gallons per minute or greater onto the base of the fire before committing personnel to the interior. Fire departments should cool interior spaces from the safest and closest location possible, especially in vent-limited spaces [NIOSH 2025c].

Educating firefighters on reading smoke helps identify the location and intensity of a fire as well as the likelihood of a hostile fire event. Reading smoke helps firefighters and ICs make better strategic and tactical decisions regarding what they see on the fireground [NFPA 1700 2026]. Fire departments can develop training from available resources or acquire existing training. Fire behavior/dynamics trainings are available through FSRI, fire academies, and private fire training organizations. Fire departments can develop SOPs using the information and response techniques learned from these trainings [NIOSH 2025c].

Firefighters should also be educated on the limitations of TICs. As described in NFPA 1408 [2020], TICs do not provide a reliable indication of the thermal conditions on the other sides of walls or floors. This is due to the insulating properties of materials used in these assemblies and floor coverings. TICs should be used to look for thermal contrasts, movement, and heat signatures. They should not be relied on to determine the temperature of a compartment, through either a digital readout or a color scale [NFPA 1408 2020].

Recommendation #4: Fire departments should ensure firefighters and fire officers are properly trained in and use principles of air management and survival procedures for out-of-air emergencies.

In this incident, multiple firefighters had their EOSTIs sound during interior operations, with two experiencing an out-of-air emergency. This resulted in a Mayday being declared. Some did not recognize the EOSTIs sounding or the heads-up display notifications (HUD) indicating their cylinders were low on air.

The only respiratory protection for firefighters in a toxic smoke environment is the air in their SCBA cylinder [Gagliano et al. 2008]. Air management is a program that the fire service can use to ensure that firefighters have enough breathing air to complete their primary mission and escape an unforeseen emergency.

Air management happens at the individual firefighter level, the crew level, and the command level. Aspects of air management for which firefighters are responsible include [NIOSH 2025d]:

- Ensure air supply is adequate (full cylinder) at the start of the shift
- Monitor air usage during an event
- Recognize the 50% HUD light flash and communicate this information to crew members
- Exit an IDLH atmosphere before going into emergency reserve air and EOSTI alarms.

A low-air emergency for one crew member should be treated as an emergency for the entire team, requiring the team to exit simultaneously and maintain crew integrity. If they are not out of the IDLH atmosphere and go into their emergency reserve air, they need to immediately communicate this emergency with their crew and IC. Firefighters should not wait until their EOSTI alarms activate or they are out of air to communicate or address this situation.

NFPA 1404 [2018] states that firefighters should exit from an IDLH atmosphere before the consumption of reserve air supply begins. It is critical that firefighters understand that the initial 67% of the air supply is "working and exiting air." This includes air used for gaining access, working toward tactical objectives, and exiting the hazard zone [NFPA 1404 2018].

Firefighters may not pay attention to their air usage until they get into their emergency reserve air and their EOSTI sounds or vibrates. Once the SCBA air supply reaches approximately 50%, the light begins to flash. Some change color to yellow when below 50%, then change to red in the EOSTI mode. This is designed to alert the firefighter to promptly exit the building with their reserve air intact. Once the air supply reaches the EOSTI level, the SCBA provides another signal (bell, whistle, and/or vibration signal) that alerts the user they are nearing the end of the usable air in the cylinder. On pre-2013 edition SCBAs, this level was approximately 25% (+/-2). For SCBAs manufactured to the 2013 edition of NFPA 1981 and newer edition SCBAs, the EOSTI level was increased to 33% (+/-2).

Repetitive skills training with an SCBA is vital for the safety of firefighters working inside an IDLH atmosphere. Training should be performed regularly to ensure that firefighters "know their SCBA." Repetitive skills training with an SCBA may provide increased comfort and competency levels, decreased anxiety, lower air consumption, increased awareness of the user's air level (noticing and using the HUD), and an automatic muscle memory response for the vital function controls, such as the don/doff buttons, main air valve, emergency bypass operating valve, and auxiliary air connections (i.e., RIT/universal air connection and the buddy breather connection). Repetitive skills training also increases the ability of a user to operate these functions and controls in a high-anxiety moment or an emergency. Many times, using these skills is necessary with gloved hands, limited vision, and reduced ability to hear commands from others. Performed in conditions that are non-IDLH, repetitive skills training helps build muscle memory so firefighters' hands will be able to activate the controls with gloves on while supporting a conditioned or second-nature response in case of an emergency [NIOSH 2025d].

Relatedly, firefighters should be trained in how to call a Mayday when in danger. Any delay in calling a Mayday reduces the chance of survival and increases the risk to other firefighters trying to rescue the downed firefighter. Firefighters should have 100% confidence in their competency to declare a Mayday

and follow established Mayday procedures. Fire departments should ensure that any personnel who enter a hazard zone have been trained and are proficient in Mayday competencies [IAFF 2010a; IAFF 2010b].

Every firefighter should be equipped with a portable radio provided by the fire department when operating in the hazard zone [NFPA 1550 2024]. If a firefighter becomes lost or trapped in a hazard zone, the firefighter should activate the emergency alert button on the portable radio prior to transmitting a Mayday. This action provides the best chance for the dispatcher and/or IC to acknowledge the Mayday in a timely manner. This process should be supported by an SOP and practical training [NIOSH 2025d].

The rescue of a firefighter who is out of air or trapped is time sensitive with a very narrow window of survivability in a hazardous environment. Firefighters must not delay communicating a Mayday, ensuring the IC is notified. When it comes to rapid egress or removing a downed firefighter, the most appropriate action due to conditions may be to use a window in the immediate area. Such a task can be challenging if it is not trained on or practiced regularly. It is important to remember that the safest way to remove a downed firefighter from an upper level of a building is by using a staircase if at all feasible [NIOSH 2025d].

Recommendation #5: Fire departments should train firefighters and fire officers to use Task-Location-Objective assignments for clear communication of expectations.

In this incident, the IC stated that Tiller 11 needed a second hoseline. Truck 3 firefighters deployed another hoseline from Tiller 11 and assumed it was needed on the second division.

Assigning the tactics to accomplish tactical priorities aids in the coordination of the fireground activities. This is ordinarily completed by the IC or a division/group supervisor communicating assignments to personnel. An assigned tactic provides direction to personnel, which serves as the basis for feedback to the IC as to whether the tactic is completed [NIOSH 2021]. Coordination of fireground activities requires clear, direct communication between IC and personnel or crews assigned to fire control, ventilation, and other tactical (e.g., search, rescue) functions that are or will be taking place inside a structure. Incident communications should be short, effective, and direct [NFPA 1700 2026]. This minimizes the potential for confusion of assigned personnel but also maximizes the available free "airtime" on the radio. When assigning units, the IC or division/group supervisor should structure the assignment by communicating to personnel the: 1) task(s), 2) location of the task(s), and 3) objective of the task(s) [NIOSH 2021].

Recommendation #6: Fire departments should educate personnel on use of radio communication processes for sharing critical information, such as conditions and actions.

In this incident, Tiller 11 entered the structure and encountered moderate smoke conditions. Tiller 11 proceeded to the second division and encountered heavy smoke conditions. This information was not communicated to the IC.

Safety hazards, such as the fire spread in this incident, may dictate an immediate change in strategy and tactics to preserve life and safety [IFSTA 2015]. Consequently, firefighters on scene should immediately

communicate safety hazards through the chain of command so they can be brought to the attention of those working in the hazard zone, IC, Incident Safety Officer, and operations [NIOSH 2025e]. Because the IC is located at the Command Post (outside the hazard zone), interior crews should communicate the interior conditions to the IC as soon as possible. Interior conditions can change the IC's strategy and incident action plan. Interior crews can aid the IC in this process by providing reports of the interior conditions as soon as they enter the fire building and by providing regular updates, especially when benchmarks are met (e.g., "primary search complete, all clear" and "the fire has been knocked down").

Communication of critical incident factors and their possible consequences offer the basis for a standard incident management approach. Such an approach is the launching pad for effective incident decision making and operational performance. ICs should use the critical factors in their order of importance, as the basis for making the specific assignments that make up the incident action plan. ICs should not assume the action-oriented responders engaged in operational activities will stop what they are doing so they can feed the IC with a continuous supply of top-grade, objective information. It is the IC's responsibility to do whatever is required to stay informed [NIOSH 2025e].

In terms of task-level management, fire departments should develop communication plans specifying how to share critical information on a fire scene. When firefighters report hazardous conditions, the division supervisor should relay this information to operations and the IC to document for tactical decisions and objectives. Division supervisors can provide the best assessment of hazard zone conditions for the IC and provide ongoing conditions, actions, and needs (CAN) reports. It is important to have visual observation of all four sides and the interior of an incident to influence the incident action plan Without the observations and CAN reports, the IC will have limited information to make decisions [SKCFTC 2023].

Recommendation #7a: Fire departments should ensure a rapid intervention team/crew is dedicated and in place during structural firefighting operations to immediately respond to a firefighter emergency.

In this incident, there was no dedicated rapid intervention team/crew on scene. Medic 5 was added to the incident based on location and responded to the Mayday as RIT.

Effective RIT operations are dependent on being proactive. On arrival, the RIT officer with one member of the RIT receives a report from the IC. This report informs the RIT of on-scene details before they perform an incident scene survey to complete their evaluation. The remaining RIT members assemble the RIT equipment. After these tasks are completed and the RIT equipment is in place, the RIT officer informs the IC that a scene survey is complete and the RIT is ready, if needed. The entire RIT should stay immediately accessible for rapid deployment and maintain radio contact with the IC. The RIT officer should brief all RIT members with results of the incident scene survey [Toledo Fire & Rescue Department 2012]. The RIT officer and members coordinate with the IC to form rescue plan contingencies and to monitor radio and fireground conditions. RIT protection is an active assignment. This is an ongoing process of comprehensive information gathering and diligent scene monitoring until the unit is released by the IC [NIOSH 2025f; NFPA 1407 2020].

Additionally, fire departments should provide and use a rapid intervention operation training program consistent with the requirements outlined in NFPA 1407. This program may include declaring a Mayday, enhanced search techniques, access and extrication, air supply, ropes, protecting the downed firefighters in place and getting them to safety, and firefighter self-rescue techniques. The established RIT teams should be trained along with all firefighters on scene as research shows most Maydays are rescued by the individual calling the Mayday, their crew, or other crews already operating in the building [NIOSH 2025d; NFPA 1407 2020].

Recommendation #7b: Fire departments should employ an on-deck crew in a forward staged position throughout the incident to be assigned to developing needs.

In this incident, there were limited personnel available to perform tasks to mitigate developing needs. When interior crews exited the structure to change cylinders, there were no available personnel to replace them for interior operations.

Mitigation of a firefighter emergency can also be accomplished by use of an on-deck crew. This concept involves a crew in a forward staged position outside of the IDLH who can be given an assignment based on developing needs. This crew serves as a tactical reserve of resources within the workforce management cycle. As this crew is assigned a task, another crew takes its place in a staged position. Additionally, this position can be staffed with crews who have come from operations and rehabilitation. An on-deck crew is most often given crew relief, reinforcement, and RIT assignments. As opposed to being solely dedicated to one task like RIT, this crew can be assigned multiple tasks and is always available based on incident needs. This includes assignment to rescue a Mayday firefighter [Wilkerson 2017; Phoenix Fire Department 2005].

Recommendation #8: Fire departments should ensure EMS with transport capability is on scene at any fire or special operation location to provide emergency medical care and transport.

In this incident, there was no dedicated and staffed EMS unit on scene. Upon extricating the Mayday firefighter, interior crew members performed emergency medical care and transportation. This lessened the amount of personnel on scene to perform operations tasks as the incident continued.

NFPA 1550 [2024] states that the highest available level of emergency medical care should be standing by at the scene with medical equipment and transportation capabilities. Basic life support is the minimally required level and advanced capabilities should be considered based on evaluation of the risk to personnel operating at the scene [NIOSH 2025g]. On-scene EMS can also provide incident scene rehabilitation for the health and safety of firefighters during the incident. This function ensures monitoring of the physical and mental condition of firefighters, food and fluid replenishment, and rest and relief from extreme climatic conditions [NIOSH 2024]. Per NFPA 1584 [2022], EMS providers in rehabilitation have the authority to use their professional judgment to keep firefighters in rehabilitation or to transport them for further medical evaluation or treatment.

Recommendation #9: Fire departments should develop and implement a professional development program that promotes psychological safety, and effective safety communication during incidents as a key element for improving worker empowerment and decision making on the fireground.

During interviews with NIOSH, some firefighters expressed that they did not feel their concerns, such as low air, were addressed or prioritized by others working in the interior.

Psychological safety reflects shared beliefs within a team that it is safe to speak up with ideas, questions, concerns, or mistakes without fear of retribution or embarrassment [Edmondson 2023]. It influences whether individuals feel comfortable voicing critical observations, raising safety concerns, or correcting errors, all of which are essential for effective performance in high-risk, rapidly changing fire environments [Newman et al. 2017]. Over time, just like culture, psychological safety becomes a shared belief within a group or team about how safe an environment is for risk taking and the associated outcomes based upon their perception of team response in various situations. For example, the officer of a three-person engine company preparing to enter a structure may be preoccupied and miss rapidly changing smoke conditions. If the officer's crew notices these conditions and feels safe speaking up, the officer can be made aware of the hazard and incorporate the observations into tactics [IAFC and NFFF 2024]. This example shows that people who feel psychologically safe can work better in teams because of their comfort in openly sharing information [Edmondson 2023].

Preparing members to face high stress incidents, such as how stress affects attention, memory, and performance, can help build resilience to withstand the effects of stress. Edmondson [2023] also discusses the importance of providing opportunities to learn from mistakes by debriefing training, activities, and other discussions about what went wrong to learn lessons for the next incident. This transparency can help promote team learning, strengthen psychological safety, and support recovery after challenging responses. Consequently, besides fire departments providing training that discusses the impact of emergency incidents on rapid spikes in stress, the effects of stress on performance, and how to confront operational stress, building in ways to discuss what has gone wrong in the past and what was learned from it is also important for building team transparency and resilience. Organizations such as the National Volunteer Fire Council suggest that fire departments create and maintain an environment that promotes resilience [NVFC 2021]. Additionally, fire departments can also employ crew resource management (CRM) practices. CRM can reinforce psychological safety by teaching firefighters how to practice cross-monitoring, maintain situational awareness, communicate assertively, and assign tasks based on qualifications rather than hierarchy [IAFC and NFFF 2024].

The fire service has a long history of tradition, and one of those traditions is that personnel are expected to prove themselves and build knowledge and experience. Providing personnel with autonomy and ability to express themselves, especially to speak up about events involving safety, requires strong leadership that is not intimidated by tradition and bias. Psychological safety on the fireground requires humility and openness among strong situational awareness, communication to supervisors without fear of retribution for doing so, and those observations being valued by leadership. This allows for good tactical decisions and understanding of the evolving conditions that rapidly change during emergency operations. Empowerment grows out of psychologically safe environments. When firefighters trust that their input will be valued, they are more willing to offer suggestions, report concerns, and participate in

dynamic decision-making behaviors that can prevent injuries and fatalities in hazardous environments [NIOSH 2025h].

Post-Incident Fire Department Prevention Actions

After this incident, the fire department implemented changes to incident response and fireground operations. These changes were based on the department's critique of the incident on August 30, 2025.

- **Location of RIT Equipment on Apparatus**
  During the incident, there was confusion about the location of RIT equipment on Tiller 11. The fire department has since standardized the equipment layout for all apparatus to ensure consistency for firefighters locating tools and equipment for operations.
- **PSAP CAD Data Recommendations**
  During the incident, the PSAP CAD data recommendations had a glitch causing it to assign Tiller 11 as two units, an engine and truck. As such, this reduced the dispatched assignment by one apparatus. The fire department has worked with the PSAP to correct this data issue.
- **SCBA Maintenance per Manufacturers' Instructions**
  During the incident, the Tiller 11 firefighter's SCBA quick connect disengaged from the cylinder while he was exiting the apparatus. The connection on the threading was not tightened to the manufacturers' recommended torque. The fire department has ensured that all SCBAs have undergone inspection and maintenance to correct this issue per manufacturers' instructions.

References

Edmondson A [2023]. Four steps to building the psychological safety that high-performing teams need. Boston, MA: Harvard Business School Working Knowledge.

Gagliano M, Phillips C, Jose P, Bernocco S [2008]. Air management for the fire service. Tulsa, OK: Penn Well Corporation, Fire Engineering.

IAFC and NFFF [2024]. Crew resource management: A force multiplier for better critical fire service decision making. McLean, VA: International Association of Fire Chiefs and National Fallen Firefighters Foundation.

IAFF [2010a]. IAFF fire ground survival training program. Washington, DC: International Association of Fire Fighters.

IAFF [2010b]. Self-survival procedure. Washington, DC: International Association of Fire Fighters.

IFSTA [2015]. Fire and emergency services safety officer. 2nd ed. Stillwater, OK: International Fire Service Training Association.

Newman A, Donohue R, Eva N [2017]. Psychological safety: A systematic review of the literature. Human Resource Management Review *27*(3): 521-535.

NFPA [2018]. NFPA 1404, Standard for fire service respiratory protection training. Quincy, MA: National Fire Protection Association.

NFPA [2020]. NFPA 1407, Standard for training fire service rapid intervention crews. Quincy, MA: National Fire Protection Association.

NFPA [2020]. NFPA 1408, Standard for training fire service personnel in the operation, care, use, and maintenance of thermal imagers. Quincy, MA: National Fire Protection Association.

NFPA [2022]. NFPA 1584, Standard on rehabilitation process for members during emergency operations and training exercises. Quincy, MA: National Fire Protection Association.

NFPA [2024]. NFPA 1550, Standard for emergency responder health and safety. Quincy, MA: National Fire Protection Association.

NFPA [2026]. NFPA 1700, Guide for structural fire fighting. Quincy, MA: National Fire Protection Association.

NIOSH [2008]. Volunteer fire chief killed when buried by brick parapet wall collapse – Texas. By Merinar T and Miles S. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2008-21.

NIOSH [2016]. Career fire apparatus operator dies after falling down an unsecured elevator shaft at a 5-story residential structure – Ohio. By Merinar TR and Bowyer ME. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2015-06.

NIOSH [2021]. Career firefighter dies after becoming disoriented in a three-story apartment building – Massachusetts. By Loflin ME, Merinar TR, and Kline K. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2018-18.

NIOSH [2024]. Volunteer firefighter killed after becoming trapped at an assisted living facility fire and two firefighters injured – New York. By Loflin M and Attwood WR. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2021-10.

NIOSH [2025a]. Three firefighters die and another seriously injured during the collapse of an abandoned, derelict, 3-story row house fire – Maryland. By Funke JR, Attwood WR, Haas EJ, Miles ST, Bowyer M, and Loflin ME. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2022-01.

NIOSH [2025b]. Firefighter dies after becoming lost in an attic at a residential structure fire – Illinois. By Loflin ME, Barger A, Attwood WR, Saunders R, and Montague PR. Cincinnati, OH: U.S.

Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2023-05.

NIOSH [2025c]. Career firefighter seriously injured during search operations in a residential structure fire – Oregon. By Attwood WR, Lago LR, Stakes K, and Montague PR. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2024-03.

NIOSH [2025d]. Firefighter dies and lieutenant seriously injured at a multi-family residential structure fire – Connecticut. By Loflin ME, Attwood WR, and Funke JR. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2021-11.

NIOSH [2025e]. Career firefighter dies in collapse involving lightweight construction with two separate maydays – South Carolina. By Attwood WR, Montague PR, and Richardson MR. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2023-07.

NIOSH [2025f]. Career firefighter dies after being trapped by collapse of two vacant commercial buildings – New York. By Attwood WR. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2025-03.

NIOSH [2025g]. 27-year-old firefighter has seizure then dies of cardiac arrest while responding to residential fire – Kansas. By Eisenberg J, Saunders R, and Schaeffer TL. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2025-04.

NIOSH [2025h]. Volunteer firefighter dies when propane from an underground tank leaked into a residential home causing a catastrophic explosion – Virginia. By Lago LR, Attwood WR, and Schaeffer TL. Morgantown, WV: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, F2024-01.

NVFC [2021]. Psychologically healthy fire departments implementation toolkit. Washington, DC: National Volunteer Fire Council.

Phoenix Fire Department [2005]. In-transit, on-deck, company recycle. Pheonix, AZ: Phoenix Fire Department.

SKCFTC [2023]. Command procedures: Structure fires. Kent, WA: South King County Fire Training Consortium. March 2023.

Toledo Fire & Rescue Department [2012]. Rapid intervention team (RIT) standard operating procedure C82. Toledo, OH: Toledo Fire & Rescue Department.

Wilkerson CE. [2017]. Identifying critical components of rapid intervention teams on structural fires for the Virginia Beach fire department. Emmitsburg, MD: U.S. Fire Administration.

Weather Underground [2025]. Weather history. The Weather Underground. Date accessed: September 25, 2025.

Investigator Information

Incident investigators and report authors were Louis (Rick) Lago, Investigator, and Dr. Wesley R. Attwood, Senior Investigator, with the Fire Fighter Fatality Investigation and Prevention Program, Surveillance and Field Investigations Branch, Division of Safety Research, NIOSH. Sean Gray, Captain, from the Cobb County Fire and Emergency Services, Georgia, and Brian P. Kazmierzak, EFO, Deputy Director of Fire Services with the Benton Harbor Department of Public Safety, Michigan, provided a subject matter expert review of the investigation report. Dan Madrzykowski from the Fire Safety Research Institute, part of the UL Research Institutes, provided an expert review of the investigation report.

Additional Information

NFPA 1700, Guide for Structural Fire Fighting (2026 edition)
NFPA 1700, *Guide for Structural Fire Fighting*, 2026 edition, is the first NFPA document connecting fire dynamics research and its application to strategy, tactics, and best practices for firefighters in controlling fires within a structure.

Disclaimer

The information in this report is based upon dispatch records, audio recordings, witness statements, and other information that was made available to the National Institute for Occupational Safety and Health (NIOSH). Information gathered from witnesses may be affected by recall bias. The facts, contributing factors, and recommendations contained in this report are based on the totality of the information gathered during the investigation process. This report was prepared after the event occurred, includes information from appropriate subject matter experts, and is not intended to place blame on those involved in the incident. Mention of any company or product does not constitute endorsement by NIOSH, Centers for Disease Control and Prevention (CDC). In addition, citations to websites external to NIOSH do not constitute NIOSH endorsement of the sponsoring organizations or their programs or products. Furthermore, NIOSH is not responsible for the content of these websites. All web addresses referenced in this document were accessible as of the publication date. *NIOSH Approved is a certification mark of the U.S. Department of Health and Human Services (HHS) registered in the United States and several international jurisdictions.*