Career Firefighter Injured after Falling from Ladder while Self-Extricating from Boarding House Fire – Pennsylvania

Executive Summary

Photo 1: View of structure, Side Bravo.
(Courtesy of the fire department)

On February 20, 2026, one career firefighter was seriously injured after falling from a ladder while self-extricating from a boarding house fire. At approximately 10:45 hours, the public safety answering point (PSAP) received a 911 call reporting an electrical fire in the basement of a boarding house. At 10:46 hours, a box alarm assignment was dispatched for a high occupancy, electrical fire in the basement. At 10:48 hours, Engine 20-1 arrived on scene, and Lieutenant 20 reported smoke in the rear of the building. Utility 20 arrived on scene, and Captain 20 established command. Firefighters stretched a hoseline to the basement and extinguished the fire. Lieutenant 20 reported that the fire was knocked down and requested ventilation. Turbulent, heavy brown smoke came from the boarded-up windows on the first division near the basement door. At 10:53 hours, Captain 20 requested the second alarm. Ladder 24 arrived on scene and staged on Side Alpha. Ladder 24 firefighter (seriously injured) had a face-to-face with Captain 20, who assigned his crew to conduct a primary search. Ladder 24 firefighter entered the building as Ladder 24 driver/operator put on the rest of his personal protective equipment (PPE).

At 10:55 hours, the PSAP dispatched the second alarm assignment. Captain 20 walked down the alley on Side Bravo and reported active fire from windows on the first division. Ladder 24 firefighter and driver/operator completed searches on the second division as the hallway started filling with heavy white smoke. Ladder 24 firefighter and driver/operator split up, and each found multiple victims, who were directed to the stairs to self-extricate. At 10:59 hours, Chief 20 assumed command and designated Chief 20-1 as operations. Between 11:00 and 11:05 hours, there were multiple reports of entrapments with requests for ladders on Sides Alpha, Bravo, and Charlie. Ladder 24 firefighter and Ladder 24 driver/operator went to the third division to continue searches. Ladder 24 firefighter instructed Ladder

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24 driver/operator to continue the search on the third division while he (i.e., Ladder 24 firefighter) went to the fourth division to search for a reported victim.

As smoke conditions worsened, Ladder 24 driver/operator exited the building to get a thermal imaging camera (TIC) from his apparatus. At 11:06 hours, Captain 20 reported active fire on the second division. Multiple firefighters rescued victims from windows on all sides. At 11:10 hours, Ladder 24 firefighter started to find his way out and his end-of-service-time indicator (EOSTI) later sounded. Conditions were zero visibility, and Ladder 24 firefighter tried to find his way by feel. He realized that he did not have enough air to exit the building. He found a room that he previously searched that had a window. As he broke and cleared the window, his facepiece sealed tightly to his face. His self-contained breathing apparatus (SCBA) also indicated he was out of air. He removed his regulator, placed his hood over the facepiece connection to filter breathe, and hung his head out of the window. Multiple reports of entrapments continued with requests for ladders. Between 11:11 and 11:14 hours, Ladder 24 firefighter made multiple radio transmissions reporting he was out of air and needed a ladder to the window. At 11:15 hours, Ladder 24 firefighter called a Mayday and activated his personal alert safety system (PASS).

Chief 20 requested the PSAP to clear the radio channel for the Mayday and move all other on-scene communications to the next available channel. Firefighters on scene looked at the building's windows, trying to locate Ladder 24 firefighter. Due to the amount of smoke exiting the windows, he was not visible. At 11:19 hours, Chief 20 requested the PSAP announce to all units to evacuate the structure. Not being able to hear the radio and transmit clearly, Ladder 24 firefighter deactivated his PASS. As the wind blew the smoke periodically from the windows, firefighters on the ground momentarily saw Ladder 24 firefighter. Ladder 24 firefighter again reported he could not exit or breathe. He stated the need for a ladder and could see one below him. Firefighters raised a 35 ft ladder to his location after initially raising it to an adjacent window in another room. Lieutenant 24 and Engine 20-1 firefighter placed the ladder against the building by putting it under cable lines that were running to the building from a telephone pole. The ladder was close to live power lines coming from the same telephone pole. At 11:21 hours, Ladder 24 firefighter stepped out and onto the ladder after it was raised to the correct window. As Ladder 24 firefighter descended and reached the top of the second division windows, he stepped off the ladder after losing consciousness and fell more than 20 ft to the ground. At 11:30 hours, an EMS unit reported that Ladder 24 firefighter was loaded and transported to a local hospital.

Contributing Factors

- *Fall from ladder during self-extrication*
- *Strategy and tactics*
- *Air management and firefighter survival*
- *Crew integrity*
- *Available personnel/adequate staffing*

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- *Pre-incident planning*
- *Fire inspection and identification of hazards*
- *Structured communications protocols*
- *Termination of utilities*

Key Recommendations

Fire departments should:

- *Assist Mayday firefighters down ground ladders during self-extrication when their medical status is unknown.*
- *Ensure the first arriving firefighters choose initial and ongoing operational strategies based on the tactical considerations for buildings converted to residential or multiple dwellings.*
- *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 maintain crew integrity when operating in the hazard zone.*
- *Ensure that adequate staffing is available to respond to emergency incidents.*
- *Develop a pre-incident plan for high-risk occupancies, such as boarding houses.*

Governing municipalities (federal, state, regional/county, and local) should:

- *Partner with fire departments to enforce the applicable fire and life safety codes at high-risk occupancies, such as boarding houses.*

Public Safety Answering Points (federal, state, regional/county, and local) should have:

- *Adequate staffing that allows dispatchers to be dedicated to an incident to support fireground operations, the incident commander, and Mayday management.*

Electric utility companies should:

- *Ensure utilities are disconnected when requested by fire departments to support fireground operations and firefighter safety.*

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

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Introduction

On February 20, 2026, one career firefighter was seriously injured after falling from a ladder while self-extricating from a boarding house fire. On February 24, 2026, the fire department notified the National Institute for Occupational Safety and Health (NIOSH) of this incident. Between March 9-12, 2026, one investigator representing the NIOSH Fire Fighter Fatality Investigation and Prevention Program (FFFIPP) traveled to Pennsylvania to investigate this incident. The NIOSH investigator conducted interviews with command officers, fire officers, and firefighters who were on scene during the incident. The investigator reviewed fire department standard operating procedures (SOPs), training records, dispatch records, witness statements, investigation documents, and code enforcement records.

Fire Departments

The seriously injured firefighter was a member of a career fire department (station 24) that has a 1.1-square-mile jurisdiction, serves a population of over 8,200 residents, annually responds to an average of 1,000 calls, and provides emergency medical services (EMS) at the basic life support (BLS) level. The fire department includes 25 uniformed personnel—6 full time, 15 part time, and 4 "call" firefighters. The fire department's leadership contains a fire chief, captain, and lieutenant. Full time firefighters work Monday through Friday with two on per 8-hour shift. Part time firefighters provide weekend coverage. Those who are "call" firefighters respond to calls but do not work on a shift schedule.

The career fire department (station 20) where the incident occurred has a 5-square-mile jurisdiction, serves a population of over 32,000 residents, annually responds to an average of 2,500 calls, and provides EMS at the BLS level. The fire department is comprised of 50 uniformed personnel across 3 platoons. Minimum staffing is 9 firefighters per 24-hour shift across 3 fire stations. The fire department's leadership contains a fire chief, deputy chief/fire marshal, 3 captains, and 3 lieutenants.

Training, Education, and Professional Development

For those hired as a "call" firefighter, station 24 requires completion of the Pennsylvania State Fire Academy's NFPA 1010 Fire Fighter I curriculum. Full time and part time firefighters must have an EMS certification level, such as Emergency Medical Technician (EMT).

Station 20 requires recruits to attend a fire academy that results in Pro Board® certifications of NFPA 1010 Fire Fighter I and II, Hazardous Materials Responder at the Awareness and Operations levels, Rescue Technician, Vehicle Machinery I, and Driver Operator for Pumper and Aerial. Recruits also attain EMT certification. Chief 20 (incident commander) had 22 years of total fire service experience at

station 20. He had over 1,000 hours of training and held certifications such as Pro Board® NFPA 1021 Fire Company Officer IV. Ladder 24 firefighter had 7 years of fire service experience with station 24 and held numerous certifications such as Pro Board® NFPA 1001 Fire Fighter II and EMT.

Apparatus, Staffing, and Communications

At 10:46 hours, the following units were dispatched for a high occupancy, electrical fire in the basement (see Table 1). At the time of the incident, station 20's Tiller had been out-of-service for 10 days.

Table 1. Units dispatched on initial box alarm and arrival time

Apparatus	Staffing	Arrival On Scene
Engine 20-1	3	10:48
Utility 20	2	10:48
Chief 20-1	1	10:49
Engine 20-3	2	10:52
Engine 20-4	3	10:52
Chief 20	1	10:52
Ladder 24	2	10:53
Chief 24	1	10:53

At 10:55 hours, the following units were dispatched as a second alarm assignment (see Table 2).

Table 2. Units dispatched on second alarm and arrival time

Apparatus	Staffing	Arrival On Scene
Engine 24	2	11:02
Tower 14	2	11:04
Chief 27	1	11:06
Engine 27	3	11:06
Tiller 27	7	11:07
Engine 25	6	11:10
Mobile Cascade 14	2	11:14
Engine 20-2	6	11:28
Engine 20-5	5	11:31
Engine 94	2	11:31

The county operates a PSAP that dispatches all emergency and non-emergency fire, EMS, and law enforcement response calls. The PSAP dispatches an annual 19,000 fire calls for service and has two dispatchers on duty 24/7 to handle both fire and EMS calls. Supervisors are available to assist dispatchers during times of high call volumes.

Building Construction

This incident involved a large commercial building that was in the middle of a row on a main street (**see Photo 1**). Records indicated the building was constructed around 1775 with two additions built in

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subsequent years. The original building was about 30 ft x 40 ft and had five stories with a basement. The first addition was about 30 ft x 80 ft and had four stories with a connecting basement. Both the original building and the first addition were Type III, balloon frame construction with their floor joists pocketed into the next building in the row (**see Photo 2**). The second addition was about 20 ft x 80 ft and had three stories. It was Type V, balloon frame construction with vinyl siding with access to Side Delta in the backyard of the adjacent building. A small 25 ft x 25 ft garage was built onto the second addition. With all of the additions, the building was 200 ft from Side Alpha to Side Charlie and varied in width from 20 to 30 ft.

The entire building was an estimated 28,000 square feet and had three means of egress for all floors above the first: one entry on Side Alpha and two fire escapes on Side Bravo. The main entrance had a staircase leading to a reception desk on the second floor. The first floor was only accessible by a storefront entry and doors on Side Bravo. The basement was only accessible by an exterior door on Side Bravo which entered an alley. The original building and additions shared multiple hallways which were not level and connected with a step down or step up. Pocket stairs in the original building were used to access the different floors but were not located in the same area across all floors. The hallways were built on Side Delta with rooms on Side Bravo and at the end of the building on Side Charlie. Each floor shared a common bathroom.

Photo 2: View of pockets for floor and roof joists, post-fire.
(Courtesy of the fire department)

Occupancy Status

The building was used as a boarding house for individuals experiencing homelessness and those needing temporary housing. The building had 48 rooms which could be rented on a daily or weekly basis. The rooms were on all floors except the first floor and basement, which were used for storage. At the time of the incident, there were 41 residents renting rooms in the building. Firefighters interviewed by NIOSH noted that most rooms were furnished with only a single mattress on the floor with others having additional furniture such as bed frames and dressers. Station 20 firefighters were familiar with the building due to numerous EMS calls for medical emergencies, such as drug overdoses and a recent

mattress fire. Firefighters noted a high fuel load with many rooms described as containing hoarding conditions.

Fire and Life Safety Inspections

The authority having jurisdiction (AHJ) for the location of the building maintains an inspection program for rental properties. The AHJ's code enforcement & planning office uses the Pennsylvania Uniform Construction code and the 2018 edition of the International Fire Code (IFC). Inspections of rental properties occur every four years per the program policies and procedures. AHJ employees interviewed by NIOSH indicated that fire inspections have not been conducted in the jurisdiction since 2017 due to limited staffing in the code enforcement & planning office.

Code enforcement & planning office records show the boarding house received a change of occupancy and use inspection in 1977 when the owner applied for use as a hotel. Between 1990 and 2008, several annual and complaint inspections were performed. Inspection reports from 2004 noted the presence of a functional fire detection and alarm system. This included 14 manual pull stations, 10 bell audible notification appliances, emergency lighting, and smoke detectors. Records indicate several systemic inspections were conducted due to complaints filed about the fire alarm system not working, excessive garbage, and insect infestations in the building. Inspection results included windows to the fire escape nailed shut, multiple nonfunctioning smoke detectors in hallways and bedrooms, fire doors propped open, and missing stair railings and exit signs. The fire marshal conducted a cause and origin investigation in 2008 following a fire in the building. The investigation found a smoke detector wrapped in plastic bags to prevent activation as a resident was cooking in their room using an electric hot plate. It is unknown if the fire alarm and detection systems were functional at the time of the current incident.

Incident Timeline

The following timeline is a summary of events that occurred as the incident evolved shortly after 10:45 hours on February 20, 2026. Not all incident events are included in this timeline. The approximate times are to the minute and taken from the fire departments' *National Emergency Response Information System* (NERIS) fire reports, dispatch log, on-scene accountability documentation, and interview notes.

Time February 20, 2026	Fireground Operations, Response, and Details
10:45 Hours	• PSAP received a 911 call reporting an electrical fire in the basement of a boarding house with multiple rooms. The caller stated the fire alarm was sounded but only some residents evacuated.
10:46 Hours	• PSAP transmitted a box alarm assignment for a high occupancy, electrical fire in the basement. Engines 20-1, 20-3, 20-4, Ladder 24, Utility 20, Chief 20, Chief 20-1, and Chief 24 were dispatched and assigned to tactical channel 3.

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Time	Fireground Operations, Response, and Details
10:48 Hours	• Engine 20-1 arrived on scene and reported smoke showing in the rear of the building. • Utility 20 arrived on scene and Captain 20 established command.
10:49 Hours	• Captain 20 confirmed to the PSAP that there was an active basement fire as Chief 20-1 arrived on scene.
10:52 Hours	• Lieutenant 20 reported that the fire was knocked down and requested ventilation. • Engines 20-3, 20-4, and Chief 20 arrived on scene. • Smoke conditions drastically changed with fire on the first division, Side Bravo.
10:53 Hours	• Captain 20 requested a second alarm as Ladder 24 arrived on scene on Side Alpha.
10:55 Hours	• PSAP dispatched a second alarm and all-call for station 20.
10:56 Hours	• Captain 20 reported active fire from windows on the first division.
10:59 Hours	• Chief 20 assumed command and designated Chief 20-1 as operations.
11:00 Hours	• Lieutenant 20 requested a ground ladder to the alley as Chief 20-1 requested the PSAP to report what ladder trucks were enroute to the scene.
11:01 Hours	• PSAP listed incoming ladder trucks for Chief 20-1. • Chief 20-1 requested Tower 14 to stage on Side Alpha and for Tiller 27 to stage on Side Charlie for rescues. • Law enforcement requested the public works department for barricades for the surrounding streets.
11:02 Hours	• Engine 24 arrived on scene and parked on Side Bravo in a lot of an adjacent building.
11:03 Hours	• Chief 20 requested the electric company for priority response. • Chief 20-1 directed Tower 14 to stage in front of the building on Side Alpha and rescue a victim on the fourth division.
11:06 Hours	• Captain 20 reported active fire on the second division. • Engine 27 and Chief 27 arrived on scene on Side Alpha. • Chief 27 reported that his crew was assigned to search on the third division.
11:11 Hours	• PSAP notified Chief 20 that the electric utility company had disconnected the electricity to the building remotely. • Lieutenant 20 reported he would be making entry with Lieutenant 24 on the third division of Side Bravo. • Ladder 24 firefighter radioed Engine 24 asking if they could see him. He reported he was out of air and was hanging his head out the window (he was on the fourth division of Side Bravo). He requested Engine 24 to get a ladder to the window.

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Time	Fireground Operations, Response, and Details
11:12 Hours	• Ladder 24 firefighter radioed Chief 20 multiple times with no response. These transmissions were not heard by Chief 20.
11:13 Hours	• Ladder 24 firefighter radioed Chief 20 reporting he needed a ladder out back where Engine 24 was. He stated he was out of air and hanging his head out the window. • Chief 20 acknowledged that a unit reported they were out of air and requested they repeat their message. Ladder 24 firefighter repeated his message.
11:14 Hours	• Chief 24 requested Ladder 24 firefighter's location. He replied that he was at the window in the third division at the back of the building and reported that he could see Engine 24 (Ladder 24 firefighter was in the fourth division). • Chief 20 replied that there was a fire escape on Side Bravo.
11:15 Hours	• Ladder 24 firefighter called a Mayday and activated his PASS. He stated he couldn't breathe and was out of air. • Chief 20 requested the PSAP to clear the radio channel for the Mayday and move all other on-scene communications to the next available channel. • Chief 20 then requested Ladder 24 firefighter to provide their location. • PSAP announced that all on-scene fire personnel were to move to tactical channel 1 due to a Mayday.
11:16 Hours	• Ladder 24 firefighter reported he was right above Chief 20-1 and Engine 24. He reported that he needed a ladder to get down and could not breathe because there was so much smoke. • Lieutenant 20 radioed Ladder 24 firefighter asking what he could see out the window. He replied that it was smokey, but he saw Engine 24.
11:17 Hours	• Chief 20 requested a third alarm for manpower. • Chief 24 requested Ladder 24 firefighter to activate his PASS.
11:18 Hours	• Chief 27-2 reported that he had a crew completing a search on the first division of Side Delta with high heat and zero visibility conditions. They did not hear the Mayday transmission or order to clear the channel.
11:19 Hours	• Chief 20 requested the PSAP announce to all units to evacuate the structure. • Not being able to hear the radio and transmit clearly, Ladder 24 firefighter deactivated his PASS. He again reported he could not get out or breathe. He stated he needed a ladder and could see one below.
11:20 Hours	• Chief 24 requested Ladder 24 firefighter to yell out of the window. • Chief 20-1 requested the electric company to cut the power immediately. • Chief 24 reported to Ladder 24 firefighter that crews had a ladder coming up to him and requested his location. • Ladder 24 firefighter saw the ladder and reported that it was being raised to the wrong window.

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Time	Fireground Operations, Response, and Details
	• Crews identified and situated the ladder at the right window.
11:21 Hours	• Ladder 24 firefighter stepped out and onto the ladder after it was raised to the correct window on the fourth division. • Chief 20-1 reported to Chief 20 that Ladder 24 firefighter was coming down the ladder. • Chief 20 acknowledged and requested the PSAP to cancel the Mayday. • As Ladder 24 firefighter proceeded down, at about halfway, at the top of the second division windows, he stepped off the ladder after losing consciousness and fell more than 20 ft to the ground. • Chief 20-1 called a Mayday, reporting a firefighter had fallen off the ladder halfway down. He requested EMS to respond to Side Bravo, halfway down.
11:30 Hours	• An EMS unit reported that Ladder 24 firefighter was loaded and transported to a local hospital.
11:37 Hours	• Chief 20 reported that all operations were defensive. • Multiple hoselines, ground monitors, and aerial devices were placed into service to flow water into the building.
12:02 – 21:46 Hours	• Defensive operations continued, with multiple portions of the building experiencing collapses.
21:47 Hours	• Incident was terminated.

Personal Protective Equipment

At the time of the incident, Ladder 24 firefighter was wearing full structural firefighting turnout gear and a NIOSH Approved® SCBA. A technician from the SCBA manufacturer performed a data download from the unit. Based on the data, Ladder 24 firefighter entered the building with 4,435 PSI and depleted his entire air supply in 15 minutes. He activated his PASS after calling a Mayday but turned it off 4 minutes later. No evidence was identified to suggest that the structural firefighting turnout gear or SCBA unit contributed to the serious injury.

Weather Conditions

At 10:51 hours, on February 20, 2026, the outdoor temperature was 36°F, dewpoint was 34°F, the wind was out of the east north-east at 9 mph, there was no precipitation, and conditions were cloudy [Weather Underground 2026].

Investigation

At approximately 10:45 hours, the PSAP received a 911 call reporting an electrical fire in the basement of a boarding house with multiple rooms. The caller stated the fire alarm was sounded but only some residents evacuated. At 10:46 hours, a box alarm assignment was dispatched for a high occupancy, electrical fire in the basement. The dispatched assignment was Engines 20-1, 20-3, 20-4, Ladder 24, Utility 20, Chief 20, Chief 20-1, and Chief 24. They were assigned to tactical channel 3.

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At 10:48 hours, Engine 20-1 arrived on scene. Lieutenant 20 reported smoke showing in the rear of the building. The PSAP received an additional 911 call reporting that the landlord was on scene to show firefighters where to access the basement. At the same time, Utility 20 arrived on scene. Captain 20 established command.

Engine 20-1 firefighter walked down the alley to the basement door and noticed whisps of white smoke coming from the building's foundation. Smoke was also coming from the bottoms of the first division windows in the middle of Side Bravo. The 911 caller showed Engine 20-1 firefighter the basement door, which was wide open for ventilation. There was light grey smoke in the basement, and Engine 20-1 firefighter requested a hoseline to be stretched. Lieutenant 20 pulled a 200 ft 1 ¾-inch cross lay and flaked it out in the alley (**see Photo 3**). Captain 20 walked to Side Alpha and spoke to residents who said that not everyone was evacuating. Captain 20 then radioed to Ladder 24 that they would conduct search upon their arrival.

Photo 3: Firefighters preparing to enter the basement, Side Bravo.
(Courtesy of the fire department)

At 10:49 hours, Captain 20 confirmed to the PSAP that there was an active basement fire as Chief 20-1 arrived on scene. Chief 20-1 went to Side Charlie to size up the building. Engine 20-1 firefighter and Utility 20 firefighter dry-stretched the hoseline into the basement, flaked it around the room, and called for the hoseline to be charged. The basement conditions were lazy smoke from floor to ceiling but no heat. As they bled the air out of the hoseline, the smoke parted. Both firefighters observed the electric panel was glowing red with flames extending across the ceiling from it about 7 ft in all directions.

At 10:51 hours, Captain 20 requested the PSAP to dispatch code enforcement. Engine 20-1 firefighter extinguished the fire on the ceiling as Lieutenant 20 arrived in the basement. Lieutenant 20 and Utility 20 firefighter used their TICs to look for extension but could not locate any additional fire. Towards the Side Charlie part of the basement, Utility 20 firefighter heard crackling above him and thought it was from the extinguishment.

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At 10:52 hours, Lieutenant 20 reported that the fire was knocked down and requested ventilation. Engine 20-4 arrived on scene behind Engine 20-3 at the hydrant on Side Alpha. Chief 20 arrived on scene and had a face-to-face with Captain 20. They noticed smoke conditions drastically changing with fire on the first floor, Side Bravo. Turbulent, heavy smoke was coming from the boarded-up windows near the basement door. Chief 20 directed Captain 20 to request a second alarm and said that he would take command after donning his PPE. At this time, Engine 20-3 established a water supply to Engine 20-1. Captain 20 then assigned Engine 20-3 firefighters to conduct a primary search. As they approached the building, Engine 20-3 firefighters saw a victim in a fourth division window on Side Alpha. Grey, lazy smoke was coming from the window. The firefighters yelled to the victim that they would come up and get him. They grabbed a 24 ft ladder from their apparatus but realized it was not tall enough to reach the victim. They then forced the door and entered the building to reach the victim from inside.

At 10:53 hours, Captain 20 requested the second alarm. Chief 24 and Ladder 24 arrived on scene and staged behind Engine 20-1 on Side Alpha. Ladder 24 firefighter (seriously injured) had a face-to-face with Captain 20, who assigned his crew to conduct a primary search. Ladder 24 firefighter entered the building as Ladder 24 driver/operator put on the rest of his PPE at his apparatus. After donning his PPE, Ladder 24 driver/operator went to a barbershop in the adjacent building (Side Delta exposure) and ordered the occupants to evacuate. He then met Captain 20, who assigned him to meet up with Ladder 24 firefighter. Ladder 24 firefighter was already in the building to conduct a search. Captain 20 assigned Engine 20-4 firefighters to start removing the plywood from the windows on the first division of Side Bravo.

Photo 4: Post-ventilation conditions, Side Bravo.
(Courtesy of the fire department)

At 10:55 hours, the PSAP dispatched the second alarm assignment and an all-call for station 20. Captain 20 walked down the alley on Side Bravo and reported active fire from windows on the first division. He requested the firefighters in the basement to evacuate as they had fire above them. The firefighters exited the basement and took the hoseline back into the alley. Engine 20-4 firefighters and Utility 20 firefighter removed the metal security grilles and plywood off the first division windows. As the windows were opened, smoke became more turbulent with flames (**see Photo 4**).

At 10:57 hours, Chief 20-1 directed Tiller 27 to access from Side Charlie. Ladder 24 firefighter and driver/operator searched on the second division as the hallway started filling with heavy white smoke. They split up and found multiple victims, who they directed to the stairs to self-extricate.

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At 10:59 hours, Chief 20 assumed command and designated Chief 20-1 as operations. Chief 20 staged on the sidewalk across the street with a tactical command board. An EMS supervisor on scene requested two advanced life support units due to the number of victims. Captain 20 went up the fire escape on the Side Alpha/Bravo corner to check rooms on the fourth division. Upon entry, smoke was banked to the floor with no heat.

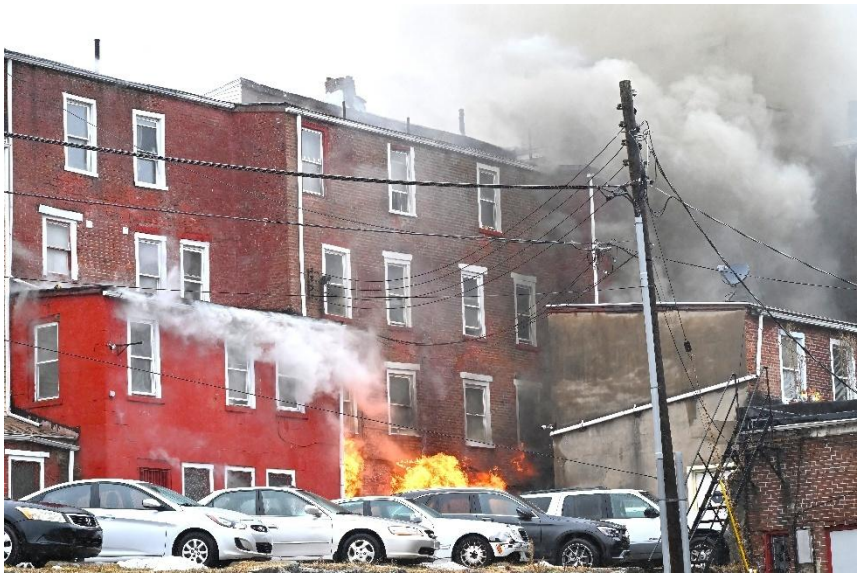

Photo 5: Fire conditions, Side Bravo.
(Courtesy of the fire department)

At 11:00 hours, Lieutenant 20 requested a ground ladder to the alley as Chief 20-1 requested the PSAP to report what ladder trucks were enroute to the scene. Engine 20-1 driver/operator carried a 24 ft ladder from his engine into the alley and assisted with rescues. Engine 20-1 and Utility 20 firefighters flowed water into the first division windows (**see Photo 5**). At 11:01 hours, the PSAP listed incoming ladder trucks for Chief 20-1 as Lieutenant 20 reported a confirmed entrapment on the third division of Side Bravo. Chief 20-1 requested Tower 14 to stage on Side Alpha and for Tiller 27 to stage on Side Charlie for rescues. Law enforcement requested the public works department for barricades for the surrounding streets. At 11:02 hours, Chief 20 requested the mobile emergency management agency command unit. Engine 24 arrived on scene and parked on Side Bravo in a lot of an adjacent building. Lieutenant 24 and Engine 24 firefighter grabbed ladders off the apparatus and assisted with rescues on Side Bravo.

At 11:03 hours, Chief 20 requested the electric company for priority response. Chief 20-1 directed Tower 14 to stage in front of the building on Side Alpha and rescue a victim on the fourth division. Ladder 24 firefighter and driver/operator went to the third division to continue searches. Hearing the transmission about the victim on the fourth division, Ladder 24 firefighter instructed Ladder 24 driver/operator to continue the search on the third division while he went to the fourth division for the reported victim. As smoke conditions worsened, Ladder 24 driver/operator exited the building to get a TIC from his apparatus. He spoke with the Engine 20-3 firefighters who were conducting a search as he exited.

At 11:04 hours, Tower 14 arrived on scene and staged on Side Alpha. Two Tower 14 firefighters took ladders to Side Bravo to assist with rescues, and two others set up the Tower for aerial operations **(see**

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Photo 6). Chief 20-1 again directed Tiller 27 to stage on Side Charlie for rescues. Lieutenant 20 reported another victim on the third division and no victims visible on Side Charlie from the ground.

At 11:06 hours, Captain 20 reported active fire on the second division. As Ladder 24 driver/operator exited the building, firefighters raised a 35 ft ground ladder to the victim on the fourth division of Side Alpha. He stayed at the ladder and assisted the victim down. Engine 27 and Chief 27 arrived on scene on Side Alpha. Chief 24 had a face-to-face with Chief 27 and asked him to locate Ladder 24 firefighter inside the building. Chief 27 reported that his crew was assigned to search on the third division. They entered the fire escape near the Side Alpha/Bravo corner and started to search rooms with their TICs. The crew entered the building from the fire escape with Captain 20. Engine 20-4 and Utility 20 firefighters crawled into a first division window of the first addition of the building. They saw fire only on the ceiling with heavy smoke and no heat. They extinguished the fire and saw a hole in the ceiling where the fire burned through to the second division.

Photo 6: Apparatus placement, Side Alpha.
(Courtesy of the fire department)

At 11:07 hours, an EMS unit requested the PSAP to call area hospitals to see how many victims they could take. Chief 20 requested the PSAP dispatch emergency management to provide batteries for tools and logistical support. Tiller 27 arrived on a street adjacent to Side Delta but was blocked by construction vehicles. Civilians informed Tiller 27 firefighters that someone was trapped in a window and needed help. Some of the Tiller 27 crew, along with Chief 20-1, went to Side Delta and assisted a victim down a contractor ladder. At 11:08 hours, Lieutenant 20 requested a medic unit on Side Charlie to evaluate a victim for smoke inhalation. Chief 20 directed Engine 25 to stage on Side Charlie. The next minute, a double entrapment was reported on the second division. The PSAP requested a personnel accountability report (PAR) check for units on scene. Chief 20-1 acknowledged and requested a delay for the PAR check as they had a victim hanging out a window on Side Bravo.

At 11:10 hours, Engine 25 arrived on scene. Chief 24 reported one victim was rescued from the fourth division on Side Alpha. Lieutenant 20 reported a victim was on the second division in the rear and another on the third division in the rear of Side Bravo. Hearing that the fourth division victim was rescued, Ladder 24 firefighter began to try to find his way out until his EOSTI sounded. By this time, there were zero visibility conditions. Ladder 24 firefighter tried to find his way by feel. He arrived at stairs that led up to the fifth division and realized he went the wrong way. He turned around, found the stairs, and descended to the third division. He encountered a closed door at the bottom of the stairs. He

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realized that he did not have enough air to find his way back down the stairs to exit the building where he entered. He returned to the fourth division and found a room that he previously searched that he remembered had a window. He entered the room and closed the door. As he broke and cleared the window, his facepiece sealed tightly to his face and his SCBA indicated he was out of air. He removed his regulator, placed his hood over the facepiece connection to filter breathe, and hung his head out of the window.

At 11:11 hours, the PSAP notified Chief 20 that the electric company had disconnected the electricity to the building remotely (it was still on). A rescued victim reported to Lieutenant 24 that his neighbor on the third division was handicapped and may not have made it out. He pointed to their window on Side Bravo. Lieutenants 20 and 24 threw a ladder to the window (**see Photo 7**). Lieutenant 20 reported he would be making entry with Lieutenant 24 on the third division of Side Bravo. Lieutenant 24 climbed the ladder and entered the room for a vent-enter-search, while Lieutenant 20 remained on the ladder at the window. The room was charged with smoke. At the same time, Ladder 24 firefighter radioed to Engine 24 asking if they could see him. He reported he was out of air and hanging his head out the window (he was on the fourth division of Side Bravo). He requested a ladder from Engine 24. He did not receive a response.

Photo 7: Lieutenants 20 and 24 climbing ladder, Side Bravo.
(Courtesy of the fire department)

At 11:12 hours, Ladder 24 firefighter radioed Chief 20 multiple times with no response. These transmissions were not heard by Chief 20. The PSAP updated EMS units which hospitals could take victims based upon triage level. Chief 20-1 reported that he was operations on Side Charlie getting Tiller 27 into position. He reported that crews were performing searches and rescuing victims from windows. Ladder 24 firefighter again radioed Chief 20 reporting he needed a ladder out back where Engine 24 was. He stated he was out of air and hanging his head out the window. Chief 20 acknowledged that a unit reported they were out of air and requested they repeat their message. Ladder 24 firefighter repeated his message. Hearing this message, Lieutenant 24 searched the room he was in for the door to the hallway, thinking he could get to Ladder 24 firefighter from inside.

At 11:14 hours, Chief 24 requested Ladder 24 firefighter's location. He replied that he was at the window in the third division of the back of the building and reported that he could see Engine 24 (he was

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in the fourth division). Chief 20 replied that there was a fire escape on Side Bravo. Multiple firefighters on scene looked at the windows of the building to try to locate Ladder 24 firefighter. Due to the large amount of smoke exiting the windows, he was not visible.

At 11:15 hours, Ladder 24 firefighter called a Mayday and activated his PASS. He stated he couldn't breathe and was out of air. Chief 20 requested the PSAP to clear the radio channel for the Mayday and move all other on-scene communications to the next available channel. Chief 20 then requested Ladder 24 firefighter to provide his location. The PSAP announced that all on-scene fire personnel need to move to tactical channel 1 due to a Mayday.

At 11:16 hours, Ladder 24 firefighter reported he was right above Chief 20-1 and Engine 24. He reported that he needed a ladder to get down and couldn't breathe because there was so much smoke. Lieutenant 20 radioed Ladder 24 firefighter, asking what he could see out the window to try to determine what window he was in. He replied that it was smokey, but he could see Engine 24. Conditions deteriorated on the third division, and Lieutenant 20 told Lieutenant 24 to get out of the building. At 11:17 hours, Chief 20 requested a third alarm for manpower. Chief 24 climbed onto the fire escape on the Side Alpha/Bravo corner and looked in the windows. He requested Ladder 24 firefighter to activate his PASS. About the same time, Chief 27-2 reported that he had a crew completing a search on the first division of Side Delta with high heat and zero visibility conditions.

At 11:19 hours, Chief 20 requested the PSAP announce to all units to evacuate the structure. Not being able to hear the radio and transmit clearly, Ladder 24 firefighter deactivated his PASS. Ladder 24 firefighter again reported he couldn't get out or breathe. He stated he needed a ladder and could see one below. As the wind blew the smoke periodically from the windows, firefighters on the ground saw Ladder 24 firefighter for a moment. They started to raise a 35 ft ladder to his location (**see Photo 8**).

Photo 8: Ladder 24 firefighter in window, Side Bravo.
(Courtesy of the fire department)

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At 11:20 hours, Chief 24 requested Ladder 24 firefighter to yell out of the window. Seeing the power was still on and live wires were near where firefighters were raising the ladder, Chief 20-1 requested the electric company to cut the power immediately. Chief 24 reported to Ladder 24 firefighter that crews had a ladder coming up to him and requested his location. Ladder 24 firefighter saw the ladder and reported that it was being raised to the wrong window. The firefighters had raised the ladder to the next window thinking it was part of the same room Ladder 24 firefighter was in. The firefighters lowered the ladder and repositioned. Lieutenant 24 and Engine 20-1 firefighter placed the ladder against the building by putting it under cable lines that were running to the building from a telephone pole. The ladder was close to live power lines coming from the same telephone pole.

Photo 9: Ladder 24 firefighter descending ladder, Side Bravo.
(Courtesy of the fire department)

At 11:21 hours, Ladder 24 firefighter stepped out and onto the ladder after it was raised to the correct window. Multiple firefighters on the ground stated they wanted to go up the ladder to assist him, but others stated he appeared to be descending well on his own. Chief 20-1 reported to Chief 20 that Ladder 24 firefighter was coming down the ladder (**see Photo 9**). Chief 20 acknowledged and requested the PSAP to cancel the Mayday. As Ladder 24 firefighter reached the top of the second division windows, he stepped off the ladder after losing consciousness and fell more than 20 ft to the ground. Chief 20-1 called a Mayday reporting a firefighter had fallen off the ladder halfway down. He requested EMS to respond to Side Bravo, halfway down the building. Multiple firefighters rushed to Ladder 24 firefighter, who had altered consciousness but was able to stand with assistance. They removed his SCBA and structural firefighting turnout gear to prepare him for EMS. At 11:30 hours, an EMS unit reported that Ladder 24 firefighter was loaded and transported to a local hospital.

At 11:37 hours, Chief 20 reported that all operations were defensive. Multiple hoselines, ground monitors, and aerial devices were placed into service to flow water into the building (**see Photo 10**).

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Rehab was established for on-scene personnel who were rotated through to provide rest and replenishment. Chief 20 and emergency management organized shelters for the displaced residents of the building. Between 12:02 and 21:46 hours, defensive operations continued with multiple portions of the building experiencing collapses. During these operations, it was discovered that the electricity was still not shut off to the building. As Tiller 27 was flowing water from its aerial, water reached underground power cables and the apparatus became energized. Several firefighters were affected, trapping them on Tiller 27 until the situation was resolved when the electric utility company cut power to the entire city. At 21:47 hours, the incident was terminated.

Photo 10: Defensive operations, Side Bravo.
(Courtesy of the fire department)

Fire Behavior

Prior to the arrival of the fire department, the building residents opened the basement door in an attempt to ventilate the smoke. When Engine 20-1 and Utility 20 firefighters entered the basement, conditions included lazy smoke from floor to ceiling but there was no heat. As they bled the air out of the hoseline, the smoke parted. Both firefighters observed the electric panel was glowing red, with flames extending across the ceiling from it about 7 ft in all directions. At this time, the fire had a low air intake supplied by the oxygen in the basement. Once the fire in the basement was extinguished, fresh air (oxygen) was able to flow up into the void spaces to enable fire spread. The fire moved vertically due to the available oxygen in the walls. The balloon frame construction facilitated rapid fire movement throughout the building.

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Fire Cause and Origin

The fire department's cause and origin investigation classified the fire as undetermined.

Cause of Injuries

Ladder 24 firefighter was out of air and spent over 10 minutes inhaling smoke and byproducts of combustion while he waited for a ladder. Halfway down, he stepped off the ladder after losing consciousness and fell about 20 ft to the ground. He sustained a broken back and ankle, injured shoulder, and respiratory injuries from smoke inhalation. His treatment included oxygen therapy while at the hospital due to low oxygen levels and carbon monoxide saturation.

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 that ultimately result in injuries or fatalities. The NIOSH investigator identified the following items as key contributing factors in this incident that ultimately led to the serious injury:

1. Fall from ladder during self-extrication
2. Strategy and tactics
3. Air management and firefighter survival
4. Crew integrity
5. Available personnel/adequate staffing
6. Pre-incident planning
7. Fire inspection and identification of hazards
8. Structured communications protocols
9. Termination of utilities

Recommendations

Recommendation #1: Fire departments should assist Mayday firefighters down ground ladders during self-extrication when their medical status is unknown.

At this incident, Ladder 24 firefighter was out of air and spent over 10 minutes inhaling smoke and byproducts of combustion. As he was self-extricating, he stepped off the ladder after losing consciousness and fell about 20 ft to the ground. He was treated for low oxygen levels and carbon monoxide saturation at the local hospital.

Firefighters are trained to assist victims down ladders for rescue at structure fires. This includes protecting conscious victims from slipping and falling as they may be unaccustomed to climbing down a ladder [IFSTA 2024]. Victims may also be unable to climb down a ladder due to symptoms such as dizziness or exhaustion caused by exposure to smoke and byproducts of combustion. The respiratory exposures at structure fires are unique to each fire response and potentially contribute to adverse health outcomes [Harvey et al. 2024]. Depending on building contents, toxic gases such as carbon monoxide and hydrogen cyanide may be present in smoke at a structure fire. This may affect the percentage of oxygen in air that exists in a fire environment [NIOSH 2022; NFPA 1400 2026]. Symptoms for

exposure to these gases include weakness, exhaustion, dizziness, as well as confusion and can occur in a short period of time depending on concentration [NIOSH 2007; IFSTA 2024].

When a Mayday firefighter's medical status is unknown, they should be assisted when descending ground ladders during self-extrication. This is an especially beneficial practice when a firefighter has been inhaling significant amounts of smoke, like in this incident. Assistance should include firefighters heeling the bottom of the ladder and a firefighter climbing down the ladder with the Mayday firefighter. Firefighters in Pennsylvania are required to demonstrate this skill as part of the NFPA 1001 Firefighter I certification testing [PSFA 2026].

Recommendation #2: Fire departments should ensure the first arriving firefighters choose initial and ongoing operational strategies based on the tactical considerations for buildings converted to residential or multiple dwellings.

The incident building was a boarding house that was previously converted from another type of occupancy. Lack of fire and life safety code compliance resulted in delayed detection, limited egress paths, maze-like conditions, increased fire load, rapid fire propagation, and unpredictable fire travel which complicated firefighting and search operations.

NFPA 1700 [2026] provides firefighters with building construction information, critical factors, observations, and science-based tactical considerations to develop the initial and ongoing operational strategies required for fire control based on occupancy type. The standard notes that incidents involving buildings converted to residential or multiple dwellings are complex and expose firefighters to many challenges and hazards. This includes buildings that have been converted from single-family residences, warehouses, retail, and other types of occupancies for use by multiple families within the same structure. These living units may be located above or adjacent to commercial occupancies. The complexity of these incidents is a function of multiple factors and can require significant resources to mitigate [NFPA 1700 2026].

Firefighting Tactical Considerations

NFPA 1700 [2026] offers the following tactical considerations for fires in buildings converted to residential or multiple dwellings:

- Many of these conversions can have a history of being completed without building or fire and life safety code compliance. This can result in delayed detection, limited egress paths, maze-like conditions with limited access for firefighting operations, increased fire load, rapid fire propagation, and unpredictable fire travel.
- Living units may be found at all levels including the basement and the attic, resulting in extremely limited access for fire operations which increases the hazard to life and complicates search operations.
- The structure may be overcrowded, and the number of occupants may far exceed the original anticipated occupancy load.

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- Due to the difficulty in conducting rescues and evacuations, it is essential to limit fire spread with a coordinated fire control as soon as practical.
- Additional resources may be needed due to the challenges presented by potential multiple rescues and fire control within a converted structure.

Specific to the building in this incident, NFPA 1700 [2026] offers the following considerations:

- If large numbers of residents require immediate rescue, resources become critical and delayed extinguishment of the fire is often the result. Even in the face of rescues or removals, emphasis must be placed on extinguishment. Effective suppression creates and maintains survivable spaces; delayed extinguishment creates greater danger to occupants and firefighters.
- Active fires in these structures will often increase the demand of ground ladders to support rescue and provide access and egress for firefighters. Incident commanders should proactively consider early placement of ground ladders.
- Fires that involve balloon frame construction, void spaces, attics, knee walls, and other concealed spaces within a structure present many hazards and are challenging to safely extinguish. The structure should be assessed from both the interior and exterior simultaneously to ensure rapid detection of possible concealed space fires. Ventilation should be controlled during the search for fire.

Fire departments can integrate the fire-specific tactical considerations listed in NFPA 1700 into training and SOPs to aid in developing initial and ongoing operational strategies at structure fires.

Recommendation #3: 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.

At this incident, Ladder 24 firefighter entered the building with 4,435 PSI and depleted his entire air supply in 15 minutes. He did not recognize his air supply limitations and his EOSTI sounded as he was trying to find his way out of the building. After running out of air and becoming trapped, he requested a ladder for 5 minutes via radio before calling a Mayday. He activated his PASS but turned it off 4 minutes later since he could not hear his radio.

SCBA Air Management Training and Practice

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 2025]:

- Ensure air supply is adequate (full cylinder) at the start of the shift
- Monitor air usage during an event
- Recognize the 50% heads-up display (HUD) light flash and communicate this information to crew members

- Exit an immediately dangerous to life and health (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 the incident commander. Firefighters should not wait until their EOSTI alarms activate or they are out of air to communicate or address this situation.

NFPA 1400 [2026] 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 1400 2026].

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. These signals are 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 also provides another signal beyond flashing red (e.g., 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., rapid intervention team/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 2025].

Firefighter Survival and Mayday Procedures

Relatedly, firefighters should be trained and have confidence in how to call a Mayday when in danger [IAFF 2020]. 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 2010; IAFF 2020].

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 (if equipped) prior to transmitting a Mayday. This action provides the best chance for the dispatcher and/or incident commander to acknowledge the Mayday in a timely manner. This process should be supported by an SOP and practical training [NIOSH 2025].

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 incident commander 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 [NIOSH 2025].

Recommendation #4: Fire departments should train firefighters and fire officers to maintain crew integrity when operating in the hazard zone.

At this incident, the Ladder 24 crew separated multiple times upon arrival and while operating in the building.

Crew integrity is essential to fireground accountability. NFPA 1550 [2024] states in Paragraph 10.5.6 that company officers shall maintain an ongoing awareness of the location and condition of all company members. Paragraph 10.5.7 states that, where assigned as a company, members shall be responsible for remaining under the supervision of their assigned company officer [NFPA 1550 2024]. It is the responsibility of every firefighter and company officer to always stay in communication or contact with crew members by visual observation, voice, or touch while operating in the hazard zone. All firefighters should maintain the unity of command by operating under the direction of their company officer. The ultimate responsibility for crew integrity and ensuring no members get separated or lost rests with the company officer. A Mayday should be called if any member cannot be accounted for during a PAR [NIOSH 2026].

Recommendation #5: Fire departments should ensure that adequate staffing is available to respond to emergency incidents.

At this incident, the initial box alarm assignment included 15 personnel. Those dispatched included three engines, one ladder truck, one utility vehicle, and three chief officers. The building was classified as a high occupancy building in the PSAP dispatch protocols. It would be considered a high-hazard occupancy per NFPA 1750 [2026] due to high life hazard and high fire potential due to its location, construction, configuration, and the presence of specific contents (high fuel load). In the years preceding this incident, numerous requests for additional staffing were made to the AHJ by Chief 20 but were not

fulfilled. Automatic aid agreements with neighboring departments were used to supplement staffing needs.

NFPA 1750 [2026] states that the number of on-duty fire suppression members should be sufficient to perform the necessary firefighting operations given the expected firefighting conditions. It further states that the number of personnel should be determined through task analyses that take the following factors into consideration [NFPA 1750 2026]:

- Life hazard to the populace protected as well as potential property loss.
- Provisions of safe and effective firefighting performance conditions for the firefighters.
- Nature, configuration, hazards, and available internal protection of the properties involved.
- Types of fireground tactics and evolutions employed as standard procedure, type of apparatus used, and results expected to be obtained at the fire scene.

Adequate staffing is necessary to meet the needs of the community and ensure safe, effective, and efficient emergency operations. NFPA 1750 [2026] states that both engine and truck companies should be staffed with a minimum of four on-duty personnel. These numbers ensure that all primary functions of these companies can be completed without resource strain such as pumping and delivering water, basic firefighting, search and rescue, forcible entry, overhaul and salvage work. In terms of deployment, NFPA 1750 [2026] states that an initial full alarm assignment to a structure fire in a high-hazard occupancy should contain a minimum of 42 members. These numbers include the provision of an incident commander with an aide, a rapid intervention crew/team, division/group supervisors, incident safety officer, two or more search and rescue teams, and initial emergency medical support and transport [NFPA 1750 2026].

Recommendation #6: Fire departments should develop a pre-incident plan for high-risk occupancies, such as boarding houses.

At this incident, station 20 did not have a pre-incident plan for this building even though it was classified as a high occupancy building in the PSAP dispatch protocols. Station 20 performs regular pre-incident planning but has more than 150 high-risk occupancies in their jurisdiction.

A pre-incident plan is a document developed by gathering general and detailed data that is used by responding personnel to effectively manage emergencies for the protection of occupants, participants, responding personnel, property, and the environment. A pre-incident plan identifies deviations from normal operations and can be complex and formal, or simply a notation about a particular problem. Examples may include the presence of flammable liquids, explosive hazards, modifications to structural building components, or structural damage from a previous fire [NFPA 1660 2024].

NFPA 1660 [2024] outlines steps involved in developing, maintaining, and using a pre-incident plan by breaking the incident down into planning, implementation, and execution phases. The planning phase, for example, covers factors such as physical elements and site considerations, occupant considerations, protection systems and water supplies, hydrant locations, and special hazard considerations. Building

characteristics that are important to record include type of construction, materials used, occupancy, fuel load, and unusual or distinguishing characteristics [NFPA 1660 2024; NIOSH 2026].

Because many fire departments are unable to pre-plan for every structure within their jurisdiction, departments may opt to prioritize plans for structures that have elevated or unusual fire hazards and life safety considerations. Strategies and tactics employed at an emergency incident need to match the structure. The pre-plan information can help ensure that residential fire tactics are not applied at commercial structures [NIOSH 2026].

Special Resource Considerations

Fire departments can consider integrating pre-incident plans and fire inspection records electronically so they are available to fire officers, firefighters, and the incident commander. The information gathered and included in the pre-incident plan can help ensure the appropriate tactics are employed in the most effective way [NFPA 1660 2024]. Fire inspection records are also valuable for choosing appropriate tactics. These records may show a temporary hazard such as a fixed fire suppression system being out of service, which can influence fire behavior. Both records can be made readily available to personnel through electronic software. This software can also be integrated with the critical incident dispatch system program. This program provides needed building information that may not be readily apparent to responding companies upon arrival. The critical incident dispatch system program also provides accurate and consistent information for required radio progress reports and indicates where variations in SOPs would be necessary due to features previously identified at this location [FDNY 2011; NIOSH 2026].

Recommendation #7: Governing municipalities (federal, state, regional/county, and local) should partner with fire departments to enforce the applicable fire and life safety codes at high-risk occupancies, such as boarding houses.

At this incident, fire inspections had not been conducted in the jurisdiction since 2017 due to limited staffing in the code enforcement & planning office. In the years preceding this incident, numerous requests for the fire department to complete fire inspections were made to the AHJ by Chief 20 but were not granted.

NFPA 1750 [2026] states that fire prevention inspection and code enforcement shall be conducted to ensure compliance with adopted codes and standards. The AHJ shall determine the minimum resources, personnel, and equipment levels necessary to perform code enforcement and inspection activities. Additionally, NFPA 1750 [2026] states that existing occupancy fire prevention inspection and code enforcement inspection frequencies shall not be less than those specified below for each occupancy risk classification:

- High: Annually
- Moderate: Biennially
- Low: Triennially
- Critical Infrastructure: Per AHJ

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Although the recommended inspection frequency for an occupancy such as the one in this incident is annual, fire departments, in cooperation with their AHJ, can opt to perform additional fire and life safety inspections and enforcement. Additional inspections can enhance their ability to identify potential compliance and emergency response issues [NFPA 1750 2026; NIOSH 2026].

Implementing a fire inspection program requires adequate staffing. An evaluation of the resources needed for the program to be effective should be completed annually. NFPA 1750 [2026] provides fire departments with a sample staffing exercise that uses a five-step process to help estimate personnel needed for a fire inspection program. Staffing for a program can be accomplished through several means including [IFSTA 2025]:

- Full time- Career or paid personnel assigned full time to inspections
- Part time- Career or paid personnel who perform inspections in addition to other duties
- Operations- Company personnel who perform inspections as part of their firefighting duties

Company-level assigned inspections may be completed in support of the fire department's inspection program. Company personnel should interact regularly with fire inspection personnel [IFSTA 2025]. Company-level personnel assigned to perform fire inspections should meet the training requirements for first responder inspector in NFPA 1030 [2024] at minimum. Additionally, these personnel can utilize Annex I, *First Responder Inspector Fire Safety Inspection List*, from NFPA 1030 [2024] as part of their duties in supporting the fire inspection program. Recurring proficiency training should be provided.

Recommendation #8: Public Safety Answering Points (federal, state, regional/county, and local) should have adequate staffing that allows dispatchers to be dedicated to an incident to support fireground operations, the incident commander, and Mayday management.

The PSAP in this incident maintained two dispatchers for fire and EMS calls for service. During the fire, multiple radio transmissions from Ladder 24 firefighter stating he was out of air were missed. A dedicated dispatcher monitoring the incident communications may have aided in earlier identification of a firefighter emergency for the incident commander and on-scene personnel.

Effective fireground radio communication is important to ensure fireground command and control as well as enhance firefighter safety and health. The radio system must be dependable, consistent, and functional to ensure effective communications, especially during emergency incidents. There are several ways to ensure that the incident commander can effectively manage fireground communications. One method is to have a trained dispatcher monitor the fireground radio channel. It is suggested that dispatchers meet the requirements of NFPA 1225 [2022], *Standard for Emergency Services Communications*. The dispatcher is in a secure environment, isolated from fireground distractions and noise, and usually has access to playback technology to listen to hard-to-understand messages. This depends upon the ability to monitor and record all radio traffic. The dispatcher should also have access to "identifier" information, which identifies the portable radio being used to make the transmission [NFPA 1225 2022; NIOSH 2026]. PSAPs should work with fire departments to ensure integrated operations and procedures that utilize their staffing, equipment, and abilities.

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Recommendation #9: Electric utility companies should ensure utilities are disconnected when requested by fire departments to support fireground operations and firefighter safety.

At this incident, the incident commander and operations requested the electric utility company to disconnect the power to the building multiple times. The PSAP communicated these requests directly to the electric utility company through established protocols. The power was not disconnected until later in the incident which affected laddering the building for the rescue of Ladder 24 firefighter and aerial operations by Tiller 27.

NFPA 70E [2024] states that only qualified persons may de-energize and disconnect the electric supply and relieve all stored energy. Firefighters cannot disconnect power from buildings at structure fires. They are required to request assistance from electric utility companies who can shut off the power remotely, at the building, or at the telephone pole [IFSTA 2024]. In 2008, NIOSH investigated a firefighter fatality in Pennsylvania where a career fire captain was electrocuted during aerial operations. During the incident, the electric utility company was requested by the incident commander to disconnect power to an apartment building as well as overhead wires. Although the electric utility company representative informed the incident commander that power was cut, the fire captain was electrocuted and killed on the aerial platform after touching an overhead wire [NIOSH 2009].

NFPA 1700 [2026] states that firefighters should be aware of the electrical hazards at all structure fires. Electric hazards should be assumed during all phases, especially during aerial and ground ladder placements. Modern services allow for secondary electrical sources to activate once primary sources fail or are disconnected [NFPA 1700 2026]. When fire departments request power to be disconnected, electric utility companies should ensure termination of the utilities through their specific means and procedures.

Post-Incident Fire Department Prevention Actions

After this incident, the fire departments implemented changes to incident response and fireground operations. These changes were based on the departments' critique of the incident on February 20, 2026.

- **Radio Discipline Training**
  The fire departments are enhancing training for firefighters to ensure the communication of critical information and reduce unnecessary radio traffic for non-priority transmissions.
- **Tactical Channels for Divisions/Groups**
  The fire departments are developing an SOP for use of tactical fireground channels at complex incidents. Each division/group will be assigned a tactical channel, and personnel will communicate only using that channel. The division/group supervisor will communicate critical information, such as PARs, to the incident commander to reduce radio traffic for overall incident management.

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Investigator Information

Incident investigator and report author was 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. Brian P. Kazmierzak, EFO, Deputy Director of Fire Services with the Benton Harbor Department of Public Safety, Michigan and Raymond Reynolds, Director of Fire & EMS, City of Nevada, Iowa, 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. The Pennsylvania Office of the State Fire Commissioner provided a state partner 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.

Underwriters Laboratories (UL)
The Fire Safety Research Institute (FSRI), part of the UL Research Institutes, continues to work with fire departments and fire service organizations to conduct research on fire dynamics, fire safety issues, and fire ground operations. Evidence-Based Structural Firefighting, a free online course from UL FSRI, is a

course based on NFPA 1700: Guide for Structural Firefighting. The Fire Specific Scenarios section is relevant to Recommendation #2 of this report. https://training.fsri.org/course/109/evidence-based-structural-firefighting.

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.*