Career Firefighter Dies during Warehouse Fire at Unpermitted Film Studio – Georgia

Executive Summary

Photo 1: View of the warehouse, Side Alpha, post-fire.
(Courtesy of the fire department)

On September 8, 2025, a master firefighter died after becoming disoriented while trying to evacuate a warehouse at a commercial structure fire. At 13:32 hours, the Public Safety Answering Point (PSAP) transmitted an alarm assignment for a business fire. Engines 13 and 25, Quints 17 and 24, Trucks 16 and 25, Battalions 3 and 4, Heavy Rescue (HR) 24, Advanced Rescue 26, and Car 7 were dispatched. At 13:34 hours, Engine 14, Squad 14, and Squad 24 requested to be added. At 13:37 hours, Engine 14 arrived on scene, gave a size-up of a one-story commercial structure with heavy smoke coming from the roofline, and assumed command. Engine 14 radioed that they did not see a hydrant in the area and requested the first arriving truck to open the garage doors on Side Alpha. He provided an update at 13:39 hours that he was unable to complete a 360 size-up but that the incident building was a large metal commercial structure with garage doors on Sides Alpha and Delta. He stated that his crew would make entry and be in offensive mode. Engine 14 officer and tailboard entered the structure with a 200 ft 1 ¾-inch hoseline. They observed clear conditions with smoke at the ceiling. As the crew began to encounter film studio props, Engine 14 officer announced that the structure was a haunted house and that it was “cut up inside.” HR 24 and Quint 24 arrived on scene. HR 24 officer announced that he would assume command and conduct a 360 size-up. He requested that Quint 24 perform a primary search and that the HR 24 tailboards work on the garage doors. Quint 24 entered the structure and began a primary search off the hoseline. At

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13:43 hours, HR 24 assigned Quint 17 to assist with the garage doors on Side Delta. Battalion 4 arrived on scene, assumed command, and assigned HR 24 officer as safety officer. At 13:48 hours, Engine 14 driver radioed they could not open the hydrant in front of the warehouse but had one on the other side of the fence at the adjacent property. HR 24 officer radioed Battalion 4 that there was a lot of fire on the backside. He stated that he was unsure how far Engine 14 was in the structure but suggested they evacuate until a water supply was established. At 13:50 hours, Battalion 4 ordered all interior crews to evacuate the structure until a water supply was established. He announced that all operations would be defensive. At this time, conditions were hotter with near-zero visibility on the interior. Smoke became black with fire showing. On the interior, Quint 24 officer directed Engine 14 tailboard to spray up and cool the ceiling above them. As Engine 14 tailboard opened the nozzle, he faced Side Bravo and sprayed Quint 24 officer in the head. Quint 24 officer went to the floor and became disoriented. Not seeing him go to the floor due to zero visibility conditions, Engine 14 crew followed the hoseline back to Side Alpha, taking the nozzle with them. Quint 24 was left without a hoseline to follow to the exit as conditions deteriorated and heat increased. By this time, multiple garage doors were open, and a water supply established. At 13:52 hours, Engine 14 crew reached the man door on Side Alpha and began to exit the structure. Speaking to his tailboard and accidentally keying his microphone, Quint 24 officer radioed that he was "going to go ahead and call a Mayday." HR 24 officer, driver, tailboard 1, and tailboard 2 (deceased firefighter) entered the structure through the man door on the Side Alpha/Delta corner, split up, and began their search for Quint 24. Around 13:54 hours, HR 24 officer reported that he had two members of Quint 24 and they were on their way out. Hearing that Quint 24 was out, HR 24 tailboard 2 said to tailboard 1 that "the fire is burning above us, and we have to get out." Tailboard 1 handed him the search line bag as he followed the line back to the exit. Both firefighters could hear the metal roof popping and conditions were very hot. They became separated as they proceeded to Side Alpha. At 13:59 hours, HR 24 tailboard 2 called a Mayday stating he was trying to make his way out. HR 24 officer and Truck 16 officer entered the structure. At 14:10 hours, HR 24 officer radioed to Car 7 that they found tailboard 2 and were coming out. He was located about 20 feet into the structure. At 14:13 hours, Car 7 announced that HR 24 tailboard 2 was out of the structure. Crews began treating him for cardiac arrest. He was transported to a local hospital where he was pronounced deceased.

Contributing Factors

- *Strategy and tactics at high-risk occupancy*
- *Coordinated ventilation and fire control*
- *Benchmarking of critical information*
- *Mayday operations/firefighter survival*
- *Available personnel*
- *Task saturation*
- *Psychological safety*
- *Pre-incident planning*
- *Fire inspection and identification of hazards*
- *Change of occupancy*
- *Structured communication protocols*

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Key Recommendations

Fire departments should:

- *Ensure the first arriving firefighters choose initial and ongoing operational strategies based on the tactical considerations for high-risk occupancies such as warehouses.*
- *Ensure that firefighters understand the influence of ventilation on fire behavior and effectively apply ventilation and fire control tactics in a coordinated manner.*
- *Educate personnel on use of radio communication processes for sharing critical information, such as conditions and actions.*
- *Ensure all fire officers and firefighters are trained in Mayday operations and survival.*
- *Employ an on-deck crew in a forward staged position throughout the incident that can be assigned to developing needs.*
- *Ensure incident command functions are expanded to prevent task saturation of the incident commander.*
- *Develop and/or implement a professional development program that promotes psychological safety, with a focus on open safety communication during incidents as a key element for improving worker empowerment and decision making on the fireground.*
- *Develop a pre-incident plan for high-risk occupancies such as warehouses.*
- *Ensure appropriate staffing is available to enforce the applicable fire and life safety codes at high-risk occupancies.*

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

- *Ensure that the delegated zoning or building code enforcement authorities coordinate efforts and share change of occupancy information with the fire department.*
- *Consider requiring the use of fixed fire suppression systems, such as sprinklers, at high-risk commercial occupancies.*

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

- *Communication standard operating procedures (SOPs) and equipment that allow dispatchers to support fireground operations and the incident commander, including the ability to monitor and record all radio traffic during fireground operations.*

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 September 8, 2025, a master firefighter died after becoming disoriented while trying to evacuate a warehouse at a commercial structure fire. On September 11, 2025, the U.S. Fire Administration (USFA) notified the National Institute for Occupational Safety and Health (NIOSH) of this incident. Between December 7-12, 2025, two investigators representing the NIOSH Fire Fighter Fatality Investigation and Prevention Program (FFFIPP) traveled to Georgia to investigate 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 SOPs, training records, dispatch records, fire inspection and occupancy records, incident videos and photographs, and investigation documents.

Fire Department

The career fire department has a 270-square-mile county jurisdiction, serves a population of 760,000 residents, annually responds to an average of 130,000 calls, and provides emergency medical services (EMS) at the advanced life support level. The fire department is comprised of 730 personnel with 550 in operations. It maintains five battalions with a minimum of 141 personnel on-duty per shift, across the 26 fire stations. Shifts operate 24 hours on with 48 hours off. The fire department's leadership is comprised of a fire chief and four deputy chiefs who manage fire and EMS operations, fiscal and support services, training and professional services, and planning and risk reduction divisions.

Training, Education, and Professional Development

The fire department 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 and operations level. Recruits also receive Georgia and national registry EMT-Basic. HR 24 tailboard 2 (deceased firefighter) had 21 years of total fire service with the department and held the rank of master firefighter. He completed more than 1,000 hours of training and held numerous Pro Board® certifications as NFPA 1010 Fire Fighter I and II, and NFPA 1072 Hazardous Materials Responder at the awareness and operations level. He was licensed as an EMT-Intermediate.

Apparatus, Staffing, and Communications

At 13:32 hours, the following units were dispatched for a business fire (see Table 1). However, Engine 14, Squad 14, and Squad 24 requested to be added to this incident after clearing from separate calls. Engine 14 (three staff) was the first arriving unit on scene at 13:37 hours. Squad 24 (two staff) arrived on scene at 13:45 hours and Squad 14 (two staff) arrived on scene at 13:49 hours.

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Table 1. Units dispatched and arrival time

Apparatus	Staffing	Arrival On Scene
Engine 25	4	13:41
Heavy Rescue 24	4	13:41
Quint 24	3	13:41
Engine 13	3	13:42
Battalion 4	1	13:42
Truck 25	3	13:42
Quint 17	4	13:43
Truck 16	3	13:45
Battalion 3	1	13:46
Advanced Rescue 26	3	13:47
Car 7	1	13:50

The county PSAP dispatches for the fire department, police, and EMS. The fire department is dispatched on one channel and operates on multiple operations (fireground) channels. The PSAP dispatches fire department stations based on geographic location and type of emergency incident.

Building Construction

This incident involved a Type IIb, single-story industrial warehouse built in 1980 (**see Photo 2**). The warehouse was approximately 70 ft x 200 ft x 15 ft steel-frame design with a low-slope steel roof, steel exterior siding and 16 roof skylights. Two sides of the warehouse had 4 ft diameter vent holes with a mechanical fan that allowed continuous fresh air exchange. It contained 14,000 square ft of floor space, including 1,000 square ft of office area, and seven 14 ft garage doors with raised concrete foundations. The warehouse's office areas were partitioned on Side Alpha with the remaining area being open floor space. The warehouse was located on a two-acre lot with a surrounding security fence and gate.

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

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Occupancy Status

At the time of the incident, a film studio business operated the warehouse. The warehouse had multiple temporarily constructed rooms, which were made of rigid expanded and extruded polystyrene boards, ordinary construction materials, and plastics (**see Figure 1**). The rooms were not ceiling height, and each contained themed studio props, such as furniture, manikins, and other lightweight decorations (**see Photo 3, 4, 5, and 6**). The warehouse also had props on the exterior, such as a graveyard and a circus. The film studio business also used the warehouse for an annual Halloween party open to the public.

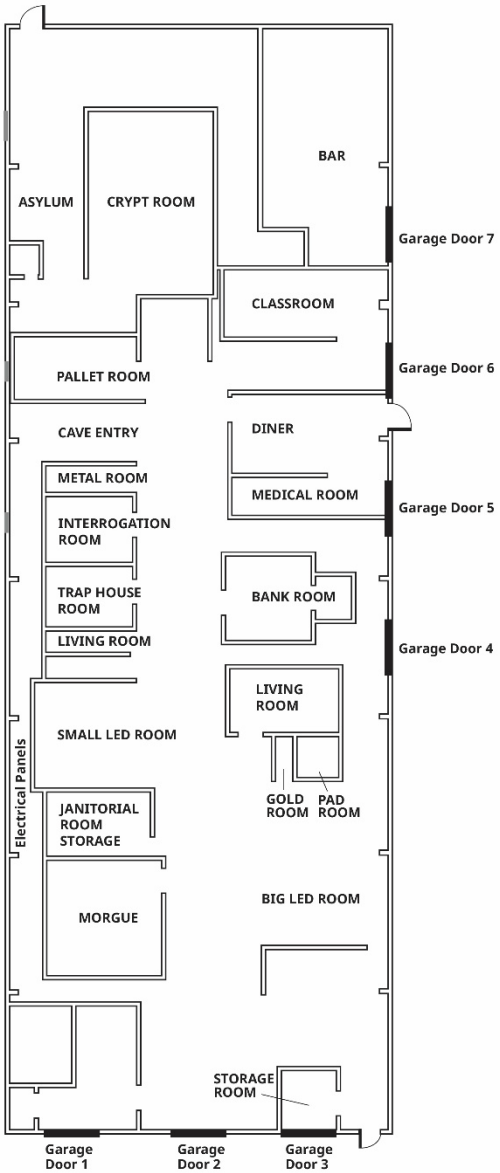

Figure 1: Floor plan of warehouse showing temporarily, theme-constructed rooms. ***(Courtesy of the fire department)***

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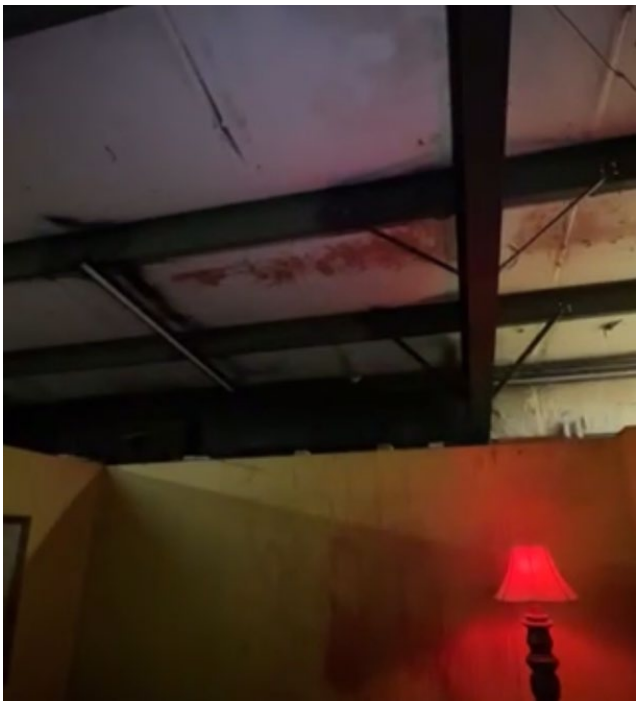
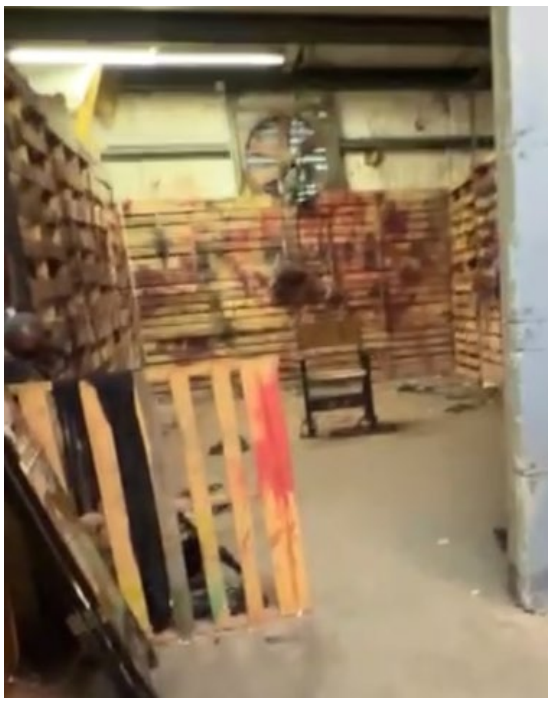


Photo 3, 4, 5, and 6: View of temporarily constructed rooms with themed studio props, pre-incident. Photos show rooms were not built to ceiling height.
(Courtesy of the fire department)



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Change of Occupancy and Inspections

The county authority having jurisdiction (AHJ) maintains a change of occupancy process for businesses moving into existing commercial space. The AHJ's department of planning & sustainability (application, approval, and permit) and the incident fire department (fire and life safety inspection) share the county change of occupancy process. A certificate of occupancy is required for all businesses that occupy a commercial space in the county, which requires an application review and fire and life safety inspection. Any changes to the occupant, ownership, or name of the business require a new certificate of occupancy. Change of occupancy for individual municipalities must also be satisfied outside of the county process. The AHJ uses the following codes relevant to the incident:

- International Building Code (IBC) 2018 edition with Georgia amendments
- International Fire Code (IFC) 2018 edition with Georgia Fire Marshal amendments
- National Fire Protection Association (NFPA) 101 Life Safety Code (LSC) 2018 edition.

The last commercial fire inspection for the warehouse was in 2017. The planning and risk reduction division records showed that the warehouse was used as storage for an internet car parts sales business. State business license records show that the film studio business began operating in the warehouse in 2019. The film studio business did not follow the county or municipality change of occupancy processes. Both entities and the fire department were unaware of its operation at the time of the incident.

Post-Incident Inspections

The incident fire department conducted an inspection the day after this incident and noted more than 10 violations of code which constituted fire hazards and unsafe conditions. These included no:

- Fixed fire suppression system
- Detection, alarm, and communication systems
- Water supply (inoperable private hydrant)
- Fire control for pyrotechnics
- Appropriate storage for combustible liquids and gases
- Occupancy permit.

Other violations identified were obstructed means of egress and limited permanent wiring with extension cords being used in its place.

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Incident Timeline

The following timeline is a summary of events that occurred as the incident evolved shortly after 13:29 hours on September 8, 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, investigation documents, and interview notes.

September 8, 2025	Fireground Operations, Response, and Details
13:29 Hours	• PSAP received a 911 call from a neighboring business reporting smoke coming from a commercial warehouse.
13:32 Hours	• PSAP transmitted an alarm assignment for a business fire. Engines 13 and 25, Quints 17 and 24, Trucks 16 and 25, Battalions 3 and 4, HR 24, Advanced Rescue 26, and Car 7 were dispatched.
13:34 Hours	• Engine 14, Squad 14, and Squad 24 requested to be added after clearing from separate calls for service.
13:37 Hours	• Engine 14 arrived on scene, gave a size-up of a one-story commercial structure with heavy smoke coming from the roofline, and assumed command. • Engine 14 officer announced they were trying to cut the gate open to make access and requested the next arriving engine establish a water supply.
13:38 Hours	• Engine 14 officer updated that the building was a red iron, metal structure. He radioed to Engine 13 that they did not see a hydrant in the area and requested the first arriving truck start opening the garage doors on Side Alpha.
13:39 Hours	• Engine 14 officer updated that he was unable to complete a 360 size-up but the incident building was a large commercial metal structure with garage doors on Sides Alpha and Delta. He stated his crew was going to make entry and would be in offensive mode.
13:41 Hours	• Engine 25 arrived on scene and radioed they would establish a water supply. • HR 24 and Quint 24 arrived on scene.
13:42 Hours	• Engine 14 officer requested that units start opening the Side Alpha garage doors. • Engine 14 officer announced that the structure was a haunted house and that it was "cut up inside."

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September 8, 2025	Fireground Operations, Response, and Details
	• HR 24 officer announced he was assuming command and would be conducting a 360 size-up. He requested Quint 24 perform a primary search and that HR 24 tailboards start working on the garage doors. • Engine 14 officer requested a crew to assist them with hoseline management.
13:43 Hours	• Quint 17 and Truck 25 arrived on scene. • HR 24 assigned Quint 17 to assist with the garage doors on Side Delta, HR 24 tailboards to Side Alpha, and Truck 25 to back up Engine 14.
13:44 Hours	• Engine 13 radioed to Engine 25 that they could not locate a hydrant. HR 24 driver responded that they had a hydrant in front of their apparatus. • HR 24 officer announced he was halfway down Side Delta and could hear fire crackling.
13:45 Hours	• Engine 13, Truck 16, and Squad 24 arrived on scene. • HR 24 officer assigned Engine 13 crew to stretch a 300 ft bundle for a backup hoseline. He requested the hoseline be deployed down Side Delta to go through a garage door. • Battalion 4 arrived on scene. He began to conduct a 360 size-up before he assumed command and assigned HR 24 officer as safety officer.
13:46 Hours	• Truck 16 radioed to command that they would set up on Side Bravo in the parking lot of a neighboring property. • HR 24 officer radioed to interior crews that Engine 13 would enter on Side Delta, halfway down, as Engine 13 requested their hoseline be charged.
13:48 Hours	• Engine 14 driver radioed they could not open the hydrant in front of the warehouse but had another one on the other side of the fence at the adjacent property.
13:49 Hours	• Engine 13 forced the Side Delta man door and saw flames inside. They radioed Engine 14 driver to charge the hoseline as they had a lot of fire on Side Delta. Engine 14 driver responded that a water supply was not yet established. • HR 24 officer radioed to Battalion 4 that there was a lot of fire on the backside. He stated he was unsure how far Engine 14 was in the structure but suggested they should evacuate until a water supply is established.
13:50 Hours	• Battalion 4 ordered all interior crews to evacuate the structure until a water supply was established. He announced that all operations would be

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September 8, 2025	Fireground Operations, Response, and Details
	defensive. Battalion 4 radioed to Engine 14 requesting they evacuate, which Engine 14 officer acknowledged.
13:51 Hours	• Battalion 4 announced again that operations would be defensive until a water supply was established. He requested HR 24 officer to get a personnel accountability report (PAR) for on-scene units. Battalion 4 again radioed to Engine 14 that he needed them to evacuate. • Engine 14 officer responded that they were trying to make their way out. • Quint 24 officer responded to the transmission and requested Engine 14 to come back since they were taking the hoseline with them as they exited. • Truck 16 driver announced that a positive water supply was established.
13:52 Hours	• Battalion 3 announced and assumed the role of safety officer and for all units to standby for a PAR. • Quint 24 officer responded, requesting that Engine 14 bring their nozzle back as they were trying to find their way out. • Speaking to his tailboard and accidentally keying his microphone, Quint 24 officer radioed that he was "going to go ahead and call a Mayday." • Quint 24 officer again called for Engine 14 to come back with their nozzle and get on the ground. He also said that his crew was in front of where they were previously operating. • Engine 14 officer requested Quint 24 officer to activate his PASS as he reentered the structure. • HR 24 officer, driver, tailboard 1, tailboard 2, and Truck 16 crew entered the structure through the man door on the Side Alpha/Delta corner.
13:53 Hours	• Battalion 4 requested Quint 24's location. Quint 24 responded that they were with Engine 14. Quint 24 officer stated that they needed the roll up doors off the building and some hoselines inside. • Battalion 4 requested that Quint 24 activate their PASS as Quint 24 officer radioed that it was getting hot inside and they needed a hoseline.
13:54 – 13:58 Hours	• Car 7 announced and took command, directing Battalion 4 to assume the role of operations. • Car 7 requested the PSAP to send two more engines as Quint 24 radioed that they had fire on them. The PSAP did not answer this request. • Car 7 radioed to Engine 14, asking if they were able to locate Quint 24. HR 24 officer responded that he had two members of Quint 24 and were on their way out.

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September 8, 2025	Fireground Operations, Response, and Details
	• Battalion 3 reported that they were still defensive on Side Delta with the green bundle hoseline and that they had heavy fire on the Side Charlie/Delta corner.
13:59 Hours	• HR 24 tailboard 2 called a Mayday stating he was trying to make his way out. • Car 7 requested all rescues on scene to bring equipment and personnel to Side Alpha. • Truck 16 reported that Engine 14 and Quint 24 were out of the structure and they were checking on one more unit.
14:00 Hours	• Car 7 requested HR 24's location with HR 24 officer responding that he was out and had eyes on his driver and tailboard 1. He stated he was looking for HR 24 tailboard 2. • Car 7 requested all on-scene units to look for HR 24 tailboard 2.
14:01 Hours	• HR 24 tailboard 2 reported that he was inside the structure, cut off. • Car 7 acknowledged by announcing to all on-scene units that they are looking for HR 24 tailboard 2.
14:02 Hours	• Car 7 radioed to HR 24 tailboard 2, requesting he activate his PASS and that Truck 16 was coming to get him. HR 24 tailboard 2 responded that it was hot inside and he couldn't find his way. Seconds later, Car 7 and HR 24 officer heard a PASS. • HR 24 officer and Truck 16 officer reentered the structure.
14:03 Hours	• Car 7 requested a second alarm from the PSAP as Truck 16 driver reported heavy fire through the roof on Side Bravo.
14:04 Hours	• Car 7 radioed Truck 16 asking if they located HR 24 tailboard 2 with the Pak-tracker. Truck 16 officer responded that they did not hear any PASS and requested other units to look through Side Charlie.
14:07 – 14:09 Hours	• Car 7 and Battalion 4 made multiple attempts to contact HR 24 tailboard 2 with no response.
14:10 Hours	• HR 24 officer radioed to Car 7 that they found tailboard 2 and were coming out.
14:13 Hours	• Car 7 announced that HR 24 tailboard 2 was out of the structure.

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	Fireground Operations, Response, and Details
September 8, 2025 **14:14 – 15:03 Hours**	• Command was transferred to Battalion 5 and fire suppression operations continued with first alarm crews being rotated off the incident.

Personal Protective Equipment

At the time of the incident, HR 24 tailboard 2 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, HR 24 tailboard 2 did not manually activate his personal alert safety system (PASS) during this incident. The PASS went into full alarm after a lack of movement. No evidence was identified to suggest that the structural firefighting turnout gear or SCBA unit contributed to the fatality.

During this incident, firefighters utilized a Pak-Tracker hand-held receiver unit to try to locate HR 24 tailboard 2 in the warehouse. The SCBA manufacturer and the NIOSH National Personal Protective Technology Laboratory were contacted to report user issues involving the unit that firefighters experienced at the incident. The SCBA manufacturer evaluated the unit for diagnosis.

Weather Conditions

At 12:56 hours on September 8, 2025, the outdoor temperature was 78°F, dewpoint was 54°F, there had been no precipitation in the last 24 hours, and conditions were fair. The sustained wind was out of the East (blowing towards Side Alpha) at 9 mph with periodic gusts of up to 21 mph [Weather Underground 2025].

Investigation

At approximately 13:29 hours, the PSAP received a 911 call from a neighboring business reporting smoke coming from a commercial warehouse. At 13:32 hours, the PSAP transmitted an alarm assignment for a business fire. Engines 13 and 25, Quints 17 and 24, Trucks 16 and 25, Battalions 3 and 4, HR 24, Advanced Rescue 26, and Car 7 were dispatched. At 13:34 hours, Engine 14, Squad 14, and Squad 24 requested to be added after clearing from separate calls for service.

At 13:37 hours, Engine 14 was first to arrive on scene, gave a size-up of a one-story commercial structure with heavy smoke coming from the roofline, and assumed command (**see Photo 7 and 8**). Due to periodic gusts of wind, smoke conditions did not always appear heavy at the roofline. The size-up transmission was repeated by Battalion 4, who was still enroute to the scene. A chain-link gate at the driveway to the warehouse was locked with a pad lock and chain that Engine 14 driver cut with bolt cutters. Engine 14 officer announced that they were trying to cut the gate open to make access and requested the next arriving engine to establish a water supply. After opening the gate and staging on Side Alpha, Engine 14 officer provided an update that the building was a red iron, metal structure. He radioed to Engine 13 that they did not see a hydrant in the area and requested the first arriving truck to start opening the garage doors on Side Alpha.

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Photo 7: Smoke conditions upon arrival of Engine 14, Side Alpha.
(Courtesy of the fire department)

Photo 8: Smoke conditions upon arrival of Engine 14, Side Delta, showing buckling of roof.
(Courtesy of the fire department)

Engine 14 officer attempted to conduct a 360 size-up but encountered thick vegetation at the Side Alpha/Bravo corner. He moved to the Side Alpha/Delta corner and looked down Side Delta, observing smoke but no fire. He provided an update at 13:39 hours that he was unable to complete a 360 size-up but that the incident building was a large commercial, metal structure with garage doors on Sides Alpha and Delta. He stated that his crew was going to make entry and be in offensive mode. Engine 14 tailboard forced the man door on the Side Alpha/Delta corner as Engine 14 driver deployed and charged a 200 ft 1 ¾-inch hoseline with a combination nozzle. Engine 14 officer and tailboard entered the structure with the hoseline and observed clear conditions directly inside with smoke at the ceiling.

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At 13:41 hours, Engine 25 arrived on scene and radioed that they would establish a water supply. At the same time, HR 24 and Quint 24 arrived on scene. Quint 24 positioned on the Side Alpha/Delta corner and set their aerial to the roof. Engine 14 officer requested that units start opening the Side Alpha garage doors at 13:42 hours. Visibility became more obscured as his crew moved further into the structure. As the crew began to encounter film studio props, Engine 14 officer announced that the structure was a haunted house and that it was "cut up inside." Following this transmission, HR 24 officer announced that he would assume command and conduct a 360 size-up. He requested that Quint 24 perform a primary search and that HR 24 tailboards start working on the garage doors. Engine 14 officer requested a crew to assist them with hoseline management as they began to move down Side Delta of the structure. As Quint 24 crew entered the structure, they began feeding hose to Engine 14. They followed the hoseline into the big LED room (**see Figure 1**) and searched off the line. Quint 24 tailboard looked into the pad room and saw a mattress. Thinking there could be squatters, he continued to search as smoke conditions moved down to chest level as heat increased.

At 13:43 hours, Quint 17 and Truck 25 arrived on scene. HR 24 assigned Quint 17 to assist with the garage doors on Side Delta, HR 24 tailboards to Side Alpha, and Truck 25 to back up Engine 14. HR 24 tailboards began cutting the garage doors on Side Alpha, starting with door 2 and moving to door 1. Around 13:44 hours, Engine 13 radioed to Engine 25 that they could not locate a hydrant. HR 24 driver responded that a hydrant was in front of their apparatus. HR 24 driver was then assigned to Side Delta to cut garage doors, starting with door 4 (**see Figure 1**). He was assisted by Quint 24 driver.

HR 24 officer announced that he was halfway down Side Delta of the structure and could hear fire crackling. He was unable to complete a 360 size-up. A minute later, Battalion 4, Engine 13, Truck 16, and Squad 24 arrived on scene. HR 24 officer assigned Engine 13 crew to stretch a 300 ft bundle for a backup hoseline. He requested that the hoseline be deployed down Side Delta to go through a garage door. As an Engine 13 crew met him, he asked them to force the man door on Side Delta. Battalion 4 began to conduct a 360 size-up, moving from Side Alpha to Delta and Charlie due to heavy vegetation on Side Bravo. He later assumed command and assigned HR 24 officer as safety officer. At 13:46 hours, Truck 16 radioed to command that they would set up on Side Bravo in the parking lot of a neighboring property. Truck 16 officer and Truck 16 tailboard began to conduct a 360 size-up. HR 24 officer radioed to interior crews that Engine 13 would be coming in on Side Delta, halfway down, as Engine 13 requested their hoseline be charged.

Around 13:47 hours, Advanced Rescue 26 and Battalion 3 arrived on scene. On the interior, Engine 14 crew encountered a large cooler (at garage door 4) as they moved along Side Delta towards Side Charlie. They were unable to move the cooler. Engine 14 officer looked with his thermal imaging camera (TIC) and saw finger flames on the ceiling coming from the direction of Side Charlie. He directed Engine 14 tailboard to cool the ceiling, and he began to spray the smoke towards the Side Charlie/Delta corner. At the same time, HR 24 driver heard the water from the hoseline hitting the wall. He began cutting garage door 4 that the Engine 14 crew was standing on the other side of. Water spray made no progress with the finger flames at the ceiling, so they returned to the middle of the structure towards Side Alpha. HR 24 tailboards completed the cuts on Side Alpha and moved to Side Delta to assist HR 24 driver. As HR 24

driver completed his cut with Quint 24 driver, the top of the garage door burped black smoke, which led to their decision not to take the whole door.

At 13:48 hours, Engine 14 driver radioed they could not open the hydrant in front of the warehouse but had another on the opposite side of the fence at the adjacent property (**see Photo 12**). Drivers from Truck 16 and Engine 13 began to cut the chain-link fence to try establishing a water supply from the other hydrant to Engine 14. Battalion 3 responded that a hydrant was located on the street about 400 feet from the driveway to the warehouse. At 13:49 hours, Engine 13 forced the Side Delta man door and saw flames inside. They radioed Engine 14 driver to charge the hoseline as they had a lot of fire on Side Delta. Engine 14 driver responded that a water supply was not yet established.

HR 24 officer radioed Battalion 4 that there was a lot of fire on the backside. He stated that he was unsure how far Engine 14 was in the structure, but suggested that they should evacuate until a water supply was established. As Truck 25 completed cutting garage door 5, the smoke coming out turned brown with periodic flames visible. HR 24 officer and Battalion 4 performed a face-to-face transfer of command. HR 24 officer provided an update on which on-scene units were operating where and that he believed the fire was halfway down the structure. HR 24 officer then assumed the role of safety officer.

At 13:50 hours, Battalion 4 ordered all interior crews to evacuate the structure until a water supply was established. He announced that all operations would be defensive. Battalion 4 radioed to Engine 14 requesting they evacuate, which Engine 14 officer acknowledged. Conditions were hotter with near-zero visibility on the interior. Smoke became black with fire showing (**see Photo 9**). Engine 14 crew crawled on the floor, following their hoseline while taking the nozzle with them. As they were making their way out, they encountered Quint 24 crew, who advised them to get out of the structure. Quint 24 officer searched with his TIC, seeing temperatures of almost 550 degrees on the ceiling. He directed Engine 14 tailboard to spray up and cool the ceiling above them. As Engine 14 tailboard opened the nozzle, he was facing Side Bravo and sprayed Quint 24 officer in the head. Quint 24 officer went to the floor and became disoriented. Not seeing him go to the floor due to zero visibility conditions, Engine 14 crew

Photo 9: Smoke conditions at 13:50 hours, Side Delta, showing fire.
(Courtesy of the fire department)

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began to follow the hoseline back to Side Alpha, taking the nozzle with them. Quint 24 was left without a hoseline to follow to the exit as conditions became progressively hotter.

At the same time, Car 7 arrived on scene and directed EMS to stage with equipment on Side Alpha as he approached the structure. As he began a 360 size-up, he looked down Side Delta and saw dark black smoke. Battalion 3 radioed that he needed two additional engines in the driveway to help establish the water supply. Still completing their 360 size-up, Truck 16 officer radioed that they forced a man door on Side Charlie and could hear popping. They observed air enter the man door before smoke started coming out. With tailboard, they completed their 360 size-up by walking through the vegetation on Side Bravo. They noticed fire in all mechanical fan vents as they proceeded to Side Alpha.

At 13:51 hours, Battalion 4 announced again that operations would be defensive until a water supply was established. He requested HR 24 officer to get a PAR for on-scene units. Battalion 4 again radioed to Engine 14 stating he needed them to evacuate. Engine 14 officer responded that they were trying to make their way out. Quint 24 officer responded to the transmission and requested Engine 14 to come back since they were taking the hoseline with them as they exited. As the smoke conditions worsened, HR 24 officer ordered units to stop cutting as they completed cuts of garage doors 6 and 7 on Side Delta (**see Photo 10**). Truck 16 driver announced that a positive water supply was established. Additional hoselines were charged and Engine 13 began flowing water into the man door on Side Delta.

At 13:52 hours, Battalion 3 announced he was assuming the role of safety officer and for all units to standby for a PAR. Quint 24 officer responded, requesting that Engine 14 bring their nozzle back as they tried to find their way out. His TIC screen whited out from oversaturation as he looked around him for an indication of the exit. Engine 14 crew reached the man door on Side Alpha and began to exit the structure. Speaking to his tailboard and accidentally keying his microphone, Quint 24 officer radioed that he was "going to go ahead and call

Photo 10: Garage door cuts, Side Delta, post-fire.
(Courtesy of the fire department)

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a Mayday." At this time, the Quint 24 crew was in the big LED room (**see Figure 1**) and decided to stay in their location to avoid getting further lost. Quint 24 officer again called for Engine 14 to come back with their nozzle, get on the ground, and that his crew was in front of where they previously operated. Engine 14 officer and his firefighter checked their air supply and responded that they were re-entering to assist Quint 24. Engine 14 officer requested Quint 24 officer to activate his PASS. In response, Quint 24 tailboard manually activated his PASS.

Hearing the Mayday transmission, HR 24 driver told tailboards 1 and 2 to move to Side Alpha. They met HR 24 officer who told them that Quint 24 was lost and directed them to enter the structure to find them. HR 24 officer, driver, and tailboard 2 entered the structure through the man door on the Side Alpha/Delta corner, split up, and began their search (**see Photo 11**). Quint 24 driver gave a rope bag to HR 24 tailboard 1 and clipped its anchor onto the railing outside the man door. He also gave him a Pak-Tracker hand-held receiver unit as he entered the structure. Battalion 3 began to perform a face-to-face PAR with the apparatus officers on scene to avoid tying up the radio.

Photo 11: Crews entering to search for Quint 24, Side Alpha.
(Courtesy of the fire department)

Car 7 requested Squad 14 use their TIC at the Side Alpha garage doors to try to locate the Quint 24 crew inside. As they completed their 360 size-up, Truck 16 crew arrived on Side Alpha and met with Car 7. He assigned them to enter the structure and search for Quint 24. Truck 16 crew entered through Side

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Alpha, crawling due to limited visibility and high heat conditions. During their search, they followed the hoseline and periodically heard the metal roof buckling (**see Photo 12**).

At 13:53 hours, Battalion 4 requested Quint 24's location who responded that they were with Engine 14. Quint 24 officer stated that they needed the roll up doors off the building and some hoselines inside. Battalion 4 requested that Quint 24 activate their PASS as Quint 24 officer radioed that it was getting hot inside and needed a hoseline. HR 24 driver located and directed Engine 14 to begin flowing water to cool the area as they began to feel the heat on their shoulders.

Photo 12: Ceiling condition, post-fire.
(Courtesy of the fire department)

Car 7 directed exterior crews to pull another hoseline and flow water into the Side Alpha garage doors to improve conditions. After entering the structure, HR 24 tailboard 1 met up with HR 24 tailboard 2. They moved to the middle of the structure, searching towards Side Bravo. Squad 24 officer heard PASS alarms as he looked in one of the open garage doors on Side Alpha. He crawled into the structure and met the HR 24 tailboards, who said they were searching for Quint 24. Squad 24 officer then moved back to the garage door opening and made noise in an attempt to help crews find their way to the exit.

At 13:54 hours, Car 7 announced and took command, directing Battalion 4 to assume the role of operations. Car 7 requested the PSAP to send two more engines as Quint 24 radioed that they had fire on them. The PSAP did not acknowledge this request. Car 7 radioed to Engine 14, asking if they were able to locate Quint 24. HR 24 officer responded that he had two members of Quint 24 and they were on their way out. They were followed by the Truck 16 crew. After exiting the structure, Quint 24 quickly doffed their SCBAs and turnout gear, complaining of feeling excessively hot. Hearing that Quint 24 was out, HR 24 tailboard 2 said to tailboard 1 that "the fire is burning above us and we have to get out." Tailboard 1 handed him the search line bag as he followed the line back to the exit. Both firefighters could hear the metal roof popping and conditions were very hot. They became separated as they proceeded to Side Alpha. Battalion 3 reported that they were still defensive on Side Delta with the green bundle hoseline and that they had heavy fire on the Side Charlie/Delta corner.

At 13:59 hours, HR 24 tailboard 2 called a Mayday stating he was trying to make his way out. Battalion 4 responded by repeating that HR 24 was declaring a Mayday. Car 7 then requested all rescues on scene to bring equipment and personnel to Side Alpha. Truck 16 reported that Engine 14 and Quint 24 were out of the structure and they were checking on one more unit. HR 24 tailboard 1 then exited the

structure. Battalion 3 began to perform a face-to-face PAR with the apparatus officers on scene. At 14:00 hours, Car 7 requested HR 24's location with HR 24 officer responding that he was out and had eyes on his driver and tailboard 1. He stated he was looking for HR 24 tailboard 2. Engine 14 and Quint 24 confirmed that their crews were out of the structure. Car 7 then requested all on-scene units to look for HR 24 tailboard 2.

At 14:01 hours, HR 24 tailboard 2 reported that he was inside the structure, cut off. Car 7 acknowledged by announcing to all on-scene units that they are looking for HR 24 tailboard 2. HR 24 driver and Quint 24 driver re-entered the structure and began to spray water inside the man door of Side Alpha/Delta corner to cool the area. They noted conditions as very hot. At 14:02 hours, Car 7 radioed to HR 24 tailboard 2 requesting he activate his PASS and that Truck 16 was coming to get him. HR 24 tailboard 2 responded that it was hot inside and he couldn't find his way. Seconds later, Car 7 and HR 24 officer heard a PASS. Car 7 directed HR 24 officer to go in and search for tailboard 2 using the search line. He also assigned Truck 16 officer to the search line and asked that he notify him if the line goes slack. As both entered the structure through the man door on the Side Alpha/Delta corner, smoke was banked to the floor and heat was intense.

At 14:03 hours, Car 7 requested a second alarm from the PSAP as Truck 16 driver reported heavy fire through the roof on Side Bravo. At this time, on-scene crews had multiple hoselines flowing into the structure through the garage doors on Side Alpha and Delta. Car 7 radioed HR 24 tailboard 2 again requesting he activate his PASS and stated that Truck 16 was coming to get him. A minute later, Car 7 radioed Truck 16 requesting if they had located HR 24 tailboard 2 with the Pak-tracker. Truck 16 officer responded that they did not hear any PASS and requested other units to look through Side Charlie. Between 14:07 and 14:09 hours, Car 7 and Battalion 4 made multiple attempts to contact HR 24 tailboard 2 with no response.

At 14:10 hours, HR 24 officer radioed to Car 7 that they found tailboard 2 and were coming out. He was located about 20 feet into the structure, along the wall of the storage room that faced Side Bravo (**see Figure 1**). His PASS was in full alarm. HR 24 officer and Truck 16 officer began to drag him out, which became difficult with the debris and metal props in the area. At 14:13 hours, Car 7 announced that HR 24 tailboard 2 was out of the structure. Battalion 4 repeated the transmission and stated that operations would remain defensive. Multiple crews carried HR 24 tailboard 2 from the doorway and began to remove his SCBA and structural firefighting turnout gear. Crews doffing his PPE noted that his body felt extremely hot to the touch and had burns on his lower torso. Crews began treating him for cardiac arrest and he was transported to a local hospital where he was later pronounced deceased.

Between 14:14 and 15:03 hours, command was transferred to Battalion 5 and fire suppression operations continued with first alarm crews being rotated off the incident. All first alarm crews were given a debriefing outside the incident before they were released. The fire was declared under control at 15:04 hours with fire investigators taking control of the scene (**see Photo 13**).

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Photo 13: Warehouse, Side Alpha/Delta corner, post-fire.
(Courtesy of the fire department)

Fire Behavior

Upon arrival of the fire department, the fire in the warehouse was ventilation-limited. The heat release rate and growth were limited by the amount of oxygen available to the fire as the warehouse doors and openings were mostly closed with the exception of vent holes for mechanical fans. Upon opening doors for interior operations and cutting the garage doors for ventilation, the fire moved from decay to growth stage as it received fresh oxygen sources. This included the opening of Side Alpha from which the wind directly entered the warehouse. This uncontrolled ventilation, along with no fire suppression, facilitated full development of the fire and involvement of surrounding fuel sources such as the rigid expanded and extruded polystyrene boards (**see Photo 14 and 15**). According to Fire Safety Research Institute (FSRI), these materials have effective heats of combustion that are 50% to 100% higher than wood. In addition, the soot yield from these foam plastics are 10 to 20 times greater than the soot emissions of wood [FSRI 2023]. With increasing heat energy, the conditions became hotter with larger amounts of smoke limiting visibility.

Photo 14 and 15: Rigid extruded polystyrene boards used to make film studio rooms.
(Courtesy of the fire department)

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Fire Origin and Cause

The state and fire department cause and origin investigations determined that the fire started in the center of the back half of the warehouse (towards Side Charlie) and the cause was classified as undetermined.

Cause of Death

According to the county medical examiner report, the cause of death of HR 24 tailboard 2 was inhalation of smoke and products of combustion.

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 fatality:

1. Strategy and tactics at high-risk occupancy
2. Coordinated ventilation and fire control
3. Benchmarking of critical information
4. Mayday operations/firefighter survival
5. Available personnel
6. Task saturation
7. Psychological safety
8. Pre-incident planning
9. Fire inspection and identification of hazards
10. Change of occupancy
11. Structured communication protocols

Recommendations

Recommendation #1: Fire departments should ensure the first arriving firefighters choose initial and ongoing operational strategies based on the tactical considerations for high-risk occupancies such as warehouses.

During interviews with NIOSH, many firefighters noted that a strategy for residential structure fires was employed at this incident initially and did not change until conditions deteriorated significantly.

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 warehouse fires are complex incidents that expose firefighters to many challenges and hazards. The complexity of these incidents is a function of multiple factors and can require significant resources to mitigate. Fires in these occupancies can involve large open areas and high fuel loads as well as other unique characteristics [NFPA 1700 2026].

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Firefighting Tactical Considerations

NFPA 1700 [2026] offers the following tactical considerations for warehouse fires:

- Preplanning of warehouse occupancies is a critical aspect of enabling an effective fire response.
- High fuel loads, large open areas, and complex floor layouts can make size-up and determining the exact location of the fire difficult. These factors can require additional staffing to properly execute engine company, ladder company, and rapid-intervention team activities. Firefighters can attempt to locate the fire using existing openings of the warehouse (e.g. man doors) and conduct suppression from areas of relative safety such as exterior locations.
- Large open areas with complex and confusing floor plans can facilitate firefighter disorientation and negatively affect hoseline movement and search operations. Incident command should focus on good communication, controlled movements, and firefighter accountability.
- Warehouse occupancies can result in high fire flow demands. Fire departments should prioritize establishing and maintaining an adequate water supply early in the incident using hydrants, water supply shuttles (tanker/tender), or large diameter hose lays.
- Due to the high fuel loads and large areas involved, larger volume hoselines, such as 2 ½ inch, that can reach the base of the fire should be considered. Aerial water streams and ground-level monitors can be used to help control the spread of fire and for protection of exposures when defensive operations are conducted.
- For large fires where the fire has vented through the roof, defensive operations are recommended. If defensive operations are initiated, personnel should be evacuated from within the interior and the roof areas and appropriate collapse zones established and enforced.
- Rooftop ventilation operations, especially involving fires with high fuel load materials and when roof supports include lightweight construction and/or unprotected steel members, can be hazardous with structural collapse a significant concern. This is especially true for buildings not equipped with fixed fire suppression systems. Even when not working on the roof, size up of the roof condition from an aerial or ladder can be beneficial.

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 #2: Fire departments should ensure that firefighters understand the influence of ventilation on fire behavior and effectively apply ventilation and fire control tactics in a coordinated manner.

At this incident, the first arriving engine called for the garage doors to be cut as companies arrived. This provided opportunity for the fire to grow as fresh air was introduced to the structure's interior. As Engine 14 and Quint 24 progressed into the structure to locate the fire, they requested for more doors to be opened. Through the interviews, NIOSH learned that this was to provide "lift" to the smoke inside the structure.

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NFPA defines a flow path as the route followed by smoke, air, heat, or flame toward or away from an opening; typically, a window, door, or other leakage points, due to differences in pressure [NFPA 1700 2026]. Flow paths consist of an inlet and an exhaust with pressure determining the direction of travel. Heat and smoke in a high-pressure area will travel to an area of lower pressure. It is possible to have multiple flow paths within a structure, depending on the size of the building, openings, closures such as fire doors, and overall structure design. Ventilation tactics should be coordinated to redirect the flow path away from interior operations. When firefighters advance a hoseline or ventilate windows to make entry into a building, they establish new flow paths between the fire compartment and exterior vents of the building [IFSTA 2024].

Venting a structure that is charged with hot smoke and/or flames (ventilation-limited fire condition) can increase the size of the fire hazard. In many cases, that increase will occur rapidly. In a ventilation-limited condition, tactical ventilation must be coordinated with an effective volume of water on the fire. Along with coordinated ventilation, firefighters should select and deploy the appropriate hoseline based on fire conditions. This should also include consideration of potential fire load. Firefighters need to provide the appropriate amount of water in the initial attack to put out the fire and stop potential fire growth. Inability to provide a sufficient volume of water for the fire's size may delay extinguishment and expose firefighters to danger from rapid fire development [NFPA 1700 2026; IFSTA 2024].

As seen at this incident, wind can change fire development and flow behavior. Winds as low as 9 mph can have a significant impact on an incident as they can increase the speed that the gases flow or change their direction. The term "wind-impacted" fire is used to describe a fire in which the wind has the potential to, or is already causing, a dramatic and sudden increase in fire, heat, and smoke conditions. When responding to a reported structure fire, an overriding consideration concerning size-up must be wind conditions and their potential effect on the fire [NFPA 1700 2026; NIOSH 2025a].

Recommendation #3: Fire departments should educate personnel on use of radio communication processes for sharing critical information, such as conditions and actions.

As crews progress through their tasks, they should update command when certain benchmarks are met or when conditions change. At this incident, there were many actions being performed simultaneously. As conditions changed suddenly for crews operating on the interior of the structure, they were not relayed to the IC. These benchmarks assist the IC with decision making by keeping them updated on conditions, progress through the incident, and efficacy of the strategy in place.

Safety hazards, such as the deteriorating conditions 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, incident commander, incident safety officer (ISO), and operations [NFPA 1550 2024]. Because the incident commander is located at the Command Post (outside the hazard zone), interior crews should communicate the interior conditions to the incident commander as soon as possible. Interior conditions can change the incident commander's strategy and incident action plan. Interior crews can aid the incident commander 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," "the fire has been knocked down," or "water on the fire").

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. Incident commanders should use the critical factors in their order of importance as the basis for making the specific assignments in the incident action plan. Incident commanders should not assume the action-oriented responders engaged in operational activities will stop what they are doing so they can feed the incident commander with a continuous supply of top-grade, objective information. It is the incident commander's responsibility to do whatever is required to stay informed [NFPA 1561 2020; NIOSH 2025b].

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 incident commander to document tactical decisions and objectives. Division supervisors can provide the best assessment of hazard zone conditions for the incident commander 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 observations and CAN reports, the incident commander has limited information to make decisions [NIOSH 2025b].

Recommendation #4: Fire departments should ensure all fire officers and firefighters are trained in Mayday operations and survival.

At this incident, the fire department had implemented the Who, What, Where (WWW) procedure for declaring a Mayday in December 2023. All personnel received in-person training on this procedure in 2024. This change was made to simplify the Mayday declaration process for personnel and incident commander receiving the Mayday. Neither Mayday in this incident followed the WWW or industry best practices for declaring a Mayday. While trying to locate the exit, interior crews reported their TIC screen whited out from oversaturation. Additionally, HR 24 tailboards became separated as they began to exit the structure.

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. When a Mayday is transmitted, incident commanders have a narrow window of opportunity to locate the lost, trapped, or injured member(s) and may need to restructure the strategy and tactics to include a priority rescue [NFPA 1550 2024]. A Mayday tactical worksheet can serve as a tailored guide to any fire department's Mayday procedures such as a reminder to prompt the firefighter to activate their emergency alert button for priority radio transmissions and other important items such as personal alert safety system activation, air status, and location information. This Mayday section is located on the back of a tactical worksheet to assist incident commanders in ensuring the necessary steps are taken to clear the Mayday as quickly and safely as possible. This process is too important to operate from memory and risk missing a vital step that

could jeopardize the outcome of the rescue of a firefighter who is missing, trapped, or injured [IAFF 2020; NIOSH 2025c].

Crew Integrity

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 to remain 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 personnel accountability report [NIOSH 2025c].

TIC Training

Firefighters should also be educated on the capabilities and limitations of TICs as it relates to firefighter survival [NFPA 1400 2026]. TIC proficiency is a perishable skill that requires regular reinforcement. TICs rely on thermal contrast to produce usable images and have defined operational limitations. Training can be conducted during live-fire evolutions whenever feasible to reinforce proper TIC application under realistic fireground conditions. This includes integrating an emphasis on operating techniques such as maintaining a low scanning position, managing lens moisture, controlling scan speed, and recognizing environmental conditions that limit TIC effectiveness. Issues like those experienced in this incident can be caused by improper scanning techniques, high-moisture environments, uniform temperature conditions, unidirectional flow paths, and, in rare cases, radio frequency interference. Firefighters who are unfamiliar with these limitations may misinterpret TIC imagery, potentially contributing to disorientation or delayed decision-making during interior operations [Starnes 2025; NFPA 1400 2026; NFPA 1700 2026].

Recommendation #5: Fire departments should employ an on-deck crew in a forward staged position throughout the incident that can be assigned to developing needs.

At this incident, personnel were given assignments as they arrived, and it grew to an all hands working incident quickly. When the incident began to deteriorate and the Maydays were declared, crews who were mid-task around the structure were forced to relocate and deploy to the firefighter emergency. This all hands working status did not allow for a fresh or on-deck crew to be deployed from a standby position.

Mitigation of a firefighter emergency can be supported by using an on-deck crew that can be given an assignment based on developing needs. This concept involves a crew in a forward staged position outside of the immediately dangerous to life and health (IDLH) environment, serving 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 from operations and rehabilitation. Importantly, an on-deck crew is not ever completely idle. They are most often given crew relief, reinforcement, and rapid intervention crew/team assignments. But as opposed to being solely dedicated to one task like rapid intervention crew/team, 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 #6: Fire departments should ensure incident command functions are expanded to prevent task saturation of the incident commander.

At this incident, the first arriving apparatus executed a tactical command style. When the next due apparatus arrived, the officer took command, as is department policy. This officer held command until the arrival of the first battalion chief. When the battalion chief arrived, the previous incident commander moved to the safety officer position until they were relieved by another battalion chief. A formal transfer of command did not occur until the third incident commander took command of the incident.

Since the inception of the incident command system, the duties and responsibilities of incident commanders have significantly increased. As an incident escalates, it is difficult for one individual to effectively manage a complex emergency operation. The incident commander needs to address issues dealing with situation evaluation, deployment management, strategy, the incident action plan, communications, personnel accountability, firefighter and responder safety, tactical worksheet, and other essential job tasks. NIOSH has historically recommended that firefighters are trained in situational awareness for personal safety and accountability reasons. It is critical that all personnel remain alert to their immediate surroundings to readily identify unsafe conditions or acts [NFPA 1550 2024; NIOSH 2025b]. Fire departments can train incident commanders to employ rapid task delegation or task allocation as a strategy to correct task saturation. This may include assigning tasks to other personnel in the incident command structure such as operations or logistics which would allow the incident commander to refocus emergency response operations [IAFC and NFFF 2024; NIOSH 2025b].

Transfer of Command

When command is transferred, it is the responsibility of the incident commander to communicate critical information to the person taking over. This includes the current accountability, assignments, and actions of on-scene personnel as well as current incident conditions, safety concerns, and benchmarks. Transfer of command also includes any other critical information that may have been missed while other units are enroute to the incident [NFPA 1561 2020; NFPA 1660 2024].

Personnel Accountability System

A personnel accountability system is a system that identifies the location and function of all members operating at an incident scene. This system is activated during an incident to collect and maintain the status and location of personnel who may be working in an IDLH environment. All personnel operating at an incident are responsible for understanding and participating in this system. The incident commander is responsible for all personnel but may delegate certain responsibilities to another person

such as the ISO. An integral part of the accountability system is to make sure that the firefighters who are assigned and operating in the hazard zone are accounted for throughout the entire incident. A properly initiated and enforced personnel accountability system can improve firefighter safety and survival. A properly functioning personnel accountability system can identify [NFPA 1561 2020; NFPA 1550 2024; NIOSH 2025a]:

- Members operating in the hazard zone
- Where members are in the hazard zone
- Conditions in the hazard zone
- Actions used in the hazard zone
- Paths of access and egress in and out (i.e., exits) of the hazard zone
- Rapid intervention teams/crews and their assignments

Different methods and tools are available for resource accountability, including [NFPA 1561 2020; NFPA 1550 2024; NIOSH 2025a]:

- Tactical worksheets
- Command boards
- Apparatus riding lists
- Company responding boards
- Electronic bar-coding systems
- Accountability tags or keys

Task-Location-Objective Assignments

Assigning tactics to accomplish tactical priorities aids in coordination of the fireground activities. This is ordinarily completed by the incident commander or a division/group supervisor communicating assignments to personnel. An assigned tactic provides direction to personnel, and serves as the basis for feedback to the incident commander as to whether the tactic is completed. Coordination of fireground activities requires clear, direct communication between the incident commander 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 not only to minimize the potential for confusion of assigned personnel but also to maximize the available free "airtime" on the radio. When assigning units, the incident commander 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) [NFPA 1700 2026; NIOSH 2025d].

Dedicated Safety Officer

The ISO provides a fire department with a higher level of expertise to perform the necessary incident scene functions and assist the incident commander with fireground safety. An ISO can perform initial and ongoing size-ups throughout the incident. Expectations and authority for the ISO include determining hazardous incident conditions, advising the incident commander to modify control zones or tactics to address corresponding hazards, communicating fire behavior and forecasting growth, and estimating building/structural collapse hazards. The ISO also has the authority to stop or suspend

incident operations based on imminent threats to firefighter safety. The ISO should be separate from the incident commander, operations, or accountability positions so they can focus on their responsibilities and the primary objective of continually assessing all on-scene hazards to firefighter life and safety [NFPA 1550 2024; NIOSH 2025a].

Divisions/Groups or Multiple Safety Officers

Within a division/group, firefighters advise their supervisor of work progress and provide accountability for crew members engaging in task-level activities. The incident commander should assign divisions/groups to a supervisor early. This is especially important when firefighters are operating from tactical positions that the incident commander 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 incident commander. Supervisors can provide ongoing conditions, actions, and needs (CAN) reports to the incident commander of all four sides and the interior of an incident, which may influence tactics and strategy. Division/group supervisors can assist in providing PARs when requested by the incident commander, ISO, or operations. When the incident commander 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 IDLH environment [NFPA 1561 2020; NIOSH 2025d].

The incident commander may consider the use of multiple or assistant ISOs for fireground management and risk assessment at a geographically complex scene. Incidents at large geographical areas such as large commercial buildings or scenes with access issues that hamper the ability to do a 360 (e.g., riverside, row of buildings) often require expansion of the ISO role. Consequently, assigning assistant ISOs into branches, divisions, or groups for specific areas of responsibility (e.g. Side Charlie) might be necessary [NFPA 1561 2020; NIOSH 2016; NIOSH 2025a].

Incident Command Technician or Staff Aide

Functions of the staff aide include maintaining the tactical worksheet; maintaining personnel accountability of all members operating at the incident (resource status and situation status); monitoring radio communications on the dispatch and operations channels; control information flow; and accessing reference material and pre-incident plans. Some fire departments use firefighters as staff aides. Other fire departments use fire officers to serve as a staff aide for a command officer. This position can be appointed, or fire departments can consider increasing staffing to fill this position [NFPA 1561 2020; NIOSH 2025a].

Recommendation #7: Fire departments should develop and/or implement a professional development program that promotes psychological safety, with a focus on open safety communication during incidents as a key element for improving worker empowerment and decision making on the fireground.

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During interviews with NIOSH, some firefighters expressed that they did not agree with and had concerns about the initial strategy chosen by Engine 14 and the ongoing interior operations. However, they cited department culture as being a barrier to speaking out.

Psychological safety, a fundamental aspect of an organizational culture, 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]. While it was ultimately up to the officer to apply the observations of the crew, this example shows that people who feel psychologically safe can work better in teams because of their comfort in openly sharing information [Edmondson 2023].

Educating personnel on ways stress can affect attention, memory, and performance, can help build resilience to withstand the effects of high stress incidents. 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. Fire departments can provide 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. This can include discussing what has gone wrong in the past and what was learned, which 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]. Fire departments can also employ crew resource management (CRM) practices to help reinforce psychological safety. CRM practices may include 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 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, strong situational awareness, communication to supervisors without fear of retribution for doing so, and leadership valuing those observations. 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 likely to offer suggestions, report concerns, and participate in dynamic decision-making behaviors that can prevent injuries and fatalities in hazardous environments [NIOSH 2025e].

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Recommendation #8: Fire departments should develop a pre-incident plan for high-risk occupancies such as warehouses.

At this incident, no pre-incident plan was available for crews to view enroute or on arrival. The department had previously conducted pre-incident plans for some buildings, but they had not continued that practice for several years. These pre-incident plans were kept in three-ring binders on each apparatus as a hard copy.

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. This can 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 2025f; NIOSH 2025g].

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 2025g; NIOSH 2025h].

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 which provides critical building information that may not be readily apparent to responding companies upon arrival. This 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 2025h].

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Recommendation #9a: Fire departments should ensure appropriate staffing is available to enforce the applicable fire and life safety codes at high-risk occupancies.

The fire department in this incident is responsible for roughly 20,000 commercial occupancies within their coverage area. The department employs 12 personnel within the planning and risk reduction division. Even with focusing on only high-risk occupancies, there would still be too many inspections for each inspector to handle.

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

Although the recommended inspection frequency for an occupancy such as the one in this incident is annually, fire departments, in cooperation with their AHJ, can opt to perform additional fire and life safety inspections and enforcement to enhance their ability to identify potential compliance and emergency response issues [NFPA 1750 2026; NIOSH 2025f].

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 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 2019]:

- 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. Using this strategy, company personnel should interact regularly with fire inspection personnel [IFSTA 2019]. 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.

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Recommendation #9b: Governing municipalities (federal, state, regional/county, and local) should consider requiring the use of fixed fire suppression systems, such as sprinklers, at high-risk commercial occupancies.

The AHJ in this incident requires high-risk commercial occupancies to retrofit or add fixed fire suppression systems, such as sprinklers, prior to the issuance of a certificate of occupancy. In this instance, the tenant of the structure only filed with the state for a business license and never began the process with the city or county to obtain a certificate of occupancy.

Fires in large square footage structures have the potential to develop beyond the incipient stage when they contain significant fire loads and are not equipped with a fixed fire suppression system. These situations facilitate rapid fire development and are a significant hazard to firefighters [NIOSH 2018]. The adopted code, 2018 IBC with Georgia Amendments, also required an automatic fire extinguishing system per Chapter 9 Fire Protection and Life Safety Systems. Sprinkler systems have proven to be reliable in reported structure fires that are large enough to activate them. To further illustrate, a recent NFPA study showed results for effective suppression and containment as high as 89 percent [McGree 2024].

Had the occupant followed the appropriate occupancy pathway, they would have been required to equip the warehouse with a fixed suppression system. Occupancy would not have been permitted until the installation was completed and tested by the AHJ. This would have also prevented anyone from working within the building under normal business conditions.

Recommendation #10: Governing municipalities (federal, state, regional/county, and local) should ensure that the delegated zoning or building code enforcement authorities coordinate efforts and share change of occupancy information with the fire department.

The State business license records show that the film studio business began operating in the warehouse in 2019. However, the film studio business did not follow the county or municipality change of occupancy processes and both entities, as well as the fire department, were unaware of its operation at the time of the incident.

NFPA 1201, *Standard for Providing Fire and Emergency Services to the Public*, Section 6.3 recommends that fire departments establish a working relationship with the agency or authority responsible for enforcing the building code so that the review of the design, construction, alteration, or demolition of buildings and structures can be monitored to identify fire protection concerns. This includes sharing vital information from inspections, permits, code violations, fire protection maintenance and service, and investigation of fires or other emergencies [NFPA 1201 2020; IFSTA 2016]. This also includes sharing relevant information from change of occupancy permits and approvals.

When a change of occupancy is completed, the application of different code requirements may be required [ICC 2018]. Additionally, this can change factors such as the number of occupants being housed, storage of hazardous materials, or other unique hazards that can require significant change in fire suppression and rescue tactics and strategy [IFSTA 2016]. This information is critical for fire

department pre-incident planning. NFPA 1660 [2024] recommends that pre-incident plans document occupancy type and use including considerations for occupant load, accountability, means of egress, and assistance for people with self-evacuation limitations. When added to computer-aided dispatch, this information can assist incident commanders with formulating an incident action plan [NFPA 1660 2024; NIOSH 2025i].

Recommendation #11: Public Safety Answering Points (federal, state, regional/county, and local) should have communication SOPs and equipment that allow dispatchers to support fireground operations and the incident commander, including the ability to monitor and record all radio traffic during fireground operations.

In this incident, the fire department was dispatched on one channel and then assigned a tactical channel to conduct operations on. Typically, when the incident is declared "working," a dispatcher is assigned to the tactical channel until completion of the incident. This incident was not assigned a dispatcher in the PSAP, and companies who overheard the additional engines and second alarm requests self-dispatched to the scene.

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, *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 making the transmission [NFPA 1225 2022; NIOSH 2025j]. PSAPs should work with fire departments to ensure integrated operations and procedures that utilize their equipment and abilities.

Post-Incident Fire Department Prevention Actions

After this incident, the fire department implemented changes to their incident response and fireground operations. These changes were based on the department's critique of the incident on September 8, 2025.

- **Increased Staffing**
  The fire department added a sixth battalion to their operations to increase daily available staffing per shift.
- **Industrial Building Awareness Training**
  The fire academy developed an awareness level course for all fire officers and firefighters on firefighting tactical considerations for industrial commercial buildings. This course focuses on challenges of various construction characteristics. The course provides students the opportunity to examine buildings in their respective areas of responsibility and perform decision-making scenarios.

- **Enhanced Mayday Training**
  The fire academy developed a Mayday course that emphasizes skills for fire officers in managing a Mayday and for firefighters to employ survival/rescue skills when disoriented. These skills are framed for use in commercial occupancies.
- **Incident Command System Procedures**
  The fire department implemented several changes to their incident command system procedures to enhance communication, accountability, and safety in the hazard zone. These changes include implementing a strategic incident commander role who works outside the hazard zone, use of a tactical worksheet, and adoption of a formal process to analyze an incident's critical factors.
- **Targeted Warehouse Inspection Program**
  The fire department developed a list of warehouses in their jurisdiction using geographic information system software and implemented a targeted inspection program. This program includes revised inspection criteria for occupancies based on size.
- **Electronic Pre-Planning Software**
  The AHJ approved the purchase and implementation of electronic pre-planning software for the fire department.

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Investigator Information

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Additional Information

International Code Council (ICC)
The International Code Council is the leading global source of model codes and standards and building safety solutions that include product evaluation, accreditation, technology, training, and certification. The Code Council's codes, standards, and solutions are used to ensure safe, affordable, and sustainable communities and buildings worldwide. Access to codes and standards can be found at https://www.iccsafe.org/products-and-services/codes-standards/.

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.

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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.*