

LINE OF DUTY  
DEATH REPORT

REPORT F2023-03 • January 2026

***Career Firefighter Dies While Trapped during Overpressure Events in a Mixed-Use Structure – New York*****Executive Summary**

On March 1, 2023, a career firefighter (E-2B) died during overpressure events in a three-story mixed-use structure after becoming trapped by debris. At 09:56, the public safety answering point telecommunicator (PSAP-T) transmitted a full alarm assignment for a building fire. PSAP-T advised that the caller reported seeing flames coming from the building while working on masonry on the outside of the building. At 09:58 Engine 2 (E-2) and Ladder 2 (L-2), not on the original dispatch, arrived on scene after clearing another call nearby. E-2 pulled beyond the dispatched address after observing a civilian waving to them from a parking lot which contained a one-story building. L-2 was positioned behind E-2. The civilian was the reporting person. E-2 notified PSAP-T that there was nothing showing. A battalion chief (B-43) arrived on scene at 09:59 and reported a one-story ordinary construction building and then paused. The reporting person directed them to the fire building as battalion chief B-56 (IC) arrived on scene at 10:00, took command, and notified PSAP-T with a confirmed address. The IC described heavy smoke on the first floor of a three-story fire resistive construction building. The IC requested a second alarm, with staging south of the fire building, and police for traffic control. E-2 and L-2 self-deployed a 1 $\frac{3}{4}$ -inch hoseline to Side Alpha and began to breach multiple doors to make entry. The IC was not notified of these actions. IC



**Photo 1: View of Side Bravo during an overpressure event showing flames exiting Side Alpha.**

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requested Rescue 1 (R-1) to ‘recon’ to see how far back the building went and if entry from Side Charlie was needed. R-1 acknowledged this request and reported that they were currently making entry on Side A. Feeling intense heat and rapidly changing conditions, the interior crews decided to evacuate the building just as the IC ordered an evacuation. As crews were exiting, fire conditions again rapidly changed, resulting in an overpressure event (OPE) that separated E-2 officer and E-2B. During this same time, IC reported to PSAP-T that the fire became heavy with turbulent smoke and was extending. IC notified PSAP-T that they were going to pull everyone out and go with defensive operations. PSAP-T initiated evacuation tones and called for evacuation by radio. The OPE occurred while IC was ordering defensive operations for Side Alpha and Side C. IC notified PSAP-T of a “possible backdraft” and that there was heavy fire on all three floors. PSAP-T notified IC of mayday calls from E-2B, and then PSAP-T attempted to obtain a location from E-2B. IC attempted to obtain an accountability report from E-2 crew and coordinated for an additional Ladder to Side C. E-2 officer confirmed E-2B as missing. At this same time, R-1 attempted to make reentry for rescue, although this was not coordinated with IC. IC observed R-1 making entry and ordered B-43 to stop R-1 from entry because they did not have a handline. IC put B-43 in charge of the mayday. B-43, R-1 and firefighter assist and search team (FAST) coordinated rescue operations. R-1 made entry due to being familiar with E-2B’s location. FAST remained outside for R-1. At this time, E-2B’s personal alert safety system (PASS) device was heard by R-1 and E-2B was located. E-2B was entangled in clothing racks and other contents. While R-1 attempted to extricate E-2B from the racks and debris another OPE occurred which forced R-1 to evacuate and abandon the rescue. Between 10:21 and 13:40 defensive operations continued. At 13:41 hours, recovery personnel made entry and recovery was completed at 13:44. E-2B was transported to a local hospital and pronounced deceased.

## **Contributing Factors**

- *Scene size-up and risk assessment*
- *Fire behavior/dynamics and tactics*
- *Professional development/fireground operations procedures*
- *Communicating critical incident benchmarks*
- *Mayday management*
- *Incident management*
- *Building condition and renovations*

## **Key Recommendations**

Fire departments should:

- *Ensure the first arriving resource completes an initial scene size-up and risk assessment to inform a risk-benefit analysis before committing firefighters to interior operations.*

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- *Train personnel on modern fire dynamics, including air flow path management, and develop fireground strategies based on a thorough risk/benefit analysis that accounts for building types, their characteristics, associated risks, and available on-scene resources.*
- *Ensure fireground operations and safety procedures are developed, trained on, and followed by fire officers and firefighters.*
- *Ensure critical incident benchmarks are communicated to the IC through the chain of command throughout the incident.*
- *Ensure that fire officers and dispatchers are trained in managing a Mayday.*
- *Ensure that the Incident Command System (ICS) is compliant with national incident management system (NIMS), fire department members and dispatchers are trained and can demonstrate ICS proficiency, and that the incident command group is properly resourced to address multiple duties.*

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

- *Ensure the applicable fire and life safety codes are enforced for commercial occupancies and relevant information is shared with and made available to the fire department.*

The National Institute for Occupational Safety and Health (NIOSH) initiated the Fire Fighter Fatality Investigation and Prevention Program to examine deaths of firefighters in the line of duty so that fire departments, firefighters, fire service organizations, safety experts and researchers could learn from these incidents. The primary goal of these investigations is for NIOSH to make recommendations to prevent similar occurrences. These NIOSH investigations are intended to reduce or prevent future firefighter deaths and are completely separate from the rulemaking, enforcement, and inspection activities of any other federal or state agency. Under its program, NIOSH investigators interview persons with knowledge of the incident and review available records to develop a description of the conditions and circumstances leading to the deaths in order to provide a context for the agency's recommendations. The NIOSH summary of these conditions and circumstances in its reports is not intended as a legal statement of facts. This summary, as well as the conclusions and recommendations made by NIOSH, should not be used for the purpose of litigation or the adjudication of any claim.

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



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#### **Introduction**

On March 1, 2023, a career firefighter (E-2B) died during overpressure events in a three-story mixed-use structure after becoming trapped by debris. An OPE is described as the “Rapid expulsion of combustion products from a building that cannot be explained by the accidental release of flammable gases or the ignition of flammable liquids” (Fleischmann, et al 2024). On March 3, 2023, the U.S. Fire Administration (USFA) notified the National Institute for Occupational Safety and Health (NIOSH) of this incident. On April 9 - 15, 2023, two investigators representing the NIOSH Fire Fighter Fatality Investigation and Prevention Program (FFFIPP) traveled to New York to investigate this incident. The NIOSH investigators conducted interviews with fire officers, firefighters, and other emergency personnel who were on-scene at the time of the incident. Also, the NIOSH investigators consulted with an investigator from the U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) regarding origin and cause, fire flow paths, and hostile fire events that occurred during this incident. The investigators reviewed fire department standard operating guidelines (SOGs), training records, dispatch records, witness statements, as well as fire department and state agency investigation documents.

#### **Fire Department**

The career fire department in this incident has a 52 square mile jurisdiction, serves a population of 276,486 residents, responds to an average of 44,000 calls annually, and provides emergency medical services (EMS). The fire department has 675 uniformed personnel and maintains four platoons. Each platoon is staffed by four battalions across 19 fire stations, each accommodating an engine company, ladder company, and one specialized response apparatus. Shifts operate on a 24-hour schedule from 08:00 to 08:00 the following day. Each shift is assigned a shift commander (battalion chief). The fire department’s leadership includes a fire commissioner and three deputy fire commissioners. The fire department has additional support staff for a service station, training bureau, special operations command, technical and water rescue teams, EMS, and safety.

#### **Training, Education, and Professional Development**

The fire department maintains a training bureau that provides initial training and continual skills development for all firefighters, fire officers, and EMS personnel. Initial training for recruits consists of 20 weeks of daily academy training to develop both firefighting and EMS knowledge, skills, and competencies.

E-2B firefighter attended the fire department’s recruit academy in 2020 and successfully completed the state’s Basic Fire Fighter Training and Emergency Medical Technician training. His probationary check sheet, dated June 30, 2022, noted successful completion which included using a self-contained breathing

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apparatus (SCBA), changing SCBA cylinders, and returning an SCBA to service.

### **Apparatus, Staffing, and Activities**

<b>Company</b>	<b>Dispatch</b>	<b>PAR</b>	<b>Assignment</b>
E-1	Self	4	2 <sup>nd</sup> engine on location, water supply, then a 2½" hoseline to Side Alpha to protect egress - charged at time of backdraft
E-2	Self	4	1 <sup>st</sup> engine on location, entered Side Alpha with 1¾" interior attack
L-2	Self	4	1 <sup>st</sup> ladder on location, Breached Side Alpha doors and windows, interior operations
E-3	First	5	Dispatched 1 <sup>st</sup> due engine, arrived 3 <sup>rd</sup> engine on location, water supply to E-1, then took 2½" hoseline to Side Bravo after breaching parking lot with a fob, ordered by Side Bravo command to back up from building just before first backdraft occurred
B-43	First	1	1 <sup>st</sup> arriving officer, 3 <sup>rd</sup> battalion chief
B-56	First	1	2 <sup>nd</sup> arriving officer; division chief; Incident Command (IC)
L-5	First	4	Dispatched 1 <sup>st</sup> alarm, reassigned as FAST after recalling L-15 due to L-2 response
F-20	First	1	EMS Officer, Responded with F-40, accountability on A side after 1 <sup>st</sup> OPE
F-9	First	1	Mobile Air & Light Truck
F-40	First	1	Safety Lieutenant, responded with F-20, ordered to conduct 360 survey, met access challenge at A/B corner and again at B/C corner due to parking lot fence, returned to IC at time of 1 <sup>st</sup> OPE
L-4	First	4	Aerial operations Side Alpha
E-37	First/Second	4	Dispatch with 1 <sup>st</sup> alarm then recalled due to response of E-1; Dispatch as balance of 2 <sup>nd</sup> alarm; 2½" hoseline in unknown location
L-15	First/Second	4	Dispatch with 1 <sup>st</sup> alarm as FAST then recalled due to response of L-2; Dispatched as balance of 2 <sup>nd</sup> alarm; Aerial operations Side Charlie
E-21	First/Second	4	Dispatched with 1 <sup>st</sup> alarm but recalled due to E-2 response, 2½" hoseline on A/D corner, Side Alpha coverage post back draft, A/D corner blitz, feed L-4
E-33	Second	4	Unknown – no interview conducted
L-14	Second	4	Aerial operations Side C
B-44	Second	1	4 <sup>th</sup> battalion chief; Division C command
B-41	Second	1	Safety chief
B-55	Second	1	Chief of special operations; Side Charlie operations

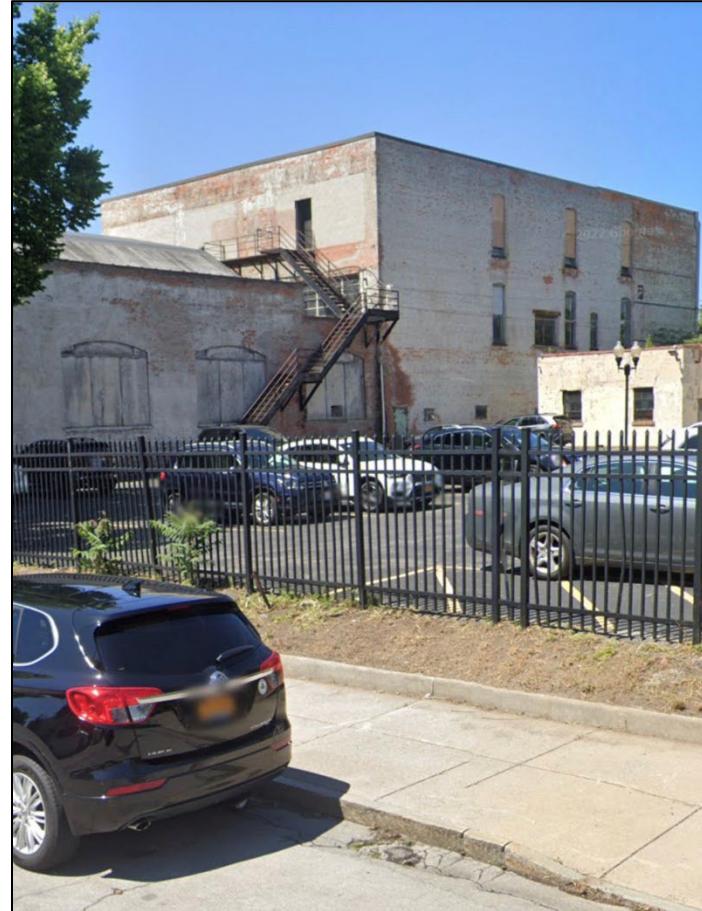
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### **Building Construction**

This incident involved a building constructed pre-1900 that was comprised of two portions: the front portion was a three-story mixed-use type III construction with masonry exterior walls and basement, and the rear portion originally a dance hall with a partial bow-string roof (see photo 2). The front portion was approximately 19,800 square feet equally divided between the three stories (see Photo 3). The front portion of the building was a typical mixed-use “main street” type III construction with masonry exterior walls and a basement. It contained 3 first floor storefront spaces each with stairway access to the basement. The second and third floors were office spaces. A costume fabrication and sales business specializing in theater productions occupied one storefront for several decades. Over time, the business expanded into the center storefront, opening the wall between the storefronts and placing a wall separating the basement from the third storefront access. The business used the basement area for fabrication and included equipment such as irons, cutting tables, heat presses, etc. The basement was accessed from inside of the costume business by a stairwell about 10 ft wide located about 40 ft inside the Side Alpha door.

The rear portion of the building was a one story, bow roof construction open space building. The rear portion was originally used as a dance hall, then later was used for storage. At the time of this incident, the costume business was the only occupant, and the unoccupied areas were emptied of all contents. Side Bravo of the building included a gated and fenced parking area that was accessible only with remote access (electronic key).

The Side Charlie portion of the building was constructed as an addition of about 6,600 square feet with a bowstring truss roof. This building was originally constructed as an assembly occupancy for stage performances and included fixed position seating. As occupancies changed, the fixed position seating was removed to accommodate storage needs, but the stage remained. At the time of the incident, the addition served the purpose of a warehouse. The outermost covering of both roofs were typical membrane style roof.



**Photo 2: View from the rear of Side Bravo showing the front and rear portions of the building. (Photo provided by fire department)**

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### **Building Condition**

New York building code laws placed restrictions on when building inspections may be conducted without permission of the owner or occupant, unless under exigent circumstances, such as during an emergency at the address. The structures at this address were known to be in disrepair and undergoing restoration of the exterior masonry. In the year prior to this incident during a building inspection, violations of adopted ordinances and codes were documented. Those violations included issues with the exterior masonry, structural members, windows, roof, and drainage. A contractor performing work within the building reported failing floors that contained holes between the various divisions of the building. Near Side Charlie within the three-story building, a large section of the floor was missing, essentially making that area a two-story compartment. Various doors on the exterior of the building had been removed and plywood sheathing installed in their place, though some were only covered with plastic sheeting. It is unknown if these deficiencies were reported to the fire department or fire prevention office at the time of discovery.



**Photo 3: Pre-fire view of Side Alpha of the fire building with the secured parking lot on Side Bravo. (Photo provided by the fire department)**

### **Incident Timeline**

The following timeline is a summary of events that occurred as the incident evolved on March 1, 2023.

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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, and interview notes.

Time	Fireground Operations, Response, and Details
09:55 Hours	<ul style="list-style-type: none"><li>PSAP-T received a 9-1-1 call from a masonry worker at the structure reporting a fire in a doorway of a mixed-use building that was being restored</li></ul>
09:56 Hours	<ul style="list-style-type: none"><li>PSAP-T transmitted a full alarm assignment for a building fire. E-3, E-37, E-21, L-4, L-5, L-15, R-1, F-20, F-9, F-40, B-43, and IC were dispatched with L-15 designated as the Firefighter Assist and Search Team (FAST)</li><li>PSAP-T updated responding units noting the 9-1-1 caller reported that the building may be vacant and stated that flames were visible. PSAP-T further directed all companies responding that operations were on channel 2</li></ul>
09:58 Hours	<ul style="list-style-type: none"><li>E-2 arrived on-scene and reported no fire showing, followed by L-2 and E-1</li><li>PSAP-T requested L-15 to hold and changed FAST designation from L-15 to L-5, who was enroute to the incident</li></ul>
09:59 Hours	<ul style="list-style-type: none"><li>B-43 arrived on-scene, established command, and reported a one-story ordinary construction building. B-43 ended this transmission with "disregard"</li></ul>
10:00 Hours	<ul style="list-style-type: none"><li>IC arrived on-scene and provided a corrected address and size-up of a three-story, possible fire-resistive construction, with heavy smoke coming from the first floor. The IC requested a second alarm and police for traffic control</li></ul>
10:01 Hours	<ul style="list-style-type: none"><li>IC assumed command of the incident</li><li>L-5 arrived on-scene and assumed the role of FAST</li><li>E-2 flaked out 300 feet of 1<math>\frac{3}{4}</math>-inch hoseline to Side Alpha and requested their driver/operator to charge their hoseline</li></ul>
10:02 Hours	<ul style="list-style-type: none"><li>PSAP-T dispatched the second alarm units - E-37, L-15, E-33, L-14, B-44, B-41, and B-55</li><li>L-2 breached the door leading to the upper floors</li><li>E-2B and E-2 officer, with a 1<math>\frac{3}{4}</math>" handline, and L-2 made entry on Side Alpha while another E-2 FF fed hoseline in the door</li></ul>
10:03 Hours	<ul style="list-style-type: none"><li>IC requested R-1 perform recon to see how far back the building went and if access was needed from Side Charlie. He noted seeing flames on the second floor</li><li>R-1 responded that they were going in Side Alpha for recon. IC responded asking R-1 to make sure they had water</li></ul>
10:04 Hours	<ul style="list-style-type: none"><li>F-11 reported to IC via radio that there was heavy smoke on Side Bravo, noting it did not extend all the way to Side Charlie. He further noted there were heavy fire conditions in the rear of the building</li></ul>

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Time	Fireground Operations, Response, and Details
10:05 Hours	<ul style="list-style-type: none"><li>• IC requested B-44 take command on Side Charlie and provide an update.</li><li>• Interior crews breached the two plate glass windows</li></ul>
10:06 Hours	<ul style="list-style-type: none"><li>• F-11 reported to IC that heavy fire conditions were only halfway back to Side Charlie</li><li>• An E-2 firefighter requested their driver/operator increase the pressure in their hoseline</li><li>• IC requested the PSAP-T dispatch a third alarm and reported “heavy fire, heavy smoke blowing out, turbulent, the fire is extending.” Interior crews felt intense heat and observed heavy smoke conditions. Interior crews decided to exit the building</li></ul>
10:07 Hours	<ul style="list-style-type: none"><li>• E-2 officer tapped E-2B and ordered him out of the building, then E-2 officer turned and walked toward the door assuming E-2B was behind him.</li><li>• IC radioed “everybody get out!” and “Dispatch we’re pulling everyone out, the fire has too much of a head start, we’re going defensive!”</li><li>• PSAP-T sounded the evacuation tones and transmitted an evacuation order for all companies</li><li>• IC requested blitz guns (ground monitors) be set up on Side Alpha and reported two portions of the building were involved</li></ul>
10:08 Hours	<ul style="list-style-type: none"><li>• B-44 reported that a ladder was being set up on Side Charlie</li><li>• An OPE occurred</li><li>• IC radioed to the fireground asking if all units were out of the building</li><li>• “Mayday Mayday Mayday. I’m hurt” was called with no acknowledgement or response, while IC was ordering everyone out of the building by radio</li><li>• IC reported to PSAP-T that a possible backdraft occurred with heavy fire on all three floors and noted that “everyone is okay at this time”</li><li>• “Mayday. Mayday. Mayday” followed by “Mayday. Mayday.” was called at the same time as IC was attempting fireground communications</li></ul>
10:09 Hours	<ul style="list-style-type: none"><li>• IC reported to PSAP-T that the fire was extending from Side Alpha to Side Charlie</li><li>• PSAP-T reported to IC that a Mayday was called from E-2B’s radio</li><li>• PSAP-T requested E-2B’s location with a response stating “help”</li><li>• IC requested the identifier of the firefighter who called the Mayday with PSAP-T responding with “E-2B”</li><li>• IC attempted to contact E-2B via radio. He then radioed “Let’s get a head count” and then radioed to E-2 asking if they’re all accounted for</li></ul>
10:10 Hours	<ul style="list-style-type: none"><li>• IC requested accountability of E-2 personnel with their unit responding that E-2B was missing</li><li>• R-1 heard the Mayday and immediately attempted entry into the building for rescue without orders</li></ul>

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Time	Fireground Operations, Response, and Details
10:12 Hours	<ul style="list-style-type: none"> <li>IC yelled to E-2 officer and B-43 to get R-1 out after seeing them entering Side Alpha with no hoseline</li> <li>IC ordered R-1 to pull back since they had no water</li> </ul>
10:13 – 10:15 Hours	<ul style="list-style-type: none"> <li>IC ordered L-4 to initiate an aerial attack</li> <li>PSAP-T reported the 15-minute mark for the incident</li> <li>IC gave a status update of a large three-story building, approximately 75ft x 300ft with heavy fire throughout. He noted that operations were going defensive</li> </ul>
10:16 Hours	<ul style="list-style-type: none"> <li>IC reported to PSAP-T that all companies were working and confirmed they had a missing firefighter</li> <li>IC confirmed to Side Bravo command to have an aerial start flowing anywhere fire is seen</li> </ul>
10:17 Hours	<ul style="list-style-type: none"> <li>IC ordered B-43 in charge of the rescue</li> <li>R-1 was given the rescue assignment due to their familiarity of the location where E-2B was believed to be located</li> <li>L-5 was staged and ready as FAST for the rescue assignment.</li> <li>R-1 made entry into the building</li> </ul>
10:18 Hours	<ul style="list-style-type: none"> <li>R-1 reported to IC that they had E-2B with no acknowledgment or response. R-1 found E-2B entangled in debris and could not extricate him</li> <li>IC reported to PSAP-T that there was heavy fire on all three floors</li> <li>PSAP-T requested acknowledgement from IC that E-2B was located</li> </ul>
10:19 Hours	<ul style="list-style-type: none"> <li>Another OPE occurred</li> <li>IC requested a Personnel Accountability Report (PAR) from PSAP-T and reported a second backdraft</li> <li>An R-1 firefighter radioed reporting they were disoriented with no acknowledgement or response</li> <li>IC ordered B-43 to pull everyone back once they exit the building</li> </ul>
10:21 – 13:40 Hours	<ul style="list-style-type: none"> <li>Evacuation tones were sounded with R-1 reporting they were inside</li> <li>Defensive mode operations continued</li> <li>Building engineer provided an assessment of building stability with all apparatus being moved from an established collapse zone</li> </ul>
13:41 – 13:44 Hours	<ul style="list-style-type: none"> <li>IC reported that recovery personnel made entry</li> <li>Recovery operations completed with E-2B transported to a local hospital and pronounced deceased</li> </ul>
13:45 – 23:59 Hours	<ul style="list-style-type: none"> <li>Overhaul and scene evidence processing began with all companies clearing hours later</li> </ul>

## Personal Protective Equipment

At the time of the incident, E-2B was wearing full structural firefighting turnout gear and a NIOSH Approved® SCBA. No evidence was identified to suggest that the structural firefighting turnout gear or

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SCBA contributed to the fatality.

### **Weather Conditions**

At 09:54, on March 1, 2023, the outdoor temperature was 33°F, dewpoint was 25°F, and the wind was out of the southeast at 6 mph [Weather Underground 2023].

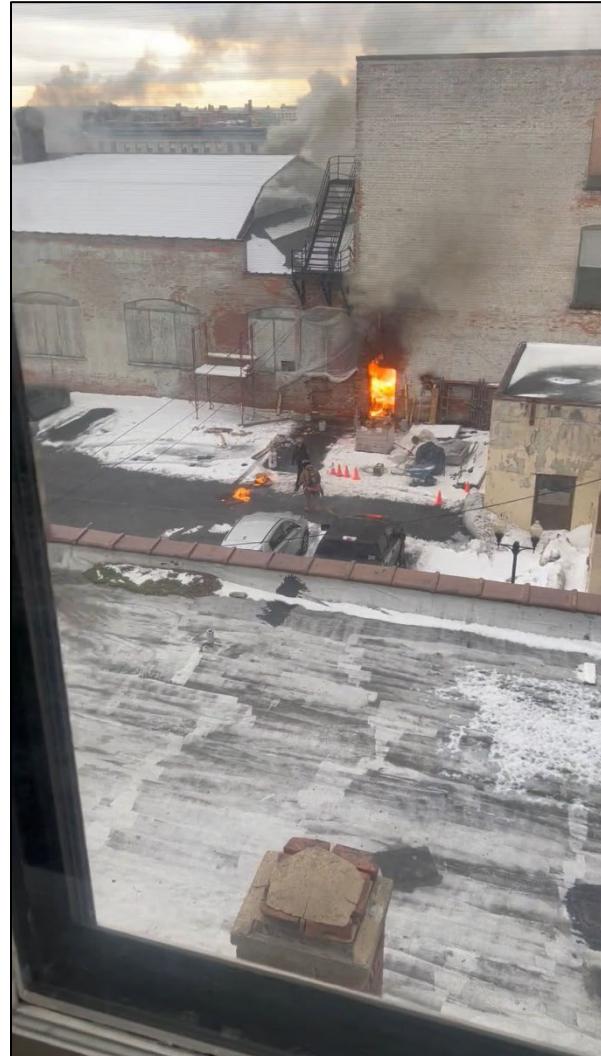
### **Investigation**

At approximately 09:55, the PSAP-T received a 9-1-1 call from a masonry worker reporting a fire at a mixed-use building that was undergoing restoration. The caller reported working on the exterior of the building (Side Bravo) near a doorway and said he noticed flames inside. At 09:56 the PSAP-T transmitted a full alarm assignment for a building fire. E-3, E-37, E-21, L-4, L-5, L-15, R-1, F-20, F-9, F-40, B-43, and IC were dispatched with L-15 designated as the FAST. The PSAP-T updated responding units noting the 9-1-1 caller reported that the building may be vacant and that flames were visible. The PSAP-T further directed all companies responding that operations were on channel 2.

The address for the building fire was within the fire district for E-1, E-2, and L-2. At the time of dispatch, these units were two blocks away for an automatic alarm investigation. E-1, E-2, and L-2 notified the PSAP-T of their availability to respond as they cleared from the previous incident. The PSAP-T notified all companies of the change in units for the first alarm. E-21, E-37, and L-15 (FAST) were placed in a hold status and the response assignment for L-5 (currently enroute) was changed to FAST.

At 09:58, E-2 arrived on-scene and pulled past the dispatched address next to a parking lot where a bystander had gotten their attention. L-2 and E-1 arrived and staged behind E-2. The parking lot was secured with an iron fence and remote access gate. There was a one-story building in the parking lot. E-2 and L-2 believed this was the fire structure and tried to gain access to the parking lot as E-1 secured a water supply from a nearby hydrant.

At 09:59, B-43 arrived on-scene, established command, and reported a one-story ordinary construction



**Photo 4: View of the area of fire origin on Side Bravo. (Photo provided by fire department)**

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building with nothing showing. He stopped this transmission with “disregard.” At this time, B-56 (IC) arrived on-scene, assumed command, and provided a corrected address and size-up of a three-story, possible fire-resistive construction with heavy smoke on the first floor. (see **Photo 4**) and requested that the PSAP-T hold all companies. IC requested a second alarm to be staged one block south of the fire building and police for traffic control. It was difficult to get to the doorway on Side Bravo because of the fenced parking lot blocking access. IC could only complete a visual assessment of Side Bravo as L-5 arrived on scene and assumed the role of FAST.

Initial operations began on Side Alpha. While IC attempted to further size-up the fire building, E-2 flaked out a 300 ft section of 1¾-inch hoseline to Side Alpha. The E-2 crew requested the E-2 driver/operator charge their line. L-2 approached the southern set of double doors and breached the left side door. This led to stair access to the second floor. This breach was not communicated to IC. L-2 then went to the northern set of double doors, leading to a costume business, and breached the door that was not blocked by contents. This breach was also not communicated to IC. E-2 and L-2 crews entered the costume business as the PSAP-T dispatched the second alarm.

At 10:03, IC requested R-1 perform recon to see how far back the building went and if access was needed from Side Charlie. He noted seeing flames on the second floor. R-1 responded that they were going in Side Alpha for recon. IC responded by asking R-1 to make sure they had water and requested second alarm companies to respond to Side Charlie. The three crews on Side Alpha entered and noticed the heat was intense with smoke banking down, but no flames visible. These conditions were not reported to IC. F-11 reported to IC via radio that there was heavy smoke on Side Bravo, noting it did not extend all the way to Side Charlie. He further noted the heavy fire conditions did not reach all the way to Side Charlie, only halfway back.



**Photo 5: View of Side Alpha operations post-OPE. (Photo by fire department)**

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Once inside, E-2 requested a bump up in pressure on the line twice. A member of R-1 heard this request and separated from their crew to check the E-2 line, found a kink in the line, and flaked it out. During this time, L-2 crew knocked out the front facing plate glass windows. Interior crews noticed that heat quickly intensified, and the smoke conditions became heavier and banked to the floor. The R-1 crew used thermal image devices and observed an all-orange screen when reading toward Side Charlie and toward the ceiling. The changing conditions after knocking out the front plate glass windows were not communicated. Outside, IC requested the PSAP-T dispatch a third alarm and reported heavy fire extension with turbulent smoke. E-1 pulled a 2½-inch hoseline to the door on Side Alpha to protect egress for interior crews.

Feeling intense heat and rapidly changing conditions, the interior crews decided to evacuate the building at 10:05 hours. E-2B was on the nozzle of the hoseline with E-2 officer as the backup. E-2 officer tapped E-2B on the shoulder to indicate it was time to get out of the building. E-2 officer turned to walk to the door and thought E-2B was beside him. At this time, IC ordered all interior units to exit the building. He reported to the PSAP-T that he was pulling everyone out and going to defensive operations as the fire had “too much of a head start.” The PSAP-T sounded the evacuation tones and transmitted an evacuation order for all companies. Following the order, IC requested blitz guns (ground monitors) be set up on Side Alpha and reported two portions of the building were now involved (see Photo 5). The interior crews began to back out when the evacuation tones sounded. When the E-2 officer made it to the door, an OPE occurred. This forcefully pushed the E-2 officer out of the building and the E-1 crews away from the building, abandoning the 2½-inch hoseline. The E-2 officer thought he saw E-2B exiting the structure, but his facepiece was soot covered.

At 10:07 hours, a Mayday was called stating “MAYDAY, MAYDAY, MAYDAY, I’m hurt.” with no acknowledgement or response. IC reported to the PSAP-T that a possible backdraft occurred with heavy fire on all three floors and noted that “everyone is okay at this time.” Two additional maydays were called stating “Mayday. Mayday. Mayday.” And “Mayday. Mayday.” The PSAP-T reported to IC that a Mayday was called from E-2B’s radio. The PSAP-T requested E-2B’s location and received a response stating “help.” IC requested the identifier of the firefighter who called the Mayday with PSAP-T responding with “E-2B.” IC attempted to contact E-2B via radio with no response. IC requested a PAR with E-2 confirming one firefighter was missing and that it was E-2B.

R-1 attempted entry into the building for rescue without orders. IC yelled to E-2 officer and B-43 to get R-1 out after seeing them entering Side Alpha with no hoseline. IC ordered R-1 to pull back since they had no water. IC gave a status update of a large three-story building, approximately 75ft x 300ft with heavy fire throughout. He noted that operations were going defensive and confirmed to the PSAP-T that they had a missing firefighter at 10:15 hours. IC ordered B-43 in charge of the rescue. Because the R-1 had been inside previously, they were familiar with the probable location of the E-2B. B-43 assigned R-1 to the rescue assignment with L-5 being on-deck as FAST.

R-1 entered the building and followed the 1¾-inch hoseline that E-2 was using before the evacuation. R-1 reported hearing a PASS device sounding, moved towards it, and found E-2B about 20 feet inside the building. R-1 reported to IC that they had E-2B. Hearing no response, the PSAP-T requested acknowledgement from IC that E-2B was located. E-2B was entangled in clothing racks and debris,

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preventing extrication. R-1 firefighters attempted to forcibly free and untangle E-2B when another OPE occurred at 10:18 hours.

IC requested a PAR from PSAP-T and reported a second “backdraft”. An R-1 firefighter radioed, reporting they were disoriented with no acknowledgement or response. IC ordered B-43 to pull everyone back once they exited the building. IC began a PAR and the PSAP-T sounded the evacuation tones. Someone called by radio to R-1 driver/operator ordering them to “Get out. Get out and bring your partner.” The rescue attempt for E-2B was abandoned with B-43 ordering R-1 to evacuate the structure due to deteriorating conditions and intense heat. Additional rescue attempts were not considered until the fire was under control hours later. Between 10:21 and 13:40 hours, defensive operations continued (see Photo 6).



**Photo 6: Aerial view of incident during defensive operations. (Photo provided by police department)**

A city building engineer was consulted to assess building stability so crews could be ready to recover E-2B immediately. All apparatus were moved from an established collapse zone. At 13:41 hours, recovery personnel made entry and recovery was completed at 13:44 with E-2B transported to a local hospital and pronounced deceased. Overhaul and scene evidence processing began with all companies clearing hours

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later (see Photo 7).



**Photo 7: View of Side Alpha post-fire. (Photo provided by police department)**

### **Fire Origin and Cause**

The ATF cause and origin investigation determined that the fire started on Side Bravo and was classified as accidental. The fire was believed to be started by the application of an open flame via a propane torch to melt ice.

### **Cause of Death**

According to the county medical examiner report, the cause of death of the E-2B firefighter was smoke inhalation and thermal injuries.

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### **Contributing Factors and Recommendations**

#### ***Contributing Factor #1: Scene size-up and risk assessment***

The secured parking lot and the location of the fire building prevented the incident commander (IC) from obtaining a complete 360-degree scene size-up. The IC was able to visually observe only Sides Alpha/Bravo. The IC ordered R-1 to enter Side Alpha to see how far back the fire was located before having units report to Side Charlie to provide a size-up. The unique building design led to communication difficulties when describing the location of the fire.

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

One of the most important duties of the first officer on the scene is to conduct an initial size-up and risk assessment. This information lays the foundation for the entire operation. A risk assessment can help determine whether a strategy should be offensive or defensive and help with tactics development to achieve the desired objective(s). Some of the primary considerations in conducting a size-up and risk assessment include fire department assets, life hazard, fire development (and forecasting), time of day, building type/occupancy, and building condition [NIOSH 2025a]. Additional considerations include an evaluation of factors such as the fire size and location, length of time the fire has been burning, fuel load and presence of combustible or hazardous materials, exposures, and weather conditions. Information on the structure itself can affect whether an offensive or defensive strategy is employed including size, construction type, age, condition (evidence of deterioration, weathering, etc.), evidence of renovations, lightweight construction, loads on roof and walls (e.g., air conditioning units, ventilation ductwork, utility entrances, etc.), and available pre-plan information [NIOSH 2008]. A priority should be to get fire department resources to Side Charlie as quickly as possible. The 360-degree survey is essential to determine the possible location of occupants, fire dynamics, and firefighter safety information. NFPA 1700, *Guide for Structural Fire Fighting*, 2021 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 [NFPA 1700 2021].

A risk/benefit analysis uses hazard identification and situation assessment from the scene-size up to weigh the potential risks compared to potential benefits [NFPA 1670 2017]. An accessible and accurate pre-incident plan should be a part of the risk/benefit analysis. ICs should collect current, accurate, and relevant information for a risk/benefit analysis to inform effective initial and ongoing actions [NIOSH 2025b; Brunacini 2002]. A sound risk management plan ensures that risks are evaluated and matched with appropriate actions and conditions. NFPA 1550, *Standard for Emergency Responder Health and Safety*, states the IC should determine the life safety profile of the incident and level of risk consistent with the established principles. Risk management should be based on the following principles [NFPA 1550 2024]:

- Activities that present a significant risk to the safety of members should be limited to situations where there is potential to save endangered lives.

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- Activities that are routinely employed to protect property should be recognized as risks to the safety of members. These risks should be limited, reduced, or avoided when possible.
- No risk that threatens the safety of members is acceptable when there is no possibility to save lives or property.
- In situations where the risk to fire department members is excessive, all activities are limited to defensive operations.

The practice of Crew Resource Management (CRM) in which crew members remain in continuous communications with each other and all members contribute to size up and identification of changing operating conditions. Continuous communication supports effective risk assessments. It also allows the IC and all personnel operating at an incident to be aware of changing conditions and adjust to avoid hazards or mitigate risks. A 360-degree assessment is an important component of the scene size-up and assists with a complete risk assessment. The International Association of Fire Chiefs' Rules of Engagement for Structural Firefighting recommends that the first rule for ICs is to rapidly conduct or obtain a 360-degree situational size-up of the incident. When 360-degree reconnaissance is achieved, it provides the IC and personnel knowledge of the building layout, construction, access/egress points, fire location and direction of spread, and obstacles or hazards [NIOSH 2017].

Many incidents contain obstacles that prevent the viewing of all sides of a structure. Incidents at large geographical areas, such as commercial buildings or scenes with access issues that hamper the ability to do a 360, establish the need for the IC to employ tactical-level management to inform their scene size-up and risk/benefit analysis. This strategy can be supported by establishing divisions or groups to direct operations in specific geographic areas or manage incident functions [IFSTA 2015]. Within a division/group, firefighters advise their supervisor of work progress and provide accountability for crew members engaging in task level activities. The IC should assign divisions/groups to a supervisor early. This is especially important when firefighters are operating from tactical positions that the IC has little or no direct control over (e.g., out of sight). All requests for additional resources or assistance within a division/group are directed to the supervisor who is responsible for communicating with the IC. Supervisors can provide ongoing conditions, actions, needs (CAN) reports to the IC of all four sides and the interior of an incident which may influence tactics and strategy [SKCFTC 2023]. Division/group supervisors can also assist in providing PARs when requested by the IC, incident safety officer (ISO), or operations. Tactical-level management at geographically complex scenes can also be accomplished by using multiple safety officers [NIOSH 2025c].

### ***Contributing Factor #2: Fire behavior/dynamics and tactics***

In this incident, the fire originated at the exterior door on Side Bravo of the costume business. The business had a heavy fire load of costumes, masks, props, and other items used in theater productions made with a variety of materials. Clothing racks were noted to be stacked to the ceiling throughout the first floor. This contributed to the intensity and rapid growth of the fire. The condition of the building also impacted fire spread. Prior to the fire, the flooring on floors two and three were in poor condition and included holes. There was a large opening on the first-floor ceiling to the second floor near the originating point of the fire. Windows on the upper floors were partially replaced with plywood and

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deterioration of the roof could have aided rapid acceleration of fire spread throughout the building. The uncoordinated ventilation which occurred by breaching the plate glass windows could have contributed to increased thermal exposure to the interior crew and the subsequent generation of the OPEs.

***Recommendation #2: Fire departments should train personnel on modern fire dynamics and develop fireground strategies based on a thorough risk/benefit analysis that accounts for building types, their characteristics, associated risks, and available on-scene resources.***

The National Institute of Standards and Technology, Fire Safety Research Institute, and the International Society of Fire Service Instructors research modern fire dynamics involving heat release rates, building construction techniques, and the composition of modern home furnishings. In years past, these home furnishings were largely composed of natural products such as wood and cotton. Today, many of these home furnishings are manufactured using petroleum-based synthetic materials that generate high heat release rates as well as toxic and flammable smoke. Consequently, common, everyday structure fires can create an oxygen depleted environment with fuel rich smoke that can sustain combustion given the appropriate mixture of air and heat [NIOSH 2025d].

A flow path is defined by NFPA as “the movement of heat and smoke from the higher pressure within the fire area towards the lower pressure areas accessible via doors, window openings, and roof structures” [NFPA 1410 2020]. Flow paths consist of an inlet and an exhaust with the direction of travel being determined by pressure. 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. Personnel working in the flow path (between the seat of the fire and the exhaust) are in an environment with significant risk. Ventilation tactics should be coordinated to redirect the flow path away from interior operations. The International Fire Service Training Association (IFSTA) notes in the 8th Edition of the Essentials of Firefighting, “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 2018].

Venting a structure that is charged with hot smoke and/or flames burning outside of the structure (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 effective water on the fire. FSRI offers a free online class on Evidence Based Structural Firefighting which is based on NFPA 1700.

Along with coordinated ventilation, firefighters should select and deploy the appropriate hoseline based on fire conditions. 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 size of the fire may delay extinguishment and expose firefighters to danger from rapid fire development [NIOSH 2025e]. While monitoring fire suppression activities, the IC, ISO, or operations should evaluate whether the hose size is appropriate for the current fire conditions and other factors including [IFSTA 2015; IFSTA 2024]:

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- Fire load and material involved
- Location of fire
- Size of building and fire area
- Potential fire spread

A risk/benefit analysis uses hazard identification and situation assessment to weigh the potential risks to the benefits [NFPA 1670 2017]. Incident commanders should include the type and occupancy status of a structure in a risk/benefit analysis to aid in decision making. Initial and continuous size-ups of the incident's conditions, including Side Charlie, should provide information for the basis for the incident strategy and incident action plan. Collecting current, accurate, and relevant information is essential for effective initial and ongoing actions [Brunacini 2002].

Building construction factors such as fuel type, compartment volume, ventilation, and fuel load affect fire development. Size-ups should include an assessment of building construction when evaluating current fire conditions to forecast the development of the fire. This should include void spaces like floors, walls, ceilings, and attics because it may impact the stability of a structure. Personnel should be trained in the various types of structures found within their response areas, the impact that fire can have on these structures and understanding how fire travels throughout various structure types. This assessment can assist incident commanders with risk/benefit analysis and determining strategies, especially if a building is considered unsalvageable [IFSTA 2016].

NFPA 1700, Section 12 provides information on atypical construction features of non-compartmentalized spaces. Fires within these structures can challenge fire department resources. The fuel load and air within the structure can lead to a well-developed fire. Long spans can lead to structural collapse of large areas. Large space buildings require large flow streams. Understanding the construction of large space buildings, potential impacts of fire, and resources available on the fireground need to be considered to justify interior operations.

### ***Contributing Factor #3: Professional development/fireground operations procedures***

In this incident, crews acted independently of each other without communication to the IC. Personnel on-scene included acting-officers who did not have prior officer experience or training in accordance with NFPA 1021. At the time of the incident, the fire department did not offer any professional development or training for personnel in situations where they may be required to act outside of their normal functional area, such as a fire officer (i.e., acting officer).

### ***Recommendation #3: Fire departments should ensure fireground operations procedures are developed, trained on, and followed by fire officers and firefighters.***

Fire departments should develop fireground operations procedures that are clear and understood by all firefighters. Established procedures can provide better structure and accountability during an incident. These procedures should include the following areas relative to this incident:

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### **Training on Fireground Operations**

To ensure proficiency and competency of fire department members, fire departments should conduct annual training and skills evaluations to verify firefighters understand the established fireground procedures. NFPA 1550, *Standard for Emergency Responder Health and Safety*, requires a fire department to establish and maintain a training, education, and professional development program to help prevent occupational deaths, injuries, and illnesses. This ensures member competencies are maintained to execute all responsibilities effectively, efficiently, and safely [NFPA 1550 2024]. NFPA 1410, *Standard on Training for Emergency Scene Operations*, defines basic evolutions, which are adaptable to local conditions and serve as a method for the evaluation of minimum acceptable job performance during training for fire suppression and rescue activities [NFPA 1410 2020]. Proficiency training for fireground operations and emergency incidents should occur annually. Training should include scene size-up, situational awareness, use of an IMS, PASS, strategy and tactics, search and rescue, hoseline operations, ladder operations, ventilation, thermal imaging cameras, fireground communications, use of RIT, and Mayday operations [NIOSH 2025d].

### **Appropriate Hoseline Selection and Use**

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 size of the fire may delay extinguishment and expose firefighters to danger from rapid fire development. Firefighters should recognize the flow rate needed for the estimate of the fire load.

During an incident, firefighters should select and deploy the appropriate hoseline based on fire conditions with consideration of the best application of the water. *Essentials of Firefighting, 8<sup>th</sup> Edition, Firefighter 2* provides considerable information on hose stream characteristics, selection, and best application methods. Using multiple lines can provide better maneuverability and lead to faster control of the fire. While monitoring fire suppression activities, the IC, ISO, or operations should evaluate whether the hose size is appropriate for the current fire conditions and other factors including [IFSTA 2015; IFSTA 2024]:

- Fire load and material involved
- Location of fire
- Size of building and fire area
- Occupancy type
- Potential fire spread

### **Officer Professional Development**

Fire departments should make sure that training and professional development are offered to personnel who may be expected to perform outside of their normal functional area but within their level of experience. The primary goal of all training, education, and professional development programs is to reduce occupational injuries, illnesses, and fatalities. As members progress through various duties and responsibilities, the department should make sure knowledge, skills, and abilities (KSAs) are introduced to members who are new in their position while continuing development of existing skills. A successful training plan is developed in a systematic and functional manner. Training occurs in the fire service to improve the KSAs and competencies of firefighters and fire officers. The results enhance the overall

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response capabilities of the department while meeting national standards. A structured plan should meet all these criteria [Clark 2017].

When developing a professional development plan, each department must recognize the needs of the community, services offered by the fire department, and available resources such as funding, staffing, and experience levels. The goal to establishing a professional development plan should be to meet or exceed the NFPA professional qualifications. NFPA 1550 states in paragraph 7.1.2 that the fire department should provide training, education, and professional development for all department members commensurate with the duties and functions that they are expected to perform [NFPA 1550 2024].

Professional development plans should be customized to fit within a fire department's resources and capabilities while striving to reach a national standard. A successful professional development plan might include:

- Training programs on technical competencies (hands-on skills)
- Task and mentoring books (technical and academic competencies)
- Mentorship programs (experience)
- Self-guided study classes and programs (academic competencies)

Every fire department should have a professional development plan. NFPA 1201 [2020] states in 4.11 Professional Development, “The fire and emergency services shall have training and education programs and policies to ensure that personnel are trained, and that competency is maintained in order to effectively, efficiently, and safely execute all responsibilities” [NFPA 1201 2020]. These programs should include information to make sure members are trained prior to performing individual duties, and that members receive ongoing professional development to maintain competency. The training plan serves as a comprehensive all-hazards approach that meets or exceeds federal, state, and local regulations as well as the needs of fire department personnel. This approach allows the department to maintain operational and response capabilities to the customers they serve. The plan is designed to be specific yet allows flexibility depending on departmental needs. The plan includes a detailed calendar for the year, which allows the company officers and command staff to balance other duties and priorities [Clark 2017].

Specific to this incident, fire departments should ensure that all company officers or personnel who serve as acting company officers are trained to the requisite knowledge and skill requirements of NFPA 1021 [2020], such as the ability to:

- Develop an initial action plan, give size-up information for an incident and assign emergency response resources, so that resources are deployed to control the emergency.
- Implement an action plan at an emergency operation, given assigned resources, type of incident, and a preliminary plan, so that resources are deployed to mitigate the situation.
- Assign tasks or responsibilities to unit members, given an assignment at an emergency incident, so that the instructions are complete, clear, and concise; safety considerations are addressed; and the desired outcomes are conveyed.

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### **Other Internal Controls**

Additional internal controls should be established to ensure compliance with department policies and procedures that include:

- conducting structured Post Incident Analysis and After-Action Reports that include requirements to report on compliance with policies and procedures
- establishing near miss reporting
- establishing Crew Resource Management practices
- requiring company training reports to document the continuous on duty reinforcement training
- train all staff for at least one level above their rank so that acting positions are competent to fill in in the absence of their supervisor
- establishing a Quality Assurance program with a dedicated officer position who will
  - capture documentation of the above to address areas that need improvement
  - assist in creating performance measures to capture data
  - assure plans are made to correct the deficiencies
  - evaluate implementation to measure success (similar to following the FEMA Planning P)

Other important aspects of fireground operations specific to communication, crew integrity, and managing a mayday are discussed in subsequent recommendations.

### ***Contributing Factor #4: Communicating and managing critical incident benchmarks***

In this incident, interior crews did not communicate actions taken to the IC such as:

- Breeching of the door to the upper floors prior to entry into the commercial unit involved
- Insufficient water supply once inside the commercial unit involved
- High heat and banking of smoke upon entry
- Breeching of the Side Alpha plate glass windows
- Increasing intensity of heat and smoke and the readings of thermal imaging devices

### ***Recommendation #4: Fire departments should ensure critical incident benchmarks are communicated to the IC and managed with crew integrity throughout the incident.***

Effective fireground communication and radio communication are important tools to ensure fireground command and control while supporting firefighter safety and health. The radio system must be dependable, consistent, and functional to ensure that effective communication is maintained. All personnel on the scene should maintain radio discipline during emergency operations. Key components for effective fireground communications include [NFPA 1550 2024]:

- Requirements for transmitting strategic modes of operation and situational reports

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- Personnel accountability reports
- Emergency traffic including Mayday
- Receipt of critical transmissions

Specific to receipt of critical transmissions, fireground benchmarks are an essential element for accomplishing successful and safe outcomes. To ensure that the proper benchmarks are communicated at fireground incidents, fire departments should develop and maintain a consistent process for communicating critical benchmarks in the form of an SOP/SOG. The SOP/SOG should include effective hands-on classroom and practical training programs with annual live fire training, a defined department deployment model, an effective incident management system, adequate radio equipment (mobile and portable radios), and adequate radio channels (dispatch, tactical, and command channels) [NIOSH 2014a, NIOSH 2014b, NIOSH 2015, NIOSH 2018; NIOSH 2025f].

Crew integrity is essential to fireground accountability. NFPA 1550, *Standard for Emergency Responder Health and Safety*, 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]. The first arriving fire department resource initiates the incident command process by giving a brief initial report. It is the responsibility of every firefighter to stay connected with crew members. Freelancing by any member, crew, or company is strictly prohibited.

The ultimate responsibility for crew integrity and ensuring no members get separated or lost rests with the company officer, who maintains constant contact with their assigned members by visual observation, voice, or touch while operating in a hazard zone. If any of these elements are not adhered to, crew integrity is lost, and firefighters are placed at great risk. A company officer can track personnel in smoky conditions by calling out to crew members. This becomes necessary when conducting a PAR. Because it is possible to have crew members with the same first name, it is best to use the member's last name [NIOSH 2025f].

The International Association of Fire Chiefs' Safety, Health, and Survival Section defines the Rules of Engagement for Structural Fire Fighting. One of the objectives is for firefighters to enter a burning building as a team of two or more members and another is that no firefighter be alone at any time while operating in or exiting a building. These objectives align with the definition of crew integrity (i.e., staying together as a team of two or more) [IAFC 2012].

Because the IC is located at the Command Post (outside the hazard zone), interior crews should communicate the interior conditions to the IC as soon as possible. Interior conditions can change the IC's strategy and incident action. Interior crews can aid the IC in this process by providing reports of the interior conditions as soon as they enter the fire building and by providing regular updates, especially when benchmarks are met (e.g., "primary search complete, all clear" and "the fire has been knocked down"). Communication of critical incident factors and their possible consequences offer the basis for a standard incident management approach. Such an approach is the launching pad for effective incident decision making and successful operational performance. ICs should use the critical factors in their order of importance as the basis for making the specific assignments for the incident action plan. ICs should

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not assume the action-oriented responders engaged in operational activities will stop what they are doing so they can feed the IC with a continuous supply of top-grade, objective information. It is the IC's responsibility to do whatever is required to stay informed [Brunacini 2002; NIOSH 2025f].

### ***Contributing Factor #5: Mayday management***

In this incident, after the OPE, E-2B called multiple Maydays. However, information directed by the fire department's SOPs was not provided. The fire department SOP directs that after calling a Mayday, firefighters should provide a LUNAR: location, unit, name, assignment, and resources needed. Consequently, the IC and crews operating on side Alpha never heard three back-to-back Mayday calls while communicating fireground operations change to defensive. But, crews were notified by PSAP-T when IC notified PSAP-T of the OPE described as a possible backdraft. A PAR was not completed completely PSAP-T identified the mayday caller as E-2B, and E-2 officer confirmed to the IC that E-2B was missing. Then the IC ordered B-43 as the Mayday officer. R-1, FAST, and B-43 quickly planned the rescue: R-1 would make entry, having been inside already and aware of the last known location of E-2B. FAST would remain on stand-by as RIT for R-1.

R-1 made entry and heard a PASS device activated and found E-2B, however E-2B was trapped by the clutter of clothing racks and other store supplies. While attempting to extricate E-2B, another OPE occurred and the IC ordered all personnel out of the building. B-43 ordered R-1 out of the building. An R-1 member reported being disoriented and was assisted out of the building by a crew member.

### ***Recommendation #5: Fire departments should ensure that fire officers and dispatchers are trained in calling and managing a Mayday.***

#### **Mayday Training/Survival**

Firefighters should be trained in how to call a Mayday when in danger. Any delay in calling a Mayday reduces the chance of survival and increases the risk to other firefighters trying to rescue the downed firefighter. Firefighters should have 100% confidence in their competency to declare a Mayday and follow the established Mayday procedures. Fire departments should ensure that any personnel who enter a hazard zone have been trained and are proficient in Mayday competencies [IAFF 2010a; IAFF 2010b].

The NIOSH Safety Advisory [The Importance of Understanding and Training on the Portable Radio Emergency Alert Button \(EAB\)](#) [NIOSH 2022]. was developed in response to a line of duty death investigation [F2020-10]. Each firefighter should be equipped with a portable radio and trained on its use and safety features. This training process should be extended to the fire department's dispatchers because they are responsible for designating a channel for emergency alert button (EAB) transmission [NFPA 1550 2024; NIOSH 2022].

The safety features on portable radios include:

- EAB, commonly referred to as the “orange” button on top of a portable radio or remote speaker microphone
- The man-down notifier (MDN)

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- The dispatcher's ability to "alert" a portable radio

In addition, several portable radio manufacturers are developing the ability for a dispatcher or on-scene ICs to remotely activate a firefighter's EAB [NIOSH 2022; NFPA 1802 2021]. The EAB is preprogrammed to send an emergency transmission on a designated channel or talk group. When operating on a simplex channel or in direct mode, the radio can revert to a channel/talk group monitored by the IC or a dispatch center. The communication system administrator must program the transmission channel/talk group for the EAB. A dispatcher should be dedicated to remaining in radio contact with the firefighter(s) who declared a mayday to assure that no emergency transmissions are missed.

### **Mayday Management**

When a Mayday is transmitted, ICs 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 EAB for priority radio transmissions and other important items such as personal alert safety system activation, air status, and location information. This worksheet can be easily located on the back of a tactical worksheet to assist ICs 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 2010; NIOSH 2024].

The FAST, also known as a rapid intervention team (RIT), must be in place, properly trained, sufficiently staffed, and equipped to anticipate the potential for a Mayday response. Pre-Mayday planning should be discussed to create contingencies based on the potential risks that the RIT identifies.

All members who become disoriented, lost or trapped in an IDHL should not hesitate to call a Mayday in compliance with the department policy and procedures. Ensure all firefighters are trained in the use, care, limitations and function of the emergency alert button. Ensure practical experience includes varying environmental conditions.

Mayday policies and procedures must consider dedicated communications to the Mayday firefighter(s) such as a dedicated dispatcher, dedicated radio channel, emergency radio traffic only during the Mayday event and sufficient staffing capacity at the command post to monitor the Mayday firefighter(s) and FAST radio transmissions.

### ***Contributing Factor #6: Building condition and renovations***

The building in this incident had a history of city ordinances and state code violations. These were violations concerning masonry and brickwork, structural members, windows, roof and drainage. Also identified were deteriorated flooring of the upper floors and a large square opening between the first and second floor. The building was assigned three addresses. Each address represented one commercial unit and the residential floors above. The costume business commercial unit had expanded in recent years and occupied two of the assigned addresses. The violations were written up for the entire building rather than separate addresses. The Authority Having Jurisdiction (AHJ) did not report these violations to the fire department. At the time of this incident, the fire department had a Vacant-Abandoned SOP on file,

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which supports pre-planning when notified of violations by the AHJ.

### ***Recommendation #6: Governing municipalities should ensure the applicable fire and life safety codes are enforced for commercial occupancies and relevant information is shared with the fire department.***

Coordination between city code officers and the fire department can support sharing information to aid in an informed scene size up during an emergency. NFPA 1730, *Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations*, Chapter 6 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 [NFPA 1730 2019].

Further, NFPA 1201, *Standard for Providing Fire and Emergency Services to the Public*, Section 6.3 recommends that fire departments establish a good 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 between the entities from inspections, permits, code violations, fire protection maintenance and service, and investigation of fires or other emergencies [NFPA 1201 2020; IFSTA 2016]. This information is critical for fire department pre-incident planning. NFPA 1620 [2020] 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 [NIOSH 2025g]. AHJs should be aggressive to assure that code violations are corrected in a reasonable time period if the structure is allowed to maintain its occupancy permit. The use of fire watches is an additional step that can be taken between the time of the notice of violation and the code compliance correction.

The AHJ should establish a code that provides access to locked buildings and in this case a locked parking lot on B side of the fire building. Products exist that provide access to keys that remain secured to only the fire department during incident operations.

### ***Contributing Factor #7: Incident management***

The Incident Command System (ICS) was not fully established and the IC had overwhelming duties with competing demands placed on him under extreme conditions. A statement about the National Incident Management System (NIMS) should be included here because NIMS terminology was not in compliance with the terminology used and the IC practices deployed. Fire service personnel are required to have certain NIMS training depending on their position. Although fire officials may have certain training, the risk of confusion and misunderstanding is heightened during an emergency incident and can hamper the expected execution of known practices. The IC can be easily overwhelmed in crisis situations due to the number of duties that the IC is responsible for, including performing continuing risk/benefit analysis, establishing the Incident Action Plan, monitoring radio traffic (at times multiple channels), assuring firefighter accountability, tracking critical incident benchmarks and allocating

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resources, addressing media inquiries and more.

Reliable reports were given to the 9-1-1 telecommunicator that the structure was not occupied and the arriving units found fire condition that could not sustain life in the extremely low probability that there was a civilian in the structure, yet crews made entry to begin extinguishment in an IDLH operating environment. No primary search for civilian victims was ever initiated. A proper risk/benefit analysis, if conducted, could have resulted in a different lower risk operating mode.

***Recommendation #7: Ensure that the ICS is compliant with NIMS and that fire department members and dispatchers are trained and can demonstrate ICS proficiency, and that the incident command group is properly resourced to address multiple duties.***

NIMS recognizes the span of control that is within each position in the IC chain of command's ability to manage. Typically, firefighter accountability requires a dedicated officer. Large or complex incidents necessitate additional resources to monitor and relay radio communications. For example, a dedicated Safety Officer(s) is required to ensure the safety of all firefighters, especially those personnel operating in an IDLH environment. An Accountability Officer's responsibility is to ensure that all firefighters' location and status are accounted for from arrival on the scene to being released. The Accountability Officer performs PAR checks regularly throughout the incident. All firefighters are to comply with the department's Accountability policy and procedure.

Exercise design expertise should be developed withing the Training Division to build department wide ICS knowledge and skills from classroom training to full-scale exercises.

## **Post-Incident Fire Department Prevention Actions**

After this incident, the fire department implemented changes to its incident response and fireground operations. These changes were based on the department's post incident analysis of the incident and internal line of duty death investigation on March 3, 2023.

- **Training and Professional Development:** The fire department instituted the following training: 1) annual comprehensive firefighter survival training program with emphasis on survival techniques and Mayday procedures provided to all personnel, 2) coordinated Mayday training for command, line companies, and dispatchers, 3) continuing training on PAR concepts, and 4) enhanced training on building and offensive 2½-inch hoseline tactics at both recruit and officer fire academy programs.
- **Equipment:** The fire department purchased thermal imagers for every apparatus riding position, 2<sup>nd</sup> decision-making thermal imagers for Ladder company crews, and radio ear pieces for on-duty chiefs. The fire department has also ensured compliance with pumper inspections for consistent pre-sets and relief valve pressure settings.
- **Accountability, Safety, and Procedures:** The fire department has: 1) added safety chief command staff positions on every platoon, 2) implemented a new PAR SOP, 3) developed a "Mayday tone" with the alarm office, 4) issued company identifier sleeves for all SCBAs to

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assist with accountability, 5) instituted on-scene SCBA programming capability, 6) and issued accountability tags to all personnel.

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### **Investigator Information**

This incident was investigated by Michael Richardson, Safety and Occupational Health Specialist (former), and Tammy L. Schaeffer, Safety and Occupational Health Specialist, with the Fire Fighter Fatality Investigation and Prevention Program, Surveillance and Field Investigations Branch, Division of Safety Research, NIOSH located in Morgantown, WV. The report was written by Tammy L. Schaeffer. Dan Madrzykowski and Keith Stakes from the Fire Safety Research Institute, part of the UL Research Institutes, provided an expert review of the investigation report. A subject matter expert review was provided by Chief Kevin McGee (ret.), Prince William County Department of Fire and Rescue.

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