

NIOSH FIRE FIGHTER FATALITY INVESTIGATION AND PREVENTION PROGRAM

SERIOUS INJURY REPORT



Career firefighter sustains serious burns at residential structure fire with hoarding conditions – Virginia

F2026-05 VA · July 2026

KEY POINTS

- On April 18, 2026, one career firefighter was seriously injured while fighting a knee wall fire in an attic with hoarding conditions.
- Hoarding, or the excessive accumulation of materials, is a significant threat to firefighters conducting interior operations.
- Firefighters can use exterior fire suppression to safely extinguish knee wall and attic fires when hoarding conditions are present and delay reaching the seat of fire.



Image 1. Thermal imager reading from Fire Drone, view from above Side Charlie. (Source: Fire department)

SUMMARY

When the Engine 16 crew arrived in the attic, the officer reported hoarding conditions. Although they began to flow water, they could not reach the source fire behind the knee wall. Reaching the source fire was complicated by hoarding conditions, which made hoseline navigation difficult. The fire grew rapidly, and the ceiling collapsed. Interior crews exited the attic as a Mayday was called. *See Table 1 for the contributing factor and prevention action.*

Table 1. Contributing factors and prevention actions

Contributing factor	Prevention action summary
1. Knee wall fire into attic with hoarding conditions	Consider exterior fire suppression when hoarding conditions are present and delay reaching the seat of fire in a knee wall and attic.

BACKGROUND

Table 2. Fire department information

Category	Information
Department type	Career
Branches	Services, operations, and finance & budget
Jurisdiction	307 square miles and 42 miles of shoreline
Population	450,000 residents with over 14,000,000 visitors annually
Average response	73,000 calls for service, including 700 fires annually
EMS	Advanced life support
Personnel	500
Shifts	Three (A, B, and C)
Shift type	56-hour work week (21-day cycle)
Shift staffing	130 minimum
Leadership	One chief, three deputy chiefs, and six assistant chiefs

Apparatus, staffing, and communications

At 21:10, the following units were dispatched for a residential structure fire (see Table 3):

Table 3: Units dispatched

Apparatus	Staffing	On-scene arrival
Engine 16	3	21:17
Ladder 16	3	21:17
Battalion Chief 3 (BC3)	2	21:17
Fire Drone	1	21:18
Engine 18	4	21:18

Apparatus	Staffing	On-scene arrival
Rescue 1	4	21:19
Engine 3	3	21:19
Engine 9	4	21:19
Battalion Chief 5 (BC5)	2	21:21
Safety Officer (Safety 1)	1	21:21

The fire department has an unmanned aerial systems (UAS) program that provides aerial support for fire and emergency operations. The program's drones have thermal imager capabilities to inform command and operations at incidents. Each shift includes assigned drone pilots. The city operates a public safety answering point (PSAP) that dispatches all emergency and non-emergency fire, EMS, and law enforcement response calls. The fire department is part of a hoarding task force with the authority having jurisdiction. They utilize an established process to report hoarding conditions found by firefighters. This process results in assistance provided to homeowners for remediation.

Training, education, and professional development

The fire department provides initial recruit training through an in-house academy for EMS and firefighter programs. The training spans eight months for 50 firefighter recruits. Training includes specialized education on marine awareness and Mayday/firefighter survival. Officer development is conducted in-house through a dedicated program where officers attend a quarterly four-hour training session.

BC3 (incident commander) had 21 years of total fire service experience at the fire department. Engine 16 officer (seriously injured) had 15 years of fire service experience, with 1.5 years as a captain with the department.

Cause of serious injury

Engine 16 officer sustained significant burns to both wrists and hands following the ceiling collapse. He was treated at the local hospital and was off work for two weeks for recovery.

Building construction

This incident involved a type V, wood-frame construction, residential structure built in 1982. It was two-stories with 1,425 square feet of living space. The structure included three bedrooms, two bathrooms, a garage, and an attic. The backyard (Side Charlie) was fenced off with a 6 ft wood fence. The attic space had knee walls that were approximately 5 ft in height. The attic contained two small rooms connecting into the knee walls on Sides Alpha and Charlie. Each room had a small door. There was one window in the attic on Side Charlie. At the time of the incident, firefighters described the attic as containing hoarding conditions with large amounts of boxes, totes, and other items being stored throughout with only a small path to walk through.



Image 2. View of Side Alpha, pre-incident. (Source: Fire department)

Fire cause and origin

The fire department cause-and-origin investigation classified the fire as accidental. It indicated that the area of origin was a first-division hallway bathroom due to exhaust fan failure. The fire subsequently traveled vertically into the knee wall space above.

Personal protective equipment

At the time of the incident, the Engine 16 officer was wearing full structural firefighting turnout gear and a NIOSH Approved® self-contained breathing apparatus (SCBA). No evidence was identified to suggest that the structural firefighting turnout gear or SCBA contributed to the serious injury.



Image 3. View of knee wall, Side Bravo, post-incident. (Source: Fire department)

Weather conditions

At 20:56, on April 18, 2026, the outdoor temperature was 76°F, dewpoint 62°F, the wind out of the south at 7 mph, no precipitation, and conditions fair [Weather Underground 2026].

TIMELINE

This is a timeline of events. Sources include dispatch records, audio recordings, and witness statements, among others. This is not an official record of events.

Day 1: April 18, 2026

21:09

- PSAP received a 911 call reporting a residential structure fire.

21:10

- PSAP transmitted full alarm assignment for a residential structure fire.
- Engines 3, 9, 16, 18, Ladder 16, Rescue 1, Fire Drone, BC3, BC5, and Safety 1 were dispatched.

21:17

- Engine 16 and Ladder 16 arrived on scene.
- Engine 16 officer gave a size-up of a two-story residential structure with smoke coming from the back and fire coming from the vent on the roof. He requested to designate this a working fire, established command, and requested the next arriving unit to establish a water supply.
- Engine 16 officer did a 360 size-up while his driver stretched a 200 ft 1 ¾-inch hoseline to the front door.

- Engine 16 firefighter masked up as the hoseline was charged and Engine 16 officer ordered him to direct water onto the vent fire on the Side Bravo roof.
- BC3 reported he was on scene, assumed command, and that on-scene units would be in offensive mode. He initially staged four houses down and had limited visibility of the fire building.



Image 4. Apparatus placement with Engine 16 preparing to enter structure. Arrow indicating incident structure. (Source: Fire department)

21:18

- Fire Drone and Engine 18 arrived on scene. Engine 18 pulled a second 1 ¾-inch hoseline to the front door, but it was not charged since the water supply had not been established.
- Ladder 16 reported they were on scene but not positioned at the front of the structure.
- BC3 assigned Ladder 16 to conduct a primary search starting on the first division and Engine 16 to start a fire attack on the second division.
- BC3 assigned Engine 18 to assist Engine 16 with fire attack on the first division.
- Engine 16 and 18 crews entered on Side Alpha. Conditions were clear with a foot of smoke at the ceiling and smoke banking on the stairs.
- Interior crews encountered the homeowner on Side Charlie, yelling for his dogs through an open sliding door.

21:19

- Rescue 1, Engine 3, and Engine 9 arrived on scene.
- Engine 16 officer reported finding no fire on the first division and making their way to the second division (attic) with Engine 18. Engine 16 crews proceeded up the stairs first, and Engine 18 assisted with hoseline management.
- Engine 16 driver/operator reported to interior crews that he had half a tank of water remaining (375 gallons). BC3 assigned Engine 9 to establish a water supply to Engine 16.
- At the top of the stairs, conditions were zero visibility and low heat. Engine 16 firefighter was first in the attic

and noticed an orange glow towards the Side Bravo/Charlie corner.

- Engine 16 firefighter began flowing water towards the orange glow, advancing slowly due to multiple items being in the way.

21:20

- Engine 16 officer reported hoarding conditions on the second division, they were trying to make their way to the seat of the fire, and had water on the fire. Engine 18 officer followed them, working near the top of the stairs.
- BC3 confirmed Engine 16 officer's update. He assigned Rescue 1 to conduct a primary search on the second division and assigned Engine 3 to be the rapid intervention team (RIT).
- Engine 16 crew advanced the hoseline slowly down a narrow path, 8-10 ft into the attic. Due to the hoarding conditions, they could not move around well and Engine 16 officer could not get low to the floor.
- As Engine 16 officer searched for the fire with his thermal imager, Engine 16 firefighter cooled the environment by spraying the ceiling. Rescue 1 firefighter arrived in the attic, began to pull ceiling towards Side Alpha, and noticed fire coming from above him.
- At this time, there were four firefighters in the attic and four on the stairs to the attic.

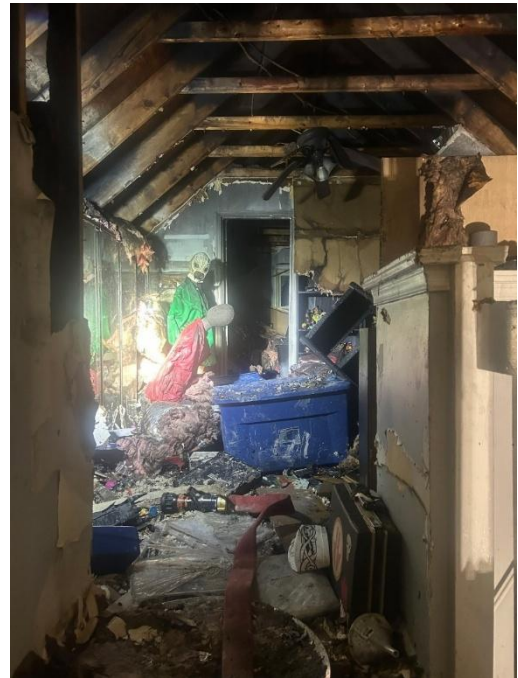


Image 5 and 6. Knee wall door (left) and hoarding conditions on second division (right), post-overhaul. (Source: Fire department)

21:21

- BC5 and Safety 1 arrived on scene.
- BC3 assigned Engine 9 to be an on-deck crew after establishing the water supply.
- BC3 requested an update from BC5 about yelling that was heard on Side Alpha. BC5 responded that it was the homeowner looking for their dog.
- Engine 16 driver/operator requested Engine 9 to send water when ready.

- BC5 requested a crew with a hoseline on Side Delta. BC3 assigned Engine 9 to Side Delta after a water supply was established.
- Engine 18 officer saw a glow around a knee wall door towards Side Alpha. He pushed the door with his hook, the door fell flat onto the floor and was followed by sheet rock falling from above.
- Engine 18 officer called the Engine 16 crew, stating the fire was behind them. Engine 16 crew attempted to turn the hoseline around with major difficulty due to the hoarding conditions in the attic.

21:22

- Rescue 1 requested BC3 to assign an available crew to roof ventilation. Ladder 16 driver/operator reported to BC3 that the fire was venting from the roof on Side Bravo.
- BC3 acknowledged Ladder 16's update and requested Engine 16 to report if they had access to the attic. Engine 16 officer responded that they were making their way to the attic.
- Part of the ceiling collapsed onto the Engine 16 crew, and conditions rapidly deteriorated with high heat. Engine 16 officer was burned through the interface of his coat and gloves.
- As conditions became hotter, all interior crews in the attic began to evacuate down the stairs.

21:23

- BC3 requested Engine 18 provide a report on the second division conditions.
- Engine 18 officer called a Mayday and reported they exited the structure because of high heat conditions. They requested a personnel accountability report (PAR) check immediately.
- BC3 radioed Engine 3 (RIT), who responded they were masking up on Side Alpha.
- BC3 ordered all units to exit the structure and requested a status on the Mayday from Engine 18.
- Rescue 1 reported that all crews on the second division exited due to high heat conditions in the structure. They requested a PAR check.

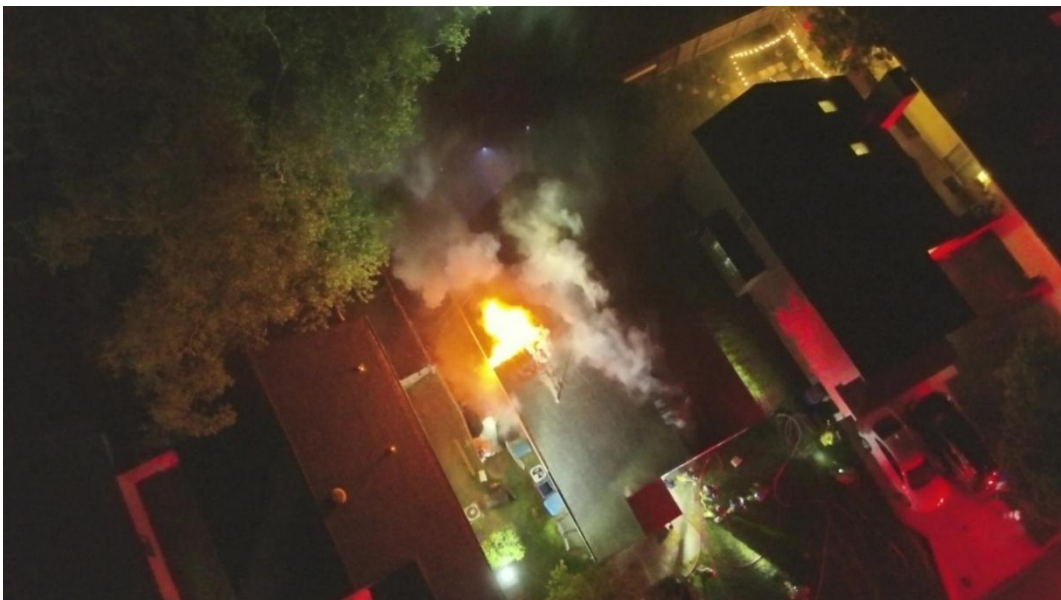


Image 7. Fire venting from Side Bravo roof. (Source: Fire department)

- BC3 began PAR checks with Engine 18. Engine 18 confirmed PAR and requested the Mayday be cleared.

21:24

- Engine 16 driver/operator reported the water supply was established, and they were flowing from the deck gun to the fire on the roof. Engine 16 firefighter deployed a 2-inch hoseline to Side Charlie.
- BC3 reported to all units that operations would be defensive, and PAR was complete with all on-scene crews accounted for outside the structure.

21:40-22:29

- EMS evaluated Engine 16 officer and he was transported to the hospital for burns.
- Crews conducted exterior fire control to suppress fire in the knee walls before completing interior overhaul.
- Fire was declared under control.



Image 8. Exterior fire control into knee wall, Side Charlie. (Source: Fire department)

CONTRIBUTING FACTORS AND PREVENTION ACTIONS



Contributing factor · Knee wall fire into attic with hoarding conditions

Prevention action · Consider exterior fire suppression when hoarding conditions are present and delay reaching the seat of fire in a knee wall and attic.

This incident involved an attic fire in the space behind the knee walls. When Engine 16 arrived in the attic, their officer reported the presence of hoarding conditions. Although they began to flow water, they could not reach the source behind the knee wall. Hoarding conditions made it difficult to reach the source fire and navigate with the hoseline. This delayed applying water at the source fire and allowed a flow path to be established when the knee wall was breached. This caused the fire to rapidly grow. As heat increased, the ceiling collapsed. Interior crews exited the attic and opened the exterior siding to suppress the knee wall fire before reentering for interior operations.

Knee wall construction often provides the potential for ideal fire growth. Air enters low at the eave line, and combustion gases exit the peak through mushroom vents, ridge vents, or gable vents. The relatively large open space behind a knee wall allows for heating of large amounts of fuel to near its ignition point. Subsequent ventilation by breaching the interior barrier or venting at the roof provides the necessary flow path to rapidly grow the fire to flashover. When the barrier between void and occupied space fails or is breached, crews operating on the interior may find themselves trapped between the new flow path and their means of egress. Even though there is a delay between making the breach and the change in conditions, once initiated, the transition to untenable conditions in the operation area occurs very rapidly [NFPA 1700 2026; NIOSH 2025; Kerber and Zevotek 2014]. Adding to this danger, the excessive accumulation of materials poses a significant threat to firefighters conducting interior operations. Piles of belongings or other items make it difficult for firefighters to move through a structure quickly. They also complicate advancing a hoseline, decrease the ability of water to penetrate to the source fire, and impede search efforts [FDNY 2022; USFA 2018; NFPA 2016; NFPA 2012].

The most effective method for interior operations on knee wall fires is to control the source fire, cool the gases prior to making large breaches in the barrier, and then aggressively opening the knee walls to complete extinguishment. Water should be applied at the source of a knee wall fire and toward the direction of spread before committing to the attic. Search for fire should be coordinated with suppression capabilities for quick extinguishment while limiting fire growth. Water application will not be effective until the source is controlled with direct water application [NFPA 1700 2026; NIOSH 2025]. When hoarding conditions are present, special consideration should be given to exterior fire control in knee walls and attics. When source fire control is delayed, anticipate rapid transition to untenable interior conditions. Exterior fire control can be completed by removing the exterior soffit and applying water along the eave line or through an exterior soffit using a piercing nozzle [NIOSH 2025]. This approach may control the fire enough to permit firefighting crews to transition back inside the structure to complete searches, suppression, and overhaul [NFPA 1700 2026; Kerber and Zevotek 2014]. *More about hoarding and knee walls and be found under [more information](#).*

FIRE DEPARTMENT ACTIONS TO ECHO

Actions to echo are measures the fire department took before and during the incident that may have prevented further serious injuries or fatalities or may help prevent similar incidents. NIOSH investigators identified the following actions to echo:

Educate personnel on the use of radio communication processes for sharing critical information, such as conditions and actions.

In this incident, interior crews communicated conditions, actions, and needs to the incident commander as the incident progressed. This included reporting the presence of hoarding conditions on the second division per the fire department's standard operating procedures. These benchmarks allowed the incident commander to assess the information and adjust tactics and the incident action plan accordingly.

Train firefighters and fire officers to use Task-Location-Objective assignments for clear communication of expectations.

In this incident, the incident commander assigned crews to accomplish tactical priorities by communicating the following to personnel: task(s), location of the task(s), and objective of the task(s). These clear assignments minimized the potential for confusion of assigned personnel and maximized the available free "airtime" on the radio.

Ensure personnel cool the environment as they advance to reduce rapid fire progression.

In this incident, Engine 16 firefighter cooled the environment in the attic while crews searched for the source fire. Cooling and controlling smoke temperature, flammability, and radiation can increase safety by preventing flashover during interior advancement in a structure until effective water is applied to the source fire [NFPA 1700 2026; FSRI 2026].

Develop and promote a psychologically safe fireground through training, leadership practices, and ongoing reinforcement that empowers firefighters to openly communicate concerns, report changing conditions, and contribute to incident decision-making.

In this incident, Engine 18 called a Mayday when conditions worsened and the ceiling collapsed. Although Engine 18 was not directly affected by the ceiling collapse, they called the Mayday to inform the incident commander of a potential firefighter emergency. This allowed for faster activation of RIT and other fireground decisions. 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.

Consider assigning or appointing a staff aide to assist incident commanders.

In this incident, BC3 had a staff aide to assist with managing operations. 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.

CONSIDER THIS

Although there is no evidence that the following actions would have prevented this serious injury, they are reminders of critical firefighter safety components to use before, during, or after incident operations.

Community risk reduction (CRR)

CRR is the process of identifying and prioritizing local risks, followed by the integrated and strategic investment of resources to reduce their occurrence and impact [NFPA 1300 2026]. Hoarding is a community risk that could have a detrimental impact on residents, their properties, and firefighters responding to emergencies. CRR efforts to address hoarding may include prevention through fire and life safety education or intervention through referral to community groups such as hoarding task forces [USFA 2023; NFPA 2012]. Fire and life safety education, including education around hoarding and fire safety, is a fundamental element of CRR. It aims to change the behaviors and beliefs of community residents to reduce risks, injuries, and fires [IFSTA 2023]. Fire departments act on this effort by training firefighters and other personnel as Fire and Life Safety Educators (FLSEs). FLSEs coordinate and deliver educational programs that teach community members about a particular risk and how to prevent it [NFPA 1750 2026; NFPA 1030 2024]. When fire service personnel become aware of hoarding conditions, strong consideration should be given to making a referral to code enforcement, a building official, health inspector, fire prevention personnel, or community mental health professionals for intervention [NFPA 1300 2026].

MORE INFORMATION

Hoarding

Review information previously shared on this subject [above](#).

The NFPA defines hoarding as the storage of multiple or extraneous items in the home [NFPA 2026]. As a mental disorder, hoarding behaviors include keeping or collecting large amounts of various items due to strong urges to save them and distress experienced when discarding them. Hoarding in the home often causes rooms to be filled with so many possessions that the rooms can no longer be used as designed and everyday living is compromised [NFPA 2026]. Outside of the challenges mentioned above, hoarding conditions adversely affect firefighting operations by [FDNY 2022; USFA 2018; NFPA 2016; NFPA 2012]:

- Delaying entry or exit of structures from blocked windows or doors

- Facilitating structural failure and collapse from weight of stored items especially with application of water
- Entrapping firefighters from falling materials
- Increasing risk of unusual or rapid fire spread from increased fire load
- Requiring the need to walk, climb, or crawl over and around items
- Impeding patient access, care, and removal

The potential to encounter hoarding conditions and the resulting adverse effects on operations make routine firefighter survival and RIT training critical. Fire departments can utilize NFPA 1400, *Standard on Fire Service Training*, to create safer and effective firefighter training to address these issues.

Knee walls

Review information previously shared on this subject [above](#).

NFPA 1700 [2026] defines a knee wall “as a short wall, typically under 3 ft (1 meter) in height, used to create a room, such as a living space within an attic, and whose creation results in a void space behind the knee wall and the underside of the roof.” Within the attic, the interior living space is surrounded on multiple sides by these void spaces separated only by drywall and possibly insulation during a structure fire. It is possible for fire to enter void spaces and surround crews conducting interior operations before they notice a rise in temperatures or see any signs of fire [NFPA 1700 2026; NIOSH 2025; Kerber and Zevotek 2014]. It is critical to recognize the potential for a knee wall fire during size-up to ensure appropriate strategies are employed.

Investigator information

Incident investigators and report authors were Louis (Rick) Lago, Investigator, and Dr. Wesley R. Attwood, Senior Investigator, with the Fire Fighter Fatality Investigation and Prevention Program, Surveillance and Field Investigations Branch, Division of Safety Research, NIOSH. Timothy Klett, Lieutenant (ret.), Fire Department of New York, NY, provided a subject matter expert review of the investigation report. Dan Madrzykowski from the Fire Safety Research Institute, part of the UL Research Institutes, provided an expert review. The NFPA Emergency Response & Responder Safety Division provided a technical review.

RESOURCES

NFPA 1700, Guide for Structural Firefighting (2026 edition)

NFPA 1700, *Guide for Structural Firefighting*, 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.

Residential attic and exterior fires

Fire Safety Research Institute’s free online training course, *Residential Attic and Exterior Fires*, a free online course, examines the dynamics of attic and exterior fires and the influence of coordinated fire mitigation tactics from full-scale fire testing in realistic residential structures. Three modules in the course focus on knee wall fire dynamics, water application, and interior operations. <https://training.fsri.org/course/75/residential-attic-and-exterior-fires>

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DISCLAIMER

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