



INCIDENT REPORT



524 South 2nd Street, Suite 400 Street, Springfield, IL 62704 • 217.782.9386

INCIDENT HIGHLIGHTS

**DATE:**

December 3, 2021

**TIME:**

11:04 PM

**VICTIM:**

38-year-old firefighter

**INDUSTRY/NAICS CODE:**

Fire Protection / 922160

**EMPLOYER:**

Municipal Fire Department (combination)

**SAFETY & TRAINING:**

IL OSHA noted some training deficiencies with two departments involved.

**SCENE:**

Single-story ranch home

**LOCATION:**

Northwest Illinois



EVENT TYPE: Fatality

INSPECTION #: 1567974 **REPORT DATE:** March 8, 2022
1568109

The Ridge Incident: Firefighter Dies in House Fire After First Floor Collapse and Loss of Accountability

SUMMARY

IL OSHA opened an inspection to investigate the death of a 38-year-old male firefighter found unresponsive and out of breathing air in the basement of a single-story residential fire after a mayday call. The firefighter was removed from the structure by a rapid intervention team and advanced life support measures were provided, however, this was not successful.

CONTRIBUTING FACTORS

Key contributing factors identified in this investigation include:

- Basement was not identified during size up.
- Interior firefighter teams did not always stay together.
- Mayday call was received but caller was not identified or located.

RECOMMENDATIONS

To help prevent similar occurrences:

- Confirm presence or absence of a basement at structure fires during initial size up.
- Interior teams go in as a team, stay in contact, and leave as a team.
- Use a unique identifier such as a name, badge number, truck and seat position, when calling a mayday.
- If a mayday is received, identify and locate the caller.
- Officers must be assertive and speak up if a procedure is not followed or something does not seem right.



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SUMMARY

On December 4th, 2021, at 8:36 AM, the Illinois Department of Labor – Division of Occupational Safety and Health (IL OSHA) received informal notice of an occupationally related death of a firefighter on December 3rd. IL OSHA opened an inspection to investigate the death of a 38-year-old male firefighter found unresponsive and out of breathing air in the basement of a single-story residential structure fire after a mayday call. The firefighter was removed from the structure by a rapid intervention team and advanced life support measures were provided, however, this was not successful.



Figure 1 - "Alpha" side of residence at 11:28 PM (photo credit: Heather Smith - Eye on News)



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BACKGROUND

The victim graduated from the local high school in 2002. He attended an out-of-state fire academy following his graduation from an Illinois university. He began his firefighting career at an out-of-state fire department on the east coast. In October 2012, he accepted a career position at the municipal fire department ("FD #2"). His rank was Lieutenant, and he worked a 24-hour on, 48-hour off schedule. The firefighter achieved Illinois Office of the State Fire Marshal Certification as: Firefighter II, Advanced Technician Firefighter, Fire Apparatus Engineer, Fire Service Instructor I, and Fire Officer I.

Fire department #1 is a combination department with one station staffed with four personnel that work a 24-hour on, 48-hour off schedule. The department covers approximately 80 square miles and responds to about 1,100 calls per year.

Fire department #2 is a combination department with two stations staffed with six personnel that work a 24-hour on, 48-hour off schedule. The department covers approximately 80 square miles and responds to about 1,500 calls per year.

The involved structure was a one-story, ranch layout home with an attached garage and full basement that was built in 1972. The structure was in a rural part of fire department #1's venue, approximately six miles from the fire station, without hydrant coverage.



Figure 2 - Undated photo of "Alpha" side of residence (photo credit: Realtor.com)



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Figure 3 - Undated photo of "Charlie" side of residence (photo credit: Realtor.com)

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The resident called 911 at 11:04 PM, reporting a fire in the attached garage of their home. The 911 center ("dispatch") simultaneously dispatched the local fire department ("FD #1") and an automatic aid fire department ("FD #2") at 11:05 PM. Dispatch advised responding units that all occupants were out of the structure, but pets remained inside. While enroute, the first due engine with three firefighters from FD #1 requested a Mutual Aid Box Alarm System ("MABAS") box alarm. The Chief of FD #1 ("incident commander") was the first to arrive on scene at 11:18 PM. He attempted to provide dispatch with a size-up on the primary radio frequency three times, but received no response. This was likely due to being "covered" by dispatch as they notified box alarm level fire departments. The FD #1 Chief then radioed the first due engine directly, advising of a fully involved attached garage with extension into the house and directed the engine to set up for attack and a tender-based water supply. After meeting with occupants and confirming that all persons were out of the structure, FD #1 Chief formally established command with dispatch, designated MABAS Red as the fireground frequency, and designated a staging area.

Upon arrival, the first due engine initiated an exterior attack. The crew then repositioned to the "Alpha" side front door to make entry. A crew of two from FD #2, one firefighter being the victim, arrived and integrated with FD #1 as the first interior firefighting team of three personnel. Upon entry, the interior team noted that the entire attic space was involved in fire. The Chief of FD #2 ("operations chief") arrived and assumed the role of operations chief at the "Alpha" side, a Deputy Chief of FD #2 ("accountability officer") arrived and served as the accountability officer, and another Deputy Chief of FD #2 arrived and took command of the "Charlie" side. It was reported that the initial interior firefighting team exited the building together after their self-contained breathing apparatus ("SCBA") low air alarms actuated. After an air bottle change, the crew of two from FD #2



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received an assignment and re-entered the building on the “Alpha” side. The victim and other firefighter then split up and went to different rooms to pull down ceiling. The other firefighter pulled ceiling until he, “completely ran out of air,” encountered what he believed to be two firefighters from FD #1 and exited the building. This firefighter went to rehab and met up with the firefighter from FD #1 that was with him on the initial attack team. The victim did not arrive at rehab. During this time the accountability officer had the victim on a team with two other firefighters in the building on the accountability board. A crew of three firefighters were then assembled and directed to enter the building and report to the victim for interior assignments. Interior operations continued with personnel from multiple departments rotating in and out of the structure.

NOTES: Upon exiting the building, one firefighter informed the operations chief of a partial roof collapse above the bay window on the “Alpha” side. During interior operations another firefighter determined that a fire was burning below him. He exited the building and informed the operations chief. During operations additional box alarm level fire departments arrived and performed tasks as assigned by command.

At approximately 11:54 PM (thirty-five minutes after arrival), the operations chief stated that the fire was under control and major overhaul was underway. At approximately 12:01 AM report of a partial floor collapse was heard on the fireground frequency. At approximately 12:04 AM several members stated that they heard “mayday mayday mayday partial floor collapse” but the call was not transmitted on the designated fireground frequency, MABAS Red. At least one additional “mayday mayday mayday” was heard by members on scene, but it was unclear who made the call. These transmissions may have occurred on the “Fire 1 Dispatch” frequency. After these transmissions the operations chief directed members to clear the radio for emergency traffic to allow the firefighter calling the mayday to communicate further. There was no response. Additional attempts to reach the firefighter calling the mayday were made on the fireground and dispatch frequencies. Again, there was no response. A rapid intervention team (“RIT”) was established and staged on the “Alpha” side. It was initially thought that a firefighter from FD #2, other than the victim, initiated the mayday as he was not accounted for, but he was quickly located. A personnel accountability report (“PAR”) was initiated by the operations chief. The PAR was performed and “we have PAR” was heard over the radio, however, 100% individual accountability of all members operating in the hazard zone did not occur. The operations chief radioed the incident commander that all interior crews had been accounted for. The accountability officer marked on the accountability board that the interior crews were “PAR.” Operations resumed although some members on scene stated that they believed the PAR was not properly conducted.



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Figure 4 - "Charlie/Delta" side of residence at 11:56 PM (photo credit: Heather Smith, Eye on News)

After the PAR event, deteriorating conditions indicated the potential presence of a basement fire. At this point, at least forty minutes after arrival of the first unit, command had not confirmed the presence or absence of a basement. The incident commander then confirmed with the homeowners that there was a basement. A crew of two with FD #2 assigned to the exterior "Charlie" side were re-assigned to make entry into the basement. Once at the bottom of the basement stairs, the crew reported that they could not advance into the basement due to debris from the floor collapse.

At approximately 12:37 AM, thirty-three minutes after the first mayday call, members in rehab realized that the victim was unaccounted for and reported this to command. Command initiated several radio calls requesting the victim to respond but there was no reply.

A search operation was initiated, and several crews from multiple departments attempted to locate the victim. During the search, a member of command advised on the radio that the house had a full basement. A crew went to the basement steps and made their way down. Once at the basement landing the crew could not make further entry due to debris from the first-floor collapse that occurred at 12:01 AM. Another crew attempted to scan the



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basement from the hole created by the first-floor collapse and an additional effort was underway in the bedroom on the “Alpha-Bravo” corner to cut a hole in the floor to search for the victim. A crew used an attic ladder to enter the basement through the hole and noted heavy smoke, no visibility, and no visible fire. Shortly after entering the basement a member of the crew heard a SCBA Personal Alert Safety System (“PASS”) alarm sounding. The crew reported hearing the PASS alarm to command and requested emergency medical services (“EMS”) standby. The crew located the victim with his SCBA face piece and breathing regulator intact, and his helmet on. The crew noted that the victim’s SCBA was out of breathing air and the victim was unresponsive with no signs of breathing. Two attempts to remove the victim from the basement were unsuccessful. The third attempt was successful, the victim was removed, and was transferred to EMS personnel for care. The victim was transported via ambulance to a local hospital where life saving measures continued but were unsuccessful. The victim was pronounced dead at 1:41 AM on December 4th, 2021.

INVESTIGATION BY IL-OSHA

IL OSHA opened an investigation for the incident and opened separate inspections for fire department #1 and #2. IL OSHA visited the scene, gathered information from public and private sources, conducted interviews, analyzed photo, video, and audio evidence, reviewed records and documents, and built a timeline of events and conditions to determine if any violations of the Illinois Occupational Safety and Health Act occurred.

FD #1 had a written policy in place, SOG number #01, Passport Accountability System. The policy was effective January 1, 2000 and was revised/reviewed on August 16, 2019. Page three states the process for conducting an accountability check by the incident commander. It appears the policy was not followed. IL OSHA also noted some deficiencies in department training records.

FD #2 had a written policy in place, SOP 200.02, implemented on August 1, 2021 that states, "While performing interior structural firefighting, firefighters will work in teams of two or more and remain in voice, touch or visual contact with one another at all times." It appears the policy was not followed. IL OSHA also noted some deficiencies in department training records.

FINDINGS

Direct Cause: Exposure to respiratory hazards. The victim’s breathing air supply was completely depleted. According to the coroner’s report, death was attributed to asphyxia caused by inhalation of products of combustion due to a structure fire.

Indirect Causes:

1. The initial size up of the structure did not identify the presence or absence of a basement.
2. Based on evidence, firefighters entering the interior were not checked to see that they were operating on the designated fireground frequency.



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3. Interior firefighter team continuity was not maintained.
4. Based on evidence, it appears that the incident command team assessed that the fire was under control, when it was not, leading to the actual risk being higher than what they perceived.
5. There is no evidence of the incident command team reevaluating strategic modes (offensive/interior vs. defensive/exterior) after the report of a partial roof collapse, nor after the mayday call.
6. The mayday call did not include a unique identifier (or one was not heard by personnel).
7. Once received, the mayday caller was not identified by command.
8. Once implemented the personnel accountability report was not properly completed.
9. SCBA "on air" times for crews entering the structure were not properly recorded.
10. Once located, the victim did not receive emergency breathing air.
11. Once located, two attempts to remove the victim from the basement were unsuccessful.

CONCLUSION

The hazard controls and safety measures established through policy, training, and supervision in FD #1 and FD #2 failed to prevent a firefighter mayday incident. Furthermore, once a mayday call was received, the caller was not identified, and operations were allowed to resume. While everyone on the incident command team was responsible that day for firefighter safety, no one on the team exercised assertiveness (spoke up) to ensure that the victim was identified and rescued in a timely manner.

RECOMMENDATIONS

- Confirm the presence or absence of a basement during initial size up and before committing crews to offensive interior operations.
- Clearly communicate the presence or absence of a basement to interior teams.
- Ensure entry teams perform a radio check prior to entering a structure.
- Ensure interior teams make entry as a team, remain in visual or voice contact at all times, and exit as a team.



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- Ensure extensive verification prior to declaring a fire under control.
- Ensure that risk vs. reward is measured after significant events (no life safety hazard, collapse, mayday) and change strategies when the risk is no longer worth the reward.
- Ensure when calling mayday to use a specific identifier such as name, badge number, or truck and seat assignment.
- Ensure a mayday caller is 100% identified and located before terminating the mayday.
- Ensure personal accountability reports include 100% individual accountability and location of all members in the hazard zone.
- Ensure "on air" times of teams entering a structure are recorded to identify potential low air situations.
- Ensure that rapid intervention teams are equipped with and provide downed firefighters with an emergency breathing air supply.
- Ensure that rapid intervention teams have significant personnel, equipment, and training to provide effective and rapid rescue of downed firefighters.
- Ensure that fire departments that frequently operate together at structure fires operate under a common set of fireground policies/procedures/guidelines.
- Ensure that incident command teams follow written policies/procedures/guidelines and officers speak up if something does not appear right or in accordance with procedures.
- Each individual on the incident command team has an individual responsibility for firefighter safety.

CITATIONS - FIRE DEPARTMENT #1

- ***Willful - 820 ILCS 219/20(a): Illinois Occupational Safety and Health Act. Every public employer must provide reasonable protection to the lives, health, and safety of its employees and must furnish to each of its employees employment and a workplace which are free from recognized hazards that cause or are likely to cause death or serious physical harm to its employees.***

On or about December 3-4, 2021, at a one-story residential fire, the employer did not provide reasonable protection to firefighters during command of a "mayday" call and a personnel accountability report (PAR), exposing firefighters to respiratory and thermal hazards. For over 30 minutes, it was not known



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that one firefighter was missing in an immediately dangerous to life or health atmosphere.

Among other methods, one feasible and acceptable means of abatement would be to: 1) ensure strict use of the Passport Accountability System for all structure fire training and all actual structure fires and; 2) ensure 100% individual accountability of all personnel operating in the hazard zone of an incident during a "mayday" call and during a personnel accountability report. A signed Abatement Certification is required.

- ***Willful - 29 CFR 1910.134(g)(4): Procedures for interior structural firefighting. In addition to the requirements set forth under paragraph (g)(3), in interior structural fires, the employer shall ensure that: At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times.***

On or about December 3-4, 2021, at a one-story residential fire, the employer, in multiple instances, did not ensure that at least two firefighters entered the immediately dangerous to life or health (IDLH) atmosphere and remained in visual or voice contact with one another at all times, exposing firefighters to respiratory and thermal hazards. One firefighter in an IDLH atmosphere was out of visual or voice contact with other firefighters for over 30 minutes.

Among other methods, one feasible and acceptable means of abatement would be to: 1) frequently train members expected to serve as interior firefighters and command officers on crew/company continuity, accountability, and this standard and; 2) for command and company officers at structure fires to strictly enforce crew/company continuity, accountability, and this standard. A signed Abatement Certification is required.

- ***Serious - 29 CFR 1910.134(g)(3)(iii) Procedures for IDLH atmospheres. For all IDLH atmospheres, the employer shall ensure that: The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue.***

On or about December 3-4, 2021, at a one-story residential fire, the employer did not ensure firefighters were trained and equipped to provide effective emergency rescue of a firefighter from an immediately dangerous to life or health (IDLH) atmosphere. Once located, the firefighter's breathing air supply was observed as being completely exhausted, exposing the employee to respiratory hazards. Additionally, two emergency rescue attempts were not effective, exposing the firefighter to struck-by hazards and respiratory hazards.

Among other methods, one feasible and acceptable means of abatement would be to: 1) train employees and mutual aid companies that serve under direction of the employer on effective emergency rescue and; 2) ensure that a dedicated, trained, and equipped rescue team is available outside the IDLH atmosphere to provide effective rescue to include but not limited to providing a firefighter in distress



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with emergency breathing air and rapid removal from the IDLH atmosphere. A signed Abatement Certification is required.

- **Hazard Alert Letter:** Issued for problematic fire department radio communications, and inadequate documentation of major events during the incident.

CITATIONS - FIRE DEPARTMENT #2

- **Willful - 820 ILCS 219/20(a): Illinois Occupational Safety and Health Act. Every public employer must provide reasonable protection to the lives, health, and safety of its employees and must furnish to each of its employees employment and a workplace which are free from recognized hazards that cause or are likely to cause death or serious physical harm to its employees.**

On or about December 3-4, 2021, at a one-story residential fire, the employer did not provide reasonable protection to firefighters during command of a "mayday" call and a personnel accountability report (PAR), exposing firefighters to respiratory and thermal hazards. For over 30 minutes, it was not known that one firefighter was missing in an immediately dangerous to life or health atmosphere.

Among other methods, one feasible and acceptable means of abatement would be to: 1) ensure strict use of the Passport Accountability System for all structure fire training and all actual structure fires and; 2) ensure 100% individual accountability of all personnel operating in the hazard zone of an incident during a "mayday" call and during a personnel accountability report. A signed Abatement Certification is required.

- **Willful - 29 CFR 1910.134(g)(4): Procedures for interior structural firefighting. In addition to the requirements set forth under paragraph (g)(3), in interior structural fires, the employer shall ensure that: *At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times.**

On or about December 3-4, 2021, at a one-story residential fire, the employer, in multiple instances, did not ensure that at least two firefighters entered the immediately dangerous to life or health (IDLH) atmosphere and remained in visual or voice contact with one another at all times, exposing firefighters to respiratory and thermal hazards. One firefighter in an IDLH atmosphere was out of visual or voice contact with other firefighters for over 30 minutes.

Among other methods, one feasible and acceptable means of abatement would be to: 1) frequently train members expected to serve as interior firefighters and command officers on crew/company continuity, accountability, and this standard and; 2) for command and company officers at structure fires to strictly enforce crew/company continuity, accountability, and this standard. A signed



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Abatement Certification is required.

- ***Willful - 29 CFR 1910.156(c)(2): The employer shall assure that training and education is conducted frequently enough to assure that each member of the fire brigade is able to perform the member's assigned duties and functions satisfactorily and in a safe manner so as not to endanger fire brigade members or other employees. All fire brigade members shall be provided with training at least annually. In addition, fire brigade members who are expected to perform interior structural fire fighting shall be provided with an education session or training at least quarterly.***

On or about and before December 3-4, 2021, the employer did not ensure that training and education was conducted frequently enough for the incident operations chief to perform assigned duties and functions satisfactorily and in a safe manner at a one-story residential fire, endangering and exposing firefighters in an immediately dangerous to life or health (IDLH) atmosphere to respiratory, thermal, fall, and struck-by hazards. The employee's training records were requested by IL OSHA. The employee's last documented fire training is dated 11/28/2018.

Among other methods, one feasible and acceptable means of abatement would be to frequently train members expected to serve as command officers at structure fires on topics included in Area 6 (Fire Officer and Incident Commanders) of the Illinois Fire Service Institute 2021 Minimum Fire Training Guide.

- ***Serious - 820 ILCS 219/20(a): Every public employer must provide reasonable protection to the lives, health, and safety of its employees and must furnish to each of its employees employment and a workplace which are free from recognized hazards that cause or are likely to cause death or serious physical harm to its employees.***

On or about December 3-4, 2021, at a one-story residential fire, the employer did not provide reasonable protection when a firefighter using a Scott Air-Pak 75 SCBA remained in an immediately dangerous to life or health (IDLH) atmosphere after the SCBA's end of service alarm actuated and did not leave until his air supply was exhausted, exposing the firefighter to respiratory hazards.

Firefighter statement: "I pulled ceiling until I completely ran out of air as my face mask was sucking my face."

Among other methods, one feasible and acceptable means of abatement would be to ensure firefighters maintain an emergency reserve air supply by enforcing the SCBA manufacturer's warning for the Scott Air-Pak 75 stated on pages 3, 7, 10, and 30 of the operating and maintenance instructions manual: "WARNING: THE RESPIRATOR USER MUST IMMEDIATELY LEAVE THE AREA REQUIRING RESPIRATORY PROTECTION WHEN AN END OF SERVICE INDICATOR ALARM ACTUATES. ACTUATION OF ANY END OF SERVICE INDICATOR ALARM WARNS THAT APPROXIMATELY 25% OF FULL PRESSURE



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REMAINS IN THE AIR SUPPLY CYLINDER (THAT IS APPROXIMATELY $\frac{3}{4}$ OF THE TOTAL AIR SUPPLY HAS BEEN USED) OR THAT THERE IS A MALFUNCTION IN THE RESPIRATOR. A DELAY IN LEAVING THE AREA AFTER ALARM ACTUATION MAY RESULT IN INJURY OR DEATH." A signed Abatement Certification is required.

- ***Serious - 29 CFR 1910.134(g)(3)(iii) Procedures for IDLH atmospheres. For all IDLH atmospheres, the employer shall ensure that: The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue.***

On or about December 3-4, 2021, at a one-story residential fire, the employer did not ensure firefighters were trained and equipped to provide effective emergency rescue of a firefighter from an immediately dangerous to life or health (IDLH) atmosphere. Once located, the firefighter's breathing air supply was observed as being completely exhausted, exposing the employee to respiratory hazards. Additionally, two emergency rescue attempts were not effective, exposing the firefighter to struck-by hazards and respiratory hazards.

Among other methods, one feasible and acceptable means of abatement would be to: 1) train employees and mutual aid companies that serve under direction of the employer on effective emergency rescue and; 2) ensure that a dedicated, trained, and equipped rescue team is available outside the IDLH atmosphere to provide effective rescue to include but not limited to providing a firefighter in distress with emergency breathing air and rapid removal from the IDLH atmosphere. A signed Abatement Certification is required.

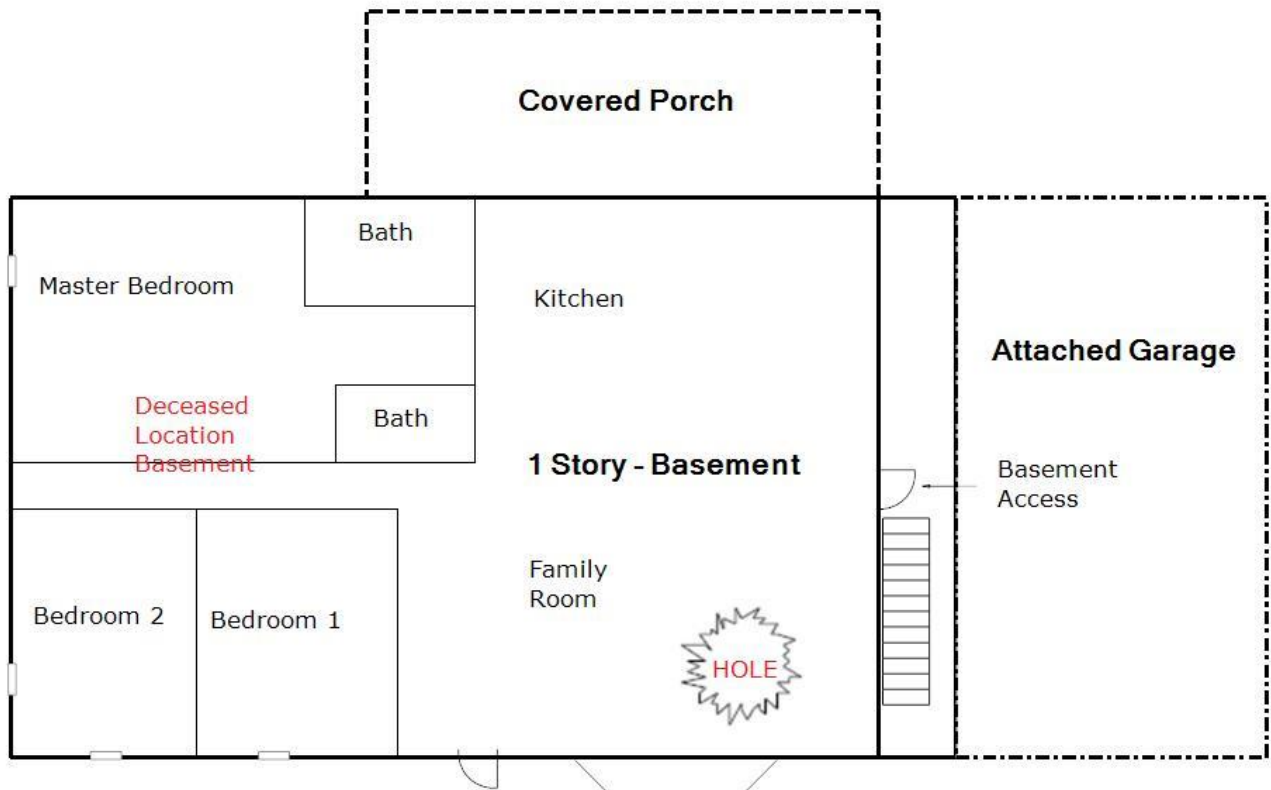
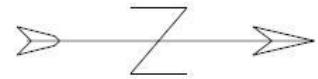
- ***Hazard Alert Letter:*** Issued for inadequate fatality reporting procedures, problematic fire department radio communications, and inadequate documentation of major events during the incident.



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Measurements not to scale

Figure 5 – Floor plan of residence (1st floor)