Captain Joshua Laird
Line of Duty Death (LODD)

AFTER ACTION REPORT AND IMPROVEMENT PLAN (AAR/IP)

August 2022

NO PERSONAL IDENTIFIABLE INFORMATION INCLUDED

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FREDERICK COUNTY GOVERNMENT
DIVISION OF FIRE & RESCUE SERVICES
Office of the Chief

Jan H. Gardner
County Executive

Thomas E. Coe, Chief

All Department Personnel:

On August 11, 2021, units from the Frederick County Division of Fire and Rescue Services were dispatched to a reported house fire at 9510 Ball Road in Ijamsville. During the initial phase of the firefight, Captain Joshua D. Laird sounded a Mayday after the first floor collapsed rendering him lost and disoriented, unable to find and exit the basement level. Tragically, after an intense rescue effort and extraordinary medical treatment, Captain Laird died in the line of duty resulting from his response to the structure fire. The death of Captain Laird is devastating to the Laird family who lost a husband, father, son, and brother; the Frederick County Division of Fire and Rescue Services who lost a brother, firefighter, and friend; the citizens of Frederick County as well as the community of Fairfield, Pennsylvania who lost an active and caring public servant.

In the days following the Ball Road incident, the Frederick County Division of Fire and Rescue Services established the External Safety Review Panel to conduct a thorough, transparent, and honest review of the incident. The Panel, comprised of regional fire service experts, was charged with gathering relevant facts and information to assess all factors that contributed to the outcome of the Ball Road Incident. The Panel was asked to make recommendations on systemic changes and measures needed to prevent or minimize the impact of future, similar events.

The attached report is the culmination of thousands of hours of work by the External Safety Review Panel, supporting agencies, and personnel. On behalf of all the members of the Frederick County Division of Fire and Rescue Services, I would like to recognize and thank the following members of that External Safety Review Panel for their time, expertise, and dedication in the completion of this report.

Assistant Chief Larry Schultz, *Anne Arundel Fire Department*
Assistant Chief Daniel Shaw, *Fairfax County Fire and Rescue Department*
Assistant Chief David Polikoff, *Frederick County Division of Fire and Rescue Services*
Lieutenant James Zour, *Howard County Department of Fire and Rescue Services*
Master Firefighter/HVO Michelle Click, *Howard County Department of Fire and Rescue Services*
Battalion Chief Christopher Mullendore, *Frederick County Division of Fire and Rescue Services*
President Stephen Jones, *Career Firefighters Association of Frederick County IAFF Local 3666*
Mr. Eric Oddo, *University of Maryland Center for Health and Homeland Security*
Ms. Ariel Neumann, *University of Maryland Center for Health and Homeland Security*
Mr. Frank Maldarelli, *University of Maryland Center for Health and Homeland Security*

As an organization, we are committed to learning everything we can from our response to this incident. We will analyze the information gathered and review the recommendations made to implement systemic change within our organization. In doing so, we will honor Josh's memory and ensure that everything possible is done to reduce the opportunity for future tragic events occurring.

Tom Coe, Fire Chief

SECTION 2: CAPTAIN JOSHUA LAIRD

Figure 1: Staff Photo of Captain Laird

A native of Fairfield, Pennsylvania, Joshua Laird first began his fire service career at the age of 16 with the Mont Alto Fire Department in Franklin County, Pennsylvania. Captain Laird earned his paramedic certification shortly after joining the Department and became Pennsylvania's youngest paramedic at the time.

Captain Laird was a 21-year veteran of the Frederick County Department of Fire and Rescue Services, having joined the Department on July 31, 2000, as a member of Recruit Class 4. After graduating, Captain Laird was assigned to Green Valley Station 25 as a Firefighter 1. He went on to serve in New Market Fire Company, Westview, Spring Ridge, United, Carroll Manor, Braddock Heights, and as a Safety Officer.

Captain Joshua Laird lost his life on Wednesday, August 11, 2021, after sustaining injuries in the line of duty while responding to a house fire in Ijamsville, Maryland.

He is remembered fondly for his sense of humor, strong work ethic, and profound desire to serve his community, both in Frederick County and his native Adams County, Pennsylvania.

Captain Laird is survived by his wife and two daughters.

SECTION 3: EXECUTIVE SUMMARY

The Executive Summary was written by Lawrence Schultz, Assistant Fire Chief, Anne Arundel County Fire, and Dan Shaw, Assistant Chief, Fairfax County Fire and Rescue.

For the past fifty years, the fire service has taken great strides to properly investigate tragic Line of Duty Deaths (LODD) to identify the contributing causes and factors that led to the outcome and to provide corrective actions that must be taken to prevent a recurrence. The methodology of conducting such an investigation has also evolved. Most commonly, an ad hoc group of people assigned to the organization impacted is appointed to identify, investigate, and hypothesize what strategical and tactical acts or omissions contributed to the tragic outcome.

Today, the fire service has benefited from a more advanced investigative process learned from law enforcement, the military, and other private sector industries like the aviation community. In this format, teams comprised of subject matter experts from outside of the organization or some combination thereof probe into both the events themselves and the managerial control systems that contributed to the LODD.

Fire Service personnel who have reviewed and immersed themselves in the study of LODD reports know that LODDs are rarely simple and rarely result from a single act or omission. Instead, there are many different critical factors linked together by a series of operational mistakes, violations, omissions, and chance. The unthinkable happens when this chain of tragedy comes together with outdated or unclear policies, resource deficiencies, qualification inequities, and a mission that has lost focus.

The External Safety Review Panel (ESRP) recognized early on that this tragedy was likely not an uncommon event in the national fire service. More likely, it was rooted, to an extent, in the Frederick Division of Fire Rescue Services (FDFRS) culture and systems. Based on written and verbal statements obtained during interviews, the ESRP broadened its analysis to include a wide range of historical and organizational issues. These factors include political and budgetary considerations, organizational compromises, changing priorities, and challenges normal to the rapid expansion of a fire department. The ESRP's belief regarding the importance of these factors strengthened as the investigation progressed. This report places as much weight on those factors as on the more easily understood and corrected technical causes of the incident.

This report identifies many of the attributes that an organization must have to create a safer and more structured organization to meet the challenges posed by the inherently hazardous operation of firefighting. Specifically, those characteristics are professional qualifications, operational doctrine supported by current written policies and procedures, clear lines of authority, proper resourcing, robust training, and, most importantly, individual, and organizational accountability.

This report concludes with findings and recommendations, focusing on policy, procedure, and training. A key foundation to developing these recommendations was to perform a detailed root cause analysis, as this ESRP did, which led to discovering many organizational causation factors. These are of equal, or in some cases, of greater importance than the technical recommendations when considering necessary changes.

The ESRP discovered many of the findings and recommendations they identified are consistent and share a commonality with many previous LODD reports. This fact demonstrates that as a collective Fire Service, we have not learned from previous incidents or are resistant to change in the face of the demonstrated need to change. To support this statement, the Fire Service has improved our investigative process and provided robust and informative findings and recommendations, but we historically continue to see the same outcome.

With this report, the ESRP is trying to find the missing link by shining a light on the human element by identifying how our culture of ignorance, arrogance, and resistance to change builds a normalization of

deviance that eventually opens the door for a catastrophic event. Additionally, we look at the critical and often misunderstood ways in which stress and emotions affect human behavior, decision making, and performance.

The simple creation of policy and procedures to address the obvious tactical and technical issues does nothing towards preventing future occurrences. This is clear as multiple organizational policies were not followed by both Company and Chief Officers on this incident. The development of clear and practical policy and procedures is only the starting point. Providing training and education on those policies, demonstrating organizational support of the policies, and ensuring accountability for following the policies are required for success.

The ESRP was diligent in removing all assumptions and focusing on the facts gained from the incident scene, recordings, interviews, and pictures. From this exhaustive process, the ESRP formulated detailed findings and recommendations that are unbiased and focused on preventing future occurrences.

As a testament to this thorough process, the ESRP delved into the impact of stress on human performance and decision-making. In addition, the ESRP consulted with several subject matter experts in this field, who were not privy to the incident or any details, to provide an unbiased analysis of this phenomenon. This is an area that has not largely been understood and or explored in previous reports. Without considering this, the fire service is ignoring that our firefighters are not immune to the impacts of stress, sleep deprivation, dehydration, etc., especially when operating in the chaotic environment of the fireground.

The Committee purposefully placed the Human Performance section after the Executive Summary. The Executive Summary will provide a synopsis of what occurred on August 11, 2021. The Committee hopes that the information contained in the Executive Summary, juxtaposed with the information contained in Chapter 6 (*Human Performance Under Stress*), will provide a lens through which the entire report should be viewed. This lens is not an excuse but a contributing factor that must be understood, trained on, recognized, and dealt with accurately if we hope to change the trend of recurrent LODD reports. This report should be a catalyst to all who read it to ensure their ego is not hampering change and understand human performance factors as an important first step to stopping needless injuries or deaths.

On Wednesday, August 11, 2021, a lightning strike from an afternoon thunderstorm hit a large home located at 9510 Ball Road, Ijamsville, Maryland, initiating a sequence of events that resulted in a fire originating inside of the basement. The Frederick County Department of Emergency Communications began receiving multiple calls for a house fire in the same area. The Emergency Communications Center (ECC) dispatched Box 23-11 for a reported house fire at 9530 Ball Road. The corrected address would quickly be confirmed as 9510 Ball Road.

The structure at 9510 Ball Road was a large, irregular-shaped Type V wood-frame construction private dwelling. It was two stories on all four sides and contained approximately 5375 sq. ft. of livable space. The first and second floors of the structure sat atop an unfinished basement, with the exterior basement entrance located at the bottom of a set of steps located on Side Delta at the C/D corner of the structure. The structure sat on the highest point of an eleven (11) acre estate, with the rear yard enclosed by a five-foot metal fence.

Like many reports before this, the sequence of events begins with an interruption to the normal patterns that firefighters desperately rely on when developing cognitive and procedural norms through experience. Ball Road is not in the first due area of E251, which would be the first unit to arrive. Because of the storm, E251 was returning from a previous call right down the street from the Ball Road incident and arrived first. Due to the previous incident, the crew of Engine 251 were in various stages of dress related to their personal protective equipment (PPE). Additionally, this incident was the first time the Driver of E251 had driven, operated, and worked with the Officer on E251 in this capacity. With the address not clearly visible from

their travel route, Engine 251 drove past the correct driveway and had to make a three-point turn on Ball Road.

Engine 251, the dispatched second due engine, arrived first and assumed first due responsibilities. As the crew from E251 approached the Ball Road address up the driveway, they observed low-lying smoke conditions on Side Bravo of the structure. E251 started its ascent up the long driveway stopping approximately 500 feet from the structure to perform a split lay and drop their Large Diameter Hose (LDH) supply line. The Officer provided a portion of the required water supply statement stating the hose lay component, however, he failed to provide a water source being this was a non-hydrant area.

E251's Officer directed his driver to position on the Alpha-Bravo corner of the house just prior to the garage located on Side Bravo. Smoke conditions worsened on the Bravo side exterior, and the crew could no longer see due to the decreasing visibility from the smoke. Engine 251's Officer transmitted an incomplete Initial On Scene Report (IOSR) and requested a Rapid Intervention Dispatch and Tanker Task Force.

Seeing that most of the fire appeared to be in the family room on Side Bravo, the nozzle firefighter from Engine 251 deployed a 200 ft., 1 ¾" hoseline to Side Bravo. The crew of two (E251 firefighter and E251 officer) advanced their hoseline to Side Bravo and began to apply water from the exterior to the interior through a set of picture windows on the first floor, just to the right and left of the chimney into the family room.

Volunteer Chief 23 (VC23) arrived on-scene and assumed Command prior to completing the transfer of Command process with E251 Officer. Within minutes, the Frederick County Fire Chief and Operations Assistant Chief arrived on-scene, neither assuming Command from Chief 23. Instead, the Fire Chief filled the role as Command Aide, while the Operations Assistant Chief stretched and operated a hoseline on Side Charlie. Throughout the incident, there is no indication that the IC or any member of the command team was ever fully aware of the location and extent of the fire.

After viewing Side Delta of the structure, the Officer from Truck 23 provided a 360 report that was incomplete and inaccurate. This report was followed by a radio transmission from the Officer of Engine 251 validating that he was not able to complete a 360. The ESRB was unable to identify any reason why the Officer from Engine 251 was prohibited from completing his 360.

The members operating on the scene and enroute were unaware that a fire had largely consumed the void space between the basement ceiling and the first floor and began extending vertically into the family room and kitchen area as well as the exterior on Side Charlie.

The Operations Assistant Chief was now operating a hoseline on Side Charlie, had a face-to-face conversation with the Officer from Engine 251, and more units were beginning to arrive on the scene. After the brief conversation, the Operations Assistant Chief observed the Officer from Engine 251 standing on the inside of the structure, standing alone in the breakfast nook while his firefighter remained alone on the bravo side flowing a handline from the exterior. The Officer from Engine 251 asked the Operations Assistant Chief to hand him his hoseline. The Operations Assistant Chief told the Officer from Engine 251 that they "we're not going inside yet because we don't have good water" but did not directly tell the Officer from Engine 251 to immediately exit the building. The Operations Assistant Chief then turned around to finish the deployment of his hoseline. When he turned back around to face the structure, he no longer saw the Officer from Engine 251 standing inside the structure.

The Officer from Engine 251 made the following transmission: "Mayday, Mayday, Mayday, Captain Laird Engine 251, I've fallen through the floor in the fire room." Captain Laird made several more transmissions verbalizing his location, equipment needed to affect his rescue, and the conditions he was facing. Many of his attempted radio transmissions were also rejected during this period due to other units controlling the

channel with ancillary transmissions. Additionally, upon receipt of the Mayday, there was a lack of tactical discipline, crew integrity issues, and lack of coordination between units operating on the fire ground.

Personnel had located the exterior entrance into the basement, forced entry, and prepared to make entry to search for Captain Laird. Captain Laird then made one final transmission, “Hey guys, tell my family I love them.” Captain Laird was extracted from the structure and was immediately rendered medical aid by awaiting paramedics.

Captain Laird was transported by Maryland State Police Helicopter to Medstar Washington Hospital Center, where he was later pronounced dead. The cause of death was listed as inhalation of products of combustion.

Following the death of Captain Laird, the Frederick County Division of Fire Rescue Services (DFRS) established the ESRP. This group was tasked with reviewing the fire incident at 9510 Ball Road, examining the DFRS’s response and actions, and providing detailed findings and recommendations to prevent future occurrences.

SECTION 4: FIRE AND RESCUE SERVICES OVERVIEW[1]

Section 4 provides an in-depth look at how Fire and Rescue Services in Frederick County are organizationally structured.

The Frederick County fire and rescue system is a combined volunteer and career staffed system that consists of the twenty-five (25) volunteer fire and rescue corporations, and the Division of Fire and Rescue Services (hereinafter referred to as "the Division" or "DFRS"). Currently, the volunteer fire and rescue corporations consist of fourteen (14) corporations that provide both fire and ambulance service, eight (8) corporations that provide fire and medical first responder services, and three (3) corporations that provide ambulance/rescue services only.

The Division of Fire and Rescue Services currently consists of 515 uniformed and sixteen (16) non-uniformed employees assigned to two sections of the Division: Emergency Services Section and Administrative Services Section. While Volunteer Fire and Rescue Services are established as a separate division of county government, they function as an integral part of the overall county fire and rescue services division.

- *Emergency Services Section*. The Emergency Services Section is responsible for all field services, including Fire Suppression, Emergency Medical Services, Special Operations, Research and Planning, Training, and Safety.

- *Administrative Services Section*. The Administrative Services Bureau is responsible for Fire Prevention, Logistics, Fleet Services, Finance, Information Technology, and Ambulance Insurance Billing.

- *Volunteer Services Division*. The Division of Volunteer Fire and Rescue Services is responsible for Volunteer Member Services, Volunteer Benefits (Insurance, LOSAP), Volunteer Recruitment, and system-wide coordination of volunteer fire and rescue companies. This section also provides staff support to the Frederick County Volunteer Fire and Rescue Association.

The Division of Fire and Rescue Services provides operational staffing and administrative support to the County's volunteer fire and rescue companies, special events planning, conducts all code-related fire inspections and investigates the cause and origin of fires, explosions, and hazardous materials incidents.

Under the authority specified in the Code of Frederick County, Maryland, the Director/Chief of the Division of Fire and Rescue Services is responsible for the overall operations and administration of the county fire and rescue system.

Volunteer fire and rescue corporations are established as community-based organizations that affiliate in a confederation relationship through the Frederick County Volunteer Fire and Rescue Association. The Fire and Rescue Association is a recognized advisory group to the County Executive. This organization works to maintain a countywide approach to fire and rescue service delivery through a consensus process among the twenty-five (25) volunteer fire and rescue corporations.

The volunteer segment of the fire and rescue system is supported by four (4) full-time positions that provide administrative support and recruitment services for the volunteer corporations. The Deputy Chief of Volunteer Fire and Rescue Services is appointed by the County Executive and is a command-level officer within the uniformed chain of command.

[1] *Fire - Rescue Service Plan CY2019 - CY2029*, Frederick County Division of Fire and Rescue Services, (Sept. 2012) (Updated Dec. 2018).

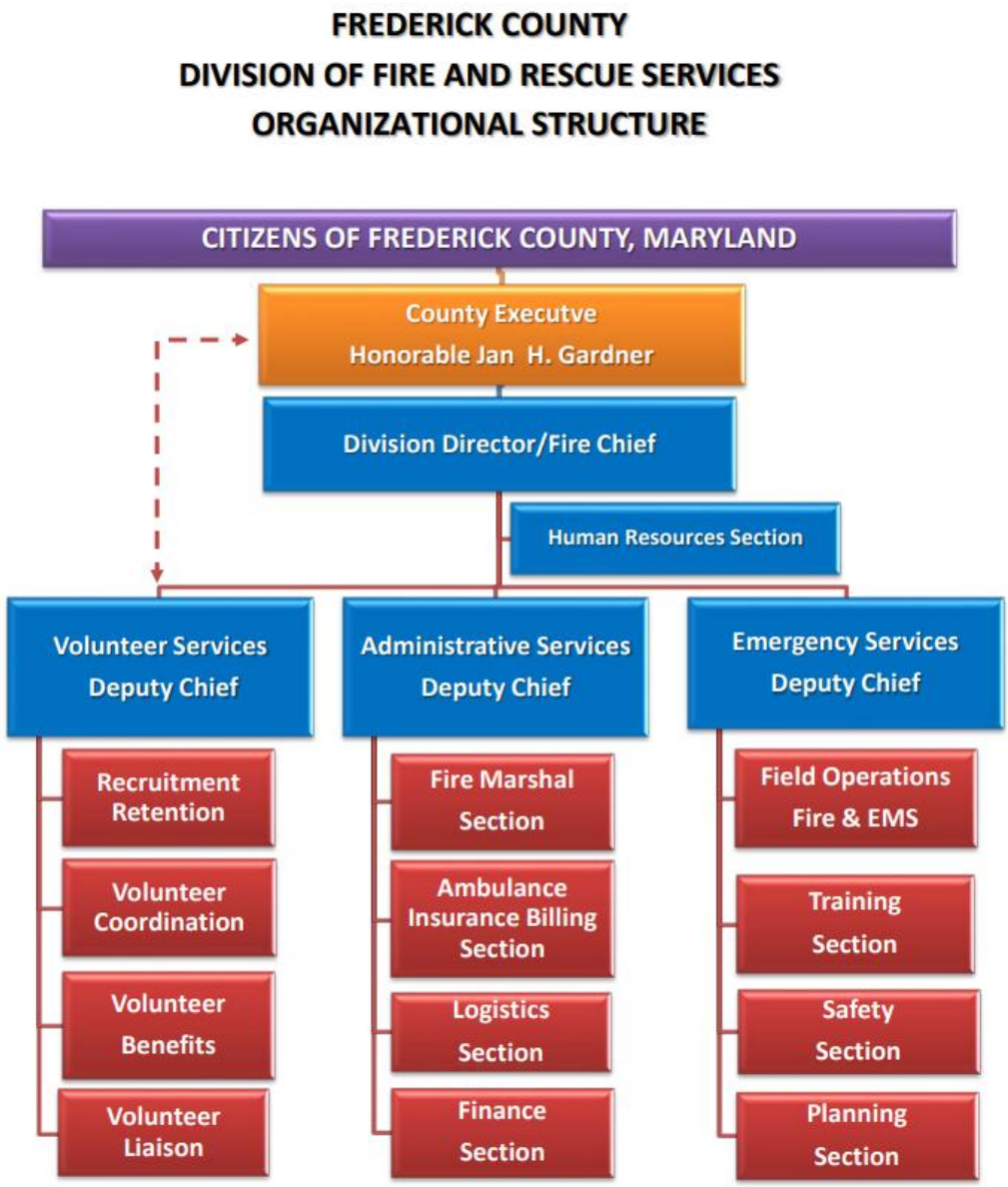

Figure 2: DFRS Organizational Chart

Frederick County Fire & Rescue Stations

COMPANY NUMBER & NAME	STATION LOCATION	STAFFING
1. Independent Hose Co.	310 Baughman's Lane, Frederick, MD	Career / Volunteer
2. Junior Fire Co.	535 North Market Street, Frederick, MD	Career / Volunteer
3. United Steam Fire Co.	79 S. Market Street, Frederick, MD	Career / Volunteer
4. Citizens Truck Co.	9 South Court Street, Frederick, MD	Career / Volunteer
5. Brunswick Vol. Fire Co	1500 Volunteer Drive, Brunswick, MD	Career / Volunteer
6. Vigilant Hose Co.	25 West Main Street, Emmitsburg, MD	Career / Volunteer
7. Middletown Vol. Fire Co.	401 Franklin Street, Middletown, MD	Career / Volunteer
8. Myersville Vol. Fire Co.	301 Main Street, Myersville, MD	Career / Volunteer
9. New Midway Vol. Fire Co.	12045 Woodsboro Pike, New Midway, MD	Volunteer
10. Guardian Hose Co.	21 North Church Street, Thurmont, MD	Volunteer
11. Walkersville Vol. Fire Co.	79 West Frederick Street, Walkersville, MD	Volunteer
12. Braddock Heights Vol. Fire Co.	6715 Jefferson Blvd., Braddock Heights, MD	Career / Volunteer
13. Rocky Ridge Vol. Fire Co.	13516 Motters Station Rd., Rocky Ridge, MD	Volunteer
14. Carroll Manor Fire Co.	2795 Adams Street, Adamstown, MD	Career / Volunteer
15. New Market District Vol. Fire Co.	76 West Main Street, New Market, MD	Career / Volunteer
16. Woodsboro Vol. Fire Co.	2 South Third Street, Woodsboro, MD	Career / Volunteer
17. Libertytown Vol. Fire Co.	12027 South Street, Libertytown, MD	Career / Volunteer
18. Graceham Vol. Fire Co.	14026 Graceham Road, Thurmont, MD	Volunteer
19. Brunswick Ambulance Co.	200 W. Potomac Street, Brunswick, MD	Career / Volunteer
20. Jefferson Vol. Fire Co.	4603-A Lander Road, Jefferson, MD	Career / Volunteer
21. Wolfsville Vol. Fire Co.	12464 Wolfsville Road, Myersville, MD	Volunteer
22. Lewistown Vol. Fire Co.	11101 Hessong Bridge Road, Thurmont, MD	Career / Volunteer
23. Urbana Vol. Fire Co.	3602 Urbana Pike, Frederick, MD	Career / Volunteer
24. Walkersville Vol. Rescue Co.	73 Frederick Street, Walkersville, MD	Career / Volunteer
25. Green Valley	3939 Green Valley Road, Monrovia, MD	Career / Volunteer
28. Carroll Manor: Pt. of Rocks	1809 Ballenger Creek Pike., Pt. of Rocks, MD	Career / Volunteer
30. Thurmont Ambulance Co.	27 North Church Street, Thurmont, MD	Career / Volunteer
31. Westview	5525 New Design Road, Frederick, MD	Career / Volunteer
33. Spring Ridge	6061 Spring Ridge Parkway, Frederick, MD	Career / Volunteer

Figure 3: Full List of DFRS Stations

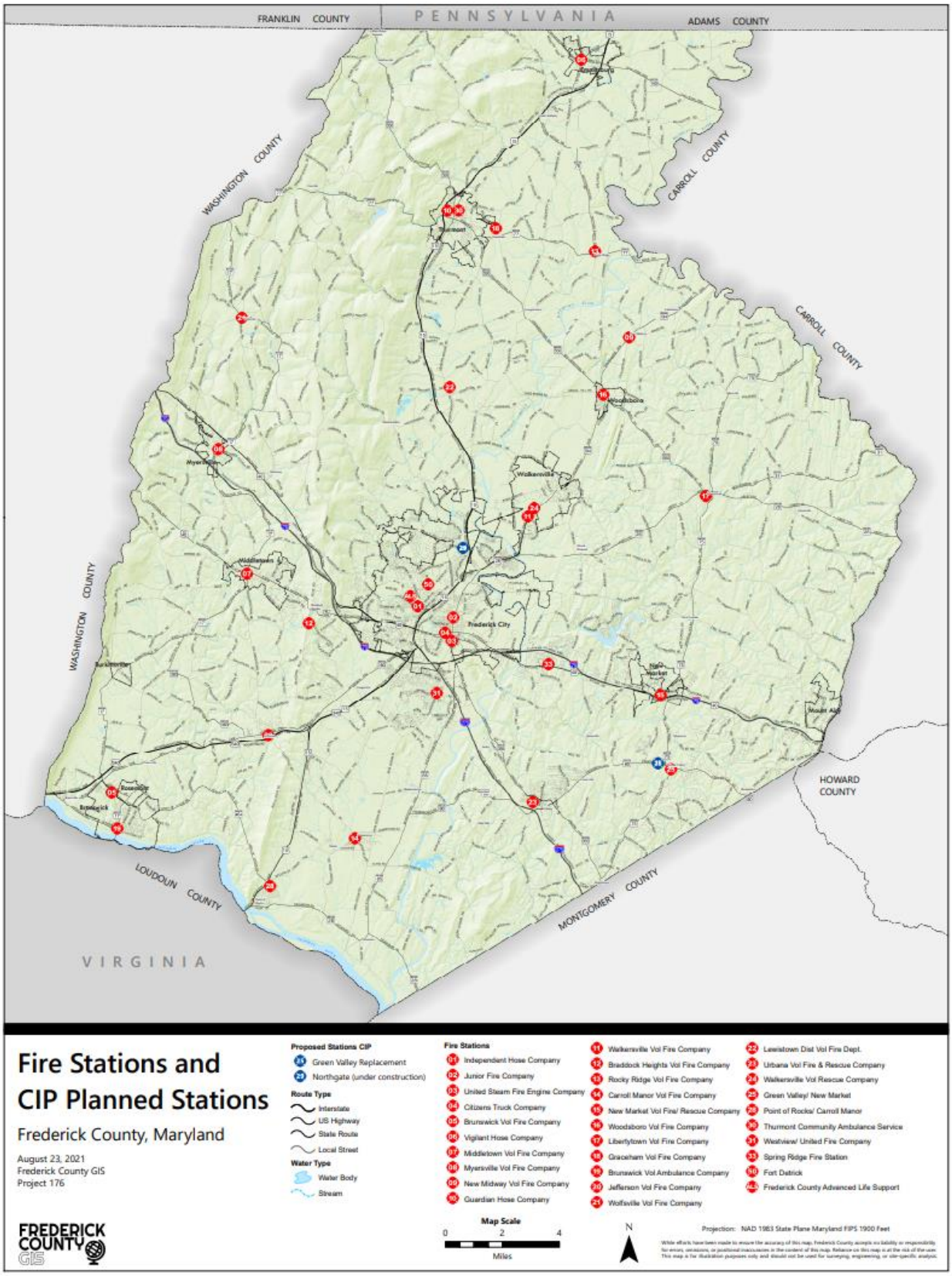

Figure 4: Frederick County Fire Stations and CIP Planned Stations

4.1 Career Staff Support

The assignment of career fire and emergency medical service personnel to staff volunteer fire and rescue stations has historically occurred at the request of a volunteer corporation when the emergency response level provided with only volunteer staffing has fallen below the service standard established by Frederick County. Career staff support can be requested through the annual budget process of the Frederick County Volunteer Fire and Rescue Association for their review and recommendation to the Director and Chief of Fire and Rescue Services.

Career personnel are currently assigned to one of two work schedules, based on the staffing need of the volunteer corporation, explained as follows:

- A volunteer station in a low or moderate risk area that has an adequate number of operational volunteers available weeknights and weekends may have county career personnel assigned to a twelve-hour (12) day work shift. In this case, career firefighter/EMTs staff the station from 0600 – 1800 hours, Monday – Friday. Volunteer personnel provide staffing at all other times.

- A volunteer station in a moderate or high-risk area where service demand is high and/or the number of operational volunteers available is not adequate to meet the service demand will typically have county career personnel assigned to a twenty-four-hour (24) work shift and career staffing will be provided 7 days a week.

- Currently, two (2) stations are career staffed on the twelve-hour (12) work schedule and twenty-three (23) stations are career staffed on the twenty-four-hour (24) schedule.

4.2 Current Volunteer Staffing

The volunteer segment of the fire and rescue system comprises approximately 600 operational and 1,000 administrative volunteers.

In August 2011, because of a successful federal SAFER grant applied for by the Division of Fire and Rescue Services, an aggressive volunteer recruitment program was initiated. The stated goal in the grant was to recruit 400 new fire–rescue volunteers within the four-year (4) period of the grant program. This goal was met with slightly more than 400 volunteers recruited and trained to at least the firefighter 1 level.

While newly recruited volunteers are entering the fire and emergency medical training programs to obtain their basic certifications needed for operational service, retention of these newly recruited volunteers has been problematic.

Of the thirty (30) fire-rescue stations in Frederick County:

- Five (5) stations continue to deliver emergency services with 100% volunteer staffing.
- Two (2) stations operate with weekday career staff and volunteer staffing evenings and weekends.
- Twenty-three (23) stations are provided with 24/7 career staff and volunteer staffing as available.

4.3 Current Fire – Rescue – Ambulance Stations

There are currently thirty (30) fire and/or ambulance stations located in communities throughout Frederick County. As noted earlier:

- Nineteen (19) stations deliver both fire and ambulance services.
- Eight (8) stations provide fire and medical first responder services.
- Three (3) stations provide ambulance/rescue services only.

Volunteer fire and rescue corporations own all the fire–rescue stations in the county except for:

- Station 7 (Middletown)
- Station 25 (Green Valley)
- Station 29 (North Gate)
- Station 31 (Westview)
- Station 33 (Spring Ridge)
- ALS quarters at 340 Montevue Lane

4.4 Mutual Response with Surrounding Jurisdictions

Frederick County participates in automatic reciprocal response with all jurisdictions that surround Frederick County, as well as federal fire-rescue departments that operate both within and immediately outside of the county. This automatic mutual response relationship benefits Frederick County and all the partner agencies with which the County exchanges services. This relationship allows Frederick County to automatically dispatch the closest unit of the appropriate type regardless of the jurisdiction from which it responds. The dispatch of the closest unit serves the best interest of the citizens in all participating jurisdictions:

- Carroll County, Maryland
- Howard County, Maryland
- Fort Detrick, Maryland
- Montgomery County, Maryland
- Naval Support Facility, Thurmont, Maryland
- Washington County, Maryland
- Adams County, Pennsylvania
- Franklin County, Pennsylvania
- Raven Rock Complex, Pennsylvania
- Loudoun County, Virginia
- Jefferson County, West Virginia

Frederick County is also a signatory to the Metropolitan Washington Council of Governments Fire – Rescue Mutual Aid Agreement, which commits to aiding and receiving aid from all other signatory jurisdictions in the Metropolitan Washington DC area.

While mutual response relationships are important to providing effective service to citizens in border areas of the county, it is important to recognize that mutual response is only as effective as assisting partners' ability to respond in a timely manner when dispatched. In several jurisdictions, Frederick County exchanges services with a predominately volunteer-staffed service. In situations where an adequate number of operationally qualified volunteers are not available to respond when dispatched, the value of mutual response is diminished.

Like Frederick County, volunteer-staffed fire and rescue stations in neighboring jurisdictions are faced with the challenge of maintaining enough operational volunteers to meet the demand for services. This is particularly true during weekday hours. This issue can make reliance on mutual response problematic with some of the mutual response partner jurisdictions.

SECTION 5: PROJECT METHODOLOGY

Section 5 details the organizational approach by which the External Safety Review Panel systematically developed this report between September 2021 and August 2022.

5.1 External Safety Review Panel

The following people comprise the External Safety Review Panel, an interagency collection of Fire and Emergency Management subject matter experts tasked with writing this After-Action Report.

- Lawrence Schultz, *Assistant Fire Chief*, Anne Arundel County Fire Department (Panel Chair)
- Dan Shaw, *Assistant Chief*, Fairfax County Fire and Rescue Department (Panel Co-Chair)
- David Polikoff[2], *Assistant Chief*, Frederick County Division of Fire and Rescue Services
- James Zour, *Captain*, Howard County Fire and Rescue Services
- Michelle Click, *Master Firefighter/HVO*, Howard County Fire and Rescue Services
- Chris Mullendore, *Battalion Chief*, Frederick County Division of Fire and Rescue Services
- Stephen Jones, *President*, Career Firefighters Association of Frederick County IAFF Local 3666
- Eric Oddo, *Continuity Program Director*, University of Maryland Center for Health & Homeland Security
- Ariel Neumann, *Law and Policy Analyst*, University of Maryland Center for Health & Homeland Security
- Frank Maldarelli, *Law and Policy Analyst*, University of Maryland Center for Health & Homeland Security

5.2 Interview Process

On August 25, 2021, Frederick County Division of Fire Rescue Services (DFRS) Fire Chief Thomas E. Coe issued Special Order 21-039, establishing an External Safety Review Panel (ESRP). Chief Coe charged the panel to conduct a detailed, transparent, and honest review of DFRS incident F21023102, which occurred on August 11, 2021, at 9510 Ball Road.

The ESRP initially collaborated with the National Institute for Occupational Safety and Health (NIOSH) investigators to obtain information from interviews with DFRS personnel who operated at the Ball Road incident. The ESRP supported the NIOSH team over the next several days examining the events surrounding the incident, particularly those that contributed to the line of duty death of Captain Joshua Laird.

After working closely with NIOSH investigators, the ESRP determined it would be beneficial to conduct a second round of interviews with the same participants. The primary focus of the second set of interviews was to gather a more detailed accounting of fireground operations, communications, and DFRS personnel's observations at the incident. Ultimately, the ESRP attempted to determine a precise sequence of actions before, during, and after the Mayday event. Interviewees participated in recorded interviews, then transcribed by a professional transcription service. The ESRP used transcriptions to ensure accuracy and transparency in the interviewee's events and actions.

Throughout the investigation, the ESRP participated in more than 125 separate interviews, conducted between August 29, 2021, and September 24, 2021, with personnel who had direct knowledge of the events at 9510 Ball Road on Wednesday, August 11, 2021. All interviews were held at DFRS Headquarters and ranged in length from one to two hours each.

In addition to the personnel interviews, additional information and data reviewed included the following:

[2] Mr. Polikoff transitioned from Battalion Chief in Montgomery County to Assistant Chief in Frederick County on 12/1/21.

1. ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).
2. FCDFRS Computer Aided Dispatch (CAD) Data for incident: F21023102
3. Audio radio transmissions, provided by the Frederick County Department of Communications.
4. Examination of Selected PPE Worn by LODD Frederick County Division of Fire & Rescue Services (FCDFRS) Battalion Chief During August 11, 2022, Structure Fire at 9500 Block Road, SE of Frederick MD, International Personnel Protection, Inc. (Apr. 4, 2022).
5. Radio Evaluation for Frederick County, MD Fire and Rescue, Motorola Solutions, Inc. (Nov. 12, 2021).
6. Full-Scale Floor System Field and Laboratory Fire Experiments, Underwriters Lab. Inc., Kerber et. al., (Jan. 2012).
7. ATF Investigation #761010-21-0047 Ball Road - Frederick LODD, conducted by the Federal Bureau of Alcohol, Tobacco, Firearms, and Explosives
8. Autopsy Report [of Joshua Laird], Government of the District of Columbia Office of the Chief Medical Examiner (Oct. 27, 2021).
9. Evaluation of a Self-Contained-Breathing Apparatus Involved in a Fatality While Operating at a Structure Fire, TN-25250 Frederick County Fire and Rescue MD- Status Investigation Report, The National Personal Protective Technology Laboratory (NPPTL), (Oct. 2021).
10. National Institute of Occupational Safety and Health (NIOSH), Firefighter Fatality Investigation and Prevention Program.
11. NFPA 220, Standard on Types of Building Construction, National Fire Protection Association (2021).
12. NFPA 1001, Standard for Fire Fighter Professional Qualifications, National Fire Protection Association (2019).
13. NFPA 1021, Standard for Fire Fighter Professional Qualifications, National Fire Protection Association (2020).
14. NFPA 1026, Standard for Incident Management Personnel Professional Qualifications, National Fire Protection Association (2018).
15. NFPA 1403, Standard on Live Fire Training Evolutions, National Fire Protection Association (2018).
16. NFPA 1407, Standard for Training Fire Service Rapid Intervention Crew, National Fire Protection Association (2020).
17. NFPA 1500, Standard on Fire Department Occupational Safety, Health, and Wellness Program, National Fire Protection Association (2021).
18. NFPA 1561, Standard on Emergency Services Incident Management System and Command Safety, National Fire Protection Association (2020).
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20. NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, National Fire Protection Association (2020).
21. NFPA 1720, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments, National Fire Protection Association (2020).
22. NFPA 1901, Standard for Automotive Fire Apparatus, National Fire Protection Association (2016).
23. NIOSH Alert, Preventing Injuries and Deaths of Firefighters due to Truss System Failures, Centers for Disease Control (May 2005).
24. Officer Development Handbook, International Association of Fire Chiefs (Aug. 2010).
25. International Fire Service Training Association, Essentials of Firefighting, 7th Edition, pg. 454 (Feb. 2019).
26. UL's Fire Safety Research Institute (FSRI), Fire Dynamics Boot Camp, (last visited Apr. 6, 2022).[3]

[3] Available at https://fsri.org/programs/fire-dynamics-boot-camp (last visited Apr. 6, 2022).

27. Maryland Fire Service Health and Safety Consensus Standard, Maryland Occupational Safety and Health (MOSH), Department of Labor, Licensing and Regulation (Jan. 1, 2002).

It is essential to recognize that those interviewed provided solely their individual observations and accounting of the events of August 11, 2021. Most importantly, the ESRP applauds the members of DFRS for their honesty and transparency during the interview process; this report could not have been successful without their contributions.

5.3 Interviewees

Interviewees are identified by radio position and role on the scene. Interviewees labeled with "NR#" were personnel on the scene but did not have a radio. Interviewees labeled "#NOS" are personnel who were not on scene during the incident. The radio position designations in DFRS are as follows: A - Unit Officer; B - Unit Driver; C-F - Unit Firefighters.

Figure 5: Full List of interviewees

Radio Position	Position Title	Interview Date	Name *(Classified Version Only)*
E231A	Captain	8-29-21	
E231C	Firefighter	8-29-21	
A239A	Firefighter	8-29-21	
E331A	Lieutenant	8-29-21	
E152A	Lieutenant	8-29-21	
E153D	Volunteer Firefighter	8-29-21	
NR#2	Firefighter	8-29-21	
C3A	Volunteer Chief	8-29-21	
E251B	Firefighter	8-29-21	
TR23C	Technician	8-29-21	
RS3D	Firefighter	8-29-21	
TR4-1B	Technician	8-29-21	
TR4-1C	Firefighter	8-29-21	
E231B	Firefighter/PM	8-29-21	
BC901	Battalion Chief 901	8-29-21	
E251C	Firefighter	8-29-21	
E331B	Technician	8-29-21	
OPSAC900	Assistant Chief	8-30-21	

Radio Position	Position Title	Interview Date	Name *(Classified Version Only)*
A239B	Firefighter	8-30-21	
BC903	Battalion Chief 903	8-30-21	
Ops-DC900	Deputy Chief	8-30-21	
E152B	Technician	8-30-21	
C23-1	Volunteer Deputy Chief	8-30-21	
TR23A	Lieutenant	8-30-21	
VOLDC900	Deputy Chief/Director	8-31-21	
E331C	Firefighter	8-31-21	
EMS901	Lieutenant	8-31-21	
TR23B	Firefighter	8-31-21	
TR41A	Lieutenant	8-31-21	
T1B	Firefighter	8-31-21	
E153A	Volunteer Assistant Chief	8-31-21	
E152C	Technician	8-31-21	
RS3A	Captain	9-1-21	
T1A	Volunteer Firefighter	9-1-21	
E153B	Volunteer Firefighter	9-1-21	
C15-1	Volunteer Deputy Chief	9-1-21	
RS3C	Firefighter	9-1-21	
E152D	Volunteer Firefighter	9-1-21	
AdminDC900	Deputy Chief	9-1-21	
TR23B	Technician	9-1-21	
M31A	Fire Medic	9-1-21	
RS3B	Technician	9-1-21	
M23A	Fire Medic	9-1-21	
E153C	Firefighter	9-2-21	
E31C	Firefighter	9-2-21	

Radio Position	Position Title	Interview Date	Name *(Classified Version Only)*
E31D	Firefighter	9-2-21	
NR#1	Volunteer Deputy Chief Aide	9-2-21	
FMBAT900	Battalion Chief/Fire Marshal	9-2-21	
E31B	Technician	9-2-21	
TR23A	Firefighter	9-2-21	
Chief 23	Volunteer Chief	9-2-21	
E31A	Lieutenant	9-2-21	
NR#4	Volunteer Firefighter	9-2-21	
ET114A	Lieutenant	9-3-21	
T33B	Technician	9-4-21	
SCapt900	Captain	9-15-21	
NR#3	Firefighter/PM	9-15-21	
Chief 900	Chief/Director	9-21-21	
FM902	Lieutenant	9-28-21	
NOS#1	Assistant Chief	9-29-21	
N/A	Fred. County Medical Director	2-4-22	

5.4 Peer Review Process

Beginning in late May 2022, a select group of peer reviewers received a draft version of this report. They provided invaluable feedback that was tremendously helpful to the overall report quality. The External Safety Review Panel is highly appreciative of their efforts. The following individuals constituted the peer review group:

- John S. Butler, Fire Chief, Fairfax County Fire and Rescue Department, VA
- Gordon Graham, *Retired Commander*, California Highway Patrol
- Bino J. Harris, *Deputy Chief*, Prince George's County Fire Department, MD
- Dr. Lois James and Dr. Stephen James, Washington State University
- Daniel McMaster, *Deputy Chief*, City of Alexandria, VA Fire Department
- Michael Smith, *Battalion Chief*, Anne Arundel County Fire Department, MD

SECTION 6: HUMAN PERFORMANCE UNDER STRESS

Section 6 provides subject matter expertise from nationally renowned experts on how human beings perform under extreme levels of stress. This is the only section of this document that was NOT written by the ESRP – it was written by Jason Brezler from "Leadership Under Fire."

HUMANIZING THE NARRATIVE ABOUT RISK, DECISION-MAKING, AND FIREGROUND PERFORMANCE – THE LEADERSHIP UNDER FIRE TEAM[4]

On the afternoon of Wednesday, August 11th, 2021, members of the Frederick County Division of Fire and Rescue Services arrived at a working fire in a considerably large private dwelling at 9510 Ball Road. This fire was unique and novel in terms of occupancy. Working fires in private houses of 5,000 square feet are rare in Frederick County, Maryland, just as they are in many jurisdictions across the United States. The fire had catastrophic consequences in terms of human loss as it tragically claimed the life of Captain Josh Laird – a 21-year veteran of Frederick County Division of Fire and Rescue Services and a married father of two daughters.

Though unique and novel in terms of the occupancy size, members operating at the Ball Road fire navigated a considerable number of common variables to nearly every working fire, most notably those variables associated with the human factor. Every chief officer, company officer, and firefighter who operated at the Ball Road fire navigated pervasive uncertainty, ambiguity, time pressure, and operational stress.

Initial arriving units found it challenging to identify the location of the main body of fire. Additionally, these units also faced the difficult task of generating an accurate layout of the enormous private house. To the casual or inexperienced observer, these fundamental tasks appear relatively simple. Still, when combined with the heightened stress of working within a structural fire, these tasks are difficult to execute. Consequently, later arriving units were challenged to locate and remove a lifeless fire officer from the basement of the dwelling. As a result, every chief officer, fire officer, and firefighter who operated at the Ball Road fire was subject to heightened levels of physiological and emotional stress.

The American fire service is steadfast in its commitment to making sense of decisions, actions, and occurrences at line-of-duty death (LODD) fires to avert catastrophic loss in the future. Despite well-intended efforts to make sense of a series of events that result in a tragic outcome, the analyses and subsequent narrative commonly diminish and even neglect the persistent uncertainty and ambiguity that fire officers and firefighters navigate at fires. Findings and recommendations are widely the results of rampant hindsight bias and subsequently yield a linear and reverse engineered (right to left) logic line that implies alternate choices and actions would have produced a different and increasingly favorable outcome. Such summaries commonly reduce the complexity and friction that existed on the fireground concealing the fact that firefighters and fire officers routinely make rapid decisions with incomplete, limited, and erroneous information.

Conventional wisdom in the United States fire service would assert that Captain Laird sacrificed his life for an unoccupied house. Captain Laird did tragically lose his life because of his actions at the working structural fire. And the house was, in fact, unoccupied at the time which tactical firefighting operations commenced. However, the narrative that Captain Laird consciously chose tactical action in an unoccupied house at the expense of his life is a patently false summation of judgment.

Far too frequently, line-of-duty narratives insinuate that individuals, namely chief officers, and company officers, actively risked the lives of firefighters or fire officers for a property. This analysis is centered on

[4] The ESRP worked with Leadership Under Fire in the examination of stress on human performance in the fire service.

information and knowledge that was not readily available to decision-makers experiencing perceptual distortion. More concerningly, this sort of analysis dramatically alters the nature of the choices that fire officers and firefighters make while being impacted by moderate or, in some cases, extreme operational stress. Assertions based on information that officers and firefighters did not possess during tactical decisions and a utopian view of situational awareness marginalize the most critical resource at every working structural fire – the human resource.

American fire service leaders are unanimously committed to ensuring that each line-of-duty death fire is an occasion for reflection and revaluation of practices, procedures, and policy. Line-of-duty analyses, findings, and recommendations serve as a powerful learning mechanism – perhaps the most influential learning instruments in the American fire service. The question is, however, is the American fire service collectively learning the right lessons about human performance at fires?

Each LODD fire yields an array of lessons learned and a narrative that often conveys the central lesson or cause succinctly. A breakdown in tactical communication, failure to follow standard operating procedures, and a loss of situational awareness is commonly linked to line-of-duty death fires in a casual capacity. These elements are undoubtedly correlated to line-of-duty death fires. Remarkably, these elements are also positively correlated to non-LODD working fires where fire officers and firefighters perform commendable acts while functioning under considerable pressure. Unfortunately, the collective fire service has yet to make an equal investment in analyzing fires where members accepted considerable risk and fire service rewarded members for it without suffering death or serious injury.

We hypothesize that thorough scrutiny of fires with favorable outcomes would positively correlate with a breakdown in tactical communication, deviation from standard operating procedures, and a loss of situational awareness. Correlation does, however, not equate to causation. Existing fireground human behavior and performance data are largely limited to LODD fire analysis, even though LODD fires represent only a small number of structural fire responses in the United States. The American fire service will not possess predictive data that meaningfully highlights behavioral and performance trends, patterns, and causal relationships until it commits to thoroughly examining a wider body of evidence.

Firefighting is an inherently complex endeavor. Many leaders in today's fire service acknowledge the operational complexity generated by emerging external and environmental elements - lightweight building construction, modern contents and increased fuel loads, rapid-fire growth, and volatile battery and energy storage systems. It is the ESRP's position that the most significant source of complexity and friction on the fireground is, however, the human factor. Accordingly, American fire service leaders have historically sought to equip fire officers and firefighters with a solid understanding of building construction, particularly with an appreciation of how buildings respond to stress.

In addition, in recent years, American fire service leaders have sought to advance the fire service's understanding of fire behavior. Though uniquely complex and fallible, particularly under stress, our human capital remains our most critical resource at structural fires. It is thus imperative that the fire service pursue an understanding of human performance under pressure with conviction and fervor equal to that of building construction and fire behavior.

Understanding Human Performance Under Stress

Every member on every fireground is subject to operational stressors which impact the mind and body. These biological and psychological forces subsequently impact the quality of decision-making and physiological performance on the fireground. Historically, the word "stress" has had an overwhelmingly negative connotation in the American fire service. This negative connotation is erroneous and unfortunately narrow because stress applied to the mind and body, when regulated appropriately, is also responsible for generating optimal performance.

A moderate spike in stress hormones and neurochemicals enables tactical operators to perform optimally despite environmental, physical, and emotional obstacles. Conversely, heightened, and unregulated emotional and psychological stress negatively affects human performance, ranging from mild to catastrophic depending on many variables. The effects of heightened or unregulated stress often have a minor effect on performance and largely go unnoticed and uncorrected. These same negative effects commonly have a negligible impact on the overall operation, particularly at fires where incident commanders and units enjoy depth in staffing and functional redundancy.

The human factors science that offers insight into human performance under stress is built upon the foundation of early twentieth-century psychologists Robert Yerkes and John Dodson. These scholars were pioneers in understanding performance under stress, and their research established an empirical relationship between human performance and stress (arousal). Their seminal work is characterized by the Yerkes-Dodson Law, commonly referred to as the Inverted or Upside-Down U-curve.

The Yerkes-Dodson Law shows that under-arousal is linked to poor performance and may be associated with apathy, boredom, complacency, or even over-confidence. These sentiments can lead to a sub-optimal performance in fires and emergencies. The Yerkes-Dodson curve also suggests that increasing emotional and physiological stress levels elicit optimal performance when the mind and body capably regulate the increase in stress hormones, including epinephrine. Coaches and athletes in recent competitive endeavors refer to peak performance as "the optimal zone" or a "flow state." The benefit of emotional stress quickly transitions to a detriment as hyperarousal or too much stress inhibits performance when members are on the "backside of the curve." It is important to note that humans are far more sensitive to emotional stress than physical stress, particularly well-conditioned tactical athletes.

The Yerkes-Dodson Law and a century's worth of associated human factors research align with what fire officers and firefighters commonly experience firsthand at working structural fires. This includes those fires that end favorably and safely and those that end in death and/or serious injury to members. Hyper or unregulated arousal can lead to an assortment of factors that jeopardize tactical performance and compromise safety and survivability: impaired senses and communications, corrupt decision-making processes, and reduced situational awareness. Reduced situational awareness, more accurately termed perceptual distortion, is the chief consequence of elevated emotional stress, negatively impacting the body and mind's ability to function. Perceptual distortion can manifest as significantly degraded motor skills, poor acute memory, and the inability to track time and/or spatial orientation. Distortions in perception are often unrecognized and have been historically an underappreciated and misunderstood problem.

Human factors science substantiates that perceptual distortion is entirely normal and cannot be wholly reduced, even at fires and emergencies where highly trained and seasoned members experience moderate and healthy operational stress levels. While the range and consequences of perceptual distortion cannot be avoided, they can be reduced and managed with greater understanding and conditioning.

Optimizing Human Performance Under Pressure

Suppose human performance under stress is, in fact, the most significant determinant of success or failure at fires. In that case, the human element should receive primary consideration in training and professional development. Leaders in competitive sports and the U.S. military special operations community have proactively advanced realistic and responsible stress exposure and inoculation to adequately prepare their athletes and operators for the physiological and psychological challenges they will encounter. Likewise, contemporary tactical fire service training concepts must account for the realities associated with the human body's physiological response to operational stress.

Numerous mental conditioning skills and performance-enhancing techniques have been proven to enhance human performance under pressure in ultra-competitive and lethal environments by extending an individual's tolerance to stress, the peak region of the performance curve. These performance-enhancing

techniques and skills include but are not limited to goal setting, process-centric objectives, performance routines, self-talk, tactical breathing, visualization & tactical imagery, framing, and resetting. Many of these performance-enhancing techniques are relatively simple to perform under normal circumstances but become exponentially more challenging to perform in high-risk, uncertain, and dynamic environments. Performance-enhancing mental skills and arousal regulation require an increased level of self-awareness and, ultimately, a recognition that chief and company officers must capably manage their own emotions before they can effectively lead and manage others.

Equally important, fireground practices and procedures must realistically account for the physiological and cognitive constraints that result when fire officers and firefighters' function under heightened operational stress. Far too often, formal fireground procedures and policies demand too much of individuals experiencing heightened or unregulated stress, particularly when fire officers and firefighters are in severe distress in a lethal environment.

SECTION 7: INCIDENT INFORMATION

Section 7 provides the objective facts of what exactly transpired during the fire incident at Ball Road that claimed the life of Captain Laird.

7.1 Weather and Environmental Conditions

On August 11, 2021, the Ijamsville area experienced rainstorms throughout the day. At 15:46, one hour prior to the initial 911 call, the temperature in Frederick dropped from approximately seventy-nine (79) to seventy-three (73) degrees Fahrenheit. Precipitation started approximately between the time of 16:00 to 16:10, accumulating up to 0.16 inches, and wind conditions reached 25 mph.[5]

On August 11, a total of 63 lightning strikes were reported within a five-mile radius of 9510 Ball Road.[6] An exterior Nest security camera at the residence recorded an apparent lightning strike at 1600 hours on the day of the fire.[7] The Nest camera featured a large flash with concurrent thunder; immediately afterwards, small pieces of debris could be heard falling and hitting the roof and siding.[8] At approximately 16:14 the recording stopped due to power or internet services failure.[9]

Figure 6: Visual representation of the lightning strikes in and around the area of the Ball Road structure.

[5] These weather conditions were reported in interviews with responding personnel and supported by weather history data obtained through Weather Underground, relying upon data from the Hagerstown Maryland Regional Airport Weather Station located roughly 35 miles North of the incident location. Wonderground, *Hagerstown MD, Weather History*, https://www.wunderground.com/history/daily/us/md/frederick/KHGR/date/2021-8-11 (last visited Jan. 31, 2022).

[6] Wundeground, *STRIKEnet Report*, https://www.wunderground.com/wundermap?lat=39.66&lon=-77.7 (last visited Jan 31, 2022).

[7] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 45, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[8] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 45, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[9] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 45, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

7.2 Building Geometry and Construction

The residence at 9510 Ball Road, Ijamsville, Maryland, is a 5375 sq. ft., two-story, colonial-style home with an unfinished basement. It was built in 2003 on an 11.86-acre lot in a rural neighborhood. The property has a 1,435-foot driveway that angles uphill, with an elevation gain of 60' and approximately 16% gradient, passing in front of Side Alpha.

The home is a uniquely shaped, mansion-style, single-family dwelling. For purposes of this report, the front door is located on Side Alpha. The residence has a main square structure with three abutments, one running along Side Delta, the second running along Side Bravo, and the third protruding diagonally out from the Bravo-Charlie corner. A patio is attached to the back of the home on Side Charlie.

The roof is of typical truss construction covered with asphalt shingles. There are several entrances to the home, the front door on Side Alpha, through the garage on Side Bravo, several french patio doors on Side Charlie, and an exterior staircase to the basement level on Side Delta. Additionally, several large windows throughout the structure may have impacted ventilation and contributed to the rapidly deteriorating and extreme fire conditions witnessed.

Figure 7: Aerial overview of structure.

Figure 8: Aerial overview of structure.

Figure 9: Side Bravo Garage & Family Room Bump-out.

Figure 10: Side Charlie of the structure.

Figure 11: Side Delta with basement entrance.

Figure 12: View from Ball Road depicting the 16% elevation change crews had to transverse.

Like many large estate dwellings, this structure had an open floor plan design, built of lightweight construction using engineered structural elements, which contributed to the fire load and early collapse.[10] The structure is an unprotected wood frame construction. The first floor and exterior walls were sheathed in an External Insulation Finishing System (EIFS) and Manufactured Stone Veneer (MSV).[11] The EIFS was simulated stucco and was typical of a one-coat system with fiberglass mesh installed over OSB panels and wooden wall studs.[12] The MSV was a simulated stone typical of individual pre-cast concrete stones installed over OSB panels and wooden wall studs.[13]

[10] *NFPA 1700, Guide for Structural Fire Fighting*, National Fire Protection Association (2021).

[11] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 8, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[12] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 8, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[13] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 8, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

The exposed foundation (basement) walls were poured concrete and the floor was poured concrete slab.[14] The basement ceiling was the unenclosed first-floor assembly consisting of exposed wood trusses, Glulam wood beams, and OSB floor decking.[15] The utility system components ran through the exposed floor-ceiling assembly, including electrical branch circuit wiring, LPG system corrugated stainless steel tubing (CSST), audio-visual coaxial cable, HVAC, and HVAC clothes dryer ducts, water pipes, sewer pipes, and alarm system wiring.[16] The ceiling height was seven feet-ten inches (7' -10") Off Finished Floor (O.F.F.) to the underside of the bottom chord of the parallel chord trusses.[17] The ceiling height to the underside of the exposed OSB floor deck was eight feet-ten inches (8'-10") O.F.F.[18]

Figure 13: View of basement pre-fire from the Delta/Alpha Corner.

The interior finish on the basement perimeter walls consisted of plastic-faced fiberglass insulation attached to the poured concrete foundation walls.[19] The basement interior walls consisted of gypsum board over wood studs or open (unfinished) wood studs.[20] Except for the Side Delta exterior doors, there were no windows or ventilation openings to the exterior from the basement.[21]

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[14] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 8-9, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[15] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 9, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[16] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 9, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[17] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 9, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[18] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 9, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[19] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 9, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[20] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 9, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[21] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 9, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

At the approximate center of the basement, just south of the interior basement stairs, was a wood-framed dividing wall that extended from Side Alpha to Side Charlie.[22] The wall was finished with gypsum board on both sides.[23] The dividing wall had two doors, one on Side Alpha and the other on Side Charlie.[24] Both doors were closed at the time of the event.[25] This dividing wall was built after the above photo was taken.

Two construction factors greatly impacted this incident. First, the house's first floor was finished with 12" by 12" ceramic tile, which was laid upon a cement board on top of Oriented Strand Board sheathing. These materials combined were extremely heavy and posed a substantial dead load. An approximately three to four feet wide section of this flooring completely collapsed into the basement, where it is suspected that Captain Laird fell through the floor into the basement.[26] The remainder of the flooring was partially suspended on the first floor.[27]

Second, the unfinished basement was constructed with parallel chord trusses and a concrete slab floor. Large houses, such as the one in this incident, have large open areas in the structure made with long spans using lightweight floor trusses. The longer the span the higher the risk of catastrophic collapse.[28] Unprotected parallel chord truss constructed basements pose serious safety concerns in fire conditions. Underwriters Laboratories, a global safety certification company, tested four types of flooring systems evaluating collapse in fire conditions. In its report, *Full-Scale Floor System Field and Laboratory Fire Experiments* found that of the four flooring systems tested for collapse in fire conditions, parallel chord truss flooring collapsed in the shortest amount of time at about 6:08 minutes and began deflecting shortly after the three-minute mark.[29] At the Ball Road incident, the combination of the first-floor tile flooring and the unprotected parallel chord truss basement construction created conditions particularly conducive for a rapid floor collapse.

The home was built with a gas-piping system, Corrugated Stainless Steel Tubing ("CSST"), providing liquefied petroleum gas to the stove and fireplace both located in the Bravo quadrant of the structure. The remaining utilities in the residence were electric.

Additionally, the residence was not protected with an automatic fire sprinkler system; it had 110 VAC with battery back-up interconnected residential smoke detectors.[30] It is unknown if the smoke detectors were operational at the time of the fire.[31] An alarm control panel (ACP) was present on the basement Side Delta

[22] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 27, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[23] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 27, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[24] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 27, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[25] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 27, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[26] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 34, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[27] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 34, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[28] *NFPA 1700, Guide for Structural Fire Fighting*, National Fire Protection Association (2021).

[29] *Full-Scale Floor System Field and Laboratory Fire Experiments*, Underwriters Lab. Inc., Kerber et. al., (Jan. 2012). Collapse times varied with each flooring system with dimensional lumber giving the greatest amount of time before collapse at 11:09 minutes to the quickest time of collapse of the parallel chord truss at 6:08. On average, engineered flooring systems collapsed at around 7 minutes. It was noted that the parallel chord truss system began to deflect at the 3:17 mark.

[30] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 10, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

[31] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 10, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

wall, but the owner advised investigators that the alarm system was not functioning at the time of the fire.[32] There were no automatically transmitted fire or burglar alarm systems received through 9-1-1 at the time of the fire.

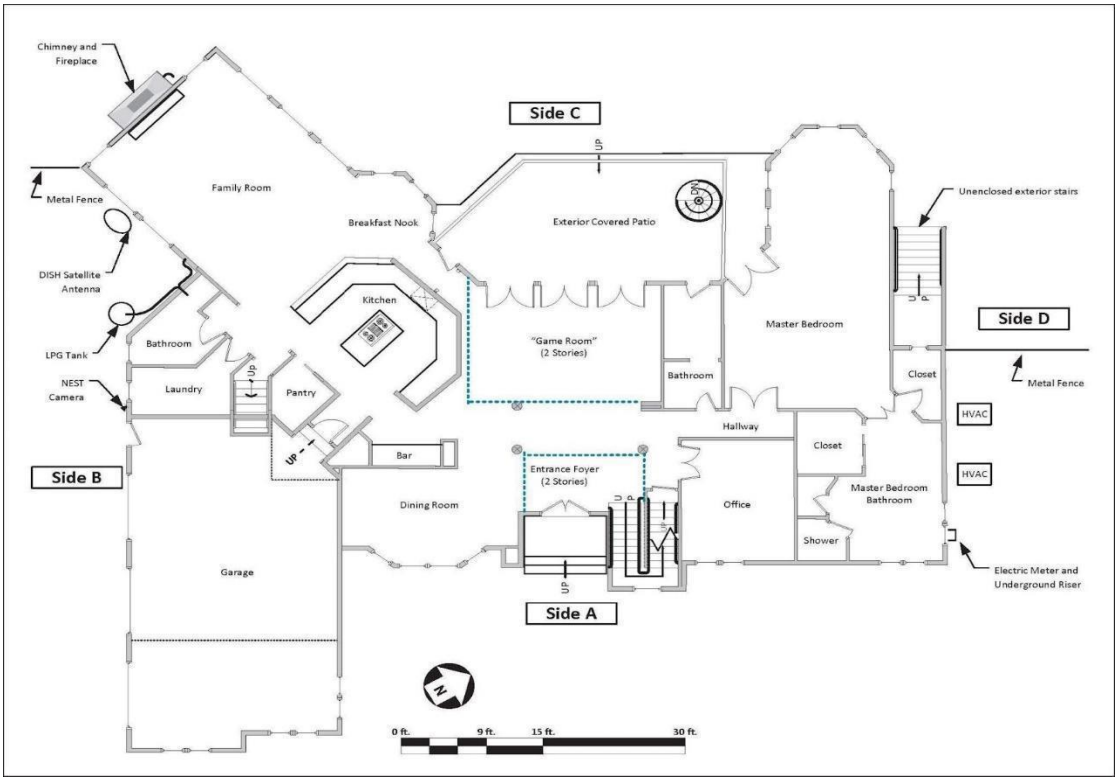


Figure 14: Diagram of first floor interior.

Figure 15: View of basement pre-fire from the Bravo/Charlie Corner.

[32] *ATF Investigation #761010-21-0047, 9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis*, at p. 10, Bureau of Alcohol, Tobacco, Firearms & Explosives (Mar. 31, 2022).

Figure 16: View of basement from Side Bravo. The tile section with the arrow is the area where the collapse occurred sending Captain Laird into the basement.

7.3 Origin and Cause of Fire

The origin and cause investigation conducted by the Bureau of Alcohol, Tobacco, and Firearms, Frederick County Office of the Fire Marshal, Frederick County Sheriff's Office, Howard County Office of the Fire Marshal, and Fire Arson Investigation Consultants Inc. determined the fire to be a result of a lightning strike induced failures within the CSST. The item first ignited was determined to be fugitive LPG escaping from at least one of the CSST perforations, followed by nearby structural framing components in the unfinished basement.

The United States Fire Administration describes the safety of CSST and its potential to be a contributing factor in the ignition of fire as follows:

As with all approved gas-piping systems, CSST is safe when properly installed. When improperly bonded or grounded, a power surge from a lightning strike near a home with CSST gas lines can puncture the membrane of the CSST. The escaping gas can then be ignited either by the electrical discharge of the lightning or another heat source in the immediate vicinity.[33]

The classification of the fire was determined to be natural. Natural fire causes involve fires caused without direct human intervention or action, such as fires resulting from lightning, earthquake, wind, and flood. The collapse of the first-floor family room and corresponding fire damage was consistent with a fire originating in the basement and extending upwards. The fire was observed venting from the first-floor family room windows in the Bravo quadrant upon arrival.

Figure 17: Approximate flame that would have come from the CSST perforation.

[33] https://www.usfa.fema.gov/nfirs/coding-help/nfirsgrams/nfirsgram-yellow-csst.html

7.4 Fire Load[34]

According to the ATF Report, there was no significant fire load that contributed to the spread of the fire in this incident. The contents of the structure were consistent with that of an occupied residence.

[34] Contents of a confined structure that are considered combustible.

7.5 Fire Evolution and Spread

The source of the Ball Road fire was a lightning-induced failure within the Corrugated Stainless-Steel Tubing (CSST) gas line, running in the void space between the parallel chord trusses supporting the first floor. The fire spread laterally to nearby parallel chord trusses and the subfloor components below the family room in the bravo quadrant of the structure. The CSST gas line ran from the 120-gallon LPG tank located on Side Bravo and ran diagonally across the family room to the fireplace with a "T" connection supplying the cooktop in the kitchen.

Based on the findings of the Bureau of Alcohol, Tobacco Firearms & Explosives, ATF Investigation #761010-21-0047 *9510 Ball Road - Frederick LODD, ROI #16 - Report of Origin & Cause Analysis,* "based on the fire scene examination, fire patterns, fire dynamics, physical evidence and witness statements, the area of origin was determined to be the B/C quadrant of the unfinished basement. More specifically, the area below the first-floor family room." Furthermore, the report found that "the ignition sequence of the fire to be a result of a lightning strike which induced the failure of the residential CSST system causing the ignition of fugitive gas escaping from at least one (1) of the four (4) perforations formed by arc-melting along the Fireplace CSST service run. The flaming fugitive gas then ignited adjacent combustibles, primarily wood structural framing, within the area of origin."

The basement was primarily used for storage, and its contents did not overly contribute to the fire development and spread. The basement was divided in the center by a 2" x 4" studded gypsum board-covered wall that extended from Size Alpha to Side Charlie of the structure. This wall extended from the floor to the bottom chord of the parallel chord truss and contained two closed doors. Minimal fire spread occurred beyond this dividing wall, but the damage was consistent with heat and smoke at the ceiling components, utilities, and wall insulation. In addition, there were two entrances to the basement that remained closed until the rescue effort commenced; an interior stairwell located in the Alpha quadrant of the structure and a below-grade exterior double metal door on Side Delta. Both these entrances entered the basement area on the minimally affected side of the basement dividing wall.

The windowless basement, the 2" x 4" studded dividing wall, and the closed doorways aided in slowing the fire's spread. Conversely, the lack of a basement ceiling assembly and the lack of sprinklers contributed to the fire progression. Due to the remote location of the house and an unmonitored fire alarm, the fire went undetected until it extended into the first floor. The large square footage of the structure likely contained the smoke for an extended period before becoming visible on the exterior. The initial 9-1-1 call was answered forty-six minutes after lightning struck the home. The 9-1-1 caller initially saw what appeared to be "steam or smoke" coming from the roof area above the garage doors. As the caller was attempting to locate the home's address and advise the 9-1-1 call taker, fire became visible.

The fire's self-venting coupled with wind gusts up to 25 miles per hour and the house sitting on top of a hill with no windbreak, along with the large windows that failed during the fire, contributed to the fire's spread. The first and second-floor areas contained damage consistent with heat and smoke progression throughout the structure. Personnel on scene observed and reported an increase in fire conditions after the landing of aviation on Side Charlie of the structure. However, pictures before landing and after takeoff do not indicate a significant change in fire conditions in the structure.

7.6 Incident Narrative

Figure 18: Drone overview from Side Alpha on August 12, 2021

Figure 19: Drone overview from Side Charlie on August 12, 2021

On August 11, 2021, at 16:46, a citizen standing in the driveway of 9401 Ball Road called 911, reporting a fire at a residence across the street at 9530 Ball Road. At 16:48, Frederick County Emergency Communications Center (ECC) dispatched a pre-alert for Box 23-11. While returning to their quarters from a previous run, traveling on Ijamsville Road, the crew of E251 noticed the Ball Road incident pending on the MDT and headed towards that location.

At 16:49, Frederick County Communications Center dispatched Box 23-11 for a reported house fire at 9530 Ball Road and directed units to respond and operate on Channel 9-Delta. The Box assignment in dispatch order was as follows:

Unit	Career Personnel	Volunteer Personnel
Engine 231 (E231)	3	0
Engine 251 (E251)	3	0
Engine 152 (E152)	3	1
Engine 153 (E153)	0	4
Engine 331 (E331)	3	0
Rescue Squad 3 (RS3)	4	0
Truck 23 (TR23)	3	0
Truck 41 (TR41)	3	0
Tanker 23 (T23)	0	2
Tanker 33 (T33)	1	0
Tanker 1 (T1)	0	2
Ambulance 239 (A239)	3	0
Battalion Chief 901 (BC901)	1	0
Safety 900 (SFT 901)	1	0

Figure 20: Box Assignment Dispatch Table

As the crew from E251 approached the Ball Road address, they observed low-lying smoke conditions coming across Ball Road. E251 drove slightly past the driveway to the Ball Road address and had to perform a quick three-point turn in a driveway across the street from the structure. Simultaneously, Frederick County Communications updated the incident address to 9510 Ball Road. After completing the turnaround, E251 promptly located the correct driveway and proceeded up the long driveway towards the house. E251 came to the first split in the driveway that went left to 9510 and stopped the engine to lay a supply line. The Driver (E251B) got out and dropped a 4" large diameter hose (LDH) before proceeding up the driveway towards the house. Engine 251's officer (E251A) communicated that E251 was on the scene and had laid a supply line halfway up the lane.

At 16:51, Engine 251A directed his driver to position E251 on the Alpha/Bravo Corner of the house just before the garage. Smoke conditions worsened on the Side Bravo exterior, and the crew could no longer see in front of them. Engine 251's officer transmitted the following Incident On-Scene Report (IOSR) "On the scene, large 3 ½, 2 ½, single-story family, we do have a working fire, go ahead and start RID (Rapid Intervention Dispatch) and probably a tanker task force."

Observing that most of the fire appeared in the family room on Side Bravo, E251C deployed the officer's side 200' 1 ¾" crosslay to Side Bravo. Due to exterior smoke conditions, E251C and E251A donned their facepieces and began utilizing their SCBAs. E251's crew advanced the line to Side Bravo and began to apply their stream interior through a set of picture windows on the first floor, just to the right of the chimney into the family room. Meanwhile, E251B secured the supply line to his pump panel, assisted with stretching E251's line, charged it, then began laddering Side Alpha.

At 16:52, Frederick Communication dispatched the following units on the Rapid Intervention Dispatch:

1. Engine 31 (E31)
2. Truck 50 (TR50)
3. Ambulance 259 (A259)
4. Medic 23 (M23)
5. Battalion Chief 903 (BC903)

At 16:52, TR23 arrived on-scene. TR23's officer (TR23A) walked from Side Alpha towards Side Delta to get a Side Charlie view since he had not heard E251A provide a 360 report. As he was doing this, TR23 tiller firefighter (TR23C) also began laddering the residence. To get to Side Charlie, TR23A walked around the outside of the fence, which prevented him from entering the yard on Side Delta; from his position on the outside of the fence, he could not get a good view of Side Charlie or Side Delta.

While enroute BC903 transmitted to BC901, "I think 9301 is showing a pond. I didn't hear your primary water source; I don't think anyone called it out yet." BC901 contacted E231A about the primary water source, to which E231A responded, "Yeah, 9301 is worth it. Two large ponds, one might have access issues; if not, secondary can be a hydrant at Tabler and Ball Rd."

As E231 was approaching the scene, E231A contacted E251B to verify if they (E231) would have enough supply line to pick up the split-lay from the entrance to the driveway at Ball Rd. E251B confirmed that they had laid 500 feet, and E231 would be able to complete the split.

At 16:53, Frederick Communications dispatched the following as part of the Tanker Task Force:

1. Montgomery County Tanker 713
2. Tanker 17 (T17)
3. Engine Tanker 114 (ET114)
4. Carroll County Tanker 1
5. Engine Tanker 204 (ET204)
6. Engine 311 (E311)

E231 arrived and laid out 800' of 4" LDH to complete the split lay from Ball Road up to where E251 dropped their line. As E231A and 231C began making their way to the Command Post on Side Alpha, E231B secured E251's supply line to his discharge and pushed his tank water up to Engine 251. Most of that water was consumed by filling the 500' of LDH laid by E251.

At 16:55, Volunteer Chief 23 arrived, drove around the yard on Side Bravo to gain a visual and ultimately positioning on Side Alpha, establishing Command from his vehicle. Several seconds later, Operations Assistant Chief 900 (OPSAC900) and the Fire Chief (Chief 900) arrived on location. OPSAC900 asked Chief 23 if he wanted him to come to the Command Post or to get dressed-out in his PPE in preparation to head inside. Under direction from Chief 23, OPSAC900 donned his PPE and went to Side Charlie to check on

E251's status and better view the fire conditions. Next, Chief 900 got into the Command Post and assisted the Incident Commander with tracking resources on the tactical worksheet.

From his position outside the fence on the Side Delta, at 16:56, TR23A made the following transmission "360 of the residence showing a single floor in the back, heavy fire on Side Charlie." Just 17 seconds later, E251A communicated, “E251 to Command, I have not been able to complete the 360.”

On his way to Side Charlie, OPSAC900 deployed an additional crosslay from E251 and stretched it by himself to Side Charlie. As OPSAC900 reached Side Charlie, he told E251A he was going to advance his line to knock down the exterior fire running side Charlie.

E331 was dispatched as the fifth due Engine and was responsible for fill-site operations. However, E331 ended up arriving third. E331 asked the IC whether he wanted E331 to stay as the fifth due Engine or take the third due position. The IC told E331 to take the third due Engine position. In doing so, the IC failed to announce an order change for the remaining two Engines not yet on-scene and failed to reassign one of those Engines to the fill-site. E331B began attaching a Siamese appliance to E231’s supply line, while the crew started up the driveway.

T33 arrived on location and, as the first due tanker, had the important responsibility of becoming the nurse tanker. T33 Driver did not think he could make it up the driveway since E231 was already up there and did not feel comfortable driving through the front yard, as that would require taking a fully loaded tanker off the hard surface. T33 then positioned on Ball Road in front of E331 and began off-loading his folding tanks per policy.

With both hoselines working on Side Charlie, OPSAC900 and E251A had a very brief conversation about fire extension on the structure's interior, specifically in the Charlie and Delta quadrant. After the discussion, E251A proceeded to the porch on Side Charlie.

At 17:00, OPSAC900 called Command with the following message, "Myself and E251 have two lines in service, trying to knock the bulk of the fire. [The] next line needs to go to the inside and hold the interior."

After making that transmission, OPSAC900 looked up and observed Engine 251A standing inside of the structure, in the breakfast nook area adjacent to the family room and kitchen, just inside the bay windows.

OPSAC900 was unaware of where E251A entered the structure. When he made eye contact with Engine 251A, E251A asked OPSAC900 to hand him his hoseline. OPSAC900 responded, "we’re not going inside yet because we don't have good water."

After losing water for a brief period, OAC-900 walked his hoseline back a few feet to check for kinks. When he returned, he no longer saw E251A standing inside the structure and assumed he had walked back outside.

At this point in the incident, TR23A forced the front door to prepare for the next hoseline to enter Side Alpha. He forced the front door and began to make entry into the house to do a quick recon. TR23A noticed a rush of air coming in behind him, so he returned to the front door and secured it while E231A and E231C worked on stretching a third line from E251 to the front door. E152A, E152C, and E152D had arrived on-scene and had just made their way up to the Command Post. E152A said to Chief 900 that since both lines are working on Side Charlie, he (E152A) could advance the next hoseline into Side Alpha, to which Chief 900 approved.

At 17:00:52, E251A made the following transmission on 9 Delta: “Mayday, Mayday, Mayday Captain Laird Engine 251, I’ve fallen through the floor in the fire room.” Sixteen seconds later, at 17:01:08, Command stated, "Command copies the Mayday, E231, E231's officer, can you copy?" E231A responded, "Yeah, can you confirm if he fell into the basement or if he is just stuck in the first floor." OPSAC900 responded, "hey,

he fell from the, uh, bulk of the fire room here on the Charlie Side into the basement. He was just in the window and fell through."

At 17:01:29, E251A transmitted, “I am in the basement.” The Incident Commander requested the dispatch of the Fire Task Force.

As E231, E152, and TR23 masked up on the front steps; they agreed that they would split up and try to locate E251A and locate the interior basement steps. E231A directed E231C to drop the attack hoseline and get the RIT pack.

OPSAC900 began flowing water towards the floor through the bay window from Side Charlie while E251C also flowed water towards the floor in the family room from Side Bravo. Both OPSAC900 and E251C observed an increase in fire coming up from the basement. OPSAC900 radioed Command and said, "I've got the back-up line number 2 crosslay off 251. I’m holding the fire in check where he fell through the floor, but I’m running out of water and need to be the primary line."

Twelve seconds later, at 17:01:41, E251A communicated, "I had to evacuate from where I was. I was burning up." E251A, facing high heat, evacuated from the fire room, then manually activated his PASS device. E231, E152, and TR23 were operating on the first floor, directly above the fire floor, actively working to locate Captain Laird. Meanwhile, E231C was knocked to the ground by other personnel entering the structure and assisting in the rescue effort and become separated from E231A, who was searching for basement stairs. After encountering a large volume of fire and heat in the kitchen area and having no charged hoseline on the first floor, TR23C exited the structure and returned with the uncharged 300’ 1 ¾” attack hoseline that was left near the front door by E231C. E152D, who had become separated from his crew, attached himself to TR23C and entered the structure with him. Neither TR23A nor E152A was aware that this occurred.

Volunteer Chief 15-1 arrived on location and, after a quick stop at the Command Post, was directed by Chief 900 to go around back and help. After getting around back, Chief 15-1 communicated to Command, "Alright, we need water in this line right now (referring to the hoseline that OPSAC900 was operating), no one has gotten to this guy, and he is still in the basement.” Command responded, “Ok do you have a visual on him now?" Chief 15-1 said, "I do not; who is it?" Command responded, “Lieutenant Laird E251, Ops Assistant Chief 900, should be on the back and has a protection line on him right now." Chief 15-1 said, "Alright, I'm with him right now, and he has a line running. E251 officer, can you hear me?" At 17:03:53, E251A responded, “I can only hear your radio. I had to remove myself from the fire room; I was burning up."

At 17:04:07, Engine 251A advised Command, "[p]robably the best thing you could do is drop a ladder down in this hole and put the fire out, and I'll walk out."

Several seconds later, Chief 15-1 called Command, "[w]e've got a line in the building now, and they are going to try to get to the basement and get him out." Chief 900 said, "I've got a roof ladder coming around to the rear." OPSAC900 then called Command and said, "[I] have verbal contact with the firefighter. He did fall through the floor. A company from 15 and E231 have a line on the interior trying to keep the fire in check and make access to him. Give me the next company to standby with RIT equipment for the extraction on the Charlie Side."

At 17:05, approximately four minutes after the Mayday, the Emergency Communications Center activated the Mayday alert tone. They requested all units not involved with the Mayday to switch radio channels to 9 India. Immediately Chief 900 responded, "That's negative, units do not change channels; everyone remain on 9 Delta. Frederick, I've got it."

E31, equipped with ladders and an RIT bag, headed to the bay window on Side Charlie to assist in extracting E251A. E31, at the direction of OPSAC900, attempted to place a 16' roof ladder through the bay window down into the basement but faced difficulties seating the heel of the ladder on the basement floor. Once E31A got the ladder seated as much as possible, E152A tried to descend the ladder into the basement. However, as he began, the small section of flooring between the ladder and the Side Charlie exterior wall began to collapse, causing the heel of the ladder to begin sliding.

After being frustrated by not finding the interior stairs to the basement, E231A exited the structure from Side Charlie toward side Delta to find another way into the basement. As soon as he got to the Charlie/Delta corner, he immediately saw the exterior basement steps and notified OPSAC900 of the same.
At 17:07:24, OPSAC900 notified Command, "I'll take Charlie Division. Right now, we've got the crews assembling. We still have verbal contact; we're unable to make access via the fire floor to get down there. I've just sent the Rescue Squad and the Captain from 231 to another basement entrance to see if they can traverse from the other side of the house to make access, ok?"

Twenty seconds later, E251A made an inaudible transmission; however, his PASS alarm could be heard in the background. During this time, it is believed that E251A had moved from the basement area directly underneath where he fell through the floor near Side Charlie to escape the high heat. Unaware of the exact path he traveled, E251A made his way most likely through a narrow framed-in hallway to an open space on the Alpha side of the structure in Quadrant Alpha where he would eventually be located. The hallway that he most likely took ran from Side Alpha to Side Charlie, dividing the basement in two.

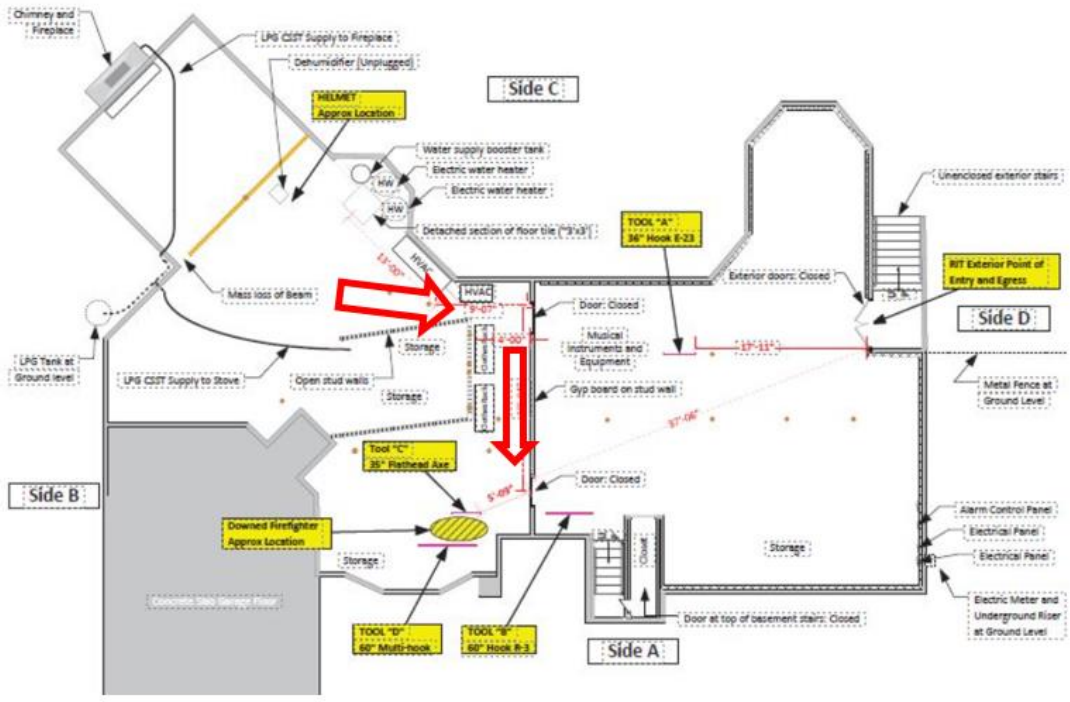


Figure 21: Believed to be the pathway that E251A took to escape the fire.

OPSAC900 responded to E251A's inaudible transmission, "Charlie Division to Captain Laird Mayday, can you copy? Mistakenly, Chief 900 responded, "I did; you are now Charlie Division, you have sufficient companies, and you are working on an alternate entrance to the basement. OPSAC900 responded, "Yeah, Ops AC 900 to Captain Laird E251A, come in."

At 17:08:09, E251A responded, "[g]o ahead." OPSAC900 responded, "[w]hat quadrant are you in?" E251A responded, "I think I'm in the C corner; they hit the fire, now I'm stuck, and I'm burning up." OPSAC900 responded, "[o]k I copy. I'm getting ready to send Battalion Chief Healy in the alternate basement door with Rescue Squad 3. He'll be the RIT Group Supervisor. Rescue Squad 3, Chief Healy is coming to you. He is advising he fell through in the Charlie quadrant, which should have been the floor just inside the door where we were operating ok Rescue Squad 3?"

OPSAC900 directed E231A, RS3's crew, and BC903 to the exterior basement door on Side Delta. In preparation for entry to the basement, a 200' 1 ¾" hoseline was stretched from T1 positioned on Side Bravo to the exterior basement steps on Side Delta.

Between 17:08:24 and 17:08:47, E251A attempted to transmit three separate times. The radio system rejected the first two attempts, and the third was unintelligible.

Eight and a half minutes after declaring his Mayday, Captain Laird made his final successful radio transmission at 17:09:33, saying, "[h]ey guys, tell my family I love them." At this time, crews were actively preparing for entry into the basement. Between this transmission and 17:10:21, there were three more attempts to transmit a message by E251A, but the radio system rejected all his transmissions.

Within a couple of minutes from E251A making his final transmission, the exterior basement doors were forced, and RS3B and RS3D, along with E231A, entered the basement accompanied by personnel from E31 with a charged hoseline. As RS3B, RS3D and E231A entered from Side Delta, they began moving towards Side Bravo in the direction of where they believed E251A had fallen through the floor. They encountered thick black and brown smoke from floor to ceiling as they entered. The crew from E31 and RS3A entered behind RS3B, RS3D, and E231A. While two members advanced the hoseline, E31A and E31D arbitrarily dropped off the hoseline and began performing a search independently for E251A.

At 17:11, OPSAC900 called Command, "[s]moke conditions are worsening on the Charlie Side, we have thick brown turbulent smoke running the roofline. I recommend you put the master stream up to prepare for once we make the rescue. It looks like we are losing the attic and upper floor.

Seeing conditions worsening, Chief 900 wanted to check on the units he believed were operating on the first floor. Chief 900 called E231A on the radio. OPSAC900 responded, "Chief, Captain Bennett redeployed with Rescue Squad 3 to the basement as part of the RIT. We're not sure where his firefighter went, think he was holding the fire on the interior of the fire floor." Everyone was unaware that E231C had run low on air and exited the building several minutes before.

Several feet into the basement, RS3B, RS3D, and E231A heard Captain Laird's PASS alarm going off and quickly moved toward the sound. RS3B and RS3D encountered a wall in the exterior portion of the hallway that it is believed E251A had crawled down as he escaped from the fire. The crew quickly located a door and made entry. The smoke layer was approximately 12" off the floor, allowing members to see below the smoke layer, and they could see E251A lying there. RS3B and RS3D moved through the doorway, throwing boxes out of the way to make a path to E251A. E251A did not have his helmet or facepiece on; E231A radioed to Command, "E231A to Command, I'm with Captain off Rescue Squad 3 and the firefighter; we found him currently unconscious. We're heading your way. We need EMS to the Delta Side." In response, Command immediately requested aviation.

When RS3B and RS3D entered the room, they observed heavy smoke from the ceiling to about 12” off the ground and moderate heat. Shortly after, smoke conditions would worsen, creating zero visibility, and heat conditions escalate.

At 17:14, Chief 900 called OPSAC900 on the radio, "[c]an you confirm when the extraction is complete, so I can evac and complete a PAR?" OPSAC900 responded, "[s]orry, I have a lot of manpower outside, but there may be people still on the first floor. You're going to have to verify that because I'm over here overseeing the extraction. “After making a quick attempt at deploying E251A's Drag Rescue Device (DRD) with no success, RS3D attempted to do an SCBA waist strap conversion to assist with extraction. As conditions began rapidly deteriorating, they wisely moved to a rapid brute force removal. As they began extracting E251A, they were met by E231A, who was holding his position to help guide the crew from RS3 back towards the exit. With the added assistance from E31, E251A was removed from the basement, where crews quickly removed his gear, and they started CPR and other critical life-saving measures.

At 17:16, Chief 900 made the following transmission: “Command to Frederick, sound the evacuation tone.” Chief 900 would spend the next several minutes attempting to get a complete PAR check completed due to the many violations of the crew integrity policy. The operations would eventually transition to a defensive operation.

Most personnel from the first alarm assignment were sent to rehab and were replaced by second alarm units. Those crews were then transported back to FD Headquarters to prepare and submit statements.

7.7 Water Supply Operations and Apparatus Placement

At 16:51, Engine 251 with 750 gallons of tank water pulled into the common driveway leading to 9510 Ball Road. Engine 251 was unable to see where the driveway that leads to the residence began due to the terrain. When Engine 251 crests the hill, they could see where the driveway turns to the left toward the residence, and the decision was made to do a split lay from there, "We're on the scene laying out from halfway back the lane."

Engine 251's driver got out, wrapped the post with his supply line not leaving any appliances, got back in, and laid out approximately 500 feet to the residence. While providing his initial on-scene radio report, E251A requested a "RID" (rapid intervention dispatch: one engine, one special service, one ambulance, one Battalion Chief, and the DFRS Safety Officer) and a "tanker task force" (five tankers and one engine). The estimated fire flow before the Mayday was 300-400 gallons per minute (GPM) based upon the deployment of two 1 ¾" hose lines.

Key		
	Hose Description	Deployed by
1	200ft 1 ¾" Crosslay From E251	E251C
2	200ft 1 ¾" Crosslay from E251	Ops AC 900
3	300ft 1 ¾" from E251	E231/E152
4	2 ½" From E251	E331
5	200ft 1 ¾" from Tanker 1	E153
6	200ft 1 ¾" Bumper	E251B
7	Approx 600ft 4" LDH	E251B (Layout)
8	Approx. 150ft 4" LDH	T1B

Figure 22: Hoseline deployment at fire scene.

Engine 231, with 750 gallons of tank water, arrives on location and confirms with Engine 251B that they will have enough supply line to complete the split lay. E231B stops the engine at the end of the common driveway, disconnects the LDH from the humat, wraps the LDH around the mailboxes, and proceeds up the driveway. Engine 231B decided not to get the Siamese from the compartment because it was not readily available, and they did not want to delay getting water to Engine 251. E231B began to make the left-hand turn at the split in the driveway when E231A advised E231B to stop the engine.

E231B did not immediately notice the green LDH that Engine 251 dropped at the split due to the color of the hose matching the lawn. E231B stopped the engine, activated the parking brake, placed the engine in pump gear and the crew dismounted the engine. E231B connected the green LDH from E251 to his officer side discharge, unrolled his blue short shot[35] of LDH, and connected it to the Officer side intake. This short shot was initially unconnected but was eventually connected to E153. At 16:58, E231B made the following transmission "251 are you ready for water?" E251B responded, "That's correct, send it." E231B immediately sent his tank water to E251.

[35] Section of LDH that is shorter than 50 feet used to make connections where 50-100 feet would be excessive.

Figure 23: E231 on scene view before laying LDH.

At 16:56, E331 arrived on the scene, positioned west of the driveway, and Command advised them to take the third due engine responsibilities. The crew assisted the driver with removing the hard-suction hose from the top of the apparatus before they proceeded up the driveway. At 16:58, Tanker 33 arrived on the scene and was positioned behind E331. Tanker 33 (T33) did not go up the driveway, concerned the LDH would get caught in the rear tandem and because of the recent rainstorm, the tanker would get stuck if they left the roadway. The Incident Commander (Chief 23) makes a radio transmission at 16:59, "Tanker 33 are you going to pump the Siamese?" Tanker 33 immediately responds "That's correct."

While enroute to the scene, Chief 23-1 is assigned as the water supply officer (WSO) at 16:58, he immediately requests "a channel". Frederick ECC assigned talkgroup 9 Echo as the water supply channel.

As E153 arrived behind E231, E231 ran out of tank water and shut the pump down just prior to E153 positioning in the driveway. This was the approximate time that E251A made his initial mayday message at 17:00:52. E231B, E153B, and E152B worked together connecting supply lines to and from E153 and E231. Specifically, there was a section of LDH connected from E153's number six discharge to the officer side intake of E231. This allowed for E153 to send his 1,000 gallons of tank water through E231, who in turn, pumped to the attack pumper (E251). The LDH that was originally laid out by E231 was then connected to the intake of E153. Just prior to E153 running out of water, the supply line from Ball Road was charged with water by Tanker 33 and Tanker 23 (see Figure 27). Based on radio transmissions made on 9-Delta (Operations Talkgroup) and 9-Echo (Water Supply Talkgroup) E251's water supply was interrupted from 17:01 until 17:03.

At the end of the driveway on Ball Road, E331B and T33 unloaded equipment from T33 necessary for the dumpsite. This included the Siamese from T33 and E331, two single-lane 2,000-gallon dump tanks, and hard sleeves. Two LDH Siamese were used to allow multiple units to connect to the LDH going to the fireground at one time. The setup of the two LDH Siamese appliances at the end of the driveway is depicted below.

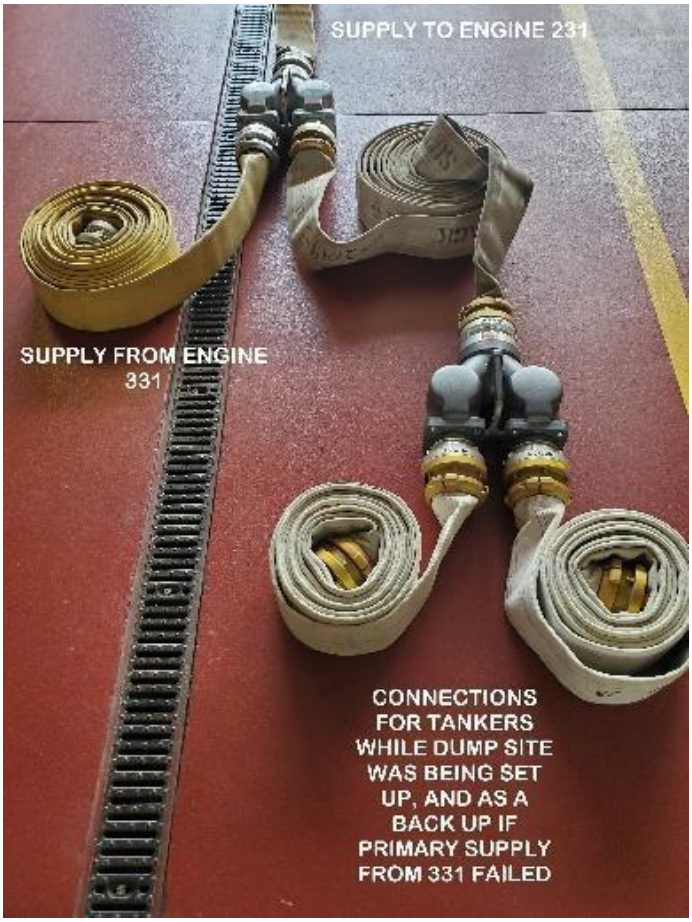


Figure 24: Siamese connections at end of driveway and Ball Road.

When the WSO arrived at the end of the driveway, he assisted T33B and E331B with making the hose connections to send much-needed water to the fire scene. Water was initially supplied to E153 by T33 and T23. E331 did not send their tank water to the fire scene.

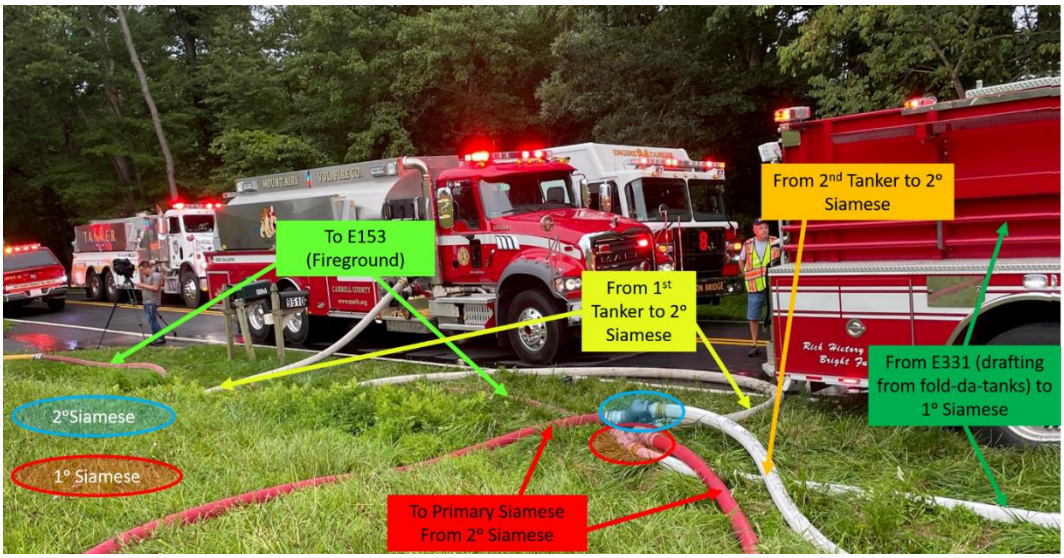


Figure 25: DH Siamese connections at end of the driveway with labels.

Key	
	Hose/Appliance Description
1	ft 4" LDH From E231 to
2	4" LDH Siamese
3	50 ft 4" LDH
4	4" LDH From E331 (Drafting)
5	4" LDH Siamese
6	Approx 100 ft LDH to Nurse Tanker
7	50 ft 4" LDH to Backup Tanker
8	3 sections of Hard Sleeve bridged over ground ladder
9	2 sections of hard sleeve bridged over ground ladder
10	1 section of hard sleeve to front intake of E331

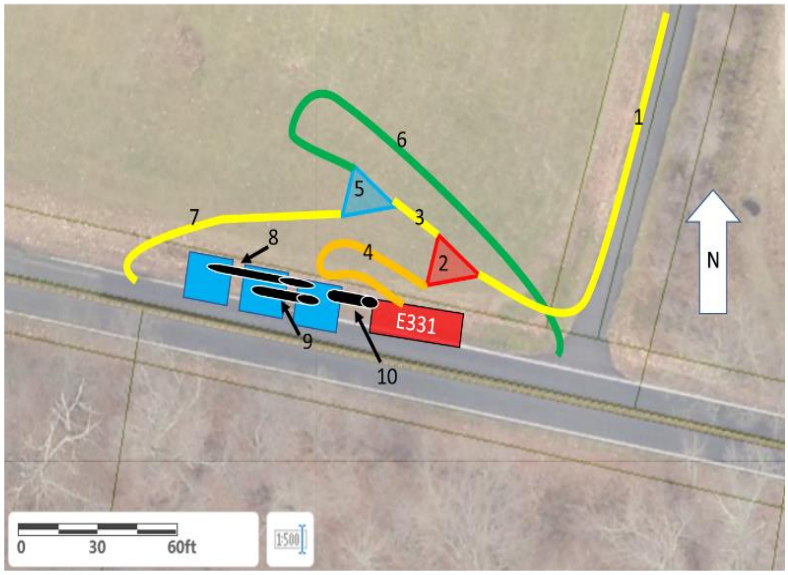


Figure 26: Dumpsite operations.

The WSO had Engine 311 go to the original fill site that was given by E231 – 9301 Ball Road at Burhans Memorial Airport to set up a draft site from a pond. Engine 311 was unable to access the pond, upon which the WSO advised them to find a hydrant near Ball Road past Tabler Road, "[J]ust pick one up and make it happen." Two fill sites were eventually established – Braidwood and Route 80 and 8739 Ball Road.

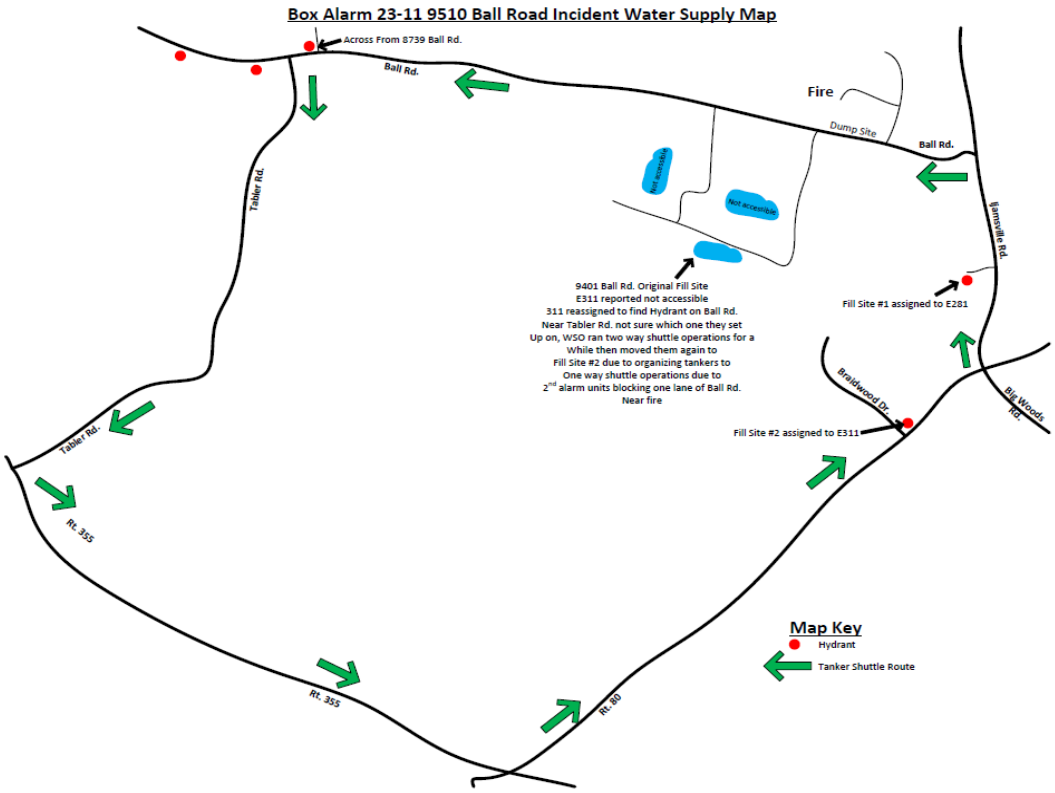


Figure 27: Tanker shuttle route (Courtesy of Chris Smith).

The dumpsite was located on Ball Road at the end of the driveway on the north side of Ball Road closest to the fire scene. The south side lane of Ball Road remained open for tankers to travel. The dumpsite initially consisted of two dump tanks – later, a third was added. E331 utilized their front intake to draft from the closest dump tank. Additional hard sleeves were used to transfer water from the other two tanks to the one from which E331 was drafting using a jet siphon. An extension ladder was used to create a stable platform for the hard sleeves to sit. The water for the jet siphon was supplied from E331.

After offloading multiple tankers, the water supply to the fireground was switched from a direct pumping operation, through the LDH Siamese operation, to a portable water tank operation with Engine 331 drafting from the dump tanks. Carroll County Tanker 1 arrived and was positioned behind Engine 331, upon which Carroll County Tanker 1 connected to one side of the secondary LDH Siamese and acted as a nurse tanker.

Figure 28: Water transfer between dump tanks.

Tanker 1 arrived on location west of the driveway and was given a verbal order by FMBC900 to drive up the hill through the grass and park as close as possible to the structure. Tanker 1 parked near the fence on Side Bravo and became the nurse tanker for E251 at approximately 17:13. In addition to providing water to E251, Tanker 1 also had a 200' 1.75" handline deployed to Side delta to be used by the RIT in the basement. FMBC900 pulled approximately 300 feet of LDH off Tanker 1, and hand jacked it toward Ball Road while E23's crew hand jacked the supply line from Ball Road to the end of Tanker 1's LDH for refilling purposes. Tanker 1 used approximately 1,500 gallons of tank water supplying E251. E251 was able to refill Tanker 1 once a consistent water supply was established on Ball Road.

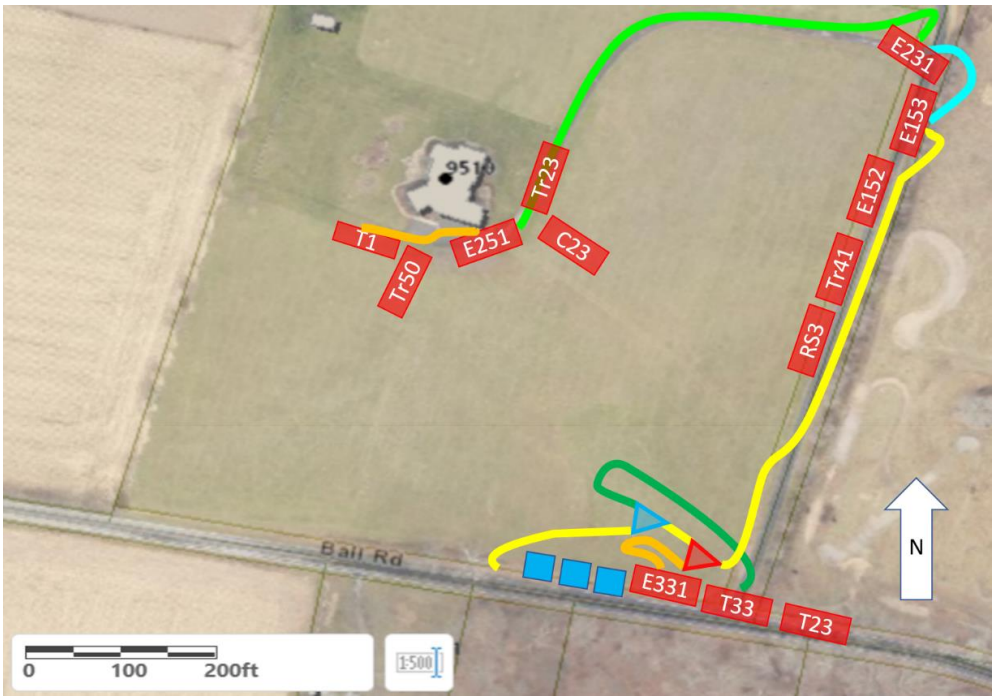


Figure 29: Overview of apparatus positioning and LDH hose.

Engine 251 did not have an interruption of water for the remainder of the incident. Throughout the incident there were multiple resource requests made by the E251A, the IC and the WSO. These resource requests brought over 40 major pieces of apparatus to the scene. The following is a list of when the resource grouping requests were made, by whom as well as how many engines tankers were on each assignment.

Type of dispatch	Requested by	Time	Engines and tankers that responded (Excludes Aerials, Squads, Medical and Staff apparatus)
Initial Alarm	E251A	16:48	Engine 231, Engine 251, Engine153, Engine 331, Tanker 23, Tanker 33, Tanker 1, Howard Engine-Tanker 44 Disp.- 17:19, MCT722 Disp.- 17:19, Tanker 9 Disp.- 17:32
RID	E251A	16:52	Engine 31
Tanker Taskforce	E251A	16:53	Engine 311, Carroll County Tanker 1, Engine-Tanker 204, Montgomery County Tanker 713, Engine-Tanker 114, Tanker 17, Tanker 7
Fire Taskforce	IC (Chief 23)	17:02	Engine 12, Engine 23
2nd Alarm	IC (Chief 900)	17:11	Engine 172, Montgomery County Engine 713, Montgomery County Engine 735, Engine 122, Tanker 22, Engine-Tanker 224
2nd Tanker Taskforce	WSO (Chief 23-1)	17:35	Engine 281, Tanker 5, Howard County Tanker 13, Carroll County Engine-Tanker 84, Carroll County Tanker 14, Howard County Tanker 34, Loudoun County Tanker 610, Engine-Tanker 134

Figure 30: Resource requests

In total 21 tankers were alerted for the incident at 9510 Ball Road. Due to the amount of apparatus on scene the WSO changed his initial water supply plan of having a tanker shuttle that consisted of 2 fill sites, one to the east and one to the west of the fire scene. The original plan would have brought filled tankers to the scene from both the east and west of the fire scene on Ball Road, from the separate fill sites. At 17:45, the WSO changed the direction of travel of the tanker shuttle. Tankers began a single direction of travel starting at Ijamsville Road and Ball Road to the fire scene.

From the fire scene tankers traveled west to Tabler Rd, turn left (Southwest) on Tabler Rd to Route 355, turn left (Southeast) to Route 355, turn left (Northeast) to Route 80, turn left (North) to Ijamsville Road, stop at the fill site 4026 Ijamsville Road, turn left on Ijamsville Road and the left on Ball Road to access the fire scene. The tanker shuttle route was approximately 8.2 miles.

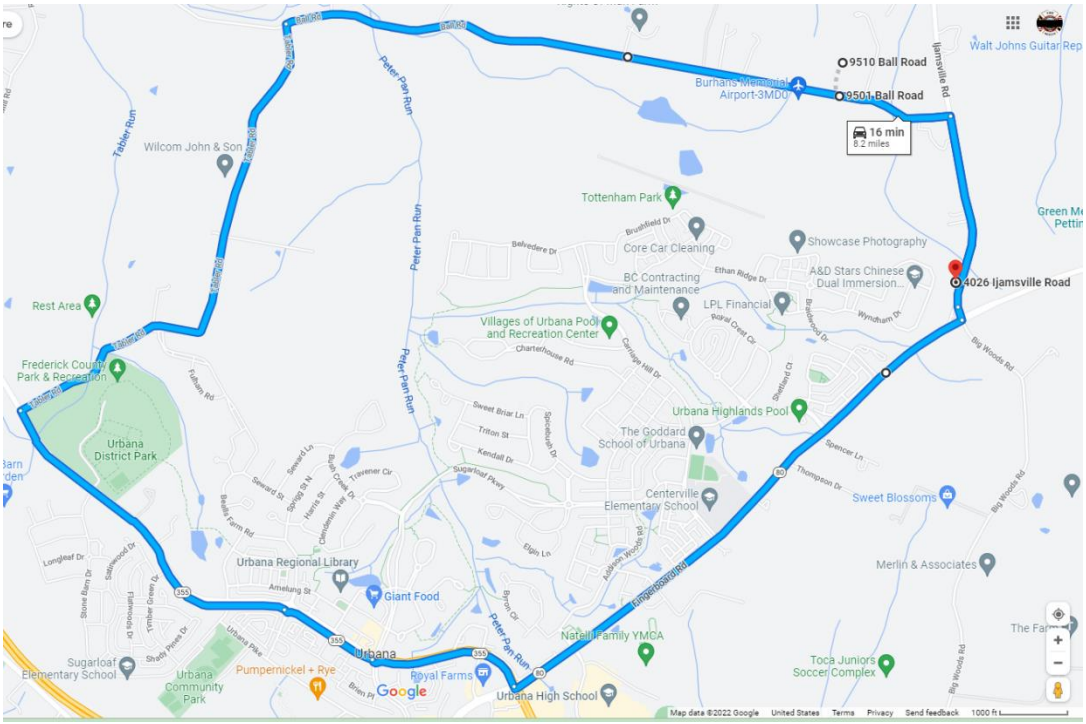


Figure 31: Tanker shuttle Route

7.8 Radio Sequence Timeline[36]

Key
911 Call Center Console
Successful Transmission 9 Delta
Successful Transmission 9 Alpha
Rejected Transmission

Event	Time	Annotation	Identifier
E251 responds to smoke alarm at 3996 Braidwood Dr. in Urbana, MD with TR23	16:23:00		
E251 arrives at Braidwood	16:29:00		
E251 and TR23 in service	16:45:00		
Initial 911 Call	16:46:47		
Pre-Alert Box	16:48:47	"Box 23-11; 9530 Ball Road"	9 Alpha
Initial Dispatch	16:49:03	"Box 23-11 Engine 231, E251, E152, E153, E331, A239, RS3, TR23, TR41, TR23, T33, T1, BAT901, SFT 900 to 9530 Ball Road between Tabler Road and Ijamsville Road, House Fire; 9 Delta."	9 Alpha
T1 Responding	16:50:15		T1
VC23 Responding	16:50:28		VC23
E153 Responding	16:50:28	"Engine 153 with 4 Switching."	E153
	16:50:29	"Units responding to Ball Rd, caller now advising address is 9510 Ball Rd."	PSTF14
	16:50:38	"Ok."	VC23
	16:50:57	"Chief 4-1."	Chief 4-1
	16:51:04	"E31 to Frederick."	E31

[36] In Frederick County, units are dispatched on 9-Alpha. For routine incidents, such as a fire alarm, medical calls, etc., units will respond on 9-Bravo. If a box alarm is dispatched, all units will be directed to respond and operate on 9-Delta. Upon the need for a water supply channel, the IC will request another channel for the operation which will be assigned by the controlling dispatcher, typically 9-Echo.

Event	Time	Annotation	Identifier
	16:51:11	"E251 to Frederick."	E251
E251 B drops 500' split lay halfway up the driveway, where the driveway to 9510 splits off from the common driveway.	16:51:18	"We're on scene laying from halfway back the lane."	E251
	16:51:34	"BC901 to [the] squad and the truck, can I go around you?"	BC901-2
	16:51:42	"Go ahead, right side."	TR41
	16:51:43	*Rejected transmission*	RS2
	16:51:45	"Squad 2; come on Chief."	RS2
	16:51:45	*Rejected Transmission*	E251
	16:51:48	"E251 to Frederick."	E251
	16:51:51	"E251"	PSTF14
E251 approached the house still in motion, Captain Laird provides E251's on scene report. "On the scene, large 3 1/2 2 1/2 story single family, we do have a working fire, go ahead and start RIT and tanker task force".	16:51:53	"Onscene, large 3 1/2, 2 1/2 story single family, we do have a working fire, go ahead and start RIT and probably a tanker task force"	E251
	16:52:06	"E251 on scene advising two-story single-family working fire, requesting RIT and Tanker Task Force, 16:52."	PSTF14
E251 parks on Alpha-Bravo corner, unable to go further due to volume of smoke.	16:52:15	"E152 to Frederick MDT is down; confirming you have us responding?"	9 Alpha
	16:52:25	"RID Dispatch - E31, TR50, A259, M23, BAT903 Due, Rapid Intervention on Box 23-11, "9530 Ball Road between Tabler, correction, 9510 Ball Road between Tabler Road and Ijamsville Rd 9 Delta."	9 Alpha
TR23 onscene	16:52:33		
E31 enroute	16:52:44		
	16:53:10	*Empty*	E251C

Event	Time	Annotation	Identifier
	16:53:20	"E152, I have you responding."	9 Alpha
	16:53:23	*Empty*	251C
	16:53:26	*Rejected Transmission*	BAT903 M2
	16:53:27	"903 to 901"	BAT903 M2
	16:53:33	"Go ahead."	BC901-2
	16:53:35	"I think 9301 [is] showing a pond, I didn't hear your primary water source, I don't think anyone called it out yet?"	BAT903 M2
	16:53:50	"Montgomery County T713, T17, ET114; Carroll County T1, ET204 Code 2, E311, SFT900 due, Tanker Task Force on Box 23-11 Ball Road between Tabler Road and Ijamsville Road for the house fire; 9 Delta."	9 Alpha
	16:53:51	"BC901 to [E]231, do you have a primary water supply?"	BC901-2
	16:53:56	"Yeah, 9301 is worth it; two large ponds, one might have access issues, if not secondary can be [a] hydrant at Tabler and Ball Rd."	E231
Radio switched to 9 Alpha	16:53:57		E251A
Radio switched to 9 Delta	16:54:00		E251A
	16:54:14	*Empty*	PSTF14
	16:54:17	"E231 to E251's Driver."	E231
	16:54:23	"Go ahead."	E251B
	16:54:25	"Are we going to have enough to make it from Ball Road to you?"	E231
	16:54:32	"That's correct, we split when we turned left. I have 500 ft. down right here."	E251B
	16:54:52	"Chief 23-1, add me to Box; T23 getting out now"	DUTY 23
	16:55:04	"Chief 23-1 responding 16:55."	PSTF14
	16:55:13	"[E]331 to Frederick; am I 5th due?"	E331
	16:55:24	"[E]331 that is correct."	PSTF14

Event	Time	Annotation	Identifier
	16:55:24	"[E]251A to Frederick."	E251A
	16:55:28	"Chief 23 to Frederick, I'm on the scene, Side Alpha, two-story house, heavy fire showing. I'll have Command on Side Alpha."	VC23
	16:55:28	*Rejected Transmission*	TR23A
	16:55:44	"Chief 23 on scene, Side Alpha, establishing Command."	PSTF14
	16:55:50	"Chief, do you want me at Command Post or [to] gear up and go in? I'm coming up right behind you."	OAC 900900
	16:55:51	*Rejected Transmission*	E251A
	16:55:59	"Why don't you go ahead and gear up and get ready to go in. I'm looking right now to see if that thing has a swimming pool in the backyard."	VC23
	16:56:08	"[E]251 to Command pick up [*communication unintelligible*]."	E251A
	16:56:10	*Rejected Transmission*	VC23
	16:56:10	*Rejected Transmission*	TR23A
	16:56:11	*Rejected Transmission*	TR23A
	16:56:13	"360 of the residence shows [a] single floor in the back; heavy fire on Side Charlie."	TR23A
Radio switched to 9 Bravo	16:56:21		E251A
	16:56:25	Open Mic	E251C
Radio switched to 9 Charlie	16:56:26		E251A
Radio switched to 9 Delta	16:56:28		E251A
	16:56:29	*Rejected Transmission*	E331
	16:56:30	"[*Communication unintelligible*] to Command; I have not been able to complete the 360."	E251A
	16:56:34	Open Mic	T1

Event	Time	Annotation	Identifier
	16:56:39	"[E]331 to Command; we're on scene, do you want us to take 3rd due or continue with 5th [due]?"	E331
	16:56:46	"If you're 3rd arriving, continue with 3rd due."	VC23
	16:56:50	"Ok, [E]331's on scene."	E331
	16:56:54	"E331 on scene 16:56."	PSTF14
	16:57:15	"T713 with two."	ZC$2500845
	16:57:21	Chief 23-1	VC23
T713 responding	16:57:21		PSTF14
	16:57:33	"Chief 23-1, come in."	VC23
	16:57:38	"Go ahead Command."	Duty 23
	16:57:40	"When you arrive, can you take care of [the] water supply?"	VC23
E152 arrives on location	16:57:40		
	16:57:46	"Yeah, did they figure out where [the fill site will be]?"	Duty 23
	16:57:54	"9301 Ball Road, it's on the Burhan's property where the airstrip is."	VC23
	16:58:06	"Copy, Frederick, go ahead and give me a channel."	Duty 23
	16:58:06	*Rejected Transmission*	VC23
	16:58:09	*Rejected Transmission*	T33
	16:58:10	*Rejected Transmission*	VC23
	16:58:12	"[E]231, did you lay in and pick up [E] 251's line?"	VC23
	16:58:12	*Rejected Transmission*	T33
	16:58:13	*Rejected Transmission*	T33
	16:58:17	Open Mic	TR23C
	16:58:18	*Rejected Transmission*	E231B
	16:58:18	*Rejected Transmission*	E231A

Event	Time	Annotation	Identifier
	16:58:19	*Rejected Transmission*	T33
	16:58:20	*Rejected Transmission*	E231A
	16:58:20	*Rejected Transmission*	E231B
	16:58:22	"That is correct."	E231A
	16:58:23	*Rejected Transmission*	FMBAT900
	16:58:23	*Rejected Transmission*	E231B
	16:58:26	"Is [E]251 ready for water?"	E231B
	16:58:26	*Rejected Transmission*	VC23
	16:58:27	*Rejected Transmission*	T33
	16:58:31	"That's correct, sent it."	E251B
	16:58:34	"OAC 900900 to [E]251, charge number 2 crosslay."	OAC 900900A
	16:58:34	*Rejected Transmission*	T33
	16:58:35	*Rejected Transmission*	T33
	16:58:37	*Rejected Transmission*	T33
	16:58:37	"T17 is responding, Frederick."	T17
	16:58:42	"T33 onscene."	T33
	16:58:47	"T33 on the scene, 16:58."	PSTF14
	16:58:52	"Command to Engine Company sitting behind T33, what is your number?"	VC23
	16:59:00	"E331."	E331B
	16:59:03	"Alright, never mind, it looks like 15's engine they have near the driveway; 15, uh, come on up the driveway and jump the line and drive into the field. I want to get another engine up here, ok?"	VC23
	16:59:17	"Direct, my engine crew is already up there."	E252B
	16:59:20	Open Mic	E231C
	16:59:20	*Rejected Transmission*	VC23

Event	Time	Annotation	Identifier
	16:59:22	*Rejected Transmission*	VC23
	16:59:24	"Ok, I want another engine up here. We'll find you some water when you get here."	VC23
	16:59:25	*Rejected Transmission*	E231B
	16:59:28	*Rejected Transmission*	E231B
	16:59:30	"[E]231 is ready for water."	E231B
	16:59:40	"T33, are you going to pump the Siamese down there?"	VC23
	16:59:46	"That is correct."	T33A
	16:59:49	"Ok, send it when you can."	VC23
	16:59:54	"OAC 900900 to Command."	OAC 900900A
	16:59:58	"Go ahead."	VC23
	17:00:00	"Myself and [E]251 have two lines in service trying to knock out the bulk of the fire. [The] next line needs to go inside and hold the interior."	OAC 900900A
	17:00:11	"E231 is ok, we are going to stretch a line to the front door."	E231A
	17:00:13	*Rejected Transmission*	VC23
	17:00:16	"Got that, right [E]231?"	VC23
	17:00:16	*Rejected Transmission*	TR23A
	17:00:19	"T7 due to the call; Tanker Task Force on Box 23-11 9510 Ball Road between Tabler Road and Ijamsville Road, 9 Delta"	9 Alpha
	17:00:20	"TR23A to Command."	TR23A
	17:00:20	*Rejected Transmission*	E231A
	17:00:20	*Rejected Transmission*	E231B
	17:00:21	*Rejected Transmission*	E231B
	17:00:21	*Rejected Transmission*	E231A
	17:00:24	"Go ahead."	VC23

Event	Time	Annotation	Identifier
	17:00:25	*Rejected Transmission*	E231B
	17:00:26	"Front door is forced [and] ready for that line."	TR23A
	17:00:27	*Rejected Transmission*	E231B
	17:00:30	"[E]231 is going to run out of water; I'm going to need water real soon."	E231B
	17:00:31	*Rejected Transmission*	VC23
	17:00:36	"T33, I want you to stay on 9 Delta, okay?"	VC23
	17:00:36	*Rejected Transmission*	E251A
	17:00:43	*Empty*	VC23
	17:00:43	*Rejected Transmission*	T33A
	17:00:44	"Copy."	T33A
	17:00:52	"Mayday, Mayday, Mayday. Captain Laird, E251A, has fallen through the floor in the fire room."	E251A
	17:01:04	"Chief, did you copy the Mayday?"	OAC 900900A
	17:01:05	*Rejected Transmission*	VC23
	17:01:08	"Command copies the Mayday; E231, E231's Officer, can you copy?"	VC23
	17:01:12	*Rejected Transmission*	E251A
	17:01:14	"Yeah, can you confirm if he fell into the basement or if he is just stuck on the first floor?"	E231A
	17:01:20	"Hey, he fell from the, uh, bulk of the fire room here on the Charlie side into the basement. He was just in the window and fell through."	OAC 900900A
	17:01:20	*Rejected Transmission*	VC23
	17:01:21	*Rejected Transmission*	E251A
	17:01:25	*Rejected Transmission*	E251A
	17:01:26	*Rejected Transmission*	E251A

Event	Time	Annotation	Identifier
	17:01:29	"I am in the basement."	E251A
	17:01:30	*Rejected Transmission*	E231A
	17:01:32	"Command, send the Fire Task Force, ok?"	VC23
	17:01:33	*Rejected Transmission*	VC23
	17:01:36	"[E]231, you need water now?"	E231B
	17:01:36	*Rejected Transmission*	CAR 15
Tanker 7 Responding	17:01:37	"Tanker 7, switching to Delta"	T7
	17:01:42	"Ok, [E]251, E231 is coming your way right now. E153, where is your crew?"	VC23
	17:01:48	*Rejected Transmission*	E251A
	17:01:57	"Chief [23], I've got the back-up line number 2 crosslay off [of E]251. I'm holding the fire in check where he fell through the floor, but I'm running out of water and need to be the primary line."	OAC 900900A
	17:01:57	"EMS901 on the Box."	EMS901
	17:02:05	"Fire Police 23B."	FP23B
	17:02:09	"I had to evacuate from where I was. I was burning up." *No audible PASS Device*	E251A
	17:02:13	*Empty*	E153D
	17:02:20	"Chief, do you want the second truck up there?"	TR41
	17:02:24	"If you can get it here."	VC23
	17:02:28	"[E]251, charge that line."	VC23
	17:02:31	"I've got no water, standby."	E251B
	17:02:36	"This is the only protection line he has."	OAC 900900A
	17:02:44	"I need water in here."	E251C
	17:02:46	"T23 is onscene."	T23

Event	Time	Annotation	Identifier
	17:02:48	Fire Task Force Dispatch. E23, E12, Q14, RS14, RS24, A158, M31 due, Fire Task Force on Box 23-11 9510 Ball Road between Tabler Road and Ijamsville Road 9 Delta	9 Alpha
	17:02:50	"TR23 is on scene 17:02."	PSTF14
	17:02:54	"SAFETY901 is on the scene."	SAFETY901
	17:02:58	"Safety 901 on the scene."	PSTF14
	17:03:02	"TR23 to Command. Where do you want us?"	TR23
	17:03:08	"15-1 to Command."	Chief 15-1
	17:03:10	*Rejected Transmission*	VC23
	17:03:15	"Go ahead."	VC23
	17:03:16	"Alright, we need water in this line right now. No one has gotten to this guy, and he is still in the basement."	Chief 15-1
	17:03:25	"[Chief 900,] ok, do you have a visual on him now?"	VC23
	17:03:29	"I do not. Who was it?"	Chief 15-1
	17:03:33	*Rejected Transmission*	OAC 900900A
TRP3 calls to ask where the Mayday is.	17:03:34		BU Console 5
	17:03:35	"Lt. Laird, E251, OAC 900900 should be on the back and has a protection line on him right now."	VC23
	17:03:37	*Rejected Transmission*	OAC 900900A
	17:03:38	*Rejected Transmission*	OAC 900900A
	17:03:42	"E23."	9 Alpha
	17:03:43	"Alright, I am with him now and he has a line running. E251 Officer, can you hear me?"	Chief 15-1
	17:03:43	*Rejected Transmission*	OAC 900900A

Event	Time	Annotation	Identifier
	17:03:43	*Rejected Transmission*	E251A
	17:03:43	*Rejected Transmission*	251B
	17:03:47	*Rejected Transmission*	OAC 900900A
	17:03:48	*Rejected Transmission*	OAC 900900A
	17:03:53	"I can only hear your radio; I had to move from the fire room, I was burning up." *PASS Device is audible*	E215A
	17:04:00	*Empty*	Chief 15-1
	17:04:00	*Rejected Transmission*	OAC 900900A
	17:04:03	"Alright, we've got a line."	Chief 15-1
	17:04:07	"Drop a ladder down in this hole and put the fire out and I'll walk out." *PASS Device audible*	E251A
	17:04:09	*Rejected Transmission*	Chief 15-1
	17:04:14	"Chief 15-1 to Command, we've got a line in the building now and they are going to try to get to the basement and get him out."	Chief 15-1
	17:04:14	*Rejected Transmission*	OAC 900900A
	17:04:24	*Communication unintelligible*	E251A
	17:04:24	*Rejected Transmission*	VC23
	17:04:25	*Rejected Transmission*	VC23
	17:04:25	*Rejected Transmission*	OAC 900900A
	17:04:28	"Ops AC900 to Command."	OAC 900900A
	17:04:28	*Rejected Transmission*	CC_TT1
	17:04:34	"I've got a roof ladder coming around to the rear; go ahead Ops AC900."	VC23

Event	Time	Annotation	Identifier
	17:04:39	"[I] have verbal contact with the firefighter, he did fall through the floor. A company from 1 and E231 has a line on the interior trying to keep the fire in check and make access to him. Give me the next company to standby with RIT equipment for the extraction on the Charlie side. Okay?"	OAC 900900A
	17:04:56	"*RS3A*"	VC23
	17:04:59	"Need a ladder; need a folding ladder and get another line back here if you can."	Chief 15-1
	17:05:00	*Rejected Transmission*	VC23
	17:05:02	*Rejected Transmission*	VC23
	17:05:05	"Is that RS3?"	VC23
	17:05:07	*Rejected Transmission*	RS3A
	17:05:09	"Ok, RIT equipment to the rear; report to OAC 900900."	VC23
	17:05:13	*Mayday Tone*	PSTF14
	17:05:13	*Rejected Transmission*	E31D
	17:05:19	"Frederick to all units, a Mayday has been received from E251A."	PSTF14
	17:05:24	"Any units not involved in the Mayday, switch to 9 India."	PSTF14
	17:05:25	*Empty*	E231D
	17:05:28	*Rejected Transmission*	VC23
	17:05:29	"That's negative, units do not change channels. Everyone remains on 9 Delta; Frederick, I've got it. Command to Ops AC900."	VC23
	17:05:29	*Rejected Transmission*	E251A
	17:05:38	"Go ahead."	OAC 900900A
	17:05:40	"[RS]3 is coming with a ladder and additional RIT equipment. The remaining companies will stage at the Command Post. Command to E231A."	VC23

Event	Time	Annotation	Identifier
	17:05:47	*Rejected Transmission*	E251A
	17:05:50	"Go ahead."	E231A
	17:05:52	"Are you making progress on Division One?"	VC23
	17:05:55	*Rejected Transmission*	E31D
	17:05:56	"We're trying. If they could charge the line off the rear, it would help us out greatly."	E231A
	17:05:56	*Rejected Transmission*	E31D
	17:05:59	*Rejected Transmission*	E23C
	17:06:03	*Rejected Transmission*	VC23
	17:06:04	"Understood, we're working on the water issue now."	VC23
	17:06:05	*Rejected Transmission*	E231A
	17:06:09	"This line appears to be complete; [E]231 has water."	E231B
	17:06:10	*Rejected Transmission*	CC_TT1
	17:06:11	*Rejected Transmission*	OAC 900900A
	17:06:12	*Rejected Transmission*	E31D
	17:06:12	"Battalion 901 to Command, there is a secondary RIT crew on the Alpha side."	9 Alpha
	17:06:15	*Empty*	E31D
	17:06:16	*Rejected Transmission*	CC_TT1
	17:06:17	*Empty*	E31D
	17:06:19	*Empty*	E31D
	17:06:19	*Rejected Transmission*	OAC 900900A
	17:06:19	*Rejected Transmission*	E251A
	17:06:20	*Empty*	E31D
	17:06:20	RS24 responding A249 Code 2	RS24

Event	Time	Annotation	Identifier
	17:06:24	"TR23A to Command."	TR23A
	17:06:24	*Rejected Transmission*	TR41A
	17:06:27	"[Tr]23A."	VC23
	17:06:29	*Rejected Transmission*	E31D
	17:06:30	*Empty*	E31D
	17:06:30	*Rejected Transmission*	TR23A
	17:06:33	*Rejected Transmission*	TR23A
	17:06:33	*Rejected Transmission*	OAC 900900A
	17:06:35	"Carroll T1 responding."	CC_TT1
	17:06:35	*Rejected Transmission*	VC23
	17:06:36	*Rejected Transmission*	TR23A
	17:06:36	*Rejected Transmission*	OAC 900900A
	17:06:38	"Mutual aid units stay off the radio. E251A go ahead."	VC23
	17:06:39	*Rejected Transmission*	OAC 900900A
	17:06:42	*Rejected Transmission*	TR23A
	17:06:44	"Go."	E231A
	17:06:45	*Rejected Transmission*	E31D
	17:06:46	*Empty*	E31D
	17:06:48	*Rejected Transmission*	OAC 900900A
	17:06:50	"TR23A to Command, I need the line charged off the read of E251. I believe it's a 300 ft. line. I've got heavy fire in the Bravo quadrant, and it looks like it might be a hole in the floor."	TR23A
	17:06:50	*Rejected Transmission*	E31D

Event	Time	Annotation	Identifier
	17:06:51	*Rejected Transmission*	OAC 900900A
	17:06:51	*Rejected Transmission*	E31D
	17:07:05	"E251's Driver, can you charge the 300 [ft line] off the rear of your unit?"	VC23
	17:07:06	*Rejected Transmission*	E251A
	17:07:10	*Rejected Transmission*	E251B
	17:07:11	"Charged now."	E251B
	17:07:12	*Rejected Transmission*	E251A
	17:07:15	*Empty*	E23
	17:07:16	*Rejected Transmission*	E251A
	17:07:17	*Rejected Transmission*	T1
	17:07:18	*Rejected Transmission*	T33A
	17:07:18	*Rejected Transmission*	E251A
	17:07:19	"Command."	OAC 900900A
	17:07:21	"Go."	VC23
	17:07:24	"I'll take the Charlie Division. Right now, we've got crews assembling. We still have verbal contact, we're unable to make access via the fire floor to get down there. I've just sent the Rescue Squad [RS3] and the Captain from [E]231 to another basement entrance to see if they can traverse from the other side of the house to make access. Okay?"	OAC 900900A
	17:07:42	*Rejected Transmission*	E251A
	17:07:44	*Communication unintelligible*	E251A
	17:07:45	*Rejected Transmission*	VC23
	17:07:45	*Rejected Transmission*	T33A
	17:07:47	"Charlie Division to Captain Laird, Mayday, can you copy?"	OAC 900900A
	17:07:48	*Rejected Transmission*	FMBAT900A

Event	Time	Annotation	Identifier
	17:07:48	*Rejected Transmission*	VC23
	17:07:49	*Rejected Transmission*	T1
	17:07:49	*Rejected Transmission*	FMBAT900A
	17:07:50	*Rejected Transmission*	FMBAT900A
	17:07:50	*Rejected Transmission*	VC23
	17:07:52	*Rejected Transmission*	FMBAT900A
	17:07:53	"I did; you are now the Charlie Division; you have sufficient companies, and you are working on an alternate entrance to the basement."	VC23
	17:07:55	*Rejected Transmission*	FMBAT900A
	17:08:02	"Yeah, OAC 900900 to Captain Laird E251A, come in?"	OAC 900900A
	17:08:08	"Go ahead."	E251A
	17:08:10	"Where are you? What quadrant?"	OAC 900900A
	17:08:11	*Rejected Transmission*	T1
	17:08:13	"I think I'm in the C quadrant, they hit the fire now; I'm stuck and I'm burning up."	E251A
	17:08:20	*Empty*	OAC 900900A
	17:08:22	*Empty*	OAC 900900A
	17:08:23	"Ok, I copy. I am getting ready to send Battalion Chief [903] in the alternate basement door with RS3. He'll be the RIT Group supervisor. RS3, Chief [23] is coming to you. He is advising he fell through the Charlie quadrant which should have been the floor just inside the door where we were operating. Ok, RS3?"	OAC 900900A
	17:08:24	*Rejected Transmission*	T1
	17:08:31	*Rejected Transmission*	T1
	17:08:42	*Rejected Transmission*	E251A

Event	Time	Annotation	Identifier
	17:08:45	"I got it, Chief."	RS3A
	17:08:45	*Rejected Transmission*	E251A
	17:08:47	*Communication unintelligible*	E251A
	17:08:48	*Rejected Transmission*	OAC 900900A
	17:08:50	"Charlie Division, E251 Driver?"	OAC 900900A
	17:08:56	"Go ahead."	E251B
	17:08:57	"Are you pumping with two-inch stacked tims? Is that off of you?"	OAC 900900A
	17:09:02	"That's correct, I am chasing out any kinks."	E251B
	17:09:06	"Ok, I don't want to rob from the RIT line, can you sustain if we flow that smooth bore to knock down the bulk of the fire that is free burning in this room? Can you do that, yes or no?"	OAC 900900S
	17:09:16	"I'm on it now."	E251B
	17:09:22	"FM900 to Command."	FMBAT900A
	17:09:24	"Go ahead."	VC23
	17:09:26	"I ran the Tanker up through the yard on Charlie side, so my 3,000 gallons."	FMBAT900A
	17:09:33	"Tell my family I love them." *PASS Device audible*	E251A
	17:09:43	"To Command, is the gas line shut off?" *Communication unintelligible*	E251C
	17:09:55	"Water supply to all tankers, switch to 9 Echo immediately."	VC23-1
	17:09:58	*Rejected Transmission*	RS3C
	17:10:01	"Chief 4-1[?]"	VC23
	17:10:10	"Chief 3 to Command, can we get another line around to the Delta side?"	C3A
	17:10:15	*Rejected Transmission*	E251A

Event	Time	Annotation	Identifier
	17:10:17	"I'm bringing you one off T1 right now."	E153A
	17:10:17	*Rejected Transmission*	E251A
	17:10:17	*Rejected Transmission*	VC23
	17:10:20	"Alright, and also let's get some p[eople around here to take down this metal fence."	C3A
	17:10:21	*Rejected Transmission*	E251A
	17:10:23	*Rejected Transmission*	OAC 900900A
	17:10:24	*Rejected Transmission*	OAC 900900A
	17:10:29	"Charlie to Command, have you requested the Second?"	OAC 900900A
	17:10:33	"Fire Task Force is enroute, we can request the Second now. Command to Frederick?"	VC23
	17:10:42	"Ball Road Command?"	PSTF14
	17:10:44	"Requesting Second Alarm."	VC23
	17:10:49	"Captain Laird, can we lower the RIT pack to you, or is the fire coming up through the hole you fell through?"	OAC 900900A
	17:11:06	"Charlie to Command."	OAC 900900A
	17:11:08	"Go ahead."	VC23
	17:11:10	"Smoke conditions are worsening on the Charlie side. We have thick brown, turbulent smoke running the roofline. I recommend you put the master stream up to prepare for once we make the rescue. It looks like we are losing the attack and [the] upper floor."	OAC 900900A
	17:11:21	*Rejected Transmission*	T1
	17:11:24	*Rejected Transmission*	Chief 15-1
	17:11:26	"Understood, Command to E231A."	VC23
	17:11:35	"Command, can we get a saw around to the Delta side to take this fence down? Like, ASAP."	C3A

Event	Time	Annotation	Identifier
	17:11:37	*Rejected Transmission*	OAC 900900A
	17:11:39	*Rejected Transmission*	OAC 900900A
	17:11:40	E141, Montgomery PME735, Montgomery E713, E172, E122, A339, RE171, Montgomery T714, ET224, T22, Montgomery Tower 735, Quint 11 due; Second Alarm on the house fire, 9510 Ball Road between Tabler Road and Ijamsville Road. 9 Delta.	9 Alpha
	17:11:43	"That's right."	VC23
	17:11:45	"Engine 153 lineman, find a saw and bring it to the Delta side."	E153A
	17:11:54	"T1 to [E]251, let me know when you need the water."	T1A
	17:11:54	*Rejected Transmission*	VC23
	17:11:55	*Rejected Transmission*	OAC 900900A
	17:11:58	"Command to E231A Division 1."	VC23
	17:12:03	"Chief, [E231A] redeployed with RS2 to the basement as part of the RIT. We're not sure where his firefighter went; [I] think he was holding fire on the interior on the first floor."	OAC 900900A
	17:12:04	*Rejected Transmission*	E231A
	17:12:04	*Rejected Transmission*	E231A
	17:12:07	*Rejected Transmission*	E231A
	17:12:09	*Rejected Transmission*	VC23
	17:12:13	"231A to Command, I'm with Captain off RS3 and the firefighter, we found him currently unconscious. We're heading your way; we need EMS to the Delta side."	E231A
	17:12:14	*Rejected Transmission*	TR23A
	17:12:15	*Rejected Transmission*	VC23

Event	Time	Annotation	Identifier
	17:12:31	"Command to Frederick, Aviation Priority One, Category A, landing site on scene. Charlie Division do you copy?"	VC23
	17:12:31	*Rejected Transmission*	OAC 900900A
	17:12:32	*Empty*	TR23A
	17:12:38	"ECC request to Syscom for Aviation."	BU Console 1
	17:12:40	"That's right, give me an EMS unit to the Delta side. I'd also like a company that can cut a chain link fence, that will be the fastest extraction. We can just cut a few links on the chain."	OAC 900900A
	17:12:48	*Rejected Transmission*	E251A
	17:12:52	"They are on the way there now."	VC23
	17:12:57	"Command to TR41, or correction, TR23's Operator."	VC23
	17:13:04	"TR23 Operator, go ahead."	TR23B
	17:13:07	"If you're not engaged in the firefight, I need to transition to set up for a master stream operation. Command to Chief 3."	VC23
	17:13:10	"Boat Support 15 to Frederick, add us to the Box 4 firefighters."	BSU 15
	17:13:16	*Empty*	TR23B
	17:13:16	*Rejected Transmission*	C3A
	17:13:18	"Go ahead."	C3A
	17:13:18	*Rejected Transmission*	T1A
	17:13:20	"The saw should be enroute."	VC23
	17:13:20	*Rejected Transmission*	T1A
	17:13:24	"We got it; we have to switch blades."	C3A
	17:13:28	"Command to EMS901."	VC23
	17:13:33	"Go ahead."	EMS901

Event	Time	Annotation	Identifier
	17:13:38	"Here comes the water, [E]251 from T1."	T1A
	17:13:38	*Rejected Transmission*	VC23
	17:13:39	"RE74 request to respond from 40A [*high feedback*] added to the Box."	9 Alpha
	17:13:45	"Standby."	E251B
	17:13:48	"Command to the Charlie Division."	VC23
	17:13:57	"M23 to Command."	M23A
	17:13:59	"Go ahead."	VC23
	17:14:02	*Communication unintelligible*	OAC 900900A
	17:14:07	"Command to Charlie Division."	VC23
	17:14:08	*Rejected Transmission*	OAC 900900A
	17:14:10	"Go ahead."	OAC 900900A
	17:14:12	"Can you confirm when the extraction is complete so I can sound the evac and complete a PAR?"	VC23
	17:14:18	"Sorry, I have a lot of manpower outside, but there may be people on the first floor. You're going to have to verify that because I'm over here overseeing the extraction."	OAC 900900A
	17:14:26	"Ok, has it been completed yet?"	VC23
	17:14:27	*Rejected Transmission*	OAC 900900A
	17:14:29	"Nope."	OAC 900900A
	17:14:38	"EMS to Frederick, add me to the fire incident."	EM902
	17:14:41	"TR23A to Command."	TR23A
	17:14:44	"TR23A, go ahead."	VC23
	17:14:44	"Tanker 22, A229 Code 2."	9 Alpha T22

Event	Time	Annotation	Identifier
	17:14:49	"My crew is with [*communication unintelligible*] in the Bravo quadrant. Running low on air."	TR23A
	17:14:54	*Rejected Transmission*	VC23
	17:14:56	"Ok, TR23, can you confirm your entire crew?"	VC23
	17:15:02	"I have myself and one firefighter from E231, E231C."	TR23A
Channel change from 9 Delta to 9 Mike	17:15:08		E251A
	17:15:15	"[E]158, bring that ambulance straight up behind this truck."	A158B
	17:15:19	"TR23C, going to have to confirm that."	TR23A
	17:15:38	"Command to the Charlie Division."	VC23
	17:15:41	"Go ahead."	OAC 900900A
	17:15:44	"I have a pickup truck at the Command Post to make that transport as soon as extraction is complete, it's on the Alpha side."	VC23
	17:15:50	"E122 to Frederick, do they want the Second Alarm units on Delta, or is there another channel?"	E122
	17:15:51	*Communication unintelligible*	OAC 900900A
	17:15:56	"A158, come straight up behind this fire truck."	A158B
	17:16:05	"E122, Switch to 9 Delta."	9 Alpha
	17:16:16	*Empty*	RE74C
	17:16:24	*Empty*	E331B
	17:16:24	*Rejected Transmission*	E251C
	17:16:26	*Rejected Transmission*	E251C
	17:16:27	*Rejected Transmission*	C3A
	17:16:30	"E251C to Command, I am out Bravo side of the corner by E251."	E251C

Event	Time	Annotation	Identifier
	17:16:32	*Rejected Transmission*	RS3E
	17:16:32	"Frederick to Paramedic Rescue Engine 709."	9 Alpha
	17:16:38	"[E]251C, I copy you."	VC23
	17:16:39	*Rejected Transmission*	OAC 900900A
	17:16:40	*Rejected Transmission*	OAC 900900A
	17:16:41	*Rejected Transmission*	OAC 900900A
	17:16:43	*Empty*	VC23
	17:16:43	*Rejected Transmission*	OAC 900900A
	17:16:44	"Units hold your traffic. Command, the firefighter is out, appears to be unconscious. He's in the care of M23."	OAC 900900A
	17:16:50	"Frederick to Paramedic Rescue Engine 709." *Second call*	9 Alpha
	17:16:53	"Copy, Command to Frederick, sound the evacuation tone."	VC23
	17:16:57	*Evacuation tone*	PSTF14
	17:17:04	"Evacuation to all units, Ball Road Command has ordered emergency evacuation, 17:17."	PSTF14
	17:17:11	"Command, I just got inside information that Trooper 3 is down, can you confirm ASAP?"	OAC 900900A
	17:17:11	*Rejected Transmission*	E12E
	17:17:15	*Rejected Transmission*	E12E
	17:17:16	"Frederick, I need that information."	VC23
	17:17:20	"Command, Syscom advised 15 minutes, about 1o minutes ago, will call them back."	PSTF01
	17:17:24	"Ok, we're landing them at the scene, they have plenty of options, they can pick it. Units prepare for a PAR check. E251C, I copy that you are clear."	VC23

Event	Time	Annotation	Identifier
	17:17:27	*Rejected Transmission*	ET114A
	17:17:29	*Empty*	PSTF01
	17:17:35	"E251C is clear and by E251."	E251C
	17:17:39	"Copy, E231 PAR?"	VC23
	17:17:41	"[E]172 to Frederick, what channel are we on?"	E172
	17:17:45	"E172, 9 Delta."	9 Alpha
	17:17:48	"Officer is PAR on Charlie side exterior. We're not sure about the firefighter."	OAC 900900A
	17:17:53	*Empty*	E311B
	17:17:55	*Rejected Transmission*	E231C
	17:17:55	*Rejected Transmission*	VC23
	17:17:56	*Rejected Transmission*	E231C
	17:17:58	"[E]231C on the Alpha side."	E231C
	17:18:02	"I copy E231 is PAR. E152 PAR?	VC23
	17:18:09	*Empty*	SCapt900A
	17:18:15	*Empty*	VC23
	17:18:16	"Command to E152, PAR?"	VC23
	17:18:17	*Empty*	E152B
	17:18:20	*Empty*	E152A
	17:18:24	"E153 PAR?"	VC23
	17:18:25	*Empty*	E152A
	17:18:28	"PAR side Delta Exterior."	OAC 900900A
	17:18:30	*Empty*	153A
	17:18:31	"Can you confirm that 15 double pulled?"	VC23
	17:18:35	"Yeah, that's right, patient in cardiac arrest."	OAC 900900A

Event	Time	Annotation	Identifier
	17:18:39	"E331 PAR?"	VC23
	17:18:46	"Negative, one missing?"	E331B
	17:18:49	"Who are you missing and where were they last at?"	VC23
	17:19:01	"Chief 15-1 to Command."	Chief 15-1
	17:19:04	"Chief 15-1, go ahead."	VC23
	17:19:07	"Taking over the Charlie Command, Assistant Chief is coming to you."	Chief 15-1
	17:19:12	"Ok, I need you to track down E331; they say they are still looking for somebody."	VC23
	17:19:12	*Rejected Transmission*	C3A
	17:19:14	*Rejected Transmission*	C3A
	17:19:18	"Chief 3 to all units, I need to look for [E331C]. [I] just need to confirm his whereabouts."	C3A
	17:19:19	*Rejected Transmission*	Chief 15-1
	17:19:30	"E331 is PAR."	E331B
	17:19:35	"Copy, RS3 PAR?"	VC23
	17:19:38	"We're PAR."	RS3A
	17:19:40	"TR23 PAR?"	VC23
	17:19:44	"TR23 is PAR with three."	TR23A
	17:19:47	"TR4-1 PAR?"	VC23
	17:19:50	"PAR with three."	TR41A
	17:19:51	"E201, Carroll E12, Howard Engine Tanker 44, Montgomery T722 due, 9510 Ball Road between Tabler Road and Ijamsville Road for the house fire; 9 Delta."	9 Alpha
	17:19:52	"Ok, the First Alarm units have all registered as accounted for. E31, your location?"	VC23
	17:20:04	"E31 on Side Charlie."	E31C
	17:20:05	*Rejected Transmission*	A158A

Event	Time	Annotation	Identifier
	17:20:09	"Ok, for clarification, on the fireground we are transitioning to a defensive attack, a defensive attack. Command to the Charlie Division."	VC23
	17:20:19	"For now, go ahead."	C3A
	17:20:23	*Rejected Transmission*	VC23
	17:20:24	"I know you have TR50 coming to you and TR23 set up from the Alpha side, you're going to have to let me know what you need."	VC23
	17:20:25	*Rejected Transmission*	Chief 15-1
	17:20:32	"Charlie Division to Command, at this time, we need a Lucas, right now."	Chief 15-1
	17:20:32	*Rejected Transmission*	C3A
E201 responding	17:20:41		E201
	17:20:44	"Command, also Chief 3 to Command, we found E331C."	C3A
	17:20:45	*Rejected Transmission*	BSU 15
	17:20:47	*Rejected Transmission*	ZC$2501580
	17:20:48	*Rejected Transmission*	SAFETY900A
	17:20:51	"ET224 responding."	ET224
	17:20:53	"Safety to Command, is EMS901 onscene?"	SCapt900A
	17:20:54	*Rejected Transmission*	VC23
	17:21:00	"EMS901 come in."	VC23
	17:21:01	*Rejected Transmission*	EMS901A
	17:21:06	"I am onscene; what ambulance am I looking for?"	EMS901A
	17:21:10	"We are still in the backyard of the house on the Charlie-Delta corner. We need you."	SCapt900A

Event	Time	Annotation	Identifier
	17:21:20	"I'm enroute."	EMS901A
	17:21:20	*Rejected Transmission*	E23A
	17:22:05	"Ok, T1, shutdown that line you have coming around to the Delta side, it's burned up."	C3A
	17:22:12	"Alright, I'll let him know."	T1A
	17:22:12	*Rejected Transmission*	VC23
	17:22:15	"Command to Side Charlie."	VC23
	17:22:18	"Go Command."	Chief 15-1
	17:22:21	"If TR50 has a good position and has water, uh, go ahead and start flowing. We're working on 23, on TR23, here for a few minutes, okay?"	VC23
	17:22:34	*Empty*	Chief 15-1
	17:22:35	"Copy TR50, you can let your water go. Also, I have TR50's crew working a handline on the Charlie Division. Everyone accounted for on the Charlie side this time."	Chief 15-1
	17:22:48	"Okay, the building should be evacuated, everything is clear, I'm just going to count on you to be my eyes back there, I can't see what is going on."	VC23
	17:23:00	"I got you []."	Chief 15-1
	17:23:35	"Charlie Division to Command."	Chief 15-1
	17:23:40	"Go ahead."	VC23
	17:23:43	"If you have any free crews, you may want to get somebody in the garage too. I think the fire is burning in there."	Chief 15-1
	17:23:51	"Alright, can they operate in there independent of what's on with TR50?"	VC23
	17:23:57	"Uh, we're going to need, I'm using them right now, I'm probably going to need another crew and another line if you can get them over there."	Chief 15-1
	17:24:05	"Ok, Company, 20 personnel standing in front of Command."	VC23

Event	Time	Annotation	Identifier
	17:24:15	"Is there a line already back there?"	VC23
	17:24:18	"I have a line here; I don't believe there is one on that side. They're probably going to have to find one off somebody up front."	Chief 15-1
	17:24:38	*Empty*	CC_X37(B)
	17:24:39	*Empty*	CC_X37(B)
	17:24:42	*Rejected Transmission*	SCapt900A
	17:24:45	"Chief 4-1 to Command."	Chief 4-1
	17:24:45	*Rejected Transmission*	SCapt900A
	17:24:48	"Go ahead."	VC23
	17:24:52	*Empty*	Chief 4-1
	17:24:53	"Confirming, it looks like we do have propane going into the house, but we can't find the tank or the shut-off."	Chief 4-1
	17:25:02	"Ok, it's probably buried out in the yard somewhere, we're going to have to look for the cap. I'll see if I can find somebody to do that."	VC23
	17:25:22	"Safety to Command, did you already give a landing zone."	SCapt900A
	17:25:25	*Rejected Transmission*	VC23
	17:25:29	"Go again Safety."	VC23
	17:25:32	"Do they already have a landing zone? They have a clear field right behind where the patient is located."	SCapt900A
	17:25:38	"Go ahead and use it, can you coordinate that with Frederick."	VC23
	17:25:43	"Will do, is there an alternate channel?"	SCapt900A
	17:25:46	*Rejected Transmission*	VC23
	17:25:47	"For that, can you ask Frederick to go ahead and move you to another channel?"	VC23

Event	Time	Annotation	Identifier
	17:25:53	“Frederick, do you copy? SCapt900, alternate channel with the Trooper?”	SCapt900A
	17:25:53	“SCapt901, switch to 9 India, 9 India 17:26.”	PSTF14
	17:25:58	“SCapt901, switch to 9 India, 9 India 17:26.”	PSTF14
	17:26:30	“Command, we gonna get that helicopter right in the back.”	C3A
	17:26:37	“Uh, Safety900 has them on 9 India, you can go direct with him?	VC23
	17:36:54	“[TR]23, shut TR50’s supply line down.”	BAT902B
	17:27:04	“Chief 4-1 to Command, I found the tank and the propane is shut–off.”	Chief 4-1
	17:27:12	“Ok, Side Charlie, do you copy?”	VC23
	17:27:14	“Copy, I'll let you know if this fire goes out now.”	Chief 15-1
	17:27:19	“Ok, ET114, come back to the Command.”	VC23
	17:27:32	“[ET]204 to Command, we’re out of hand lines up here, don’t have enough to stick in the garage.”	ET204A
Trooper 3 Arrives	17:27:57		

SECTION 8: UNIT ACTIONS

Section 8 describes in detail the operational and logistical actions taken by each responding unit at the Ball Road incident.

8.1 Chief 900

Chief 900 was in the office preparing to depart for the day after his shift when the pre-alert went out for the Ball Road incident. Realizing it was not far from his current location, Chief 900 decided to respond non-emergency to the call, as he often did.

While Chief 900 started his car and was preparing to pull out, he heard E251A provide his layout information and his on-scene report. Approaching the Ball Road address from the West, Chief 900 observed smoke from the dispatched location. He had not yet heard a Command Officer mark on-scene. As Chief 900 crested the hill in front of the Ball Road address, he heard Chief 23 arrive on location and assume Command. He saw OPSAC900 arrive right after Chief 23 and heard the request from Chief 23 for OPSAC900 to "dress out."

Chief 900, attempting not to obstruct access for incoming units, cut through the front yard. As Chief 900 approached the house, he observed fire conditions on the Bravo and Charlie side of the structure.

After observing Side Bravo, and a portion of Side Charlie, conditions, Chief 900 positioned his vehicle in the same proximity as Chief 23 and OPSAC900. As he exited the vehicle, Chief 900 had a brief conversation with OPSAC900 about the fire running Side Charlie of the structure. Chief 900 grabbed his tactical worksheet from his vehicle and got in Chief 23's vehicle to serve as the Command Aide.

Chief 900 began documenting, on his tactical worksheet, the units responding to the Ball Road incident. Next, he placed Chief 23's portable radio on the assigned water supply channel, 9 Echo.

Operationally, the units on scene were E251, E231, E331, TR23, and T33. Strategically, Chief 23, and Chief 900 reported they were waiting for an update from OPSAC900 on Side Charlie before deciding on the broader strategy and incident action plan.

While Chief 900 completed writing down the responding units, he observed Chief 23 on the portable radio, focusing on water supply operations because E251's supply line had not yet been charged. Chief 900 observed E231C stretching a hoseline from E251 to the front door on Side Alpha. At 17:00:52, E251A communicated his Mayday message. From this point on, Chief 900 informally transitioned into the role of the Incident Commander.

E331 arrived on-scene and had a quick face-to-face with Chief 900 at the Command Post. Chief 900 directed the crew of E331 to stretch a 2 1/2" line hoseline to Side Charlie from E251. E331's crew deployed a 2 1/2" hoseline to Side Charlie; however, they did not immediately charge the line due to a lack of a sustainable water supply.

At 17:01, BC-901 arrived, and Chief 900 directed BC-901 to assemble a second RIT team per the DFRS RIT policy. At 17:01, Chief 900 observed the crews from E231, E152, and TR23 beginning to enter the structure through the front door on Side Alpha. At that time, Volunteer Chief 15-1 arrived on location and made face-to-face contact with Chief 900 at the Command Post; Chief 900 directed Volunteer Chief 15-1 to go to Side Charlie and assist OPSAC900.

At 17:03, the following exchange occurred between Volunteer Chief 15-1 and Chief 900:

Chief 15-1 to Chief 900: "We need water in this line right now; no one has gotten to this guy, and he is still in the basement."

Chief 900 to Chief 15-1: "Ok, do you have a visual on him now?"

Chief 15-1 to Chief 900: "I do not. Who is it?"

Chief 900 to Chief 15-1: "Lt. Laird E251, Ops Assistant Chief 900, should be on the back and has a protection line on him right now."

Chief 15-1 to Chief 900: "Alright, I am with him right now, and he has a line running."

At 17:03, OPSAC900 contacted Chief 900, stating, "[I've had] verbal contact with the firefighter, he did fall through the floor, a company from 1 and E231 have a line on the interior trying to keep the fire in check and make access to him. Give me the next company to standby with RIT equipment for the extraction on the Charlie side, ok?" At 17:05:09, RS3's crew had arrived on-scene and approached Side Alpha. Chief 900 directed the crew from RS3 to get the RIT equipment and report to OPSAC900 on Side Charlie.

At 17:05:13, Frederick Dispatch sounded the Mayday Tone and made the following transmission, "Frederick to all units, a Mayday has been received from E251A. Any units not involved in the Mayday switch to 9 India." Chief 900 responded, "That's negative, units do not change channels, everyone remain[s] on 9 Delta. Frederick, I've got it."

As the crews from E231, E152, and TR23 advanced further into the first floor, Chief 900 observed smoke conditions becoming more significant from the front door and the roof's eaves. At 17:05, Chief 900 checked in with E231A and asked, "[a]re you making progress on Division one?" E231A responded, "[w]e're trying; if they could charge the line off the rear, it would help us out greatly." Chief 900 replied, "[u]nderstood, we're working on the water issue."

At 17:07, OPSAC900 notified Chief 900, "I'll take the Charlie Division; right now, we've got crews assembling, we still have verbal contact, we're unable to make access via the fire floor to get down there. I've just sent the Rescue Squad and the Captain from 231 to another basement entrance to see if they can traverse from the other side of the house to make access, ok?"

At 17:10, Chief 900 requested a 2nd Alarm. At 17:11, OPSAC900 notified Chief 900 of the following, "[s]moke conditions are worsening on the Charlie side, we have thick brown turbulent smoke running the roofline. I recommend you put the master stream up to prepare for once we make the rescue. It looks like we are losing the attic and upper floor."

At 17:12, Chief 900 called "E231A Division 1," OPSAC900 responded, "Chief Captain Bennett redeployed with RS3 to the basement as part of the RIT. We're not sure where his firefighter went, I think he was holding the fire on the interior on the first floor." (The information from OPSAC900 about E231 firefighter was not accurate).

At 17:12:13, E231A called Command saying, "231A to Command. I'm with Captain off RS3 and the firefighter; we found him currently unconscious; we're heading your way; we need EMS to the Delta side." At 17:12:31, Chief 900 requested Aviation.

At 17:13:17, Chief 900 called TR23's operator and stated, "[i]f you're not engaged in the firefight, I need to transition to set up for a master stream operation." At 17:14, Chief 900 asked Charlie Division Supervisor, OPSAC900 if he could confirm when the extrication was complete so that he could evacuate and complete a PAR.

At 17:14, TR23A reported to Command that his crew was in the Bravo quadrant and running low on air. Chief 900 responded, "[o]k, TR23 can you confirm you have your entire crew?" Truck23A replied, "I have

myself and one firefighter from 231 (231C). At 17:16, E251C 1 notified Command that he was out on Side Bravo next to E251

At 17:16:41, OPSAC900 made the following transmission, "[u]nits hold your traffic. Command, the firefighter is out, appears to be unconscious. He's in the care of Medic 23." At 17:16:53, Chief 900 made the following transmission, "[c]opy, Command to Frederick, sound the evacuation tone."

At 17:17:24, Chief 900 directed all units to prepare for a PAR check. At 17:19:52, Chief 900 had accounted for all units operating on the first alarm. At 17:20, Chief 900 made the following transmission "[o]k, for clarification on the fireground, we are transitioning to a defensive attack, a defensive attack."

At this point, Volunteer Chief 3 had relieved OPSAC900 as the Charlie Division Supervisor. At 17:20:24, Chief 900 directed Volunteer Chief 3, stating, "I know you have TR50 coming to you, and TR23 set up from the Alpha side, you're going to have to let me know what you need."

Chief 900 then gave the radio back to Chief 23 and transitioned into the family notification process. Volunteer DC-900 assumed the Command Aide position in Chief 23's vehicle.

8.2 Operations Assistant Chief 900

Operations Assistant Chief 900 (“OPSAC900”) was pulling up to his residence near the dispatched address when the box alarm for Ball Road was dispatched.

At 16:55, OPSAC900 arrived on location just behind Chief 23. On channel 9-Delta, OPSAC900 asked Chief 23, "[d]o you want me at the Command Post or gear up and go in?" Chief 23 responded, "[g]ear up and get ready to go in." As OPSAC900 was donning his PPE, he had a brief face-to-face conversation with Chief 23 (IC). Chief 23 stated, "[w]ater supply is going to be kind of a mess here."

At this time, Chief 900 (Fire Chief) arrived and positioned his vehicle in the same general location as OPSAC900. Chief 900 told OPSAC900 that the fire was running the ridgeline on Side Charlie. OPSAC900 directed Chief 900 to jump in the car with Chief 23 and assist him with the water supply. Based on his conversation with Chief 900, OPSAC900 decided to deploy a 200' 1 ¾" preconnected hoseline from E251 and stretched it, without assistance, to Side Charlie.

OPSAC900 was stretching his line around to Side Bravo when he encountered Engine 251A (Officer) and Engine 251C (Nozzle). He observed them flowing water, from the exterior, through a double set of windows into the family room. OPSAC900 had a brief face-to-face conversation with E251A. He conveyed he would stretch his line to Side Charlie to knock down the fire running the soffit area between the first and second floors, the second floor, and the attic area above the balcony.

After flaking out his line, OPSAC900 called Engine 251B to charge the second line and observed E251B running back to the Engine after throwing a ground ladder to Side Charlie. E251B quickly returned and charged the line. OPSAC900 quickly extinguished the fire running the soffit area into the attic and began flowing water into the family room from Side Charlie. Simultaneously, E251A and E251C operated their line into the same room from Side Bravo.

At this point, E251A walked over to OPSAC900 on Side Charlie of the structure. OPSAC900 asked E251A if the fire had gotten past them, meaning had the fire extended out of the family room towards Side Delta of the structure, to which E251A replied, "no." OPSAC900 then asked E251A if he was sure and if "he had laid eyes in there," to which E251A replied "yes.” With both lines flowing into the family room from the exterior on Side Bravo and Side Charlie, OPSAC900 directed Command, via radio transmission, to have the next line stretched to enter through the Alpha Side to "hold the first floor."

After making this transmission, OPSAC900 observed E251A standing on the Side Charlie patio, near a set of French doors, and one single French door, leading into the family room. OPSAC900 then began losing water pressure in the line. He looked back to see if there were any apparent kinks in the hoseline and saw E251A standing inside the family room, around a triple set of bay windows just to the right of the single French entry doorway.

E251A called for OPSAC900 to pass him the hoseline through the window, to which OPSAC900 replied, "[n]o, we're not going in. We don't have good water, and I don't have enough hoseline." OPSAC900 set down the hoseline and followed the line back towards Engine 251 to pull more hose back towards his position on Side Charlie. When OPSAC900 returned to the nozzle, he no longer saw Engine 251A standing inside the family room. Almost immediately, at 17:00:52, E251A transmitted the Mayday call. OPSAC900 called Command to make sure they copied the Mayday transmission. OPSAC900 noted that E251A was calm during the Mayday transmission, and 251A's SCBA was still intact.

OPSAC900 began flowing water into the bay windows where he had last seen E251A. At 17:01, OPSAC900 called Command to let him know that he (OPSAC900) had the backup line and was holding the fire in-check where he believed E251A had fallen through but was running out of water and needed to be the primary line. According to the Official Incident Chronology, in less than two minutes the backup line was fully charged and never lost water at any point in the rescue effort. OPSAC900 then handed the line through the

back door to E152C, operating with his company on the first floor, and continued to flow water into the hole.

At this juncture, OPSAC900 was no longer committed to the backup line and recognized that he needed to assume more of a Command position and self-assumed the role of Side Charlie supervisor. He immediately saw E231A exit through the rear French doors. E231A told OPSAC900 he would look for an exterior basement entrance and proceeded towards Side Delta.

At approximately 17:05, crews from RS3 and BC-903 arrived on Side Charlie; they were directed to follow E231A in search of another way into the basement by OPSAC900. At 17:07, OPSAC900 called to inform Command he had assumed Charlie Division had continued contact with E251A; however, they could not get down the hole. OPSAC900 then advised Command he had directed E231A and the crew from RS3 to attempt traversing the basement from the other side of the house, Side Delta.

At 17:08:02, the following transmissions on Delta between OPSAC900, Engine 251A and Command occurred:

17:08:02 OPSAC900 to Engine 251A: "Ops AC900 to Captain Laird Engine 251A come in?"

17:08:08 Engine 251A to OPSAC900: "Go ahead."

17:08:10 OPSAC900 to Engine 251A: "Where are you, what quadrant?"

17:08:13 Engine 251A to OPSAC900: "I think I'm in the C corner, they hit the fire, now I'm stuck, and I'm burning up."

17:08:23 OPSAC900 to Engine 251A and Command: "Ok, I copy; I'm getting ready to send Battalion Chief Healy in the alternate basement door with Rescue Squad 3. He'll be the RIT group supervisor. Rescue Squad 3, Chief Healy is coming to you. He is advising he fell through in the Charlie quadrant, which should have been the floor just inside the door where we were operating, ok Rescue Squad 3."

17:10:29, OPSAC900 to Command: "[have you] requested the second?"

17:10:49, OPSAC900 to Engine 251A: "Captain Laird, can we lower the RIT pack to you, or is the fire coming up through the hole you fell through?"

There was no response from Engine 251A.

At 17:11:10, OPSAC900 observed smoke and fire conditions worsening in the family room extending vertically. He called Command reporting, "smoke conditions are worsening on the Charlie side. We have thick brown turbulent smoke running along the roofline. I recommend you put the master stream up to prepare for once we make the rescue. It looks like we are losing the attic and upper floors."

OPSAC900 repositioned over to the Charlie-Delta corner and observed the RIT Team as they extracted E251A from the basement, removed E251A, and started CPR. At this point, OPSAC900 transferred Side Charlie responsibilities to Chief-15A.

8.3 Volunteer Chief 23

At 16:49 hours, the box alarm for 9530 Ball Road was dispatched. At that time, Volunteer Chief 23 ("Chief 23") was traveling on Route 355, Urbana Pike, from an unrelated meeting in his duty vehicle provided by the Urbana Volunteer Fire Department. Chief 23 added to the incident and began responding to the incident. While enroute, he observed the smoke from about a mile away and heard the on-scene report from E251. Chief 23 thought this was unusual because E251 would usually be 2nd Due, but he was unaware of its location before the call and where it was coming from to Ball Road.

Chief 23 arrived and began traveling up the driveway to the structure, observing a large amount of smoke from the lower end of the driveway. He saw E251 positioned in the driveway on the Alpha-Bravo corner and TR23 on Side Alpha. Chief 23 traveled up the driveway, pulling up onto the yard to loop around the structure from Alpha to Side Bravo. He observed no fire or smoke conditions on Side Delta from the driveway, but smoke showing on Side Alpha.

As he made his way through the yard on Side Bravo in his vehicle, he saw a large amount of smoke obscuring the structure and that the entire bump-out on Side Charlie was engulfed. Additionally, Chief 23 observed personnel operating on Side Bravo and a hoseline on the ground but could not confirm the assigned unit.

From where Chief 23 was traveling, he only had visibility on Side Bravo and some of Side Charlie due to a fence around the rear yard. He made a loop in the yard, returned to Side Alpha, and positioned his vehicle at the rear of E251, with the front of his vehicle facing Side Alpha of the structure. Chief 23 transmitted a Command Statement, "Chief 23 to Frederick I am on scene, Side Alpha, two-story house, heavy fire showing, I'll have command on Side Alpha." Chief 23 stated he parked his vehicle angled to see out of his driver-side mirror the end of the driveway where the water supply operations were taking place.

OPSAC900 arrived almost immediately behind Chief 23. OPSAC900 contacted Chief 23 to notify him that he was on-scene and asked what assignment he would like OPSAC900 to take. Chief 23 directed OPSAC900 to "gear up and get ready to go in." Chief 23 made this decision because he wanted OPSAC900 to "put eyes on it and see what our tactic is going to be."

Chief 23 retrieved his tactical worksheet and started writing down incident information when he saw Chief 900 arriving in his vehicle and parking right next to him on Side Alpha of the structure. Chief 900 immediately entered Chief 23's vehicle and started recording information, operating as Chief 23' Aide. At that time, there were only three units on scene, E251, E231, and Truck 23. E231 made their way up the hill and pulled a hoseline to Side Alpha of the structure.

TR23A reported to Chief 23 that he had completed a lap and commented on the fire conditions present. Seconds later, E251A communicated that he had not completed a 360. Chief 23 acknowledged neither of the reports.

At 16:56 hours, E331A arrived and called Command asking if he would like E331 to take the third Due assignment because they arrived third. Chief 23 stated, "[y]ou're third arriving. take third due." Hearing Chief 23-1's marking enroute, Chief 23 directed Chief 23-1 to take the water supply position and [switch to] a separate channel (9-Echo). Chief 23 placed a portable radio on 9-Echo in his vehicle to listen to the water supply operation while commanding the incident.

At this time, Chief 23 began communicating with the units coordinating the water supply. He asked E231 if they had laid a supply line in and inquired if it would supply E251's supply line in the relay up the driveway. Chief 23 then asked all units on scene at the end of the driveway to identify their Unit Designator because he wanted another engine up at the scene on Side Alpha. Utilizing his side mirror, Chief 23 stated on 9-Delta for 15's Engine to "jump the line and drive up the field, I want another engine up here." Chief 23 was unaware

at the time that Company 15 had two engines responding to the incident. These communications caused some confusion for E152 and E153.

Chief 23 inquired with Tanker 33 if they would be supplying the Siamese at the end of the driveway relay, to which Tanker 33 responded affirmatively. Chief 23 directed Tanker 33 to "send it when they can."

Up to this point, Chief 23 had not provided any specific tactical direction as he had remarked that he was waiting for OPSAC900 to "[l]et us know what we need to do and what he (OPSAC900) wants to do." Unbeknownst to Chief 23, OPSAC900 and Chief 900 had a preliminary conversation about fire running the backside of the house, so OPSAC900 decided to deploy a second line to Side Bravo. This action placed OPSAC900 in a task-level position, as opposed to a tactical-level chief officer position. While OPSAC900 attempted to do both, it is rarely, if ever, effective.

Considering the first two lines were deployed to side Charlie, OPSAC900 recommended Chief 23 that the next hoseline be stretched to Side Alpha to "hold the interior." Chief 23 did not acknowledge the transmission, but E231 swiftly replied to OPSAC900 that it "will stretch the line to the front door." That transmission was followed up immediately by Chief 23 to E231, "you got that right, 231?"

E251A transmitted his Mayday at 17:00 hours, immediately followed by the following transmissions on 9-Delta:

OPSAC900 to Chief 23: "Chief, do you copy the Mayday?"

Chief 23 to OPSAC900: "Command copy the Mayday, E231, E231 officer, did you copy?"

After some dialogue between OPSAC900 and E231 Officer, Chief 23 requested Frederick dispatch a "Fire Task Force" to the scene. Chief 23 made a general statement on 9-Delta, "E251, E231 is coming your way right now." Chief 23 then attempted to reach E153A and asked, "[w]here is your crew?" Following this message, being that a sustainable water supply had not yet been established, OPSAC900 communicated directly with Chief 23 on 9-Delta, that he had a hoseline operating in the space where E251A had fallen and needed to be the primary hoseline.

At this point in the incident, Chief 900 took over, communicating on 9-Delta, and Chief 23 assumed that Chief 900 was now the Incident Commander. There was no formal transfer of Command communicated between Chief 23 and Chief 900 in the command vehicle or by radio. Chief 900 took possession of the one mobile radio in Chief 23's vehicle to communicate with units, which required Chief 23 to resort to utilizing his portable radio.

When Chief 900 started managing the activities on 9-Delta. Chief 23 immediately went to the portable radio in the vehicle, turning his complete focus on making sure the sustainable water supply was completed. Subsequently, Chief 23 could not pay much attention to the Mayday operation.

Over the next several minutes, Chief 23 made a series of transmissions to the Water Supply Officer (Chief 23-1). Chief 23 asked, "[c]an you get an ambulance through the field and up to the scene?" Chief 23's next transmission to the Water Supply officer was to direct him to have the ambulance follow the path of Tanker 1 (up through the yard) to get up to the scene. Shortly after, Chief 23 contacted the Water Supply Officer again and stated, "Truck 50 came up the same way as Tanker 1, see if you get an engine to supply him." The last transmission from Chief 23 to the Water Supply Officer was requesting the units down at the end of the driveway to bring 2" hoseline bundle packs up to the fireground.

Upon the extraction of E251A, completion of the PAR check, and following the evacuation tones, Chief 900 exited the vehicle, and Chief 23 was placed back in Command of the incident. There was no formal announcement on 9 – Delta of the transfer of Command back to Chief 23. Chief 23 made a transmission

to have TR50 start flowing their aerial master stream and returned to focusing on the fire in the bump-out and traveling into the main body of the house.

As E251A was transferred to MSP Trooper 3, Chief 4-1 sent a final transmission to Chief 23, stating he had located and shut down the propane tank.

8.4 Engine 251

At the time of dispatch, E251, with a crew of three, was returning to quarters from a previous incident with TR23 (3996 Braidwood Drive in Urbana). At 16:49, E251 was dispatched as the second due Engine Company to 9510 Ball Road.

E251 was sitting at the intersection of Route 80 and Ijamsville Road, near the dispatched location, when they heard the pre-alert for Ball Road and simultaneously saw it come up on the MDT. Because they were coming back from a previous incident, E251A was already wearing his turnout pants and coat. E251C was wearing only his turnout pants, so he immediately began donning the rest of his PPE on the way to the call.

While driving on Ijamsville Road, E251B could see a column of smoke and said, "[h]ey Captain, look left." When they arrived on Ball Road, they could see a haze of smoke but could not easily see anything else because of the trees on Ball Road. At 16:50, E251 mistakenly passed the driveway on the right-hand side of Ball Road. They quickly turned around in the first driveway across the street from the dispatched address.

Figure 32: View of the driveway as E251 would have viewed it as they approached.

After turning around, E251 turned left to head up the long driveway towards the structure. As E251 got to the split in the driveway, they stopped where the driveway split. Engine 251A asked E251B, "[d]o you think we can make that lay?" referring to the distances between the split in the driveway and the structure. After confirming, E251B got out of E251 and wrapped their LDH supply line around a black pole in the driveway.

E251, dispatched as the second due engine, assumed the first due position. This was never communicated to or approved by Battalion 901. At 16:51, E251A provided the following water supply statement; "[w] e're on the scene lying from halfway back the lane." As E251 positioned on the Alpha-Bravo corner of the structure just before the garage, E251A provided the following on-scene report; "[o]n the scene, large 3 ½, 2 ½, story, single family, we do have a working fire, go ahead and start RID and tanker task force."

Due to the large volume of smoke present, Engine 251 was positioned on the Alpha-Bravo corner of the structure. As E251's crew exited the cab, E251C deployed the officer side cross lay (green 200' 1 ¾" with 75 PSI fog nozzle) and, with assistance from E251B, took the line around to Side Bravo and flaked it out in front of the garage. Once the line was flaked out, E251A said to E251C, "[y]ou get my bottle, I'll get yours," meaning that they would assist one another in opening their SCBA cylinder valve. E251C fully opened E251A's cylinder valve; however, E251C had already turned on his own cylinder.

Figure 33: View of smoke and fire conditions early into the incident. Due to the volume of fire and environmental conditions, smoke was banked down to the street level upon E251's arrival.

E251B continued connecting the supply line to the officer side intake, E251A and E251C stretched the attack line over to the family room bump-out, which connected the Bravo and Charlie sides of the structure. Once E251B charged the attack line, E251A directed E251C, "[l]et's hit it right here at the window," pointing to the windows just to the right of the chimney. Due to heat and smoke conditions where E251A and E251C were operating (exterior just outside the windows), both E251A and E251C utilized their SCBA.

While E251A and E251C continued to make an exterior knockdown of the fire in the family room, E251B threw a 14' roof ladder to the far-right 2nd-floor window on Side Alpha. E251C reported that they were starting to lose some pressure in the line, so he handed the nozzle to E251A and went to chase out any possible kinks in the line. When E251C returned, E251A said, "[w]e've got to get in there" and gave the nozzle back to E251C, who continued flowing water into the family room from the exterior.

E251B took a 28' extension ladder to Side Delta, leaned it up against the fence, jumped over the fence, and proceeded to throw the ladder against the balcony on Side Charlie. As E251B returned to the engine, he heard OPSAC900 call for his line to be charged.

E251A walked over towards Side Charlie of the structure while E251C remained at his location on Side Bravo, flowing water into the family room. On Side Charlie, OPSAC900 had a face-to-face conversation with E251A. OPSAC900 was concerned about the fire extending into the Charlie and Delta quadrant. OPSAC900

asked E251 if the fire had "gotten past us," E251A replied, "no." Looking for confirmation, OPSAC900 then asked E251A if he had "looked in there," E251A replied, "yes."

Immediately following the conversation, E251A walked from the rear yard to the back patio. Both OPSAC900 and E251C confirmed seeing E251A in this location. It is unknown how E251A entered the structure, but he was seen standing inside the kitchen nook area, just in front of the bay windows. E251A told OPSAC900, "[h]and me the line." OPSAC900 told E251A, "[n]o we're not going in. We don't have good water, and I don't have enough hoseline."

Figure 34: View of Side Charlie of the structure post fire.

OPSAC900 set down the hoseline and followed the line back towards E251 to pull more hose back towards his position on Side Charlie. When OPSAC900 returned to the nozzle, he no longer saw Engine 251A standing inside the family room. Then, from outside of the structure on Side Bravo, E251C heard a loud crash-like sound and looked in the window. He saw two holes in the floor on each side of a large beam traversing Side Bravo to Side Charlie. Within seconds he could hear E251A screaming. E251C said he didn't know what to do, so he began flowing water in the window again.

At 17:00:52, in a clear and calm voice, E251A made the following transmission on channel 9-Delta, "Mayday, Mayday, Mayday. Captain Laird E251A has fallen through the floor in the fire room." Immediately, E251B went and pulled the RIT pack from TR23 and put it by the front door. Data logging showed that E251C switched his radio from 9-Delta to 9-Alpha. While E251C was unsure why he made the decision to change channels, it is believed that he did so because thought he may have activated his Emergency Activation (EA) button and didn't want to prevent E251A from communicating on the radio.

At 17:01, after three of his attempted transmissions were rejected, E251A communicated, "I am in the basement." At 17:02, E251A reported, "I had to evacuate from where I was, I was burning up."

At 17:01, OPSAC900 called Command stating, "Chief, I've got the backup line, number 2 crosslay off [E]251. I'm holding the fire in check where he fell through the floor, but I'm running out of water and need to be the primary line." E251B responded, "I've got no water, standby." It is estimated that E251 re-established its

water supply within about two minutes from OPSAC900's request and reestablished water in all of the hoselines deployed from E251.

Chief 15-1 asked E251A if he could hear him. At 17:03, E251A replied, "I can only hear your radio. I had to remove myself from the fire room. I was burning up." E251A's PASS device could be heard in the background.

At 17:04, E251A said, "[d]rop a ladder down in this hole and put the fire out, and I'll walk out." Seconds later, still at 17:04, E251 made an unintelligible radio transmission. Data logs show that from 17:05:09 to 17:07:44 (2 minutes, 35 seconds), E251A made seven (7) attempts to transmit on his radio, but the radio system rejected his attempts. At 17:07, E251A called Command; his message was unintelligible and was never answered by Command.

At 17:08, E251A transmitted, "I think I'm in the C corner, they hit the fire, now I'm stuck, and I'm burning up." Twenty-four (24) seconds later, E251A made another unintelligible transmission. At 17:09, E251A made his final transmission "[t]ell my family I love them." After that transmission, the radio system rejected three transmissions from E251A at 17:10:15, 17:10:17 and 17:10:21, prior to the arrival of the rescue team.

At 17:16, E251C returned to E251 to tell the Driver he was okay and to change his SCBA cylinder. E251C sent a transmission stating, "E251 C to Command, I am out Bravo side of the corner by E251."

At 17:16:44, OPSAC900-900 made the following transmission, "[u]nits hold your traffic. Command the firefighter is out, appears to be unconscious. He's in the care of medic 23."

At this point, the remaining crew from E251 was assigned to Rehab and then transported back to Fire Headquarters to collect written statements.

8.5 Engine 231

Dispatched as the first due engine, Engine 231 ("E231") with a crew of three was in quarters at the time of dispatch. As E231 traveled its regular running route for that location, they encountered multiple traffic lights out along Route 80, at key intersections, presumably due to the storms that moved through the Frederick area that day.

At 16:51, a couple of minutes after dispatch, E251 was in the proximity of Ball Road after returning from another incident, assumed the first due position, and provided his initial on-scene report. E251's location informally placed E231 into the second due engine position. Because E251 had not provided a sustainable water site location, BC-901 (first due Battalion Chief) asked E231A if he had identified a primary water supply. E231A confirmed that the pond at 9301 Ball Road was a viable water source. Additionally, E231A noted that there might be access issues getting to the pond, and if so, a secondary source would be a hydrant located at Ball Road and Tabler Road.

E231A asked E251B to confirm that E231 had enough supply line to complete E251's layout, from Ball Road, up the driveway to where E251 had dropped their split layout. E251B confirmed that they had dropped 500' feet of LDH from the split at the top of the driveway up to the house, and E231 would have sufficient hose to complete the lay from Ball Road.

E231B got out, wrapped the LDH around the mailboxes at the entrance to the driveway on Ball Road, and proceeded up the driveway. While coming up the driveway, E231B struggled to see where E251's supply line was dropped because the LDH was green and blended in with the grass. After making the turn at the fork in the driveway, E231B observed Engine 251's supply line positioned in a way preventing E231 from obtaining an optimal position. E231B then began to get the supply line hooked up.

While E231B focused on water supply, E231A and E231C began walking up the driveway, noticing most of the fire and smoke presented on Side Bravo.

At 16:58, E231B sent 750 gallons of water to E251, most of the water was used filling the hose. At 16:59, E231B advised via radio that he needed water from E331. One minute later, E231B transmitted that he would run out of water "real soon." Just 30 seconds later, E231 made the transmission, "E231 needs water now."

E153 came up the driveway, positioning behind E231. E231B requested water from E153 but could not immediately locate E153B, so E152B assisted by connecting E231's LDH coming from Ball Road to E153's intake and discharge going to E231. E231B then completed his connection to E153, completing the relay. Once the hoselines were connected, E153B sent his tank water to E251 through E231.

As E231A and E231C approached the structure from Side Alpha, OPSAC900 told Command he had two lines operating from Side Charlie and that he wanted the following line to come in from Side Alpha. E231A told Command that he was ok with the message and would stretch a line to the front door from E251.

At the front door, E231A and TR23A had a brief conversation where TR23A told him that the front door had been forced and that crews could make entry when ready. E231A instructed E231C to stretch a 1 ¾" hoseline off E251 and get it to the front door. When E231A got back to the front door, E251A transmitted his Mayday on 9-Delta.

E231A instructed E231C to drop the hoseline and get the Rapid Intervention Team (RIT) Bag from TR23. E231C retrieved the RIT bag and brought it to the Side Alpha door. E231A, E231C, TR23A, TR23C, now joined by E152A, E152C, and E152D, entered the building on Side Alpha to assist E251A and locate the steps to the basement.

Figure 35: View of Side Alpha of the structure immediately prior to the Mayday transmission.

As E231A and E231C traversed the first floor, they ran into a pool table and a foosball table obstructing their pathway. At some point, E231C was knocked down from behind, fell to the floor, and lost contact with E231A. E231A, unaware that E231C was no longer with him, met up with E152A towards the back of the house. E231A told E152A that he could not locate the basement steps from the inside and would exit Side Charlie to find an exterior basement entrance.

Meanwhile, E231C quickly recovered but was unable to reconnect with E231A. After a brief encounter with the crew from E152, E231C exited Side Alpha and eventually met up with TR23A and was absorbed as part of the TR23 crew.

When E231A exited the structure, he had a brief conversation with OPSAC900, then continued to Side Delta, where he immediately located the steps to the basement. As RS3's crew arrived, E231A attempted to force the door at the bottom of the steps. RS3A assisted E231A with forcing the door until it opened.

E231A then followed RS3C and RS3D through the door into the basement. After traversing the basement approximately 8-10 feet, E231A heard a PASS alarm coming from the direction of the Alpha quadrant. E231A continued to head straight back to where he believed he heard the PASS device. However, E231A encountered a wall, so he began to move towards his left, continuing in the direction of the Alpha quadrant.

E231A remained in voice contact with RS3's crew as they all continued to make their way towards the back of the basement. At 17:12, E231A heard RS3C and RS3D call out that they had located E251A, so he immediately relayed to Command that E251A had been found unconscious, and they would be exiting with him on Side Delta. E231A and RS3's crew grabbed E251A's shoulder straps and assisted in removing him through the Side Delta basement door.

At this point, the crew was assigned to Rehab and then transported back to Fire Headquarters to collect written statements.

8.6 Engine 331

Engine 331 ("E331") with a crew of three was dispatched as the fifth due engine and was in quarters at the time of dispatch. As E331 approached the Ball Road address, they asked Frederick to confirm that they were the fifth due engine on the Box, which Frederick confirmed.

At 16:56, E331 arrived on-scene. Recognizing that they were the third arriving unit, E331A asked Command if he should stick with fifth due responsibilities or assume the third due position. Command responded, "[i]f you're the third arriving, take third due." In accordance with the SOG's, E331A directed his Driver (E331B) to position and set up for "dump site" operations, so E331B positioned the apparatus at the end of the driveway on Ball Road. E331A and E331C quickly assisted E331B with dropping the hard sleeves from E331 since this was a labor-intensive task.

As E331B continued to set up the dumpsite by himself, Tanker 33, the first due Tanker arrived on location. E331B directed Tanker 33 to proceed up the driveway since they would be operating as the Nurse Tanker; however, Tanker 33 ended up stopping on Ball Road, behind E331. E331B attached a large Siamese to E231's supply line at the entrance to the driveway and began the process of pushing water to the scene.

E331's crew, unaware of the Mayday, arrived at the Command Post and handed the command team their accountability passports. Chief 900 verbally reaffirmed with E331A that a Mayday had been declared, then directed E331A to pull a handline off E251 and report to OPSAC900 on side Charlie.

E331's crew deployed the 2 ½" line off the rear of E251, and E331A directed E251B to charge the line when water was available. Once the crew stretched the handline to Side Charlie, E331A met up with OPSAC900 and Chief 15-1, who attempted to contact E251A from outside the breakfast nook windows adjacent to where the floor had collapsed.

E331A went to the single French door where he saw E152's crew flowing their handline from the interior first floor, down into the basement, through the hole where the floor had collapsed. E331A directed E331C to bring him the 2 ½" line once the line got charged. In doing so, he noticed that E331C did not have his helmet on. E331A directed E331C to go back and find his helmet, so E331C dropped the 2 ½ "line, and went to retrieve it. E331A repositioned towards the breakfast nook window and noted a roof ladder placed through the breakfast nook window from the outside, into the collapsed portion of the floor, and down into the basement. E331A and E152A attempted to bang the ladder up and down onto the basement floor to draw the attention of E251A. Both E331A and E152A recalled hearing Engine 251A yell back to them but could not hear E251A clearly.

At this point, Engine 152A handed the interior 1 ¾" hoseline that he was operating into the basement over to E331A, who was still on the structure's exterior, allowing him (E152A) to attempt climbing down the ladder into the basement to locate and remove E251A. E331A took the line and immediately returned to flowing water into the hole from an exterior position. E331A remained in this position and continued to flow water both into the hole and in the kitchen area, trying to keep the fire in check.

At 17:13, E331A heard the radio transmission that E251A was out of the basement. He dropped the 1 ¾" hoseline he was operating and moved over to side Delta to see if he could assist with patient care.

At 17:18, Command called E331A for a PAR check. E331A responded, "[n]egative, missing one." Referring to E331C. E331A, joined by BC903, began looking for the location of E331C. E331C was located on Side Bravo, operating a handline by himself. E331A notified Command and confirmed that E331 was now PAR.

After completing rehab, the crew was taken by bus back to Headquarters to construct individual narratives of the event.

8.7 Engine 152

Engine 152's ("E152") crew were in quarters at the time of dispatch and were designated as the third due engine. It had a crew of four, three career firefighters, and one volunteer firefighter. The volunteer member had arrived at the station about an hour before the Ball Rd incident was dispatched and jumped on the engine. E152A was unaware of who the volunteer member was or that the volunteer member was at the station to ride.

Upon arrival on-scene, E152 was unaware that Command had already directed E331 to assume the third due position. At 16:59, Command stated he wanted a second engine on Side Alpha closer to the structure. E152B acknowledged Command and advised him that his crew was “already up there.” E152B attempted to reposition the Engine up the driveway but could not get to a point where he could jump the supply hoseline, so he parked the apparatus as far out of the way as possible on the left-hand side of the driveway.

As they walked up the driveway, E152B approached E231B and asked if he needed any help getting his lines hooked up. E231B asked E152B to assist him with getting water to the scene. Engine 152B connected a hoseline to E153's officer-side discharge and directed E153B to send his water up to the scene.

E152A, E152C, and E152D proceeded up the hill towards the structure. While approaching the Bravo side, E152A observed heavy fire coming from Side Charlie. They went directly to the Command Post, and E152A suggested to Chief 900 that since E251 was already on Side Charlie, they could advance a line through the front door. Chief 900 agreed and gave them the okay to do so. The crew from E152 met up at the rear of E251 and assisted E231C with deploying the 300' 1 ¾" hoseline off the rear and taking it to the front door.

While the crews from E231, E152, and TR23 assembled at the front door on Side Alpha, E152A recalled hearing someone say something about the homeowner possibly going back inside. At this point, the officers from E231, E152, and TR23 quickly started to discuss a search plan. This information was never transmitted to the Incident Commander over 9 Delta.

At 17:00:52, Engine 251A declared his Mayday. When the crews at the front door heard the Mayday, they abandoned the uncharged 1 ¾" hoseline in the front yard, in exchange for the RIT pack, and entered the first floor through Side Alpha. As they entered, E152A and E152C began making their way directly back towards Side Charlie. They recalled that they had little to no visibility on the first floor; however, they could see some light coming from the French doors on Side Charlie as they got closer to the floor level. It should be noted that from the time E152A and E152C entered the structure, they were unaware of the exact location of E152D and assumed he might be operating with the crew from TR23. Throughout the investigation, the ESRP was unable to confirm the actions of E152D.

While E231A focused on finding the basement stairs from the interior, the crew from E152 and TR23 separated inside the structure. After entering the structure, the crew from TR23 went to the left. Meanwhile, E152A and E152C went directly to where they believed E251A had fallen through the floor.

E152A and 152C began working their way towards the back of the house, eventually locating the collapsed portion of the floor, where E251A had fallen through. As E152A and E152C located the hole, they began to yell down the hole to see if E251A could answer, which he did by responding, "yeah." At this point, E152A reported that someone standing outside of the breakfast nook windows passed a 1 ¾ line inside to them. E152C immediately began to flow water into the hole. Because the kitchen floor at the site of the hole was unstable, E152A held onto E152C's SCBA bracket to keep him from falling into the hole.

As E152C continued to flow the hoseline into the hole, he felt the floor beneath him give way. In addition, he assessed that the water was not having much of an effect on the fire.

E152A met back up with E231A in the location of the floor collapse and inquired if he had found the interior basement stairs. E231A told him that he had not found the stairs and was going to exit Side Charlie and look for an exterior basement entrance. E152A returned to E152C's location and noticed that the kitchen was now lighting off, and the fire was beginning to roll across the ceiling, back toward the front door.

E152C's Vibralert began to alarm, so he handed the hoseline off to E152A and exited through the Side Charlie to replace his SCBA cylinder. E152A passed the charge hoseline outside the door to E331A and decided to descend the roof ladder into the basement to locate and extract E251A. As E152A began his descent down the ladder, the section of floor that the ladder was resting on started to give way, dropping the top side of the roof ladder onto the breakfast nook window frame. E152A abandoned the ladder, calling out for E251A one last time. The only thing E152A could hear coming from the hole was E251A's PASS alarm.

After attempting to reach E251A from the ladder, E152A exited the structure, met up with E152C, and relocated to Side Delta. Once on side Delta, E152A, E152B, and E152C remained there to assist as needed. At 17:18, Command conducted a PAR check of E152. However, the results of the PAR were delayed until the E152D was eventually located out front of the fire building.

After completing rehab, the crew was taken by bus back to Headquarters to construct individual narratives of the event.

8.8 Engine 153

Dispatched as the fourth due engine, Engine 153 ("E153"), with a crew of four, were in quarters at the time of dispatch. E153, about 40-45 seconds behind E152, arrived on the scene, initially stopping on Ball Road. E153A observed that E251, E231, E331, and E152 were already on-scene, which would make him fifth due engine, and now responsible as the fill site engine. E153A was about to get on the radio and ask Command if he wanted E153 to take fifth due responsibilities when he heard Chief 23 on the radio asking for the engine from 15 to come up the driveway and jump the supply hoseline because he (Chief 23) wanted a second engine up at the scene.

When E153A heard that, he told E153B to head on up the driveway. On the way up the driveway, E153 stopped and picked up E331's crew to drive them up closer to the structure. However, once they started up the driveway, they quickly realized that they would not be able to "jump the supply hoseline" or get past E231 positioned at the split of the driveway. The crew and driver then separated; E153B stayed with the engine and became part of the relay while the remainder of E153's crew walked towards the house.

The Mayday occurred while E153's crew was walking up the hill; only one member of E153's crew heard the Mayday transmission. Unfortunately, that member incorrectly assumed that everyone else heard the transmission, which they had not.

As E153A reached the front of the structure, he had a quick face-to-face with BC-901 and was assigned as RIT. E153A directed his crew to gather all the RIT equipment from TR23 and stage on Side Alpha while E152A conducted a 360. Shortly after, the E153C and E153D advised E153A that no RIT equipment was left on TR23. E153A saw BC-901 standing at the structure's front door and told him that there was no RIT equipment on TR23. BC-901 stated the RIT equipment was already on Side Charlie, where a Mayday rescue was occurring. This moment was the first time E153A was aware that a Mayday had been declared on-scene.

E153A went to Side Charlie to view the smoke and fire conditions, then continued to Side Delta, where he saw RS3 and E31 on the basement steps. He then went to get the handline from T1 and handed off the hoseline to E31's crew. He then called over the radio for a saw to cut a fence on Side Delta. The remaining E153 crew staged on Side Alpha brought a K12-saw to the fence on Side Delta, but ultimately, it was knocked down and removed by other crews.

E251A was extracted from the building; E153A initiated CPR, and his crew assisted in disrobing E251A for medical care. After being relieved from patient care, E153's crew returned to Side Alpha. At this point, the crew was assigned to Rehab and then transported back to Fire Headquarters to collect written statements.

8.9 Engine 31

At 16:49, the box alarm for 9530 Ball Road was dispatched. Engine 31 ("E31"), with a crew of five, was on a 'wires down' service call at the intersection of East Church Street and Bentz Street. Throughout the storms that day, E31 had been on several reported wires down incidents at this location.

When the box alarm for Ball Road was dispatched, E31A confirmed the address via the CAD and reviewed the supplemental information for the Ball Road incident. E31A felt a strong indication that it was a working fire, and it was more prudent to go in service from the wires down call and add on to the Ball Road incident.

E31A contacted Frederick, advising them to add E31 to the box alarm, and assumed they would be 5th Due on the Ball Road incident. E31 responded south on Bentz Street and anticipated traveling down MD-355 to Ball Road. A couple of blocks into their response, Frederick contacted E31 and placed the unit in service since Company 15 responded with two engines. Moments after being placed in service by Frederick, E251 arrived on location with a working fire.

With E251's marking of a working fire, E31 continued the response, anticipating E31 to be added to the box as the Rapid Intervention Dispatch ("RID") Engine. A few seconds later, E31 was dispatched to the Ball Road incident as the RID Engine. E31 was about a mile away from the incident location when it heard E251A call his initial Mayday.

Upon arriving at the incident scene, E31 parked on Ball Road. E31A communicated to his crew to bring only hand tools from their apparatus and retrieve the ("RIT") pack from the Truck Company parked on Side Alpha of the structure (TR23). The crew traversed up the hill to the Command Post and were met by Chief 900. Chief 900 directed the E31A to get a ladder around to Side Charlie, where the rescue operations were occurring. E31A grabbed a 16' straight ladder and informed E31D to grab a 10' attic ladder.

Initially, the crew attempted to travel from Side Alpha around Side Delta to get to Side Charlie but could not do so due to a metal fence that did not have an entrance gate on Side Delta. They then proceeded back to Side Alpha, around Side Bravo to Side Charlie. While traveling from Side Bravo to Side Charlie, the crew was met with a large amount of billowing smoke hanging at the ground level coming from the family room, which was on fire. The crew found it difficult to breathe without their SCBA donned.

The crew was met on Side Charlie by OPSAC900, which directed E31A to put his ladder into the center window of the breakfast nook on Side Charlie. After placing the ladder down into the basement, utilizing the 16' straight ladder, they ended up with about four rungs above the windowsill. When E31A approached the window and began to place the ladder, he saw E152C flowing water down in the hole, which he believed to be E251A's reported location.

E31A described the hole as being about 4' in from the center window of the nook and about 8' in circumference. The fire burned around the hole but with minimal smoke and fair visibility. E31A placed the ladder in the center window but could not find solid ground to foot the ladder, leaving it at an unfavorable climbing angle.

During his efforts to place the ladder, E31A heard a bonking noise consistent with being "out of range" from his portable radio. He then looked at his portable radio and saw he was on the wrong channel, and his channel selector knob was damaged beyond immediate repair. E31A attempted to turn the portable off then back on to see if that would fix the "out of range" issue and attempted to change the channel by the lapel mic selector knob; both attempts did not rectify the problem. Consequently, E31A turned his portable radio off; it remained off for the duration of the incident. E31A never heard or spoke to E251A, nor did he recall hearing a pass alarm or Vibralert activating.

Figure 36: Fire conditions on Side Charlie of the structure post Mayday transmission.

Figure 37: Ladder after being removed from the window on Side Charlie of the structure used for the rescue attempt of Captain Laird.

A few moments after placing the ladder, BC-903 approached E31A and told him that an access point to the basement on Side Delta had been located by E231A, and assistance was needed at that location. E31A observed, who he assumed was a volunteer from Company 15, deploying a hoseline from T1 positioned on Side Bravo.

E31A advised the assumed volunteer that they needed the hoseline (from T1) for the RIT operation in the basement and completed the deployment of the hoseline, positioning it at the top of the steps, leading down into the basement on Side Delta. During this time, he noticed the RS3 crew was forcing entry to the basement doors. The RIT Pack was at the top of the steps; E31A checked the pack and turned on the cylinder in preparation for the RIT operation.

When the RS3 crew opened the doors, dark smoke began coming out the doors at a medium velocity. These conditions were vastly different from the conditions E31A noted when he was operating at the hole with the ground ladder.

E31's crew then deployed the hoseline into the basement behind the crew of RS3 at a slight left angle upon entering the door. E31's hoseline did not flow any water during the RIT operation. Once in the basement, E31A dropped off the hoseline and started a right-hand search, considering that the hole on the first floor was directly in front of him. During his search, he became encumbered by the drum set and other musical equipment and, due to his portable radio being off, did not hear the transmission of E251A's location. He eventually made his way back to his crew on the hoseline.

E31D moved in just ahead of the hoseline and conducted a left-hand wall search. E31C then operated the hoseline alone until E31B met up with him.

After searching briefly, E31D heard an Integrated Personal Alert Safety System (PASS) alarm activated and stopped to determine where in the basement it was coming from. E31D moved towards where he thought the PASS alarm was coming from and ran into E31B, who was on E31's hoseline.

E31A heard some commotion to his right-hand side, thinking it was his crews' voices and began to move in that direction. E31's Officer ran into another firefighter who ended up being RS3A on the hoseline that E31 had deployed.

E251A was located at this time, and removal efforts were in process. E31B broke from the hoseline when he heard E231A yelling that E251A had been found. He proceeded towards E231A's voice and their hand lights. E31B advanced to the room's doorway where Engine 251A was located and met with E231A, RS3B, RS3D, who extracted Captain Laird. E31B grabbed one of E251A's shoulder straps and assisted in moving him to the basement door.

The RS3's crew used E31's hoseline as a guide to get them out of the basement with E251A. E31A began directing the personnel remaining on the hoseline to move to the exit to ensure a clear path for the crew extracting E251A from the basement. E31D and E31B assisted the crew RS3 in moving E251A across the last portion of the basement floor to the exit door. E31A began to move along the hoseline exiting the structure. The conditions remained zero visibility throughout the rescue operation.

Upon getting to the basement door and exiting onto the stairs, E31A could see E251A. He noted E251A was without his helmet and facepiece, and his hood had been pulled down as though he had doffed it. In addition, E251 was unresponsive, and E31A noticed a small burn to the left side of E251A's forehead. E31B and E31D got to the exterior basement door with E251A, transferring him to awaiting personnel in the exterior stairwell to be moved up to the rear yard. On the exterior, E31A and a second firefighter grabbed E251A's SCBA shoulder strap and began to pull him up the basement stairs.

E31A began assisting others disrobing E251A, removing his Self-contained Breathing Apparatus ("SCBA") and coat. E31A then assisted in several rounds of CPR on E251A until the crews were ready to move him to Trooper 3 that had landed in the yard.

E31B and E31D reportedly heard someone state, "I'm stuck" from back in the basement. They both re-entered the structure following E31's hoseline and met with E31C, who staffed the hoseline throughout the period of the extraction, who was referring to E31's hoseline being stuck, not a firefighter being stuck. The three members of E31 worked to free the hoseline but were unsuccessful and decided to exit the structure via the basement door.

E31D and E31C exited the structure and removed their PPE but were then ordered by Chief 15-1 to return to the basement stairs and use E31's hoseline to suppress the fire that was now issuing from the doorway to the basement. Once at the basement door, E31D entered the structure to avoid standing in the doorway. He entered right and flowed water into the basement, operating in this position until his Vibralert sounded, at which point he exited the structure.

The ESRP asked E31D during his interview why he decided to enter the basement after being directed to remain at the basement doorway. As a brand-new recruit firefighter, E31D recalled in his probationary training where he was taught to never stand in the doorway of a structure because it could be in the direct line of a flow path which could cause significant injury or death.

After Trooper 3 left the scene, E31A went back to the basement entrance and began to account for his personnel. An evacuation had been ordered, and his crew was either collecting their equipment or performing other suppression activities. After completing rehab, the crew was taken by bus back to Headquarters to construct individual narratives of the event.

8.10 Truck 23

At the time of dispatch, Truck 23 ("TR23"), with a crew of three, was returning to quarters from a previous incident with E251 (3996 Braidwood Drive in Urbana). At 16:49, TR23 was dispatched as the first due Truck Company to 9510 Ball Road. TR23B did an immediate U-turn at their current location and headed towards Ball Road. While enroute, the crew from TR23 had a quick dialogue about what actions would be taken once they arrived on-scene. The crew decided TR23B would ladder the roof, TR23A would perform a 360 if one hadn't been completed, and TR23C would begin laddering the structure. As TR23 arrived and proceeded up the long driveway, they observed fire showing from the Bravo-Charlie corner. TR23B straddled E251's supply hoseline and positioned the Truck on Side Alpha of the structure.

At 16:56, TR23A had exited the truck and conducted a 360, walking from his position on side Alpha, traversing side Delta, bypassing the Bravo and Charlie side. TR23A had not heard a 360 report from E251A and figured that E251A had not had time to walk around the whole structure. TR23A approached the Delta side of the structure from the Alpha side and noticed no gate allowing access to the rear yard. TR23 walked along the side Delta fence line and continued to walk the fence line until he had gotten to a point where he could see Side Charlie and Side Delta simultaneously. TR23A noted that visibility of the structure was not good at the angle that he was looking from, and he could not get a good feel for how the structure was situated. TR23A provided the following 360 report, "360 of the residence showing a single floor in the back, heavy fire on Side Charlie." TR23A did not see the exterior basement steps located on the Delta side of the structure.

Upon arrival, TR23B began setting the aerial ladder for vertical ventilation operations, while TR23C threw a 24' ladder to Side Alpha and a second 20' ladder to Side Charlie. TR23C was given a chainsaw then met up with TR23A at the front door on Side Alpha to begin forcible entry.

TR23A forced entry and opened the front door and then notified Command that the front door was open and ready for a hoseline. TR23A entered through the front door to assess conditions on the first floor. TR23A noted air rushing in through the door behind him and high heat and fire to his left in the direction of the kitchen and pantry. After moving in about 10 feet, TR23A returned to the front door to meet with the crew from E231.

Just as TR23A was informing E231's crew that he and TR23C would conduct a primary search, E251A declared his Mayday. After hearing the Mayday, TR23A and TR23C immediately went in through the front door to locate the basement steps. In their attempt to locate the steps, TR23A and TR23C made it to a dining room, noting zero visibility and moderate heat conditions. They continued deeper into the house, proceeding through the butler's pantry, moving into the kitchen/breakfast nook area, and observed fire conditions at the ceiling level. TR23A observed an opening in the floor ahead of him, projecting fire out of the hole. This location was where he believed E251A had gone through the floor.

At 17:06, after four failed radio transmission attempts, TR23A made the following transmission, "I need a [hose]line charged off the rear of E251. I believe it's a 300-foot [hose]line. I've got heavy fire in the Bravo quadrant, and it looks like it might be a hole in the floor." Shortly after this transmission, TR23A saw E231C, who had told him he got separated from his officer, so TR23A told E231C to stay with him.

TR23C knew there was an uncharged hoseline at the front door and went back to retrieve it. He grabbed the hoseline, which was still uncharged, and brought it back to the location where they discovered the hole. By this time, TR23C made his way back to the hole, and the hoseline was charged. TR23C handed the hoseline to an unidentified firefighter, who immediately started flowing the water into the area where the floor had collapsed. E231C began running low on air and immediately exited the building by himself. As the environment continued to degrade throughout the first floor, TR23A passed the hoseline to TR23C as he began taking on a lot of heat.

At 17:14, TR23A and TR23C's Vibralerts began to activate. TR23A notified Command that his crew was in the Bravo quadrant, running low on air." At 17:15, Command responded by asking TR23A, "[c]an you confirm you have your entire crew?" TR23A replied, "I have myself and one firefighter from 231 (E231C)." TR23A was unable to account for TR23B and TR23C at the time. At 17:19, some four minutes later, Command once again asked TR23A for a PAR check. By this time, TR23A had made it outside and accounted for TR23B and TR23C. The PAR check for TR23 was completed.

After exiting the structure, Command directed TR23 to begin setting up for master stream operations. After TR23 set up the master stream, the crew from TR23 completed rehab and was taken by bus back to Headquarters to construct individual narratives of the event.

8.11 Truck 41

Truck 41's crew ("TR41"), a crew of three, was dispatched from quarters as the second due Truck. As TR41 turned left onto Ball Road, traveling towards the dispatched address, they heard E251A transmit his Mayday.

TR41 arrived on-scene at 17:02 and asked Command via radio if he wanted the second truck up the driveway. Command replied, "[i]f you can get it up here." TR41 proceeded up the driveway; however, they could not make it any closer to the structure due to an apparatus parked on the driveway. As the crew from TR41 began making their way up the driveway, TR41A observed smoke from the eaves of the house and dark brown smoke pushing from the left side of the front door on side Alpha.

As the crew proceeded up the front yard towards the structure, they observed TR23B preparing to set up the master stream, so the TR41 crew stopped at TR23 and assisted in that operation. Once the master pipe system was in place, the crew from TR41 began prepping for roof operations but subsequently decided the smoke conditions and roof stability were not favorable for vertical ventilation. Command then directed TR41A to open the soffit area on Side Alpha. Once that was completed, the crew began to take several windows on the 2nd floor.

Shortly after E251A was removed from the basement, SCapt900 directed TR41A to replace Safety-901 as the Incident Scene Safety Officer (ISSO). TR41A reassigned his crew to work with TR23's crew.

After completing rehab, the crew was taken by bus back to Headquarters to construct individual narratives of the event.

8.12 Rescue Squad 3

Rescue Squad 3 ("RS3"), with a crew of four, was in quarters at the time of dispatch; however, regular staffing for RS3 is a minimum of three. Before the Ball Road incident, RS3D was assigned to one of the transport units in that station. At some point before the Ball Road dispatch, a couple of volunteer members came to the station to staff the ambulance. In doing so, they removed RS3D's PPE from the transport unit and placed it on the apparatus floor. No communications about the changing of assignments occurred between the volunteer members and the career officer or RS3D. When the Ball Road incident was dispatched, RS3D found his gear laying on the floor between the transport unit and the Rescue Squad; RS3D grabbed his PPE and jumped in the back of RS3.

RS3 was responding South on Market Street, approaching the intersection of Market and Madison, when TR41, with the right-of-way, pulled out in front of RS3. RS3 was on Ball Road, about to arrive on-scene when E251A transmitted the Mayday. Initially, RS3A planned to go up through the yard, but after looking at the grade of the property and considering that they were using a reserve squad, he decided to proceed up the driveway. RS3 followed TR41 up the driveway and parked behind TR41.

RS3A told his crew to pull RIT equipment off TR23 because it was already in position in front of the house. RS3A, RS3C, and RS3D proceeded up the hill to TR23. RS3B got dressed and joined his crew at the top of the hill on Side Alpha. At 17:04, they arrived at Side Alpha. When Chief 900 saw them approaching the structure, he directed them to report to OPSAC900 on Side Charlie with RIT equipment. All special services in DFRS carry a RIT pack.

The crew from RS3 initially attempted to reach Side Charlie from Side Delta but encountered a fence on Side Delta and back-tracked around to Side Bravo. They noted thick heavy smoke conditions from Side Bravo as they came around the house.

At 17:07, OPSAC900 told RS3A to go with E231A and BAT903 to Side Delta, where the exterior basement steps were located. When RS3’s crew arrived at the basement stairs, E231A was at the basement door attempting to force entry. RS3A and RS3D descended the steps and assisted E231A in forcing the basement door. Once the door was forced, E231A, RS3B, and RS3D entered the basement to attempt a rescue.

RS3B and RS3D entered the basement and began working their way towards Side Bravo in the direction of the Alpha-Bravo corner. They immediately encountered heavy smoke conditions, leading to zero visibility and moderate to high heat conditions. They were roughly 15-20' into the basement before hearing E251A's PASS alarm sounding. They crawled towards the sound of the PASS alarm but ran into a wall that separated the basement in half. They followed the wall to the left, quickly finding a door. RS3D opened the door, and due to better visibility, could see E251A in a semi-sitting position against the wall. While they initially had visibility of about 2' off the floor, moments later, conditions rapidly changed to zero visibility from floor to ceiling.

RS3A was unsure which way his crew had gone once they entered the basement or their current location due to heavy smoke conditions. He stopped at 5-10' intervals, listening for where his crew was operating to ensure they could find their way back out of the structure once they located E251A.

RS3B and RS3D had to move several boxes and plastic storage containers to enter the room and reach E251A. They found E251A unconscious with no helmet and his SCBA facepiece removed. Because of zero visibility conditions, E231A positioned himself just outside the door to help guide RS3B and RS3D back towards the exterior basement entrance. While the crew rapidly assessed Captain Laird, they unsuccessfully attempted to reset his PASS device. In preparation for rapid removal, RS3D attempted to do an SCBA waist strap conversion but could not make it work. They did not want to waste precious time, so they decided to focus on the rapid removal from the structure.

Figure 38: Location where Captain Laird was found. Tools left behind by RS3 are circled.

Figure 39: View of the distance and path from door in the interior basement wall separating the basement to the exterior basement entrance on Side Delta.

Figure 40: View of basement area, post collapse, where Captain Laird was located and the interior basement wall.

RS3B and RS3D started to move E251A out of the room. RS3B grabbed the SCBA shoulder strap, and RS3D had E251A's legs. Once through the interior basement doorway, E231A and E31B assisted in getting E251A across the basement and over to the exterior door. As the crew reached the basement stairs, RS3A and other members from E31 pulled E251A up the stairs to the backyard. At 17:16:45, OPSAC900 notified Command that E251A was out of the basement.

Figure 41: View of the exterior entrance and stairwell on Side Delta of the structure leading into the basement.

After exiting the structure, the crew of RS3 quickly began to change SCBA cylinders. BAT903 then ordered RS3 crews to take a hoseline back into the basement. The crew of RS3, along with members from E31, entered the basement and continued to work on fire extinguishment. After not making any significant progress and conditions were becoming unfavorable, they decided to exit the basement. The crew from RS3 was eventually sent to rehab. After completing rehab, the crew was taken by bus back to Headquarters to construct individual narratives of the event.

SECTION 9: OBSERVATIONS, ANALYSIS AND RECOMMENDATIONS

Section 9 identifies critical observations (both strengths and weaknesses) related to the Ball Road incident's operational fire response. Each observation is accompanied by an analysis (which provides detail and context), references (e.g., corresponding plans, policies, and documents) and recommendations (which identify corrective actions to mitigate the chances of a recurring mistake.)

9.1 Administration

9.1.1 Chain of Command

The chain of command is the national fire service's best practice system used to ensure that each responding unit operating on the incident scene receives instructions for a particular task from only one supervisor. It is an authority and accountability chain from the highest officer within the chain of command to the newest member. The chain of command supports officers at all levels of the department to achieve their primary assigned function of accomplishing the unit's assigned mission while caring for and accounting for personnel. A chain of command provides a singular avenue of communication for command and control, allowing officers to give and receive information. The chain of command must issue all orders and instructions. A key outcome of a clear chain of command is that a person or unit can only have one immediate officer who gives orders and provides strategic and tactical instructions.

Observation #1: There were several instances throughout the Ball Road incident where a clear and definitive chain of command failed to exist.

Analysis: The lack of a clear chain of command caused confusion about who was serving as the Incident Commander at various points throughout the incident, and who was serving as the Command Aide. In addition, throughout the Ball Road incident, there were numerous orders given by subordinate officers that were not coordinated through the Command Team or aligned with the incident objectives.

During interviews, there was significant feedback from chief and company level officers specific to the organization's long-time failure to establish and adhere to a single unambiguous chain of command that integrates both the career and volunteer ranks. This issue exists despite the following Frederick County Code § 1-2-64. FIRE AND RESCUE CHAIN OF COMMAND, mandating otherwise; the code states, "[t]here shall be one integrated chain of command for career personnel of the Division of Fire and Rescue Services and the volunteer fire, rescue, and ambulance companies."

Reference: Frederick County Code § 1-2-64.

Recommendation #1: The Department must develop and adhere to a singular chain of command that fully clarifies the operational chain of command of an integrated (career and volunteer) workforce. This structure should outline the authority of every officer position from Fire Chief to the lowest level of company level supervision (Lieutenant).

Recommendation #2: The chain of command policy must avoid equivalency position types, where different ranks, with dissimilar qualifications are considered equal in rank. Instead, the Fire Chief must consider the overall responsibility of each officer rank and must also consider the minimum qualifications required to be in each position before determining organizational structure. As an example, within DFRS volunteer chief officers who have a lower level of certification and time-

based experience requirements in comparison to a career Battalion Chief are considered equals in rank.

Recommendation #3: The chain of command policy should be developed and approved by the Fire Chief alone, free, and absent of any political influence, and based on actual day-to-day responsibilities and professional qualifications. Unfortunately, there are examples nationally where officials have applied pressure inappropriately to elevate the status of a specific group (career and volunteer) based on an actual or perceived level of political support.

9.1.2 Logistics

Standardization and consistency improve operations and efficiency within any fire department. As a fire department's size increases, standardization becomes increasingly essential for safe and effective operations during an emergency. In a department where personnel are expected to operate in many different stations, knowing how each piece of apparatus operates, where all equipment is stored and where and how to use equipment is critical to personnel operating at the scene of an emergency. Additionally, standardization provides cost savings through volume discounts and requires less training.

Fire apparatus collisions are a leading cause of firefighter fatalities annually; a common contributing factor in these incidents is personnel operating apparatus with which they are unfamiliar. Therefore, NIOSH has recommended that the drivers of emergency vehicles be aware of the characteristics, capabilities, and limitations of any apparatus they will be operating. In addition, NFPA 1451, Standard for Fire and Emergency Service Vehicle Operations Training Program, recommends annual driver's training shall include hands-on training exercises using the actual vehicles an operator is expected to drive. Standardized apparatus leads to familiarity, reduces training costs, and increases safety.

At 664 square miles, Frederick County is a geographically large area ranging from densely populated urban areas to sparsely populated rural areas. Historically, fire departments within Frederick County operated independently with oversight from its governing body, the Frederick County Volunteer Fire and Rescue Association. In 2013, elected officials recognized these concerns and therefore Frederick County Code, Article IV, *Fire and Rescue Services*, was amended to provide full operational and administrative authority to the Director of the Division of Fire and Rescue Services, thus bringing all entities under the umbrella of one department. DFRS has continued to struggle with bringing all entities together into a single unified Department.

Although Frederick County is geographically diverse, all units in Frederick County are expected to operate in urban and rural settings. For many years, Frederick County has taken small steps to achieve consistency by annually inspecting apparatus to assure each unit meets minimum equipment standards. Having 25 different corporations operating 30 different stations has and continues to create challenges for standardization, whether it be apparatus, equipment, training, or operating practices. In addition, many of the independent corporations still request the county to purchase their fire and rescue vehicles customized based on individual preference. While many corporations continue to purchase their own response units, the county still contributes to apparatus maintenance and repair of those vehicles which consist of many makes and models. As the DFRS evolves, an established written policy addressing standardization of apparatus must evolve for the safety of all personnel and the effective delivery of service to the community.

Observation #1: There is a lack of minimal equipment and apparatus standards, resulting in personnel having to regularly operate with unfamiliar types of tools, equipment and apparatus throughout the county.

> Analysis: Standardized equipment county-wide currently consists of Self-Contained Breathing Apparatus (SCBA), Mobile Data Terminal (MDT), gas meters, radios, and most EMS equipment. Personnel frequently move from station to station or unit to unit and are expected to operate many variations of equipment such as nozzles, thermal imagers, hose color and style, hose appliances, and rescue tools, among many others. Apparatus specifications vary, including tank size, pump type, compartmentation, primer style, hose beds, ladders, and safety and maintenance features. Variations in equipment have created the potential for serious injury in the past with EMS equipment; other fire and rescue equipment poses the same concerns for safety.
>
> At the Ball Road incident, multiple personnel were unfamiliar with their equipment. Most commonly, personnel noted many companies had purchased small palm-sized thermal imagers without providing detailed training on the tool. The general feeling was the thermal imager that lacked the operational capability of other thermal imagers, so they didn't use them. Other instances included

unfamiliarity with hoseline lengths and or the location of equipment they were sent to retrieve. For example, a green section of the supply line blended in with the grass and was initially unseen by the next arriving engine. Equipment used for training firefighter recruits is often second-hand equipment that differs from what is carried on station apparatus.

The committee recognizes each station may have unique situations within its area that may require additional equipment. However, these situations should be kept to a minimum, approved by the committee referenced below, and consistently applied throughout the county. While this is a substantial challenge, it will greatly benefit the efficiency and allow all stations to work together seamlessly.

Reference: *Rescue Standards Manual*, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 2013).

Recommendation #1: DFRS should establish a committee (composed equally of career and volunteer stakeholders) to determine specific specifications and brands of equipment to be carried on every unit type and where that equipment will be located. In addition, equipment should be standardized across apparatus rather than minimum equipment standards which can allow for great deviation.

Recommendation #2: DFRS should establish a research committee to conduct a field evaluation of all new equipment under consideration for purchase. After completing the field evaluation, the committee will decide on the purchase and deployment of the equipment to all apparatus. This committee shall also develop standardized operating practices for all equipment.

Recommendation #3: DFRS should establish a process for requesting the evaluation of new equipment or change in operating procedure for the use of equipment.

Observation #2: On-scene personnel struggled to communicate while enroute to the incident.

Analysis: DFRS personnel struggle to hear communications while responding to incidents. Although available in most apparatus, nearly all personnel interviewed stated they do not wear a provided intercom headset. Through questioning, it was apparent that many missed various radio transmissions, including the Mayday. Additionally, personnel spoke of the frequent face-to-face communication difficulties within the cab. In addition to the loss of communication, chronic hearing loss is prevalent within the fire department service due to exposure to the apparatus siren. Though many personnel are aware of the benefits of wearing a headset, they consistently choose not to wear them.

Reference: Labor 16 C.F.R. § 1910.95 (2022).[37] *See* U.S. Dept. Labor, Occupational Health & Safety, *1910.95 - Occupational noise exposure*, https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.95.

Recommendation #1: The DFRS should ensure that all future apparatus purchased must be equipped with an intercom system (headset) which allows for enhanced communications between one another in the cab and enhances operational situational awareness.

Recommendation #2: The DFRS should establish a new policy requiring the use of intercom headsets while responding on apparatus. A policy alone will not correct this, so management must work with field personnel to overcome the internal cultural desire against headsets.

[37] *See* U.S. Dept. Labor, Occupational Health & Safety, *1910.95 - Occupational noise exposure*, https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.95.

Observation #3: Noncompliance with unit and personnel identification procedures onscene resulted in the misidentification of crews and personnel.

Analysis: At the time of the incident, TR42 was operating out of Station 23 and being used as TR23, staffed by Station 23. Rescue Squad 2 was being used in a reserve capacity at Station 3 which resulted in these units being misidentified over the radio. TR23 was referred to as TR41 or TR42; additionally, RS2 and RS3 were used interchangeably. There were also instances where personnel were working at stations they were not regularly assigned. Their helmet identifiers resulted in the misidentification of at least one crew operating in the IDLH.

References:
Reserve Ambulance Usage, Standard Operating Procedure § 3.00.03, Frederick County, Md. Div. of Fire & Rescue Serv. (May 31, 2017).
Reserve Fire Apparatus Usage, Standard Operating Procedure § 3.00.04, Frederick County, Md. Div. of Fire & Rescue Serv. (May 31, 2017).

Recommendation #1: DFRS should develop a new policy which states that all reserve apparatus that may be used in place of another unit must be equipped with interchangeable unit identification numbers. The DFRS should provide each station with interchangeable magnetic numbers for reserve apparatus assigned to that station.

Recommendation #2: The DFRS should revise Standard Operating Procedure § 3.00.03, *Reserve Ambulance Usage* and Standard Operating Procedure § 3.00.04, *Reserve Fire Apparatus Usage*, to reflect the labeling of apparatus when operating in the place of the regularly assigned unit.

Recommendation #3: The DFRS should develop a new policy which will devise a system of standardizing all PPE identification to include helmet shields to prevent the confusion of personnel when they are operating on alternative units.

9.1.3 Culture

Observation #1: The administrative structure and the operations of fire and rescue services within Frederick County are organizationally ineffective and inefficient.

Analysis: The Frederick County fire and rescue system consists of many different functional groups, including the Division of Fire and Rescue Services, the Division of Volunteer Fire and Rescue Services, the Frederick County Volunteer Fire and Rescue Association, the Fire and Rescue Advisory Board, the Career Firefighters Association, and multiple committees and subcommittees. This split structure visibly divides career and volunteer services, which creates indistinguishable lines of authority and makes internal communications challenging and policy development challengingly bureaucratic.

The bifurcated system was designed to maintain a level of equity between the long-tenured volunteer system and a rapidly growing need to supplant that system with County career personnel. The ineffectiveness, and at times, the divisive organizational structure, has left both career and volunteer personnel feeling undervalued and unheard. Both eagerly desire to improve relations and create an effective fire department.

The multiple special interest groups within DFRS create organizational roadblocks and seemingly fail to equally represent all stakeholders. For example, the purpose of the Advisory Board is to provide a functional management structure that ensures input from volunteer, career, and citizen stakeholders is provided and considered during the policymaking and policy review process. The Advisory Board takes advice from several committees including the Operations, Planning and Research, EMS, Budget, and Training.

The makeup of the Advisory Board, however, lacks an equal level of representation, as it is composed of five (5) volunteer battalion representatives, two (2) career representatives, and (2) citizen representatives. This discrepancy leaves some groups feeling underrepresented, which creates a greater division in the critical relationships. In addition, the purpose of the Advisory Board conflicts with the guidelines established for the Operations Committee. The Advisory Board's tendency is to appease each of the special interest groups, rather than giving due consideration to their recommendations and making difficult, and at times unfavorable, management-level decisions.

The Operations Committee is another example of a dysfunctional body. The Operations Committee exists to develop policy and procedures for the Frederick County Fire and Rescue System. The Operations Committee is co-chaired by the Deputy Chief of Operations and the Director of Volunteer Fire and Rescue Services. The remainder of the Operations Committee membership is composed of five (5) volunteer battalion representatives and one (1) career Battalion Chief from each of the administrative and operational Battalions; one (1) representative from the Career Firefighters Association, and the DFRS EMS Battalion Chief.

This structure alone lends itself to extreme levels of partisanship, where timeliness, cooperation, and coordination fail to exist. During committee business, each representative is supplied in advance with all relevant operational information pertaining to upcoming decisions, policy changes, etc. that will be discussed at the next scheduled meeting. The intention is to allow each battalion representative sufficient time to meet with their constituents and discuss those issues. History has shown, however, that these Battalion representatives rarely meet with their constituents to disseminate information and solicit their input, and most of the votes taken by the Committee members are taken without any consultation of those they are chosen to represent.

Adding to the confusion, the above-mentioned Operations Committee Battalion Representatives differ from the Battalion Representatives of the Fire and Rescue Advisory Board.

Frederick County Code is unambiguous in the assignment of the Director of the Division of Fire and Rescue Services to have overall responsibility, and full authority, for all operations in conjunction with the Fire and Rescue Advisory Board. It is the ESRP's suspicion that the bureaucratic web of committees, sub-committees, and pressure from special interest groups has led the Director at times to be unwilling or apprehensive to carry out this authority, based on the perceived backlash that comes with exercising it.

Due to the dysfunctional and disjointed organizational structure, it is the assessment of the ESRP that the wants, desires, and needs of those within the organization are far too often placed ahead of the needs of the residents who pay for the services. As an example, Frederick County annually provides each volunteer fire and rescue corporation with taxpayer funding. Despite this funding, these corporations may choose to refuse personnel or apparatus from the County that may enhance the ability to provide a greater and more predictable level of service to the community. In fairness, DFRS is not unique to this situation. It is far more common in combination (career and volunteer) fire departments than it should be.

The divide between career and volunteer personnel is not unique to Frederick County and is faced by many jurisdictions. As such, many organizations will contract with a third-party SME group to provide guidance and a detailed plan to rectify these issues in the best interest of the public. The DFRS contracted with TriData in 2007 and was provided with the 2007 Comprehensive Review and Master Plan report completed. Due to the lack of implementation, many of the concerns identified in 2007 remain evident today:

- The entire organization of the fire/rescue department is internally focused on what matters to individual interest groups first. Mainly, the structure continues to experience conflict between volunteers and career staff, with frequent battles over what group will be the dominant force in determining how service is provided.
- While volunteers have been a tremendous benefit to the county for many decades, their reluctance to embrace additional career staff, coupled with rapidly changing professional qualifications, exacerbates the problem of infighting. Past local government officials must share part of the blame. A reluctance on their part to make tough strategic decisions on how the department should progress to meet the rapidly changing needs of residents forced fire department administrators to operate within a politically charged environment, trying to balance the "me first" culture that currently exists in the department over what is best for the customer and taxpayer.
- Frederick County DFRS is at an important crossroads. Many career and volunteer personnel recognize that the department must begin to change. Volunteers and career personnel alike understand that the department must make the difficult transition needed in organization and culture to reflect the growing needs of a rapidly changing and growing County. The County needs to make systemic changes at a progressive pace now or face the possibility of having to completely remake the department later, inevitably costing the taxpayer a significant amount of money. Ultimately, programmed and systemic changes done over time, while expensive, are less costly and more effective than one-time overhauls that radically change the entire organization—especially if the volunteer system is not taken into consideration.
- A problem with the current command system is the split command structure between volunteer and career personnel, which is addressed in the Administrative Section of this report.
- The split structure of authority, evolved from the past when the fire department was mostly volunteer, means that there is no way the organizational command structure can

effectively get the entire organization moving in the same direction, since career loyalties are usually to the battalion chief and the volunteer loyalties are to the volunteer officers.

References:

1. Frederick County Code §§ 1-2-60 - 1-2-69.2.
2. *Fire and Rescue Advisory Board Charter and By-Laws*, November 2015.
3. *Frederick County Volunteer Fire and Rescue Association Operations Committee Guidelines*, August 2019.
4. TriData, a Division of System Planning Corporation. (2007). *A Comprehensive Review and Master Plan*

Recommendation #1: Frederick County DFRS must immediately address the bifurcated and parallel organizational structures which have tacitly created two separate Departments. They must transition to a single Department unified by taking a "one-standard, one-team" approach to organizational restructuring. The DFRS should amend Frederick Code to reflect one singular department encompassing both the DFRS and the Volunteer Fire and Rescue Association with sole authority resting with the Director/Fire Chief.

Recommendation #2: The DFRS Chief, in consultation with the Fire Rescue Advisory Board, must immediately eliminate the unnecessary, duplicative, and partisan structures, to streamline all administrative processes and policy and decision making. The DFRS Chief should develop and implement a new, clear, and fair advisory structure that equally represents the career and volunteer personnel with a singular mission of serving the public in the most effective and efficient manner.

Recommendation #3: The DFRS should eliminate all the various workgroups and replace them with a singular Labor-Management Relations Partnership. DFRS should consider utilizing the resources provided by the International Association of Fire Fighters (IAFF) and the National Volunteer Fire Council (NVFC) to design such a partnership. The use of an independent arbitration service for facilitating meetings for the first year may be beneficial.

Observation #2: The current document standards and processing policy for the Fire and Rescue System lacks clarity, structure, and accountability.

Analysis: Throughout the investigation, personnel referenced an unapproved draft of operational guidelines for structural fires that has yet to be implemented after remaining as a draft for several months. Interviews identified frustration with overall policy development and implementation processes.

In 2007, TriData correctly identified an "organization structure, chain of command, and decision-making process that has eroded to a level that the senior staff of the fire/rescue department has extreme difficulty getting policies implemented. Even when an attempt is made to change policy and procedures, the process can take years, since there are so many individuals and groups involved in reviewing and approving policy—each with their own ideas, philosophy, and agendas. It is seemingly impossible for the organization to change even when most personnel believe changes are needed."

Current policy changes require input from the Operations Committee, Executive Committee, Policy Review Committee, and the Fire and Rescue Advisory Board. Several policies and procedures are outdated and do not have a required revision cycle. Additionally, many policies are signed by previous DFRS Directors leading to confusion if they are still in effect. Lastly, during the investigation, it was discovered some of the established policies and procedures contradict each other.

Outdated, contradictory, and inapplicable policies create an environment where policies are not followed or enforced and lead to confusion and unclear expectations. New policies are signed only by some of the stakeholder groups, which continues to create a divide within the department. Policies within the Department should only require the signature of the Fire Chief. To compound the tragedy of this event, there were countless policy violations at the Ball Road fire.

References:

1. Frederick County Division of Fire and Rescue Services Standard Operating Procedure Manual.
2. Frederick County Code, Chapter 1-2: Administration, Article IV: Fire and Rescue Services.
3. *Fire and Rescue Advisory Board Charter and By-Laws*, November 2015.
4. *Frederick County Volunteer Fire and Rescue Association Operations Committee Guidelines*, August 2019.
5. TriData, a Division of System Planning Corporation. (2007). *A Comprehensive Review and Master Plan*

Recommendation #1: DFRS should update SOP 1.00.01 Administrative and Operational Procedures Manual. The manual must include:

- Clear definition and format of all types of formal communications and document types the DFRS utilizes (SOP, General Orders, After Action Reports, etc.)
- Direction on the retention and disposition of all documents ensuring that it follows Frederick County Government policy.
- Defined document proposal, development, and approval process for all documents.
- Required revision cycle or termination date for all documents.
- Requirement of current Director signature on all DFRS documents.

Recommendation #2: DFRS should revise and update, if needed, all standard operation policies and procedures. These policies should be signed by the current director alone, who has the authority by Frederick County Code to implement policy.

Recommendation #3: DFRS should update SOP 2.00.02 to include volunteer personnel and actions. Equally, the DFRS must enforce all policies for the safety and well-being of all personnel.

Recommendation #4: DFRS should develop a policy providing a Casualty Assistance Plan to identify procedures and responsibilities when a serious injury or death occurs to a member of the DFRS.

9.2 Incident Communications

In review of Incident Communications, the ESRP was assisted by Montgomery County Fire Rescue's, Assistant Fire and Rescue Chief Michael Baltrotsky. Chief Baltrotsky is the head of his Department's IT section and leads the National Capital Regions (NCR) radio program. His perspective and expertise greatly assisted the ESRP in understanding the intricacies of mobile and portable radio functions.

Chief Baltrotsky provided the ESRP with his own assessment of radio communications during the period that the Mayday was declared, through the extraction of E251A. His statement and findings are located below:

"My evaluation of this incident is limited to the duration of the mayday by Battalion Chief Laird. The mayday was transmitted at 17:00:52 on August 11th, 2021, via radio subscriber with the P25 identification number 2407963 aliased as E251A on Frederick County P25 Radio System talk group nine delta (9D). The mayday was subsequently cleared by a unit (not verbally identified) at 17:16:44 via radio subscriber P25 identification number 2408303, aliased as OPSAC900 on Frederick County Radio System Talk group nine delta (9D). The total time of this review is fifteen minutes and fifty-two seconds (15:52) and will be hereinafter referred to as the "Mayday Period."

Of note are the following data points during this incident garnered from the incident audio:

- The Mayday was initiated via voice only.
- None of the radio data logs or transmissions indicate that the radio's subscriber's emergency features were activated.
- There was little to no radio discipline during the Mayday Period from the aspect of limiting transmissions or maintaining radio silence during rescue efforts.
- There were 278 transmission attempts during the Mayday Period
- There were 100 transmission rejects during the Mayday Period because other radios were affiliated and actively talking on the talk group.
- There were seventeen (17) noted rejects for E251A (periods when the Mayday Firefighter attempted to transmit however could not).
- The total talk time during the Mayday Period was 14 minutes and 46 seconds.
- The total talk time during the Mayday Period for E251A - 54.6 seconds.
- The total talk time during the Mayday Period for command officers/admin units - 9 minutes and 28 seconds.
- Total talk time during the Mayday Period for the Communications Center was - 21.7 seconds.
- Overall, the data provides that there were only 67 seconds of free airtime during the entire Mayday period. This equates to less than 5 seconds per minute of available talk time on the specific radio system talk group."

Observation #1: When E251A transmitted his Mayday, he did not activate his Emergency Activation Button.

Analysis: E251A correctly communicated his Mayday, however, he never activated the emergency features of the radio. Due to a lack of training by DFRS, most personnel were unaware of the emergency features enabled when activating the APX8000 portable radio emergency activation button. Of the seventeen (17) attempts and subsequent rejects of transmissions from E251A, many if not all would have been successful if the emergency features of the radio subscriber (DFRS) had been activated, and the preemption rules in the radio system worked as designed.

Reference: None applicable.

Recommendation #1: DFRS should enact yearly recertification training on Land Mobile Radios, reinforcing the learned functionality of the radio subscriber, how it interacts with the radio system, and the overall importance and use of the radios emergency features.

Recommendation #2: DFRS should investigate with radio manufacturers the feature enhancement of remote activation of a subscriber's emergency features. While not part of the P25 standard, this feature could benefit a user by allowing a remote user (console) to activate the emergency features in times of distress.

Recommendation #3: DFRS should, in consultation with their radio vendor, consider and evaluate all available emergency features of their respective portable/mobile radios.

Observation #2: There were multiple transmissions made during this incident where units did not identify themselves when transmitting.

Analysis: Units not identifying themselves, by unit designator or ICS position, is a common problem that was prevalent in this incident and likely caused confusion between operating units. Nationally recognized best practices recommend a "hey you, this is me" approach to communicate during emergency incidents. An example would be "command from engine two five one alpha." This practice begins with the "hailing" of the unit or individual that one is trying to reach, followed by the sender's or requestor's name. The overall intent is first to gain the receiver's attention by calling them out via name in the first part of the transmission.

References:

1. Fire Departments of Northern Virginia Field Communications Manual, 1st Edition, May 2020
2. *Communications Manual*, Standard Operating Procedure § 4.00.01, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).

Recommendation #1: DFRS must enforce the policy of all units being required to use their full unit's name, "Engine Two-Five-One Alpha" versus "Two-Five-One Alpha," when communicating on land mobile radio systems.

Recommendation #2: DFRS should consider a policy of the nationally recognized "hey you, this is me" approach to radio communications. This will ensure that command, and other units operating on incidents clearly understand who is being hailed, and the unit that is talking.

Recommendation #3: DFRS should adopt and incorporate into their Communications doctrine the use of the 4C's model of fireground communications as shown in the table below. This will require annual training and compliance on incidents by all users of the radio system.

4 Cs	What?	Example
Connect	Before you can send information over the radio you must ensure that you are talking to the intended receiver. As the sender you must connect with the receiver.	Use the "Hey you, it's me" model, ex., "Battalion 504 from Tower 619" or "Command from E102."

4 Cs	What?	Example
Convey	Having "Connected" with the intended receiver you can now "Convey" the message.	Engine 602: "Battalion 602 from Engine 602." Battalion 602: "Battalion 602" Engine 602: "Need additional crew to assist with search on the second floor."
Clarify	Repeat the directive. It not only confirms the message was received but also that it was understood.	ECC: "Medic 613 from Loudoun." Medic 613: "Medic 613" ECC: "Leesburg Police needs you to stage until they advise." Medic 613: "Medic 613 copy. Stage until Leesburg Police advises."
Confirm	The confirmation from ECC of the read back from Medic 613 is the "period" that ends the conversation.	ECC: "Affirmative Medic 613."

Figure 42: the 4 C'S model of Communications.

Recommendation #4: DFRS uses a computer-aided dispatch (CAD) system. Like any technology, CAD is not flawless, but the system is highly valuable. A CAD system was never intended to calculate all the variables that exist in a complex deployment model and/or geography like Frederick County. To maximize the greatest possible utility from this tool, DFRS must work closely with the County Information Technology Department and the Emergency Communications Center to maximize strategic priorities for CAD and DFRS.

Observation #3: Each unit's location relative to the incident location was not accurately reflected in the dispatch order for this incident.

Analysis: The CAD system dispatches based upon the assumption that each unit is in its respective quarters and not its true location at the time of dispatch. This error in accurate dispatching and run order resulted in nearly all units arriving in a different order than dispatched. This caused confusion and units did not assume the predetermined tactical assignments dictated by standard operating procedures. The arrival of units out of order creates confusion at a fire scene when the organization is needed the most. This resulted in units performing incorrect assignments, a lack of accountability, and missed assignments.

Reference: None applicable.

Recommendation #1: DFRS should, as it prepares for the changeover to a new CAD system in 2023, ensure funding be included to incorporate the use of Automatic Vehicle Locator (AVL) GPS dispatch.

Recommendation #2: DFRS should implement the use of CAD-to-CAD integration with surrounding jurisdictions during the change to the new CAD in 2023. As demonstrated in this incident, DFRS relies heavily on assistance from mutual aid departments.

Recommendation #3: DFRS should institute stand-alone policies that address procedures for both how a unit adds on to a response and a procedure when units arrive out of expected order. For this policy to be managed with consistency, the ESRP recommends that this responsibility rests with the first due career Battalion Chief alone or until a chief level officer has assumed strategic command.

Recommendation #4: DFRS should switch to a single incident number for all extra alarms. The use of multiple incident numbers creates difficulty for resource status tracking. This requires a person at the command post to switch between incident numbers on the MDT to track units.

Recommendation #5: DFRS should ensure that staffing levels need to be easily tracked by the incident command post. Unit staffing plays an integral role in task assignment on the incident scene. Engine 31 and Rescue Squad 3 were staffed with additional personnel. The incident command post does not have the ability to easily track staffing levels with the MDT.

Observation #4: The current dispatch algorithm creates unnecessary delays in ensuring adequate personnel arrive on scene of an incident within consensus standard response time frames.

Analysis: CAD will dispatch units from stations appropriate for the incident assignment despite the units not being 24/7 staffed. If not staffed and responding within five minutes, the next available appropriate unit will be dispatched which also may not be staffed. This results in an increased delay of DFRS personnel arriving at an incident scene and the successful execution of the mission.

Reference: Frederick County Code § 1-2-67.

Recommendation #1: DFRS should recommend that the algorithm be changed to more defined criteria based on historical response data, such as a station must demonstrate the ability to respond with multiple staffed units within four minutes 90% of the time. Stations that cannot meet multiple-unit response criteria within four minutes must be dispatched as single unit staffing or a shared staffing model.

Observation #5: The tactical channel became inundated with ancillary and useless transmissions for the duration of the incident.

Analysis: There were 112 rejected and accepted transmissions in the approximately nine minutes between E251's on-scene report and E251's officer mayday transmission. Under stressful conditions, personnel will suffer from auditory exclusion. Auditory exclusion coupled with unnecessary transmissions on the tactical channel, it is understandable how personnel can miss vital communications.

To reduce the number of ancillary and unnecessary radio transmissions on the fireground, many fire departments institute the use of a "Command Channel." The IC requests this talk group upon the arrival of an aide. Once the talk group is assigned, the Emergency Communication Center (ECC) or IC should communicate such to all units on the fireground. The tactical channel would only be units on the fireground, units operating in the IDLH, and the Incident Commander. The aide would operate the Command Channel, and they would be the only person in the Command Post (CP) to have direct dialogue with dispatch. They would also communicate with units responding and staging, along with other designated groups or divisions, such as Rehab or Welfare, not engaged in the IDLH.

References:

1. *Communications Manual*, Standard Operating Procedure § 4.00.01, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).

2. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).

Recommendation #1: DFRS should institute a policy mandating a "Command Channel" upon the aide position implemented at the Command Post to remove ancillary traffic from the tactical channel. The Command Channel can be used for direct dialogue between the Command Post, dispatch, and units marking enroute and on-scene at the staging location if on the RID or additional alarms.

Recommendation #2: DFRS should revise its Communications Manual to have units providing the on-scene report (IOSR), and follow-up reports go directly to the responding Chief Officer. The Emergency Communications Center should not repeat or "parrot" the information unless the responding Chief Officer did not acknowledge the report or the responding Chief Officer requests it from the ECC.

9.3 Effective Firefighting Force

The authority having jurisdiction must identify the service performance standards and expectations for all types of emergency incidents in their community. Frederick County Division of Fire and Rescue Services (DFRS) must consider factors during this decision-making process including local, regional, state, and industry standards. Once DFRS identifies the jurisdiction's performance standards and expectations, it must match personnel and unit resources to support and achieve the response goals properly. Examples of these challenges that will affect service delivery include changes in population, demographics, business and residential development, traffic patterns, emergency incident volume, and community risk and homeland security threat analysis.[38]

The structure at 9510 Ball Road was 5375 square feet, almost three times the size of the example scenario outlined in NFPA 1710, *Organization and Deployment of Fire Suppression Operations, EMS, and Special Operations in Career Fire Departments*. Fire suppression activities are task-oriented, labor-intensive, and often performed in a rapid sequence and coordinated manner to achieve efficiency and provide for safe incident operations. Fire ground operations speed, efficiency, and safety are directly proportional to the number of personnel available to perform the critical tasks. If staffing levels are deficient, then the time to accomplish necessary critical tasks lengthens, exposing firefighters and trapped civilians to increased dangers. Without adequate resources to control the incident, the fire continues to burn, increasing the chances of sudden changes in conditions, especially in lightweight constructed structures.

Understaffing additionally taxes existing staff, which increases risk of accidents and errors. Furthermore, the added burden of existing staff results in health consequences leading to increased sick days and leave of absences, which further taxes those remaining.[39]

Observation #1: At the Ball Road incident, most units did not meet the minimum four-person staffing requirements under NFPA 1710.

> Analysis: The National Fire Protection Association (NFPA) develops and advocates for consensus-based codes and standards. NFPA developed its 1710 standard to apply documented and scientific-based fire behavior and emergency medicine to the essential resource requirements for effective fire and emergency service deployment. NFPA 1710 is necessary as it uses the established and proven science of fire behavior and emergency medicine to the basic requirements for effective fire and emergency service deployment
>
> DFRS has historically aligned themselves with NFPA 1720 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments. The problem with this standard is that it does not include the quantifiable method of measuring the basic requirements for effective fire and emergency service deployment.
>
> In 2020, NFPA offered clarification on which of the two standards (NFPA 1710 / NFPA 1720) a combination (career/volunteer) department should comply. NFPA now defines a career fire department as one that utilizes full-time or full-time equivalent (FTE) personnel to comprise at least 50% of an initial full alarm assignment.
>
> Current performance data validates that full-time career personnel comprise at least 50% of the initial full alarm assignment staffing in DFRS.

[38] This paragraph is copied verbatim from *Line of Duty Death Investigation Report, Technician I Kyle Wilson*, Pg. 161, Prince William County Department of Fire and Rescue (Apr. 16, 2007).

[39] Lois James, PhD.; Steven James, PhD.

NFPA 1710 identifies the initial assembly of a firefighting force as a minimum of seventeen (17) qualified firefighters based on a 2,000 square foot, two-story, single-family occupancy without a basement and with no exposures. The above personnel minimum is necessary to complete the following initial on-scene actions:

- Establish a primary water source.
- Deploy an initial attack and backup hoseline.
- Ventilate the structure.
- Gain forcible entry into the structure.
- Perform search and rescue.
- Provide for an incident commander.
- Establish an initial rapid intervention crew (IRIC) to meet OSHA requirements (two-in/two-out).

Additional staffing is required above that level to accomplish other critical tactical priorities such as:

- Placing ladders.
- Controlling utilities.
- Providing emergency medical services for the responders and/or civilians.
- Placing additional hose lines in service.
- Handling multiple victims.
- Providing for a safety officer(s).
- Providing incident command support.

References:

1. NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, National Fire Protection Association (2020).
2. NFPA 1720, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments, National Fire Protection Association (2020).
3. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).

Recommendation #1: DFRS should discontinue the use of NFPA 1720 and formally adopt NFPA 1710 as the sole standard to utilize when developing organizational performance standards, unit staffing levels, and resource deployment models in Frederick County.

Observation #2: On the Ball Road incident, all but four units had a minimum staffing level of three people, which fails to meet the *NFPA 1710* standard, of four people on each engine and truck. The staffing on-scene resulted in an insufficient number of qualified personnel to perform all the critical tasks associated with firefighting activities. However, all units were in compliance with Frederick County Division of Fire Rescue Services, Standard Operating Procedure § 5.00.04, *Minimum Staffing of Apparatus*.

Analysis: Frederick County Division of Fire Rescue Services, Standard Operating Procedure 5.00.04, *Minimum Staffing of Apparatus* directly conflicts with the staffing standards addressed in NFPA 1710. The four units that did have additional staffing that day were coincidental in that:

1. E152 had a volunteer who happened to be at the station at the time of dispatch.

2. RS3 had an extra firefighter because a volunteer member had just come to the station to begin riding the ambulance and just relieved the firefighter that was assigned to the ambulance. When the Ball Road incident was dispatched, that "extra" firefighter, not knowing what he was supposed to do now that he was extra, just got on the Rescue Squad. Ultimately, that "extra" firefighter and his partner were the crew that located and extracted E251A.

3. E31 was staffed with two additional firefighters, a volunteer, and a career probationary firefighter who was riding along prior to counting as minimum staffing after recruit school.

4. E153 was volunteer staffed with four personnel.

The extra staffing on both RS3 and E31 exponentially enhanced locating and removing Captain Josh Laird from the basement. At current minimum staffing levels, it is highly unlikely that those assigned to locate and remove Captain Laird would have been able to do so as expediently as they did.

The following table (Figure 43) reflects the minimum expected staffing level for resources dispatched to 9510 Ball Road

Unit		E231	E251	E152	E153	E331	TR23	TR41	RS3	T23	T33	T1	BC901	S900
Staffing		3	3	3	3	3	3	3	3	1	1	1	1	1

References: *Minimum Staffing of Apparatus*, Standard Operating Procedure § 5.00.04, Frederick County, Md. Div. of Fire & Rescue Serv. (Jun. 7, 2013).

Recommendation #1: DFRS should immediately begin the strategic implementation of increasing the minimum qualified staffing levels on all suppression units to four (4) firefighters to improve firefighter safety and operational effectiveness.

Recommendation #2: DFRS should achieve the goal of reaching NFPA 1710 staffing, which will require a multi-year approach and a long-term commitment to funding. In addition to the future commitment of adequate financing by Frederick County, the ESRP strongly urges DFRS to begin taking full advantage of grant funding opportunities such as the SAFER[40] grant to kick-start this process.

Recommendation #3: DFRS should prohibit Units from responding on a suppression piece with a "Driver Only." This policy, which is both ineffective and dangerous, is also in conflict with the recommendation from *NFPA 1710.*

Recommendation #4: DFRS should amend SOP § 5.00.04 to limit the practice of allowing a suppression piece to respond "Understaffed" (two-person crew) outside of that company's first due area. A First Due Restriction Policy is a compromise that recognizes the geographical and staffing challenges of Frederick County, and the extended times it could take in some portions of the County for Fire-EMS assistance to arrive. The Restriction Policy would allow for an immediate initial response within the community, to initiate limited Fire-EMS actions, while making sure that the short-staffed unit is always backed up by an adequately staffed unit.

[40] The Federal Emergency Management Agency (FEMA) created the Staffing for Adequate Fire and Emergency Response Grants (SAFER) to provide funding directly to fire departments and volunteer firefighter interest organizations to help them increase or maintain the number of trained, "front line" firefighters available in their communities.

Recommendation #5: DFRS should place a first due restriction on the dispatch of a unit when that unit does not respond 90% of the time with full staffing to eliminate delay in response of a staffed apparatus. Response data should be collected annually at minimum, so that DFRS can adjust first due restrictions as necessary.

Observation #3: DFRS's strategic approach for maintaining a growing standard-of-coverage[41] is identified in the 2018 *Frederick County Fire-Rescue Service Plan*. Due to the rapid population growth in the County, and the now understood findings and recommendations of this report, that plan is no longer accurate or adequate.

Analysis: Frederick County has continued to grow in both development and population, while at the same time, volunteer participation has continued to be challenged both locally and nationally. Based on the findings and recommendations of this report, it would behoove Frederick County to prioritize updating the *2018 Frederick County Fire-Rescue Service Plan*, to consider growth and population changes and the recommendations of this report.

Reference: *Frederick County Fire-Rescue Service Plan CY 2019 – CY 2020*, Frederick County, Md. Div. of Fire & Rescue Serv. (Dec. 2018).

Recommendation #1: The ESRP recommends that DFRS consider soliciting services from a third party, independent fire service expert to provide a comprehensive analysis of the current DFRS performance measures, current and projected staffing needs, and a review of the current deployment practices utilized. The 2018 *Frederick County Fire-Rescue Service Plan* is comprehensive, and well thought out. DFRS should amend the current plan as opposed to starting anew and discarding the 2018 version. Additionally, an independent analysis that could verify the assumptions in the 2018 plan would be appropriate. The findings and recommendations of this report must also be taken into consideration.

Observation #4: The Ball Road incident demanded more than 1500 gallons per minute[42] of water to successfully mitigate the fire. Given the challenges of rural water supply operations, ensuring that there is an appropriate number of staffed and immediately available tankers is prudent to make sure the County's resource demands will be met.

Analysis: A reliable, sustained water supply is essential for firefighting in areas lacking an adequate municipal water supply. It is now common in the County for residents to own large estate dwellings exceeding 5,000 square feet with open floor plans; these structures allow for large, rapidly developing fires. Fires of this nature require a response of quickly applied high volume of water to control the fire.

Water supply operations in areas without a municipal water supply system are complex. Water supply management is often given lower priority than operations occurring in or around the structure fire. The need for well-established procedures, skilled apparatus operators, a water supply group supervisor and training are essential for successful water supply operations. Currently, DFRS staffs only one tanker on a full-time basis. The *2018 Frederick County Fire-Rescue Service Plan* identifies that the need for strategic staffing of tankers must be monitored regularly.

Reference: *Frederick County Fire-Rescue Service Play CY 2019 – CY 2020*, Frederick County, Md. Div. of Fire & Rescue Serv. (Dec. 2018).

[41] The Standard of Coverage consists of a rational, systematic way to describe decisions made regarding the deployment of resources in relation to the potential demand placed on them by the type of risk and historical needs of the community.

[42] The basis of this benchmark is the Needed Fire Flow Formula (NFF) established by the National Fire Academy (NFA)

Recommendation #1: DFRS should include a review of the current deployment and staffing of tankers in updating the *2018 Frederick County Fire-Rescue Service Plan*, to ensure that there is an adequate number of full-time staffed tankers in the County.

Observation #5: The Ball Road incident occurred during the workweek, at a time of day when several administrative chiefs were available and nearby.

Analysis: While a command team was quickly put in place on the Ball Road incident, DFRS must assure that this command team concept can be effectively applied to all Box Alarms if no administrative or volunteer chief officers are available. Currently, DFRS dispatches a single Battalion Chief on a Box Alarm assignment. Sometimes the Battalion Chief will be joined by a Volunteer Chief Officer, but this is not guaranteed. Task saturation of a single incident commander is a common contributing factor in fire department LODDs.

According to DFRS SOP § 5.00.25, *Incident Command Policy*, for complex incidents it is more effectively executed when at least two Chief Officers operate inside a stationary command post. The pace of communications and actions at structure fires or mass casualty incidents can quickly overwhelm a single person. Confusion with communications is especially apparent when second tactical talk groups are required for communications. Having a second Chief Officer in the Command Post reduces the chance of missing critical communications and enhances firefighter safety and accountability.

Frederick County is 664 square miles and served by three 24/7 Battalion Chiefs. The County benefits from having volunteer chief officers located throughout the County who assist in filling this role when available. Without considering any other administrative factors, the extended response times that occur because of a Battalion Chief (who is responsible for the management of an entire incident, and the safety of every firefighter) trying to cover so much geography, creates a significant risk for residents and firefighters which must be addressed. The ESRP heard and discussed many administrative and operational concerns related to only having three 24/7 Battalion Chiefs throughout the County. Based on the overall size of the County, the continuing expansion of the career workforce, and the lengthy response times for Battalion Chiefs in certain parts of the County, the number of needed Battalion Chiefs must immediately be reevaluated.

Reference: *Incident Command Policy*, Standard Operating Procedure § 5.00.25, Frederick County, Md. Div. of Fire & Rescue Serv. (Sept. 1, 2021).

Recommendation #1: DFRS should amend its current dispatch assignments to ensure that two (2) career Battalion Chiefs are dispatched on every structure fire assignment to ensure that there will always be enough chief officers to form a Command Team.

Recommendation #2: DFRS should include a review of the current deployment and staffing of Battalion Chiefs when updating the *2018 Frederick County Fire-Rescue Service Plan*, to identify the proper number of Battalion Chiefs needed to operate within the DFRS system safely and effectively.

Recommendation #3: In support of Recommendation #1, DFRS should explore the opportunity to capitalize on fully qualified volunteer chief level officers and develop a daily volunteer chief officer roster in each of the three operational battalions. The program, if implemented correctly, could provide an additional on-duty Chief Officer when available. It would be imperative that any member selected to participate in this program meet the qualifications of *NFPA 1021 Standards for Fire Officer Professional Qualifications.*

Observation #6: There is no comprehensive and formalized Health & Safety Program at DFRS.

Analysis: DFRS has and continues to work very hard to meet the needs and requirements of the ever-expanding world of firefighter health and safety. In a review of DFRS's health and safety-related policies, the ESRP concluded that there is still much more that needs to be done to keep up with the expanding list of risks and hazards faced by firefighters.

Reference: NFPA 1500 Standard on Fire Department Occupational Safety, Health, and Wellness Program, National Fire Protection Association (2021).

Recommendation #1: NFPA 1500 provides an excellent foundation for the development and implementation of a comprehensive health and safety program. While DFRS has continued to adopt several elements of a health and safety program, the ESRP recommends that DFRS utilize the consensus recommendations of NFPA 1500 as they strategically expand and formalize DFRS' Health and Safety Program.

Observation #7: As DFRS continues to undergo rapid growth, the resources required to effectively implement and manage a comprehensive Health and Safety program must also increase.

Analysis: Those assigned to the Safety Office work tirelessly to keep up with their day-to-day responsibilities. Their ability to complete even the most basic administrative functions of their daily responsibilities is largely dependent on how much of their time will be required to respond to unplanned emergent situations, such as emergency responses, division accidents, and injuries, and replacement of critical safety equipment, etc. With the lack of sufficient staffing, crisis management quickly consumes each day, leaving little to no time for any level of health and safety strategic planning, safety/risk analysis, illness/injury prevention, etc.

It is also understandable that the most urgent need for additional staffing in DFRS is on the EMS and suppression units themselves. DFRS administration should not have to choose between one or the other. Balance should be placed on ensuring enough support staff exists, as the operational staffing grows.

Reference: None applicable.

Recommendation #1: The DFRS Health and Safety Captain position should be elevated to a Chief Officer position. The knowledge, skills, and abilities required to implement, grow, and manage this type of program will require someone with a strong background and experience in areas such as organizational risk management, policy development, budgeting, labor-management relations, etc. This position charged with Health and Safety in DFRS was originally held by a Battalion Chief but has since been relegated to a Captain.

Observation #8: In addition to the Incident Scene Safety Officers (ISSO) having to complete their regularly assigned daily tasks, they must also respond to all priority fire/rescue incidents, traverse the County to replace critical safety equipment, and deal with all accidents, injuries, and illnesses that occur on duty.

Analysis: Currently, DFRS operates with three 24/7 ISSOs (one per shift). In addition to responding to emergency calls for service throughout the County's 664 square miles, they are required to manage day-to-day activities including but not limited to all on-duty injuries, complete injury packages, accident investigations, addressing any critical PPE needs, and a host of other health and safety needs. Between the current workload and the long distances to travel across the County, the shift ISSOs have no remaining capacity for anything else. Daily, the Safety Officer Captain sacrifices key programmatic activities and assumes the role of backup Safety Officer. They lack

any ability to provide quality follow-up on safety-related matters, assist with and provide safety-specific training, conduct incident after-action reviews, evaluate safety trends, perform station-level safety inspections, or other tasks either on their shifts or across shifts.

References: None applicable.

Recommendation #1: DFRS should create and assign a uniformed or civilian FTE position to the Health and Safety Office to manage DFRS's medical wellness programs. This person will ensure that annual physicals are completed every year, manage the infectious disease prevention program, conduct fitness assessments, and deal with the growing mental health needs.

Recommendation #2: DFRS should create and assign an FTE at the rank of Captain to the Health and Safety Office, to support and supervise the ISSOs. This Captain would serve as a backup Safety Officer during the busiest time of day and would provide continuity across shifts with priority follow-up tasks which currently sit and wait until the ISSO returns on their scheduled shift. In addition, this individual could manage important tasks such as conducting division-wide PPE inspections, station safety inspections, and accident and injury investigations.

Recommendation #3: DFRS should explore the opportunity to capitalize on a smaller group of fully qualified volunteer chief level officers and develop a Volunteer Safety Officer program. The program, if implemented correctly, could provide an additional on-duty Safety Officer in the evenings and on weekends. It would be imperative that any member selected to participate in this program meet the qualifications of *NFPA 1521 Standards for Fire Department Safety Officer Professional Qualifications.*

Observation #9: Throughout the investigative process, there was an overwhelming sense from those interviewed, both career and volunteer at all ranks, that inequality of qualifications and standards between career and volunteer officers may be one of the most significant concerns facing the membership. Every individual's sense of personal safety and wellness is directly proportional to the knowledge, skills, capabilities, and requirements placed upon the officers they work with on-scene.

Analysis: At the Ball Road Incident, there were numerous concerns identified with the actions of both career and volunteer officers. The main issue identified during countless interviews as it relates to how subordinate level members feel about their individual safety was the glaring discrepancy that exists within DFRS in the requirements and professional standards between volunteer and career officers.

The ESRP examined three relevant documents related to qualifications for career and volunteer officers in DFRS. The documents included (1) Frederick County Division of Fire Rescue Services, Standard Operating Procedure § 2.03.01, *Uniformed Employee Competitive Promotional Requirements, and Procedures*; (2) Frederick County Division of Fire Rescue Services, Standard Operating Procedures § 5.00.03, *Volunteer Rank Structure*, and (3) Frederick County Code § 1.2.65 *Qualifications of Officers.*

The table below shows DFRS requirements for promotion to Lieutenant, Captain, Battalion Chief, and Volunteer Chief Officer. Qualifications highlighted in yellow under the "Career" column indicate a higher level of training, certification, or experience required than their volunteer counterparts at the identical rank.

It is important for all members of DFRS, volunteer or career, to achieve and maintain equal qualifications for each rank and provide the same level of service across the board.

The ESRP was deeply concerned with the findings after examining DFRS's promotional requirements. The significant difference in the professional qualifications required within each of the three ranks examined, between career members of DFRS, and their volunteer counterparts is particularly problematic.

This type of equal but separate standard is causing and will continue to cause wide personal concerns for safety on the fireground. Additionally, it leads to a lack of trust and mutual respect amongst the members of DFRS and creates a significant liability lying in wait for the leadership in Frederick County.

The issue of disparity in professional qualifications between career and volunteer firefighters is not limited to Frederick County. For far too long, many fire chiefs, either of their own volition or under great pressure by local elected leaders or various advocacy groups, have permitted this equal but separate level of service to exist. In doing so, they are putting their own members at an increased level of risk, but they are also degrading the thousands of professional volunteer firefighters both in Frederick County and around the country. This practice increases the cultural fissure between career and volunteer firefighters and violates the public trust by knowingly allowing disparate levels of service, depending on whether your community is protected by career firefighters, all-volunteer firefighters, or a combination of both.

Professionalism has nothing to do with a firefighter's membership status, i.e., career or volunteer. This report makes it abundantly clear that both career and volunteer members made mistakes, errors, and omissions. As a result of tragic incidents like the Ball Road incident, fire service training standards, regulations, and requirements have continued to evolve. Not just for career firefighters but every firefighter. Professional standards and qualifications are the foundation for any professional fire department, whether all-volunteer, all career, or both.

There is a significant disparity in the qualifications and requirements for promotion at every level of supervision, between career and volunteer officers, despite being considered equal in the chain of command. They are expected to perform the same exact job function, and own the same level of command burden, yet have very different requirements for promotion.

This has been a long-standing accepted practice in DFRS, transcending the current appointed and elected leaders. While the current appointed and elected leadership of DFRS and Frederick County Government may not have created this situation, it is now their problem to fix. Frederick County Code § 1-2-65, *Qualifications of Officers* states the following:

(A) Qualifications for operational certification at each rank for career and volunteer personnel shall be in accordance with policies as established by the Director of Fire and Rescue Services, with the advice and cooperation of the Fire and Rescue Advisory Board.

(B) Volunteer officers with administrative authority internal to the volunteer fire and rescue corporation may be elected or appointed by a volunteer fire, rescue, or ambulance corporation.

(C) The operational authority of volunteer administrative officers shall be commensurate with their level of operational certification under established officer qualifications.

Figure 44	Career	Volunteer
Lieutenant	1. Three years as a DFRS FFIII, Fire-Medic III, Technician, or Technician-Medic. 2. Possess current State of Maryland EMT-B, EMT-I, or EMT-P and current CPR for the Professional Rescuer Certification. 3. Successful Completion of DFRS annual Compliance Training. 4. Valid Class B Driver's license or equivalent and Frederick County Employee Driving Permit. 5. Certification as a Fire Officer I. 6. Certification as a Health and Safety Officer. 7. Certification as an Instructor I. 8. Certification as an Inspector I.	1. Three years of Fire Service Experience. 2. Certification as a Fire Officer I. 3. Emergency Vehicle Operator Course and approved by Frederick County Office of Risk Management. 4. Current Emergency Medical Responder certification or higher.
Captain	1. Three years as a DFRS Lieutenant. 2. Possess current State of Maryland EMT-B, EMT-I, or EMT-P and current CPR for the Professional Rescuer Certification. 3. Successful Completion of DFRS annual Compliance Training. 4. Valid Class B Driver's license or equivalent and Frederick County Employee Driving Permit. 5. Certification as a Fire Officer II. 6. Certification as an Instructor II. 7. Successful completion of the National Incident Management System (NIMS), ICS 300.	1. One Year of Fire Service Experience as a Lieutenant. 2. Certification as a Fire Officer I. 3. Emergency Vehicle Operator Course and approved by Frederick County Office of Risk Management. 4. Current Emergency Medical Responder certification or higher.
Battalion Chief (career) -and- Volunteer Chief Officer	1. Three years as a DFRS Captain. 2. Possess current State of Maryland EMT-B, EMT-I, or EMT-P and current CPR for the Professional Rescuer Certification. 3. Successful Completion of DFRS annual Compliance Training. 4. Valid Class B Driver's license or equivalent and Frederick County Employee Driving Permit. 5. Certification as a Fire Officer III. 6. Certification as HazMat Incident Commander. 7. Successful completion of the National Incident Management System (NIMS), ICS 400.	1. Three Years of Experience as a Lieutenant or Captain. 2. Certification as a Fire Officer II. 3. Emergency Vehicle Operator Course and approved by Frederick County Office of Risk Management. 4. Current Emergency Medical Responder certification or higher.

References:

1. Frederick County Code § 1.2.65.
2. *Volunteer Rank Structure*, Standard Operating Procedure § 5.00.03, Frederick County, Md. Div. of Fire & Rescue Serv. (Aug. 24, 2017).
3. *Uniformed Employee Competitive Promotional Requirements and Procedures*, Standard Operating Procedure § 2.03.01, Frederick County, Md. Div. of Fire & Rescue Serv. (May 31, 2017).
4. NFPA 1021, Standard for Fire Fighter Professional Qualifications, National Fire Protection Association (2020).

Recommendation #1: DFRS has adopted NFPA 1021, *Standard for Fire Officer Professional Qualifications*, as a requirement for career officers. The ESRP recommends that the Director must ensure that the established set of promotional requirements established for career officers also apply to their volunteer counterparts. This action must be free from outside influence.

Recommendation #2: DFRS should immediately stop the practice of allowing operational volunteer officers to perform in the role of Lieutenant, Captain, and Chief Officer unless and until they have met the same minimum standards and qualifications as their career counterparts. The current requirements for career officers are closely aligned with NFPA 1021, and those requirements demonstrate a progressive level of professional development for each rank.

Recommendation #3: DFRS should require that, until Recommendation #1 can be implemented, a Volunteer Officer who does not meet the same requirements of a career chief officer and is in the position of the Strategic IC must be relieved of that position when a career chief officer or a volunteer chief officer with equal qualifications to a career chief officer arrives on-scene.

Recommendation #4: DFRS must immediately, based on the intent of Recommendations #1-3, reconsider the parameters of the Volunteer Duty Officer Program, specifically around permitting the rank of Firefighter, Lieutenant, and Captain to sign up as the Duty Officer.

Recommendation #5: DFRS should consider the development of a Frederick County Officer Development School that would unify all members (career and volunteer) in a common set of expectations and training.

Observation #10: During the Ball Road incident, it was clear that many personnel were pushed to their absolute physical limits.

Analysis: A review of DFRS SOP § 2.02.08, *Employee Medical and Physical Requirements*, and practice on the annual requirement for an NFPA compliant yearly physical medical exam is limited to only career members of DFRS. There is no requirement for operational volunteer members to undergo the same standard of annual physicals as their career counterparts.

There was a wide disparity in SCBA air consumption at the Ball Road incident. Some members expelled their available air in as little as 12 minutes, while others consumed very little air after operating the entire time. Factors that drive air consumption include but are not limited to one's physical health, level of fitness, and physical and psychological stress.

Many members purported that they were physically stressed before they ever made it up to the structure due to the distance they had to travel from their apparatus and the steep grade of the property. For example, some recall stopping for a minute to catch their breath once they reached the structure before beginning task-level work. In contrast, others stated that they had to pace

themselves to reserve their physical capacity, which they knew would be required to perform the rescue.

It is a known fact that firefighters face extreme physical demands in the performance of their duty. Those demands leave firefighters susceptible to developing hypertension, diabetes, high cholesterol, and obesity. It also puts them at higher risk for both heart attacks and cancer. The biggest danger firefighters face is not their safety but their health.

According to NFPA, 54 percent of firefighter deaths are caused by overexertion and stress.[43] And last year, the Firefighter Cancer Support Network revealed that 66 percent of career firefighter line-of-duty deaths occurred due to cancer from 2002 to 2019.[44]

The average age of a first heart attack for the general population is 66; for the fire service, it's 49. It's a sobering statistic that underscores the critical importance of annual exams for firefighters. Based upon testing criteria for the increased health risks firefighters face, annual medical physicals have proven to lead to early detection and prevention of long-term illnesses. The higher-than-average level of health risks that firefighters are exposed to does not discriminate between the volunteer or career status of a firefighter.

Reference: *Employee Medical Physical Requirements*, Standard Operating Procedure § 2.02.08, Frederick County, Md. Div. of Fire & Rescue Serv. (May 31, 2017).

Recommendation #1: DFRS should immediately begin mandating that all firefighters, both career and volunteer, be required to undergo an NFPA compliant annual medical physical. Exemptions of any kind must not be permitted.

Recommendation #2: DFRS should require that volunteer operational members participate in annual Work Performance Evaluations. The ESRP recommends additional funding support to ensure that the fitness assessment is conducted annually and that DFRS requires the assessment for each career and operational volunteer firefighter. This assessment should not be utilized to determine fitness for duty; that evaluation is accomplished through the annual medical physical. The focus of this assessment should be to provide a baseline assessment of each member's current level of fitness and, where needed, professional guidance and support to address any concerns.

[43] National Fire Protection Association, *Firefighter deaths by cause and nature of injury*, (last visited Mar. 16, 2022). *citing* Rita F. Fahy, et. al., *Firefighter Fatalities in the United States*, National Fire Protection Association (Jul. 2020).

[44] Firefighter Cancer Support Network, *FAQ*, (last visited Mar. 26, 2022) https://firefightercancersupport.org/resources/faq/.

9.4 Operations

9.4.1 Accountability / Crew Integrity

Accountability procedures enhance firefighter safety while operating on emergency incidents by providing the Incident Commander (IC) with systems to track the number of personnel operating inside the Immediately Dangerous to Life and Health (IDLH) and their area of operation. While it is critical to account for every member on the incident scene, the Incident Accountability System's primary purpose is to account for all firefighters operating within an incident's hazard zone. The personnel accountability system should consistently be implemented in all emergency incidents when personnel operate in an IDLH environment or at the IC's discretion.

A fundamental tenet of any fire department Personnel Accountability System is the concept of maintaining crew integrity otherwise known as personal accountability. Small unit cohesion is critical for personal safety when working in an IDLH environment. The fire departments' Personnel Accountability System relies on the fact that each individual operating at the incident scene has a personal obligation to the overall accountability system. These personal obligations are as follows:

- As an individual, I have a personal responsibility to always stay with my crew.
- As an officer, I have a personal responsibility to ensure my crew always sticks together when operating in an IDLH.
- As an IC, I am responsible for knowing the exact location of all my unit officers always operating in an IDLH.

Observation #1: There were countless violations and compliance failures of DFRS' Accountability policy throughout the Ball Road incident. Unfortunately, except for a minimal number of units, personnel largely ignored the policy.

> Analysis: Standard Operating Procedure § 5.00.01, *Accountability*, covers both the detailed description of the hardware used in the Accountability System and the procedures for how personnel should use that hardware system. Unfortunately, the last updated policy in 2018 primarily focuses on hardware, with little emphasis on all people and behavior. This issue is not unique to DFRS. Across the country, fire departments have concentrated on a hardware-driven policy that largely misses the mark of real personnel accountability and disregards the principle that any system used in complex, high-risk situations require intense human supervision and compliance from everyone.
>
> Without exception, the most important responsibility of the IC is to know and track the whereabouts of every person who enters the IDLH environment. Designing a policy that will accomplish this requires several other components. Hardware should be an element of an effective accountability system; it shouldn't be the primary focus. The primary focus should always be knowing who is entering the hazard zone (i.e., which unit), where they are entering from (i.e., ingress), how many people from that unit are entering the IDLH, and where they are operating. In addition, and in "support" of the primary focus, the policy must include elements such as crew integrity, tactical discipline, PAR checks, progress reports, and if desired, hardware.
>
> Reference: *Accountability*, Standard Operating Procedure § 5.00.01, Frederick County, Md. Div. of Fire & Rescue Serv. (Jun. 16, 2017).
>
> Recommendation #1: DFRS should revise SOP § 5.00.01, *Accountability*, to incorporate the key principles and components of a comprehensive accountability system. The updated policy should include the following:

- Provisions where all units that deploy into a structure before and after the arrival of the strategic commander must clearly and concisely communicate by radio the following information: the entrance to be utilized, how many people within their crew are entering the IDLH, where they intend to operate, and the actions they are taking. This information helps with situational awareness for the later-arriving strategic commander and aids in the transfer of command process.

- A requirement that prohibits crew movement inside an IDLH from one location to another without notification to the IC and/or Group or Division Supervisor.

- Provisions providing clear guidance on the frequency and conditions in which the IC should initiate a PAR check and how that PAR check should be conducted.

- A requirement for unit officers to ensure at the beginning of each shift, and each time that unit staffing changes, that they are validating that everyone assigned to the apparatus has the appropriate accountability tag in place.

Observation #2: Throughout the Ball Road incident, there were numerous occasions where crew integrity was violated. DFRS Officers who are charged with ensuring crew integrity either initiated these violations or observed them and did nothing about them.

Analysis: The tragic and sad ending of this incident was precipitated by a violation of this concept when Captain Laird, for an unknown reason, walked away from his subordinate and entered the structure. OPSAC900 witnessed this violation but took no definitive action to correct it. Further, a Chief Officer left his assigned crew and entered the first floor without permission or instruction as the incident transpired. Several Company Officers abandoned their crew, leaving subordinates who they were responsible for operating alone inside and outside of the IDLH.

In a separate incident, a volunteer firefighter arrived on an engine company with three career personnel. The career personnel, including the officer, did not know who this person was or their qualifications. From the minute the crew dismounted their rig, there was no accounting of this individual by the company officer. The volunteer firefighter then entered the IDLH on an uncharged hoseline with a crew that was unaware of who he was or what unit he was assigned. Shortly after that, the volunteer firefighter depleted his air supply in his SCBA and advised a nearby firefighter that he was low on air and had to leave. The volunteer firefighter then exited the structure alone, did not notify the IC, and returned to the apparatus that he responded on until he was relieved.

The ESRP recognizes that one of these violations resulted in locating and extracting Captain Laird from the basement. However, the ESRP is confident that it is only by chance and luck that these violations did not result in additional Maydays. Firefighters operate in the most complex, dangerous, and time-deficient environments; our response system is the most effective when supported by strong policies, accountability, operational organization, communications, and teamwork. In the absence of consistent implementation of one or more of these tenets, individuals will begin to take matters into their own hands creating chaos for everyone.

References:

1. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
2. *Safe Interior Structural Firefighter Guidelines*, Standard Operating Procedure § 5.00.08, Frederick County, Md. Div. of Fire & Rescue Serv. (Jan. 16, 2013).

Recommendation #1: DFRS should, in accordance with Observation #1, Recommendation #1, update SOP § 5:00:08, *Safe Interior Structural Firefighting*, include a section dedicated to crew integrity. These updates should include the following principles:

- Operating in an IDLH environment requires a minimum of two people, with at least one radio.
- When a member has been assigned a portable radio by virtue of their "riding position," that member is required to wear the radio (which must always be turned on) whenever entering an IDLH environment.
- Other than highly unusual situations, crews must enter and exit a structure together.
- Personnel must not separate from their crew for independent action or attach to another crew without their company officer's and/or the Incident Commander permission.
- Once assigned to operate in a specific geographical area or a Division/Group/Branch, and outside of an unforeseen emergency, crews are prohibited from moving from that location without the Supervisor or IC's knowledge.
- All personnel must maintain contact with their company officer by at least one of the following methods: (1) voice, (2) touch, (3) sight, or (4) portable radio.
- Any member(s) whose normal job is to operate outside of the IDLH is not permitted to enter the hazard area without the member's company officer's express permission. The members' company officer must give specific instructions as to the crew's location within the hazard zone. The member(s) must proceed directly to the location identified by their company officer without stopping to t perform other tasks.

Observation #3: Crew integrity was compromised prior to the first unit ever arriving on-scene. Several of the volunteer members who responded failed to both notify their Station Officer and obtain a riding assignment from them. As a result, volunteer members operated on-scene, and the officer responsible for them either never knew it or worse didn't know who the person was.

Analysis: On the day of the Ball Road incident, two instances occurred in which volunteer members at two separate stations rode to the incident without an assignment or permission from a DFRS station officer. As a result, the station officer did not have an opportunity to comply with established policy and assign the volunteer members to an apparatus riding position.

In the first instance referenced above, volunteer members from Station 3 were at the station to staff the ambulance at the time of dispatch. They removed the career firefighters' PPE from the ambulance at the station but failed to coordinate with DFRS assigned station officer or the respective firefighter. The career firefighter previously assigned to the ambulance decided to change his assignment to RS3 as an extra firefighter following the dispatch of the Ball Road Box Alarm.

In the second instance, a volunteer firefighter at Station 15 assigned himself to one of the engine companies; however, the unit officer was unaware of the volunteer's self-assignment. The unit officer remained unaware of who the individual was for the duration of the incident. Upon arrival at the incident, this individual operated separately and apart from his crew.

Career and volunteer officers share responsibility for coordinating riding assignments, ensuring that accountability hardware is properly placed on the apparatus, and validating that all personnel on the apparatus have their accountability tag attached. In stations with either all-career members or stations with all-volunteer members, compliance with process and policy is efficient and easy. While sharing responsibility is reasonable, the challenge comes in the stations where both career and volunteer work together. Regardless of who makes the decision, officers must enforce these critical accountability policies.

Following those examples, the most significant issue to address was that the career officer responsible for the lone volunteer member on the engine did not know who the individual was or their qualifications and couldn't ensure the person was a member of DFRS. This lack of crucial information places the company officer in an untenable position.

Reference: *Daily Station Management & Activities*, Standard Operating Procedure § 1.02.03, Frederick County, Md. Div. of Fire & Rescue Serv. (Jun. 1, 2017).

Recommendation #1: DFRS should revise SOP § 1.02.03, *Daily Station Management and Activities* policy to assure that prior to any member, career, or volunteer, assuming duty, they must first check-in with the officer assigned to station management and receive a riding assignment.

Recommendation #2: DFRS should establish an official DFRS database listing all operational volunteer members who are eligible to ride apparatus, either suppression or EMS. The database should be updated monthly, remain under the control of the Fire Chief, or a single designee, and be viewable to all officers (both career and volunteer) in every station. The following criteria should be utilized for maintaining the database:

- Editing access for the master database should be limited to no more than one or two people maximum (recommended to be the DFRS Volunteer Deputy or Assistant Chief).
- The database (view only) should be easily accessible to all officers, with membership broken down by company, and should be easy for an officer to read and understand.
- The database should be audited randomly for accuracy.
- There should be a formalized process for volunteer companies that establish how to request that a new or existing member be added to or deleted from the database, submission of training certificates, and the ability to identify those members who are qualified officers.
- That list should contain other critical information such as certifications, riding position eligibility (i.e., driver, officer, tiller, boat, etc.), and confirmation of updated fit testing compliance.
- Any member that is not listed on the approved database should be denied the ability to ride apparatus in any capacity.

Observation #4: Personnel operating near the IDLH were not wearing personal protective equipment in accordance with existing policies.

Analysis: Personnel were performing fireground tasks near the IDLH without wearing personal protective clothing. This included an attempt at forcing entry into the basement by a chief level officer wearing only civilian clothing.

References:

1. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, IV(C), Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
2. *Minimum Personal Protective Equipment (PPE) Requirements*, Standard Operating Procedure § 2.02.01(IV)(S), Frederick County, Md. Div. of Fire & Rescue Serv. (May 31, 2017).
3. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, IV(DD)(11) Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
4. *Maryland Fire Service Health and Safety Consensus Standard* § F(2)(a), Maryland Occupational Safety and Health (MOSH), Department of Labor, Licensing and Regulation (Jan. 1, 2002).

Recommendation #1: DFRS should enforce its existing policies to ensure the safety of all personnel. All emergency personnel operating near the IDLH must don the appropriate personal protective equipment.

9.4.2 Emergency Medical Services (EMS)

Firefighters undergo periods of strenuous physical exertion and are placed in inherently dangerous situations when operating on an incident scene. EMS is an essential element of a fire scene to provide medical care for civilians or firefighters and to assure the rehabilitation of firefighters who have performed strenuous activity. The IC should separate EMS on the fireground into two distinct functions: rehabilitation and medical care. EMS units responding to fire incidents must take a proactive approach and expect a firefighter may need life-saving medical intervention.

Established procedures and training are essential to the successful care of a fellow firefighter who may have a traumatic or medical emergency on a fire scene. Location, operating conditions, and personal protective clothing are challenges faced when needing to provide medical care to a down firefighter. Fire departments frequently emphasize firefighter mayday and extraction training but do not continue to the patient care element of training. A firefighter down is a physically and mentally stressful situation that requires all hands-on deck to extract a firefighter from the situation, provide medical care, and continue the firefight. The close nature of fire service personnel makes these times exceptionally difficult to maintain personal composure while providing medical care. During stressful situations, personnel will revert to established procedures and training.

Observation #1: Several crews worked together to rapidly provide a high level of care to Captain Laird.

> Analysis: Three ALS and multiple BLS providers staged on Side Delta, awaiting the extrication of Captain Laird. Immediately after Captain Laird was removed from the structure, crews began removing Captain Laird's turnout gear and seamlessly began high-performance CPR. Medic 23 directed numerous personnel in the "pit crew concept" where everyone has a distinct individual assignment for CPR and ALS interventions. A high level of care occurred despite a delayed response from an EMS supervisor.
>
> The required number of ALS providers would not have been available for patient care if the typical number of dispatched units were the only ones on-scene. The goal should be to have two ALS providers on-scene to render care. The delayed arrival of EMS 901 resulted in a delayed administration of hydroxocobalamin. Although personnel provided Captain Laird with the highest level of care available, providers could not overcome the injuries sustained from the inhalation of superheated air and combustion products.
>
> Reference: Autopsy Report [of Joshua Laird], Government of the District of Columbia Office of the Chief Medical Examiner (Oct. 27, 2021).
>
> Recommendation #1: DFRS should develop a new policy for the deployment of Cyanokit®[45] on Battalion Chief vehicles to have them readily available on all fire scenes.
>
> Recommendation #2: DFRS should evaluate the dispatch algorithm for structure fires to include an Advanced Life Support (ALS) provider on the initial dispatch, Rapid Intervention Dispatch, and additional alarms.

Observation #2: Several EMS personnel were in their full PPE, donned in preparation for suppression activities, limiting their ability to provide unencumbered care to a downed firefighter.

> Analysis: Personnel from multiple ambulances wore full structural firefighting PPE and SCBA. These personnel then hauled EMS equipment nearly 1500 feet while wearing full PPE. Several of

[45] Cyanokit is a powder to be made up into a solution for infusion (drip) into a vein. It contains the active substance hydroxocobalamin (vitamin B12a). Cyanokit is used as an antidote to treat known or suspected poisoning with cyanide, a highly poisonous chemical, commonly found in smoke from burning plastics.

them had to doff their PPE to provide care to Captain Laird. This incident did not necessitate the need for EMS units to perform suppression activities or perform the two out. A culture has been developed within DFRS for EMS units to perform firefighting activities based upon stations historically being understaffed.

Reference: *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).

Recommendation #1: DFRS should revise Standard Operating Procedure § 5.00.07, *Operational Guidelines at Structural Fires*, to reflect that if an EMS unit is not specifically tasked by the IC with the two-out assignment, they should doff all PPE and prepare for delivering EMS care.

Recommendation #2: DFRS should revise Standard Operating Procedure § 5.00.07, *Operational Guidelines at Structural Fires*, to reflect that once the EMS unit is no longer needed as the two-out they must transition back to EMS care and other fireground duties deemed necessary by the IC.

Recommendation #3: DFRS should revise Standard Operating Procedure § 5.00.07, *Operational Guidelines at Structural Fires* to include expected equipment and actions of EMS units on the fireground, such as setting out and checking their equipment in preparation for possible firefighter injuries or cardiac events.

Observation #3: Personnel who provided patient care to Captain Laird also performed incident on-scene rehab for first alarm units.

Analysis: When staffing allows, there needs to be a distinct difference in responsibility between crews who are to provide patient care and crews who are to perform rehab. For example, personnel involved in a traumatic incident such as caring for a coworker should not be assigned additional tasks.

Reference: None applicable.

Recommendation #1: DFRS should develop a Casualty Assistance Plan to ensure all personnel involved with a Mayday are removed from assignments to debrief. This should include that the Incident Commander should remove personnel directly involved in the care of, or the rescue of, a downed firefighter.

Observation #4: The removal of Captain Laird's turnout gear occurred quickly but was uncoordinated and cumbersome.

Analysis: A significant obstacle to patient care of a down firefighter is the removal of turnout gear and SCBA. Currently, there is no Department policy or procedure addressing the correct manner of turnout gear removal. Superheated turnout gear can quickly change an EMS provider to a burn patient if not appropriately protected. Removing turnout gear from an unconscious firefighter requires teamwork. Providers must rapidly deliver high-volume oxygen to combat the physiological effects of smoke inhalation. The procedure for turnout gear removal needs to emphasize a fluid process immediately transitioning to providing high volume oxygen and CPR as necessary. In these circumstances, a firefighter can be expected to be profusely sweating, towels and razors should be readily available to prepare a clean, dry surface for AED pad application.

Reference: None applicable.

Recommendation #1: DFRS should develop a new set procedure and training for the removal of turnout gear from a downed firefighter.

Recommendation #2: DFRS should institute initial training in the recruit school and paramedic curriculum on turnout gear removal.

Recommendation #3: DFRS should require EMT refresher and Paramedic refresher training (didactic and physical training) on proper turnout gear removal.

Observation #5: A Patient Care Report (PCR) for Captain Laird was not submitted to DFRS' EMS database and therefore in noncompliance with SOP § 5.01.12, *EMS Documentation*.

Analysis: Documentation of care following an exceptional incident can be traumatic to the providers. Having to relive an incident by writing the EMS report can be stressful to the EMS providers.

Reference:

1. *EMS Documentation*, Standard Operating Procedure § 5.01.12, Frederick County, Md. Div. of Fire & Rescue Serv. (May 13, 2019).

Recommendation #1: DFRS should develop a Casualty Assistance Plan that includes providing a supervisor or equally trained peer to assist with documenting the incident.

Observation #6: Personnel reported the need for significant suctioning to place the Endotracheal tube.

Analysis: Medic 23 was able to perform endotracheal intubation of Captain Laird prior to being transported. Intubating a smoke inhalation victim is not a common occurrence and presents the possibility of one of the most challenging airways to manage. In addition, performing this difficult skill on a coworker adds a significant amount of stress to an already stressful skill/situation. Therefore, providers must rely on habits and techniques that they have performed multiple times before managing this difficult situation. Medic 23 sent BLS providers to retrieve a suction unit after patient care was initiated during this incident.

Reference: None Applicable.

Recommendation #1: DFRS should consider training ALS providers in the Suction Assisted Laryngoscopy and Airway Decontamination[46] (SALAD) technique of intubation. The training should include the following:

- Providers should be encouraged to perform intubations and high-priority interventions in a specified manner to ensure that all providers are familiar with the technique and allow for other providers to assist.
- Suction equipment should be present whenever endotracheal intubation is performed.
- BLS providers should be made aware of techniques and equipment to be able to assist ALS providers in providing care.

[46] *What You Need to Know About the SALAD Technique*, SSCOR, (Dec. 24, 2021) (last visited May 2, 2022) https://blog.sscor.com/what-you-need-to-know-about-the-salad-technique.

9.4.3 Incident Management System (IMS)

Incident Management is perhaps the most important section of this report. The ESRP's goal is to establish for the reader a clear understanding of the Fire Officer's basic process that they must go through before making their first decisions on-scene. The other parts of an operational system inevitably guide their actions and comprise how it all comes together in practical application.

Systematically going through this process is critical for the first arriving officer, the Initial Incident Commander (IC), and equally important for the Chief Officer (strategic IC) before assuming Command. Fire Officers must have the knowledge to recognize and make sense of what they are seeing and the ability to communicate that in concise, structured radio reports keeping all personnel up to date on relevant information.

The development, communication, and implementation of sound strategies and tactics on the fireground begin with recognizing and understanding the risk firefighters will be exposed to on-scene. Once that risk is determined, having a clearly communicated strategy underpinned by well-executed tactics, both of which are enveloped by a well-defined operational system, is essential for personnel to succeed. These aspects of incident management are learned in training and affirmed in operational guidelines, manuals, and policies.

This process is far more complex than it sounds, even for the most experienced fire officer. The process is further complicated because the Fire Officer must apply it with limited information and usually less than sixty seconds of available time. Every element of this process, including risk assessment, scene size-up, strategy and tactics, operational doctrine, and standard operating procedures, are detailed below.

Risk Assessment & Scene Size-up: This step is perhaps the most important part of the process, which is why it is troubling that it is also the most difficult piece of the process to understand. However, the Fire Officer must know the process and the associated factors to fully understand the level of risk. Factors that contribute to the Fire Officer’s understanding of risk include but are not limited to the following:

1. The type of building involved, including size, construction type, occupancy, and layout.
2. The smoke and fire conditions present on-scene, including the locations where conditions are present, the direction the conditions are traveling, and the potential for a rapid-fire growth event.
3. The rescue profile (not to be confused with rescue profiling) and requirements to protect the search with the understanding that life safety is always the priority.
4. Knowledge of the resources available on-scene, including but not limited to staffing levels, the number of apparatuses, and water supply.

The IC must know and understand each of these factors and, more importantly, understand the relationship between them. This requires a high level of comprehension by the Fire Officer. The human brain under stress is subject to failure despite training, knowledge, and experience. The fire service lacks even the basic understanding of the negative effects of stress on human performance. For far too long, the cause and effect of improper risk assessment in the fire service have been viewed mostly from the lens of poor culture, behavior, and training. The ESRP believes that as a service we have become complacent in accepting those explanations, failing to see other possible root causes. Once the risk assessment process is completed and understood, the Fire Officer then determines the most appropriate strategy.

Strategy: There are two key elements to consider when defining strategy, "what" and "where." The "what" refers to the initial and strategic high-level goals the IC wants to accomplish. For example, the fire service has developed a standard set of overall objectives (the "what") such as Life Safety, Incident Stabilization, and Property Conservation.

The "where" refers to the IC's determination of the starting point to achieve these goals. Once the "where" is established, the IC can then determine the best course of tactical actions to accomplish those goals. In

many firefighting situations, the "where" is defined through the “mode” of operations, including investigation, offensive mode, defensive mode, or transitioning between the two modes. Regardless of the objectives, the IC must communicate the starting place to all personnel.

Once the IC defines the strategy and communicates it to personnel, they can determine the most appropriate tactics to implement. Implementing tactics without strategy is both dangerous and ineffective. Firefighters should never be put in harm's way without a clear purpose.

Tactics: Tactics are the specific tasks, or actions, working collectively to support the IC’s goals. Tactics include forcing entry, completing a primary search, or stretching a hoseline to suppress the fire at the point of origin. Tactics are further guided by the following two factors, operation doctrine, and standard operating procedures.

Operational Doctrine: DFRS is responsible for defining which fundamentals, principles, values, and expectations will drive fireground operations. Policies, procedures, resource requirements, and tactical considerations will guide those resources when conducting operations. Most fire departments do not formalize their doctrines, leaving them to be inferred from written operational policies and procedures. Issues occur when written procedures are unaccompanied by intent and organizational principles, values, and fundamental expectations. This ambiguity results in broad and inconsistent interpretations.

Standard Operating Procedure: SOPs assist the Fire Officer in the tactical decision-making process and provide a more consistent tactical response. Written SOPs provide the Fire Officer with a set of predetermined defined expectations and tactical actions to take when they arrive on-scene of an incident, in the absence of direction from the Initial or Strategic IC. In fast-moving incidents, officers are not required to wait until the Strategic IC arrives to begin acting, allowing the rapid deployment of resources for the most efficient protection of the residents, property, and the safety of firefighters.

During scene size-up, strategies and tactics, including SOPs, are measured against risk assessment. The IC then determines the best way to manage the risk while simultaneously achieving the incident goals of Life Safety, Incident Stabilization, and Property Conservation. All these elements are incorporated into the organization's operational doctrine.

In conclusion, each of these five factors, and the failures associated with each one, were major contributing factors in the events, actions, and outcomes of the Ball Road incident. The specifics are discussed in the relevant sections as follows.

The fireground is a chaotic and hectic environment that demands coordination and cooperation between all involved in the incident to successfully mitigate the emergency. The fireground is complex, fast-moving, dynamic, and marked with uncertainty and ambiguity. To operate safely and effectively in that type of environment requires a comprehensive Incident Management System (IMS).

Coordinating resources, strategies, and tactics are paramount in all environments, from the largest urban department to the smallest rural department. The March 2004 Presidential Mandate, titled the National Incident Management System (NIMS), demonstrates the importance of ICS, requiring any agency that receives Federal funds to comply with the NIMS Directive. However, ICS is much more than compliance with a mandate; it is the backbone of successful mitigation of fires and enhances the safety and survival of personnel when operating on-scene in an Immediately Dangerous to Life or Health situation (IDLH). The Incident Command System (ICS) is a big component of a broader IMS.

To be effective, an IMS must also include operational policies and procedures, accountability procedures, a command-and-control element, and communication procedures. IMS is the framework for supporting operational processes such as scene size-up, risk assessment, selection of strategy and tactics, and the development of a single Incident Action Plan (IAP).

The responsibility for the implementation of the IAP within DFRS' IMS begins with the first arriving unit, and transfers to the Strategic IC once they arrive on-scene. As incident complexity increases, the need to support the IC must also be supported. Task saturation of the Incident Commander is a major contributing factor in many line of duty deaths (LODDs).

Lastly, it must be clear that the IMS begins at incident dispatch and ends when the last unit leaves the scene.

Observation #1: Within DFRS, ambiguity and uncertainty regarding Chain-of-Command has and continues to cause great confusion amongst operational personnel. Inevitably, this confusion leads to the same challenges and frustration when trying to determine who oversees an incident.

> Analysis: The primary issue surrounding the chain-of-command is addressed in a separate section of the report. While the issue of chain-of-command is important administratively, it is critical on the fireground. As stated above, the implementation of the IMS begins at the time of dispatch, and the responsibility for compliance and oversight of the IMS lies with the person who is expected to serve as the Strategic IC. This includes enforcement of critical pre-arrival policies such as changes in the dispatch assignments and arrival orders and managing requests for units adding on to the call.
>
> In all career departments, it's clear that that person is the first Chief Officer on the dispatched assignment. It is also relatively clear in an all-volunteer system, where the highest-ranking Chief Officer of the community FD fills that role. Because DFRS is a combination system, and the chain-of-command is unclear, it is internally unclear who owns this part of the process.
>
> It's important to clarify that we are not specifically talking about who will end up as the Strategic IC. That will likely be the first arriving Chief Officer, career, or volunteer. We're specifically talking about who owns the IMS and the enforcement of all related policies and procedures prior to the Strategic IC assuming Command.
>
> Reference: None applicable.
>
> Recommendation #1: The ESRP recommends that in any incident where a career Battalion Chief is dispatched, the career Battalion Chief alone owns the responsibility for all portions of the IMS from the time of dispatch until a Chief Officer (career or volunteer) arrives and assumes the role of the Strategic IC.
>
> Recommendation #2: The ESRP recommends that as part of the responsibility outlined above, the Battalion Chief be expected and empowered to intervene while still enroute, when/if improper or unclear strategies and tactics are being communicated by the Initial IC. While the Battalion Chief should not assume command while enroute, they should assist the Initial IC by providing key prompts or actions when necessary.

Observation #2: As the first arriving unit, E251 failed to complete a full and accurate Initial On-Scene Report (IOSR).

> Analysis: SOP § 5.00.07 requires the first arriving officer to deliver a detailed IOSR upon their arrival. The IOSR includes unit positioning, structure description, conditions present, and passport drop-off location.
>
> E251 marked on-scene at 16:51:53 hours and stated, "On-scene, large 3 ½, 2 ½ story single family, we do have a working fire, go ahead and start RID and probably a tanker task force."

The IOSR did not include where E251 was positioned, did not provide specific conditions (smoke/fire) present, nor did it provide the important factor of where the conditions were related to the structure and did not provide a passport drop-off location.

The purpose of the IOSR is not to simply check a box. Each component of the IOSR is related to a critical factor. Those critical factors are all part of what the fire officer must know and understand, before going through the process of assessing the risk, determining the proper strategy, and implementing a tactical action plan. It is intended to narrow down the key information that the fire officer absorbs and must communicate.

An incomplete IOSR may be the first indication that the fire officer is already becoming task saturated or over stressed, both of which affect the auditory, cognitive and speech system. When the IOSR report is incomplete, the remaining part of the operational process is subject to critical failure.

There are several other benefits of communicating a complete and accurate IOSR. This paints a picture for incoming officers of those same critical factors. This is information that those officers won't have to observe and figure out for their own unit assignments. It provides incoming units time to consider things like what tools they need to bring, what length of hoselines they should be prepared to stretch, or where they might begin their search.

The IOSR also provides chief officers a snapshot of what the first arriving unit is seeing upon arrival. This snapshot will provide a comparison for the chief officer once they arrive and assess whether current strategies and tactics are effective or not.

References:

1. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
2. *Accountability*, Standard Operating Procedure § 5.00.01 Frederick County, Md. Div. of Fire & Rescue Serv. (Jun. 16, 2017).

Recommendation #1: DFRS must insist that all elements of the IOSR are included and communicated by the first arriving unit. When this doesn't occur, the unit providing the IOSR must be challenged.

Recommendation #2: DFRS should provide training focused on improving the quality of the IOSR, utilizing incident simulations.

Recommendation #3: DFRS should revise SOP § 5.00.07 to include that the first due Battalion Chief must acknowledge the IOSR, and if incomplete, require the officer to provide a complete report before making entry into the structure.

Observation #3: E251's Officer failed to complete a 360-degree check (i.e., "a 360"), and failed to provide a Side Charlie report prior to initiating interior operations. TR23A did not complete a 360 but inaccurately communicated that he did.

Analysis: In the past twenty-plus years, there has likely been no topic more widely discussed in the national fire service, than the importance of completing a 360 on every single structure fire. While there are many benefits of conducting the 360, the primary focus must be on determining the absence or presence of a basement and confirming if there is smoke or fire present in the basement. Operating above an unknown, unrecognized, and/or unchecked (hoseline in place) basement fire is perhaps the highest risk activity that firefighters engage in.

DFRS SOP § 5.00.7, *Operational Guidelines for Structural Fires* currently states, "Every attempt should be made to perform a 360-degree check of the structure." This language is not strong enough, does not provide clear examples of appropriate reasons why conducting the 360 is not practical or appropriate, and does not provide what actions should be taken when the first arriving unit cannot accomplish the 360.

The procedure for conducting the 360 is one of the most important operational procedures there is. Like any other written operational procedure, because of its importance, it should not only address when the 360 is required, it should also address when it is acceptable to defer the 360 to another unit and how that deferral should be communicated.

E251A and TR23A did not complete a 360 of the structure despite some officers stating or believing otherwise. For example, TR23A stated over the radio, "360 of the residence showing a single floor in the back, heavy fire Side Charlie." TR23A made this transmission when he was outside the exterior fence on Side Delta, but he did not walk around the entire structure. Therefore, he provided inaccurate information that he had completed a full 360, potentially leading others to believe a full 360 was completed.

Immediately after TR23A's transmission, E251A advised he could not complete a 360 and subsequently did not deliver a Side Charlie report but never communicated why he couldn't. As stated earlier in the report, the ESRP found no reason, why E251A could not perform a full 360. Further, Command did not request information obtained from the 360, never acknowledged TR23A or E251A's transmission referencing the lack of a Side Charlie report, nor did he request another unit to complete the required 360.

During interviews of multiple on-scene personnel, several officers felt that viewing only three sides of the building to identify the number of floors was sufficient. This is inaccurate. Upon assuming command and throughout incident operations, the strategic IC took no action to verify if there was a basement in the structure and if it was or was not involved in the fire.

There was a noticeable basement entrance on the Delta Side of the structure, just past the C/D corner. While there were some medium-sized bushes along the rail of the steps leading to the basement, there is no question that the entrance to the basement would have been obvious if a full 360 would have been completed.

Lastly, despite most unit officers having a thermal imager available, very few turned on and utilized this valuable piece of equipment during any aspect of the incident. A thermal imager can assist the fire officer in determining the location of the fire.

References:

1. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
2. *NFPA 1700, Guide for Structural Fire Fighting*, Chapt. 9 § 9.6, National Fire Protection Association (2021).

Recommendation #1: DFRS should amend SOP § 5.00.07, *Operational Guidelines for Structural Fires* to include the following:

1. The rule that interior offensive operations should not be conducted, prior to the 360 being completed, and Side Charlie report communicated.
2. The use of a thermal imaging camera (TIC) when available.

3. The identification of legitimate factors that may either preclude the officer from conducting the 360 or require that it be deferred. This should include obvious rescues, building size, and access issues that are difficult and time-consuming to overcome.
4. A requirement that when the first arriving officer cannot complete the 360, they must assign that task to a specific company, prior to units entering the structure.

Recommendation #2: DFRS should require that, when the 360 report is provided, it must be complete, and include all information identified in the policy. When the report is incomplete, the Battalion Chief on the incident must challenge the officer to provide all information.

Recommendation #3: DFRS should require additional 360 reports from the RIT company officer.

Recommendation #4: DFRS should develop and deliver annual training on DFRS issued, or approved, thermal imager devices personnel carry on their apparatus. During interviews, many personnel shared a dislike for the current thermal imager device along with a lack of training on the use of the device. If DFRS is going to supply equipment, it should be accompanied by adequate training for personnel.

Observation #4: The two policies that address the implementation of the IC position conflict with one another, and the confusion between the two could cause a gap in the command process.

Analysis: DFRS SOP § 5.00.07, *Operational Guidelines for Structural Fires* states that the first arriving officer or unit will establish command. This is clear and unambiguous. SOP § 5.00.25, *Incident Command Policy*, states that any unit can announce that they have established command if they feel it will improve incident operations. It also says that if Tactical Command cannot resolve the incident in short order, then they can either "pass" command to another unit, maintain it by portable radio, or establish a strategic command post.

The policy is unclear regarding to whom command should or could be passed. Passing command to a unit that is not on the scene creates a gap in the command process and compromises incident management and safety.

References:

1. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
2. *Incident Command Policy*, Standard Operating Procedure § 5.00.25, Frederick County, Md. Div. of Fire & Rescue Serv. (Sept. 1, 2020).

Recommendation #1: DFRS should revise SOP § 5.00.07, *Operational Guidelines for Structural Fires* and SOP § 5.00.25, *Incident Command Policy*, to eliminate any conflict and the potential for gaps in command.

Recommendation #2: DFRS should revise SOP § 5.00.07, *Operational Guidelines for Structural Fires* and SOP § 5.00.25 *Incident Command Policy*, to require the first arriving officer to assume Command and provide the required command statement after their 360-degree check, and after providing the radio report. Determining if it is beneficial for the first arriving officer to assume Command, will only be realized after a complete picture, which comes at the end of the 360. If the initial officer decides it would be more beneficial to "pass" Command, they should communicate that with the dispatched Battalion Chief and request to transfer command. The responsibility will then rest with the responding Battalion Chief to designate another unit on-scene to take Command or direct the first arriving officer to retain Command until a Strategic IC establishes Command.

Observation #5: There was no transfer of command process initiated between E251A and Chief 23 prior to Chief 23 assuming Command. Fully understanding the Command Team concept, it was unclear who the designated IC was from the time Chief 900 arrived until the incident was turned over to the ATF and Frederick County Sheriff's Office. Lastly, the Transfer of Command process identified in SOP § 5.00.25, *Incident Command Policy*, fails to identify the critical information required to ensure a seamless transfer of command.

Analysis: The ESRP was unable to decipher who oversaw this incident. Interviews with both Chief 23 and Chief 900 did not provide clarity, with both thinking the other was in charge. Chief 900 got into Chief 23's vehicle within two to three minutes after Chief 23 assumed command. Chief 23 is referenced because he was the initial IC during the transfer of command. At the same time, Chief 900 was in the vehicle and was the highest-ranking chief officer on-scene. This is stated to clarify that except for the first few minutes, Chief 900 was also in the vehicle working alongside Chief 23.

The objective of transferring command is to strengthen the management function and provide increased support for operational resources. The key is to do this as seamlessly as possible, without causing interruption to the ongoing operation and ensuring there is minimal loss of situational awareness in the exchange.

The chief officer assuming Strategic Command[47] must capitalize on the transfer of command period to reassess all aspects of the current operation by starting at zero, just like the first arriving officer does when they arrive on the scene. They must quickly size up the scene, assess the risk, assess the current strategy, and IAP. Most of this should be done visually, but other pieces will likely need to be done via radio. The most important part is that the full picture or as close to full as possible is understood by the chief officer before officially assuming command.

Chief 23 arrived less than four minutes after E251. During those four minutes, the crews from E251 and TR23 had already begun acting. DFRS SOP § 5.00.25, *Incident Command Policy* requires that prior to the chief officer assuming Strategic Command, they must complete the transfer of command process by obtaining a "Location, Conditions, Actions, Needs (LCAN)" report from the initial IC. Albeit inadequate, it is a way to quickly transfer command so there is minimal loss of situational awareness. Chief 23 failed to complete the transfer of command process before he assumed Command and did so without requesting an LCAN report from E251A. In conjunction with the fact that E251A failed to provide a complete IOSR, and had not communicated what actions were being taken, meant that Chief 23 assumed the responsibility for an incident for which he had no level of awareness. He didn't understand the extent or location of the issue, the actions that were being undertaken, and where personnel were operating.

Unfortunately, the worst possible scenario occurred, a scenario that demonstrates the exact reason there is a transfer of command process. Engine 251A would transmit his Mayday, close to the time of the command transfer, and the IC was without awareness of where his resources were, what they were doing, and what was going on.

Fortunately, prior to the Mayday, Chief 900 arrived and got in the command post to assist Chief 23. This allowed both Chief 23 and Chief 900 to work together as a command team to manage the incident. While the command team concept is highly effective and strongly recommended, it still requires structure to ensure unity of effort, and a clear understanding of team roles and responsibilities. From the time the Mayday was declared, until the time the incident was placed under control, there was no clear understanding of who was in the role of the IC.

[47] The ESRP uses the term "Strategic Command" to represent an Incident Commander dedicated solely to performing the incident command function from a fixed location, typically a command vehicle.

Unit officers coming to the command post received directions verbally and face-to-face from both Chief 23 and Chief 900. Chief 23 who was the established Strategic IC said that Chief 900 took the mobile radio when the Mayday was called because he was on the portable radio dealing with water supply. Both were ordering resources, and it appears that between the two, no one was designated to continue focusing on the overall firefight. These issues could have been avoided if the person in charge (IC) was identified. If that position was going to change, it should have been made clear between Chief 900 and Chief 23, even if it wasn't going to be announced on the radio.

References:

1. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
2. *Incident Command Policy*, Standard Operating Procedure § 5.00.25, Frederick County, Md. Div. of Fire & Rescue Serv. (Sept. 1, 2020).
3. NFPA 1561, Standard on Emergency Services Incident Management System and Command Safety, Chapt. 7, National Fire Protection Association (2020).

Recommendation #1: DFRS should implement a more in-depth transfer of command process by revising SOP § 5.00.25, to include additional information in the transfer of command exchange:

1. An update on current incident conditions.
2. The incident action plan currently in place.
3. The status of the tactical objectives and safety considerations.
4. Accountability for all deployed resources and personnel.
5. Request for additional resources.

Recommendation #2: DFRS should require that, once the transfer of command information has been communicated, the Strategic IC must affirm the current strategy, tactics, and IAP is appropriate based on current conditions prior to communicating the assumption of Command. If they decide to make any changes at all to the current plan, either in the mode of operations, or the IAP, that should be clearly communicated in the transfer of command radio announcement. If the initial IC failed to communicate the mode of operation or the IAP, and the chief officer assuming command does not anticipate a change of mode of operation or the IAP, the Strategic IC should clarify that information by radio to all units operating on-scene and enroute.

Recommendation #3: DFRS should ensure compliance with current SOP § 5.00.25, (H), which states, "[a]ny additional Command transfers are recommended to be accomplished face-to-face and require notification to the Emergency Communications Center (ECC)." In addition, Command transfers should be announced on the tactical channel so units operating know the IC's identity.

Recommendation #4: DFRS should ensure that the transfer of command process is included in annual training for all Chief Officers. The formal transfer of command procedure should cite specific reasons and situations for transferring command when a higher ranking chief officer arrives on-scene.

Observation #6: Chief 23 assumed the role of Strategic Command and allowed the units operating on the scene to continue with a plan that he knew very little about. He didn't know if units were in the proper mode of operations and didn't know if the tactical IAP was even appropriate. As the new IC, he failed to develop and communicate a clear strategy, supporting tactics, and an overall IAP.

Analysis: Once a chief officer assumes the role of the Strategic IC, they must start back at the beginning of the size-up process and follow the same flow as the first arriving officer. They assess

the risk based on current conditions, determine if the current strategy is correct, and assess if the current IAP is working. They have seconds, not minutes to do this. If the chief officer assuming Command wants to change the mode of operation or the IAP, they must clearly verbalize that over the radio.

Prior to Chief 23 assuming Command, E251A had not communicated the mode of operation, or the tactical actions being taken. Because he did not do his own size-up, Chief 23 assumed Command and continued to trust in a plan with which he was not familiar. There was no understanding of what mode units were operating in, or what the plan was. His plan was to let the units figure out the extent of the problem before calculating his own plan. That is an inappropriate approach. Even when the full extent of the problem is unknown, the IC must ask two quick questions, (1) "are we in the right mode?" and (2) "is the current plan effective?" This is the primary reason for a formalized transfer of command process.

Requiring the first arriving officer to verbalize both the strategy selected and the initial IAP on the radio will streamline the transfer of command process and will improve situational awareness for everyone.

References:

1. *Incident Command Policy*, Standard Operating Procedure § 5.00.25, IV(G)(b)(i)(a), Frederick County, Md. Div. of Fire & Rescue Serv. (Sept. 1, 2021).
2. *Incident Command Policy*, Standard Operating Procedure § 5.00.25, IV(A)(1-6), Frederick County, Md. Div. of Fire & Rescue Serv. (Sept. 1, 2021).
3. *Incident Command Policy*, Standard Operating Procedure § 5.00.25, IV(G)(a-b), Frederick County, Md. Div. of Fire & Rescue Serv. (Sept. 1, 2021).

Recommendation #1: The ESRP recommends that the mode of operation statement required by the first arriving officer be removed as part of the ISOR and included as part of the 360-degree radio report. This allows the first arriving officer the opportunity to conduct a full risk assessment, and gather as much information as possible, before selecting the most appropriate strategy (mode of operations).

Recommendation #2: The ESRP recommends that the first arriving officer be required to verbalize their IAP, as part of the 360-degree radio report. This should be a brief statement that describes what action the company is taking, where they intend to operate, and what task is being performed.

Recommendation #3: DFRS must improve compliance to ensure that both the mode of operation, offensive or defensive, and the initial IAP is provided before the commencement of fireground activities. When this doesn't occur, the officer must be challenged.

Recommendation #4: DFRS must enforce the practice in SOP § 5.00.25 that the Strategic IC must communicate clear strategies and tactics to units operating on the fireground. While the input from units operating in different geographic areas on the fireground is valuable, it's the responsibility of the IC to develop and communicate a coordinated IAP rather than simply repeating what units inform the IC they are going to do or want to do.

Observation #7: During the Ball Road incident, several chief officers who were relegated to task level assignments, either by self-assignment or by Command, inserted themselves in the incident without an official tasking from Command, or simply began to create their own plan without the knowledge of the IC. This occurred at a time when coordinated Command support was desperately needed.

Analysis: During the early stages of the Ball Road incident, several Chief officers arrived of various ranks. Shortly after Chief 23's arrival, OPSAC900 arrived and instead of assuming Command,

proceeded to deploy and operate a handline to Side Charlie of the structure. Chief 900 arrived just after OPSAC900, and instead of assuming Command, filled the role as Command Aide. This is not to say that the highest-ranking chief officer should always assume command from a lesser ranking officer every time they show up. But there are certain signs and indications where this transfer is in fact appropriate. Both Chief 900 and OPSAC900 had a higher level of formalized training, and command experience. The extraordinary level of responsibility (the burden of command) placed on the IC must supersede ego and feelings.

DFRS SOP § 5.00.25 clearly describes the benefit of forming a Command Team. Based on size and complexity, the IC may also need stronger support, primarily at the tactical supervision level. Tactical support occurs when Division/Group supervision in the most critical/hazardous area is enhanced with a chief officer. As the Incident Commander assigns other Chief Officers into strategic/tactical support positions it quickly builds out the critical tactical and safety elements across the entire incident scene. This extra support will underpin the Strategic IC's ability to manage the position and functions of all assigned resources.

Placing Chief Officers in these positions provides oversight and clear direction to subordinate units and officers. By performing in this Command role and not at task-level operations, the Chief Officer can maintain situational awareness of the entire incident and not become encumbered with singular tasks occurring on the fireground. Additionally, when a Chief Officer attempts to perform both tasks, strategic and tactical, they will quickly become task-saturated, and the potential for error increases.

The solution for this issue will mainly rest with the establishment of a clear and unambiguous organizational chain-of-command. One that focuses on required qualifications, not keeping the peace. The issue of chain of command is addressed in the Effective Firefighting Force section.

Reference: *Incident Command Policy*, Standard Operating Procedure § 5.00.25, Frederick County, Md. Div. of Fire & Rescue Serv. (Sept. 1, 2021).

Recommendation #1: DFRS should require that, upon the arrival of later arriving Chief Officers on the fireground, those Chief Officers should report to the Command Post (CP), with full PPE, SCBA, and their portable radio, and receive an assignment from the IC. Chief Officers not provided an official assignment from the IC should not engage in the operations.

Recommendation #2: DFRS should develop and implement a new policy clearly defining the Command Team concept mentioned in SOP § 5.00.25. The policy only recommends the formation of a Command Team of at least two Command level personnel. The policy should define the expectations and roles of each person operating in the Command Team. Additionally, the policy should define the scope of the concept along with the procedure for the expansion of the Command Team beyond the two Command level personnel.

Recommendation #3: DFRS should revise SOP § 5.00.25 to include evaluation measures of the current Incident Commander and identify the triggers for relieving an ineffective Incident Commander. A suggested model is contained in the Northern Virginia Command Officer Operations Manual, 4th Edition, Page 47: *Assumption of Command by Higher Ranking Chief Officer*, which states:

A higher-ranking chief officer should consider assuming Command when: [1] Upon their arrival, the incident is still escalating, and the current IC is needed to serve as a tactical commander for greater control of the incident. [2] The higher-ranking officer deems it necessary due to the incident (high profile incident, multi-agency unified command incident, host jurisdiction, etc.). [3] The initial IC is not demonstrating a strong command presence. [4] Improper strategy and tactics are being

employed by the initial IC. [5] The incident is being poorly managed upon their arrival. [6] Accountability is not being maintained and the IC is not tracking units appropriately.

Recommendation #4: DFRS should revise SOP § 5.00.25 to implement the role of the Deputy Incident Commander into their ICS. This role will endorse the Command Team Concept by strengthening the level of engagement and defining the roles at the Command Post. The Deputy IC position allows a higher ranking or higher trained officer to assume Command from a subordinate officer but retain that initial IC at the CP capturing their institutional knowledge of the incident. The addition of this position provides an opportunity for the previous IC at the CP, will also increase the probability that two Command level officers will be at the CP, and may lessen the arbitrary assignment of the previous IC to another fireground task.

Recommendation #5: DFRS should ensure compliance with Standard Operating Procedure § 5.00.25, designating that only the IC can assign ICS roles. Unit or chief officers should not assign themselves to these positions. Additionally, the Incident Commander should only use the components of [ICS][48] as necessary to maintain a reasonable span of control.

Observation #8: From the assumption of Strategic Command through the termination of the incident, the Tactical Worksheet (also commonly referred to as an Incident Command Chart) was not used to its full potential or updated to reflect changing assignments and accountability.

Analysis: The Tactical Worksheet is paramount to incident accountability. It is critical that the IC begin this immediately, so they can track units deployed into the IDLH. Chief 23 assumed Command and immediately began engaging with water supply operations, quickly becoming task saturated. As a result, he did not fully complete a Tactical Worksheet with the units already on scene and engaged in firefighting operations. Very shortly after Chief 23 assumed Command, Chief 900 arrived with a Tactical Worksheet in hand, and began assisting Chief 23 as the Command Aide. Shortly after that, the Mayday occurred. A review of the Command Chart from the Ball Road incident shows that it was largely incomplete, contained inaccurate information, was missing several units, and did not represent where units operated.

The demands placed on the IC is unmatched by any other position on the incident scene. They bear the responsibility for the personal safety of every individual on the fireground. Their job requires cognitive skills and abilities that require years and years of experience to obtain. Even then the effects of stress, limited time to think, and human failure innate to all of us, lie in wait. Training is limited or non-existent for command officers upon promotion or appointment on the related topics of command operations, training, administration, and leadership. Therefore, training and building sets and reps for command officers are essential for executing the mission and achieving success on the fireground.

References:

1. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
2. *Maryland Fire Service Health and Safety Consensus Standard*, § 0.09 (C)(6-8), Maryland Occupational Safety and Health (MOSH), Department of Labor, Licensing and Regulation (Jan. 1, 2002)
3. NFPA 1561, Standard on Emergency Services Incident Management System and Command Safety, § 4.9.2, National Fire Protection Association (2020).

[48] Frederick County SOP § 5.00.25 utilizes the term Incident Management System ("IMS") which is synonymous with the term Incident Command System ("ICS").

Recommendation #1: DFRS should develop a standard process for the completion of the Command Chart and ensure that they are being completed properly and completely. This should be reinforced through training as described in Recommendation #2.

Recommendation #2: DFRS should begin to provide structured annual training for all DFRS personnel who are deemed qualified to operate as Incident Commanders, on all aspects of command operations. NFPA 1561 *Standard on Emergency Services Incident Management System and Command Safety*, provides a framework for DFRS to utilize. Specifically, DFRS should require:

1. All responders who are involved in emergency operations must be trained in the incident management and personnel accountability systems to the anticipated level of their involvement.
2. Provide refresher training at least annually.
3. Responders who are expected to perform as incident commanders or to be assigned to supervisory levels within the command structure must be trained in and familiar with the incident management system and the levels at which they are expected to perform.
4. Training curricula and programs must comply with NIMS ICS position-specific training curriculum.
5. Team members must be trained together with full-scale exercises and simulations of sufficient numbers to develop their proficiency and allow them to maintain the necessary skills.

Recommendation #3: DFRS should seek funding, via available grants or through DFRS Annual Budgetary process, to develop a Field Training/Professional Development section at the Public Safety Training Facility. The current structure of the Public Safety Training Facility does not provide any formal training for personnel in these ranks and roles of increased responsibility.

Recommendation #4: DFRS should, In compliance with the *Maryland Fire Service Health & Safety Consensus Standard*, mandate annual command competency evaluations for all career and volunteer certified Command Officers.

9.4.4 Mayday

One of the most stressful radio transmissions at an emergency incident is when a firefighter declares a Mayday. There are many reasons a firefighter can call a Mayday ranging from being lost or disoriented to being trapped after a collapse. When this situation occurs, firefighters must rely on their training and experience to increase their chance of survival. Likewise, the Incident Commander must also rely on their training and experience to manage the rescue efforts.

The written standard operating procedures (SOPs) are equally important during these incidents as is the training, tools, and experience. Written SOPs provide guidance to the firefighter in distress, the Incident Commander (IC), and every other person on-scene. These documents capture best practices detailing what everyone's role is for the personnel involved. But, in the end, successful mitigation of the incident requires tactical discipline and operational compliance. Personnel and policy alone cannot provide the outcome desired. Once procedures are implemented, compliance by all becomes critical.

Observation #1: Except for Captain Laird's actions following his Mayday declaration, compliance with Standard Operating Procedure § 5.00.09 (MAYDAY) was nearly non-existent.

Analysis: Standard Operating Procedure § 5.00.09 has four key components: (1) Mayday declaration, (2) Emergency Communications Center (ECC) responsibility to announce that a Mayday was declared and pass critical information to the IC, (3) ECC's responsibility to advise units not involved in the RIT operations to switch channels, and (4) the IC's responsibility to immediately conduct a Personnel Accountability Report (PAR) with those same units. The primary intent of this policy is to establish a solid foundation for the subsequent rescue effort. In essence, it grabs everyone's attention, makes everyone aware of what the problem is, and it provides a structure for how to organize the rescue effort. While there is no question that the tactical rescue plan is the key, without controlled communications, and team structure, the rescue efforts cannot achieve maximum potential.

This is not a question of the current policy being categorized as a good or bad plan. The ESRP unanimously agrees that the policy is outdated, and not aligned with best practices. The four key tenets of the policy as described above, are appropriate, and if it was complied with would likely have had a significant positive impact on the overall rescue effort and more importantly, victim outcome.

Captain Laird gave a clear, concise, and immediate Mayday transmission, however, the ECC did not rebroadcast any of that information over 9 Delta for awareness, nor did the Command Team. This resulted in several people arriving and operating on the scene, including the Engine responsible for RIT, being unaware that a Mayday had even been declared. It was approximately four and a half minutes later that the ECC attempted to implement the policy by announcing a Mayday had been declared, directing units to an alternate channel. When they finally made the announcement, the IC countermanded that order from ECC, directing all units to remain on 9 Delta. Lastly, the IC did not conduct a post-Mayday declaration PAR check, as the policy dictates.

The relationship between the fire department and the Public Safety Answering Point (PSAP) should be viewed as transactional, with the fire department being the consumer and the PSAP being the provider. Telecommunicators are not trained as firefighters and firefighters are not trained as telecommunicators. It is unfair to expect someone not trained as a firefighter to be responsible for the implementation of such a critical policy, especially one with life safety ramifications.

References:

1. *Mayday*, Standard Operating Procedure § 5.00.09, IV(C), Frederick County, Md. Div. of Fire & Rescue Serv. (Jan. 16, 2013).

2. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, IV(E) Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2015).

Recommendation #1: DFRS should revise SOP § 5.00.0, *Mayday* to address the following:

- Depress the Emergency Activation (EA) button upon declaring a Mayday.
- The policy must include a clear designation of whose job it is to activate the Mayday tone (officially called a "channel marker") and acknowledge and rebroadcast the Mayday when the strategic incident commander is on the scene, and when they are not yet on the scene.
- DFRS should consider replacing the use of the acronym LUNAR (Location, Unit, Name, Action, Resources Needed) with the simpler requirements of "Who, What, Where." Under extreme stress, trying to remember what each letter means, and communicate that information in the order suggested, becomes extremely difficult.
- LUNAR information is critical to know during a Mayday. The policy should continue to use LUNAR as critical information needed and acquired by the IC. Instead of requiring the person who declared the Mayday to provide this information, the policy could include it as part of the IC's responsibility, via a checklist, to ask of the member.

Observation #2: As was stated in the RIT section, from the moment Captain Laird declared his Mayday, until the time he was extracted from the basement, the Mayday and RIT operational policies and procedures were either ignored and/or violated, resulting in a chaotic scene.

Analysis: Managing a Mayday is one of the most, if not the most stressful situations, on the fireground. Unfortunately, in most cases, a Mayday becomes "an event within an event," compounding the decision-making process for the IC. This will almost certainly result in an IC consumed with stress, task-saturated, and primed for human error.

Using a system like a checklist greatly reduces the chance of human error and improper judgment and refocuses the IC back to established policies and operational procedures enhancing the possibility of achieving the desired outcome. A tool like this not only benefits the IC but the firefighter in distress as well. For this process to be most effectively implemented, the IC should have an aide (command team partner) who can retain the checklist. This will allow the IC to focus on the incident while the aide can begin to verbalize the actions listed on the checklist to the IC.

To be clear, the purpose of a Mayday checklist is not to diminish in any way the responsibility of the IC to know all applicable operational policies and be competent enough to apply them during a Mayday. That is a must. The purpose of the checklist is to simply act as a memory guide during a high-stress situation, to ensure that all critical actions are being taken in a logical order.

References:

1. *Mayday*, Standard Operating Procedure § 5.00.09, IV(C), Frederick County, Md. Div. of Fire & Rescue Serv. (Jan. 16, 2013).
2. *Safe Interior Structural Firefighter Guidelines*, Standard Operating Procedure § 5.00.08, Frederick County, Md. Div. of Fire & Rescue Serv. (Jan. 16, 2013).

Recommendation #1: DFRS should develop a formal Mayday Checklist and require the use of that checklist after a Mayday has been declared. The success of the implementation of the Mayday Checklist is contingent upon the use of a Command Team.

Observation #3: During the Mayday, Chief 900 decided to keep all units operating on the fireground on the same Talk Group. While this is well within the purview of the IC, the fact remains it was not compliant with established policy and practice.

Analysis: The Mayday Policy states that ECC "shall direct all units with the exception of member(s) calling the Mayday, the RIT team, and the IC to switch to an "alternate talk group." Although significantly delayed, the ECC followed this policy as written. The tactical channel operator at the ECC demonstrated incredible discipline to not add to an already chaotic situation. They painstakingly struggled with not following the policy, in fear of occupying desperately needed airtime. The IC oversees running the Mayday; therefore, the ECC should be working for the IC, not the other way around.

After the ECC communicated the practice outlined in the policy, the IC stated, "[t]hat's negative, units do not change channels everybody remains on 9 Delta, Frederick, I got it." On the fireground, the IC has full authority to deviate from the SOP as they see fit.

It was noted that various responding units were checking on the scene, mutual aid companies were indicating their en-route status, and other on-scene units were conversing about incident firefighting operations, while rescue operations to locate and extract Captain Laird were underway. This excessive communications caused many of the 100 transmission rejects, hindering the ability of Captain Laird and the rescue teams to communicate.

In years past, before having accurate Mayday data, the common practice in the fire service was to immediately move units not involved in the Mayday to a separate radio channel. The primary intention was twofold: minimize radio traffic and reduce the freelancing of companies during Mayday.

Data now suggest that most Maydays occurring in the U.S. are quickly resolved by units operating near the emergency. This has led to the thought that keeping everyone on the same channel may have significant benefits.

The reality is that the question of keeping people on the same channel or having them switch channels is not the most important piece of the puzzle. Both options will fail without question if absolute radio discipline is not achieved.[49] Without achieving and maintaining absolute radio discipline, the discussion about which channel is a better option becomes an exercise in futility.

References:

1. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, IV(E)(3), Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
2. *Incident Command Policy*, Standard Operating Procedure § 5.00.25, IV(A)(2), Frederick County, Md. Div. of Fire & Rescue Serv. (Sept. 1, 2021).

Recommendation #1: The ESRP recommends that DFRS update the MAYDAY policy to ensure that, when a Mayday is declared, the IC has the sole discretion to either have all units remain on one channel or segregate portions of the units operating on the fireground to a separate channel. In all cases, the IC should avoid the need for the person(s) transmitting a Mayday to be required to change channels. The IC should have the option to switch Talk Groups as necessitated by the situation. If people can't or won't stop talking, then they should be moved off the channel.

[49] Radio discipline means properly using handheld, mobile and base station radios. In recent years, communication managers have noticed a sharp decline in radio discipline across the country. One of the trends they've noted is an increase in excessive or pointless talk over the radio. Professional firefighters must pay attention to this issue.

Observation #4: The Emergency Button was not activated on Captain Laird's portable radio providing him ruthless preemption.[50] After Captain Laird declared the Mayday, there was excessive radio traffic on the tactical channel resulting in numerous rejected transmissions from him.

Analysis: Standard Operating Procedure § 5.00.09 does not address the Emergency Button (EB) use once a Mayday occurs. The EB allows for "Ruthless Preemption" and would have allowed Captain Laird the ability to get every message across to the Talk Group. Captain Laird made 17 transmissions that were rejected, meaning that when he keyed his radio to talk, his transmissions were rejected due to other radio traffic. Captain Laird did not activate his EB button, which is not currently part of the Mayday procedure. This feature of the portable radio, had it been activated, would have allowed Captain Laird to transmit any message with a priority over all other fireground radio traffic. Depressing the Emergency Button (EB) for one second would have given his radio priority meaning that all his transmissions would have gone through regardless of radio traffic. There is a general lack of understanding of this function by many DFRS personnel.

Regarding radio inspection, currently, most Department personnel do not know what a portable radio inspection encompasses. Fire and EMS personnel must understand that inspecting a radio is more than just turning it on. In 2016, DFRS changed portable radios to a newer model and personnel were trained on the workings of the portable radios, but there was no detailed explanation on the required radio inspection. Additionally, refresher courses on the radios and radio inspection do not occur, except for the compliance training, but that training is not focused on these issues.

A significant issue at this scene was the lack of radio discipline among personnel. Radio transmissions should be reduced when the Incident Commander sets up groups and divisions. All units assigned to a group or division must funnel their communications through the supervisor. These communications can be done face-to-face, thus reducing the excess radio traffic. When analyzing the radio data for this incident, the bulk of radio transmission came from the Chief and unit officers. The firefighters who had portable radios rarely used them.

Reference: *Mayday*, Standard Operating Procedure § 5.00.09, V(C), Frederick County, Md. Div. of Fire & Rescue Service. (Jan. 16, 2013).

Recommendation #1: DFRS should develop annual communications training to include the (1) radio procedures, (2) procedures for daily radio checks, (3) training on new radio models and refresher courses on all models in use, and (4) radio discipline.

Recommendation #2: DFRS should update the current Mayday policy, SOP § 5.00.07 IV(E), to include (1) radio communications should be kept to a minimum and only performed by company-level officers and personnel assigned by the IC to fill positions within the ICS except in cases of emergencies, (2) clearly define radio discipline and which transmissions need to be announced over the radio and which do not need to be announced, and (3) responding units should limit their communications while enroute to avoid interfering with communications on the incident scene.

Recommendation #3: DFRS should update Standard Operating Procedure § 5.00.09 to include the use of the Emergency Button (EB) when declaring a Mayday.

[50] Ruthless preemption is a term used to describe what happens when you depress the Emergency Button (EB) on the radio. Once the button is depressed for 1 second, the radio will go into emergency mode and notify communications that an EB has been activated. All the information connected with that radio will appear on the ECC dispatch screen (unit number and position). ECC will relay that info to the IC. The specific emergency mode broadcast will prioritize all other radio communications on the talk group and any other radio on the fire ground.

9.4.5 Rapid Intervention Team (RIT)

Operating in a structure fire is one of the most dangerous aspects of the job for a firefighter. Accordingly, fire departments must establish contingency measures and precautions to reduce danger and increase safety. One of the most effective measures is implementing a fully equipped, adequately staffed, and trained Rapid Intervention Team (RIT) positioned as close to the point of entry as possible. The RIT is designed to be a dedicated resource immediately available, to move quickly into the IDLH when a firefighter(s) is in trouble and needs assistance. Assistance can range from guiding a disoriented firefighter out of a structure to extracting a firefighter trapped by debris after a collapse. Establishing a RIT is a requirement of NFPA and OSHA.

Observation #1: Following the declaration of the Mayday from Captain Laird, a lack of command presence, effective strategy, and communications led to confusion, chaos, absence of situational awareness, and freelancing amongst most of the units on the scene.

Analysis: Before Captain Laird declared his Mayday, units were operating or preparing to operate on-scene, and the Command Team was running in the mindset of a standard fire attack cadence. When Captain Laird declared his Mayday, it required a shifting of resources and tactical priorities. In this situation, shifting resources is expected and must be communicated to all on-scene personnel. The Incident Commander (IC) must then redeploy resources as they see fit, ensuring that the effort is coordinated so that tactical priorities are addressed simultaneously and in support of one another.

From an IC perspective, managing a Mayday declared by a firefighter during a firefight is like our approach to managing the confirmed entrapment of a civilian. In both instances, locating and removing the victim is, without question, the number one strategic priority. Accomplishing that strategic focus requires the IC to assign a unit(s) to achieve the task of search and rescue while simultaneously assigning a unit(s) the critical task of protecting the victim/search teams through proper placement of a hoseline. A single focus of search and rescue while ignoring fire control or, conversely, a sole focus of fire control without addressing the search is inappropriate especially during a Mayday. Firefighters must execute a dual focus strategy for safe and efficient rescue operations, where rescue efforts are supported by suppression of the original fire.

When Captain Laird declared his Mayday, the unit responsible for RIT by SOP (E153) was not yet on-scene, causing the Command Team to adjust and respond quickly. As a result, a more subtle form of chaos followed from the minute Mayday was declared. The confusion resulted in an unintended but predictable chain of errors, omissions, and policy violations. This environment led to the following events:

1. The procedures outlining the response to a firefighter declaring a Mayday are covered in SOP § 5.00.09, *Mayday*. Sequentially, after the declaration of a Mayday: (1) Emergency Communications Center (ECC) is required to notify Command of the unit calling the Mayday immediately, and their last known location, (2) ECC directs all units not directly involved in the rescue of the firefighter(s) to switch to an alternate channel; and (3) When units have switched to the alternate talk group, the IC should initiate a Personal Accountability Report (PAR). Both the ECC and Command Team failed to follow every aspect of this policy.

2. There was no formal radio announcement by the Command Team or rebroadcast by ECC that Captain Laird had declared a Mayday. The lack of a formal radio announcement resulted in numerous people, on-scene and enroute, unaware that a Mayday was in progress.

3. At the command post, Chief 900 had a face-to-face conversation with the officers of E231, E152, and TR23 and directed them to enter the first floor from Side Alpha to deal with the advancing fire and employ the tactics that OPSAC900 had recommended. It was at this point

when Captain Laird called the Mayday. Following the transmission of the Mayday, seeing the crew from E231 preparing to make entry to the first floor, Chief 23 made the following transmission "E231, E231 officer, can you copy?" This question, absent any follow-up clarification of tactical assignment or direction from Chief 23, led to assumptions by the officers of E231, E152, and T23, that their mission had now been changed to firefighter rescue (RIT). It was clear that the Command Team's unspoken intention for E231, E152, and TR23 was to focus their efforts on locating and removing Captain Laird. The action of directing nearby units to assist a Mayday firefighter is an appropriate option for the IC to consider. Based on SOP § 5.00.08, *Safe Interior Firefighter Guidelines*, the IC should have designated and verbalized that those crews were the designated Rapid Rescue Intervention Team (RRIT). The designation of a RIT never occurred, which added confusion for other units assigned to RIT and caused a lack of coordination and unity of effort during the RIT operations.

4. For the first 7 minutes of the Mayday, no incident structure was established to support the rescue efforts. While numerous actions were going on to locate and remove Captain Laird, no RIT Groups/Divisions were formally established, and no one individual was assigned to oversee the rescue effort leading to confusion and a lack of unity of action.

5. At the time of the Mayday, OPSAC900 was functioning in a task-level role, operating a handline. After the Mayday, he began to informally organize the rescue efforts on Side Charlie by deploying resources already on Side Charlie and requesting additional resources from Command. Command directed Chief 15-1 to go to Side Charlie and "make [things] happen." Chief 15-1 worked with OPSAC900 on the rescue effort but was never provided a formal supervisory role. Finally, at 17:07 OPSAC900 advised Command that he would assume Side Charlie and that he was assigning BAT903 as the RIT Group Supervisor.

6. E31 arrived on-scene as part of the Rapid Intervention Dispatch (RID), and the crew made their way up the hill towards Side Alpha. On their way past the Command Post, Chief 900 verbally directed them to grab a ladder and get to Side Charlie, where the rescue was in progress. They would spend the remainder of the incident exhausting great effort to support the rescue; however, Command never provided the crew with additional assignments.

7. When BC901 arrived on-scene and reported to the Command Post (CP), he was directed by Chief 900 to put together a second RIT team. At that point, the 1st RIT team had not been formally established. Within a few seconds, E153 arrived as the 4th due engine and was responsible for assuming the RIT position. The Mayday occurred as E153 was walking up the hill to the structure. Only one member from the crew of 153 heard Captain Laird declare his Mayday and wrongly assumed that everyone else on the crew had heard it, which they had not. Unaware of the ongoing Mayday, BC901 observed the officer from E153 walking up to the structure and directed him to gather equipment and establish RIT on Side Alpha, with no mention of them being a 2nd RIT. E153's officer directed his crew to grab the RIT equipment from the truck companies on-scene. Since others had already taken the RIT equipment, the crew from E152 told their officer that no RIT equipment was available. E153 saw BC901 preparing to enter the 1st floor and said to him that all the RIT equipment was gone. BC901 told the officer from E153 that the equipment was already being used for the rescue occurring on Side Charlie. This was the first time that the crew from E153 realized that a Mayday had been declared, and a RIT operation was underway.

8. After the discussion between BC901 and E153's officer, the two officers, absent any further direction from Command, abandoned their assignments and began to freelance. BC901 observed that an uncharged handline was advanced into the 1st floor, and smoke conditions worsened. He donned his SCBA and entered the 1st floor, searching for the crew. E153's officer told his crew to remain out front on Side Alpha while he conducted a RIT 360. He never returned

to his crew. The remaining crew members remained out front, without any supervision or equipment as the "second RIT."

9. As the fire grew in intensity and size, rapidly spreading throughout the structure, no units were assigned to focus on the critical task of fire control. During the Mayday, almost every suppression unit on-scene focused their attention and efforts on firefighter rescue until Captain Laird was removed from the structure.

References:

1. *Safe Interior Structural Firefighter Guidelines*, Standard Operating Procedure § 5.00.08 Frederick County, Md. Div. of Fire & Rescue Serv. (Jan. 16, 2013).
2. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
3. NFPA 1407, Standard for Training Fire Service Rapid Intervention Crew, National Fire Protection Association (2020).
4. NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, National Fire Protection Association (2020).

Recommendation #1: DFRS should conduct a complete revision of the current SOPs § 5.00.07 (Operational Guidelines for Structural Fires) and § 5.00.08 (Safe Interior Structural Firefighting Guidelines), to ensure the composition and structure of the RIT are flexible. Drafters of the re-write must understand the responsibilities of those assigned to the RIT, the ECC, and every other individual on the fireground. The policy must also include the understanding that the IC will have the authority to alter the plan according to the needs. The ESRP recommends that the new policy address the following:

- Any unit assigned to either perform the function of RIT or support that function must be clearly identified and communicated on the fireground. RIT resources should be assigned to their own, Group and as soon as possible best assigned an appropriate level supervisor.
- Identifies the continuation of the firefight as a tactical priority.
- Directions for companies operating in the structure but not assigned to the RIT, or RIT support function.
- An updated list of tools to be assembled by the RIT.
- Once on location, the RIT must perform and communicate a RIT 360 radio report via portable radio or face-to-face with the IC.
- The RIT can perform a list of non-committal tasks while assigned as RIT to address exterior hazards and/or proactive measures that reduce risk to interior crews.

Recommendation #2: DFRS should change their current definition of a RIT team, to the NFPA 1710 standard of “a crew of at least one officer and three members trained and equipped as specified in NFPA 1407.”

Recommendation #3: DFRS must comply with the guidelines in SOP § 5.00.08, to ensure that when the initial RIT is deployed, that an adequately staffed secondary RIT is identified and assigned.

Recommendation #4: The ESRP recommends that DFRS begin instituting the practice of having the ECC verbally identify the RIT unit during the rebroadcasting of the incident of the tac channel, and ensure that the assigned RIT unit acknowledges that they are assigned as the RIT unit.

Recommendation #5: The ESRP recommends that DFRS creates a distinct radio tone to be initiated by the ECC to indicate that a Mayday has been activated. This tone should be different than the tone used for an emergency activation.

Observation #2: Crews extracting Captain Laird tried to release his Drag Rescue Device (DRD) on the rear of his PPE but were unsuccessful.

Analysis: During the extraction, the extraction team made several attempts to deploy the DRD but could not. The individuals involved were very knowledgeable of the function of the DRD and had even trained on the deployment weeks earlier. While the concept of an integrated drag device is good, it is of little value if it can't be deployed easily. The ESRP is confident that this was not an issue of training or competency. Once the determination has been made to utilize the DRD, it needs to be deployed within seconds, in zero visibility, with limited dexterity, and under great stress.

In discussions with our partners from NIOSH, it seems that this occurrence was not a one-off situation but has been a previously reported issue by other departments during rescue attempts.

Reference: None applicable.

Recommendation #1: DFRS should work with its gear vendors and manufacturers to outline the issues with the DRD strap and work with them to determine if vendors can improve any design issues or modifications made to improve the performance and reliability of the DRD.

Recommendation #2: DFRS should develop and implement stress-induced training regarding the utilization of the DRD and other equipment utilized during a RIT activation.

Observation #3: Once the Rescue Team (E231A, E31 and RS3), entered the structure, the discovery and removal of Captain Laird occurred in four minutes and 31 seconds (the total time of the Mayday was 15 minutes and eight seconds).

Analysis: RIT crew members, having just weeks before completed a structured RIT training similar to the conditions at the Ball Road incident, found that the training they participated in significantly contributed to the rapid removal of Captain Laird. However, this training was not mandated Department-wide, so it was a matter of luck that the members involved in the extraction participated.

Reference: NFPA 1407, Standard for Training Fire Service Rapid Intervention Crew, National Fire Protection Association (2020).

Recommendation #1: DFRS should conduct annual scenario-based RIT training for all personnel, career and volunteer, where individual performance assessments are completed based on NFPA 1407.

Observation #4: Volunteers who receive their firefighter training through the Maryland Fire Rescue Institute (MFRI) do not receive RIT rescue training skills compliant with NFPA 1407 as part of their initial training. Therefore, unless or until a volunteer member completes the MFRI Rescue and Survival program, they will not receive this critical training.

Analysis: The secondary RIT on this incident was assigned to a combination of career and volunteer members. DFRS Career Recruit School includes RIT operations training as part of the required curriculum. It is unknown if any of the volunteer personnel involved in this incident had been trained in RIT operations. While it is likely that some volunteer members have the proper training, it is not

required. The training knowledge, skills, and abilities of some volunteer members may be inconsistent with the training completed by the career personnel.

Reference: NFPA 1407, Standard for Training Fire Service Rapid Intervention Crew, National Fire Protection Association (2020).

Recommendation #1: DFRS should require RIT/Mayday training, namely *NFPA 1407, Standard for Rapid Intervention Team Training* for all career and volunteer members.

Observation #5: According to DFRS SOP § 5.00.09, personnel must use a tagline if the RIT is deployed when a Mayday has been declared. During the rescue effort by RS3, a tagline was not deployed, likely for valid reasons. The deployment of a tagline in a residential structure is not always appropriate or possible. The deployment of a tagline in a residential structure can be problematic and cumbersome to operations.

Analysis: The Mayday Policy, SOP § 5.00.09, lists specifics on what the RIT should take with them and how to perform RIT operations. Due to the complexities of a Mayday/RIT scenario, there should be significant discretion afforded to the officers and members performing these tasks. In this instance, the Engine Company assisting RS3 deployed a hoseline to the location of Captain Laird and RS3's crew. This hoseline also served as a tagline, providing an exit pathway for RS3 and the other crews assisting in removing Captain Laird back to the exterior entrance into the basement. Conversely, the crews entering Side Alpha decided to abandon an uncharged hoseline. With three companies moving in on the first floor, one of them could have brought the line while the others searched more aggressively for the stairs. Not only could the line have protected them from fire spread once it was charged, but it could have oriented them to the exit (in a wide-open floor plan) in case conditions worsened.
DFRS should ensure that policy provides clear guidance as to acceptable and unacceptable methods of conducting RIT rescue operations.

References:

1. *Mayday,* Standard Operating Procedure § 5.00.09, App. A, Frederick County, Md. Div. of Fire & Rescue Serv. (Jan. 16, 2013).
2. NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, National Fire Protection Association (2020).

Recommendation #1: DFRS should review and revise SOP § 5.00.09 to encompass the best practices for the RIT in a Mayday situation. This should include expected actions and equipment to be assembled to assist the RIT. Additionally, it must be understood that a Mayday is a dynamic situation that may require actions that cannot be captured in a single policy.

Recommendation #2: DFRS should, upon revision of the above policy, ensure that comprehensive training is implemented to support any operational mandates outlined in the SOP (e.g., tagline training). The equipment mandated for personnel to use should be standardized.

9.4.6 Strategies and Tactics

This section will strictly focus on the strategic and tactical decisions made during the Ball Road incident. The Incident Management System (IMS) section detailed the findings that there was no clear strategy or IAP communicated by either the Initial IC (E251A), or the Strategic IC (Chief 23). Therefore, the ESRP will not repeat those findings and recommendations in this section.

The ESRP could not confidently determine the strategy or tactical plan that Captain Laird had in mind because he did not communicate his plans to any other personnel. However, the ESRP thinks it is reasonable to assume that he planned to eventually operate in an offensive mode, meaning that all or most activities would occur inside the structure. This mode of operation would have been logical based on the structure and conditions present upon arrival. The Ball Road residence was a large estate home, and the conditions that he would have observed from Side Bravo and Side Charlie showed fire involving the family room area only. With that said, because he did not complete a full 360, he was completely unaware of the fire in the basement.

Based on that assumption and his actions to stretch a line to Side Bravo, the ESRP suspects his initial tactical plan was to darken down the interior fire in from the exterior, with the intention of moving to an interior mop-up operation. That tactical plan was logical considering the size of the home, the fire location (towards the back of the home), and the limited number of on-scene personnel at the time (only three people). Based on the radio transmission from OPSAC900, it was his intention that the next line available should be deployed inside the structure on the first floor in order to cut off the fire spread from the rest of the house.

The ESRP's observations, analysis, and recommendations below focus only on actions taken and not assumptions.

Observation #1: Whenever there is going to be a delay of any kind in the initial offensive charge to the seat of the fire, the IC (Initial or Strategic) must take advantage of the extra time to get the full picture (complete size-up) before they act.

> Analysis: The most effective means of managing risk when avoidance is not an option is to slow down the decision-making process, taking advantage of the extra time (even if it's only seconds) to try and gather a bit more critical information. While this is not always possible, officers must recognize when it is, and capitalize on it. Based on the initial actions of E251 and OPSAC900, there was not going to be a direct charge towards the seat of the fire from the interior, nor was there an immediate known life hazard. This is also supported by OPSAC900's conversation with E251A "we're not going in there." There was an opportunity during this discretionary time, to make sure that full 360 was completed, and that exact seat of the fire and the path of extension was fully understood by the IC and those operating on the scene.
>
> Recommendation #1: When possible, the initial arriving company officer and subsequent arriving Strategic IC should try to slow down the decision-making process and utilize any available discretionary time to maximize the size-up process and gain a greater understanding of the extent of the situation.

Observation #2: The Strategic Incident Commander (IC) did not coordinate the attack from Side Alpha involving E231 & TR23 with Side Charlie operations.

> Analysis: Upon arrival at the incident, the fire was free-burning in the rear bump-out section on Sides Bravo and Charlie of the structure. Initial actions performed by E251 and OPSAC900 was to deploy and operate hoselines from the exterior into the area with an obvious fire presence.

OPSAC900 communicated to the IC that, "[m]yself and 251 have two lines in service, trying to knock the bulk of the fire. Next line needs to go to inside and hold the interior." Engine 231 immediately responded saying, "E231 is ok, we are going to stretch a line to the front door." E231A acknowledged and confirmed his plan. The IC did not have enough information to determine if this action was appropriate and did not ensure that the ongoing operations on Side Charlie, were coordinated with the actions being taken on Side Alpha, and allowed that to continue.

At this time, the IC (Chief 23) was unaware of the exact location, extent, and direct of travel of the fire, and was also unsure of where E251 and OPSAC900 lines were being directed. None of that information was included in OPSAC900's radio transmission, nor did the IC ask for that information before approving that plan. The IC must know this information before determining if the request to send a hoseline inside from the opposite direction is appropriate. The IC drives incident operations, not the company officer, especially when that officer is focused on task-level operations. The IC should have asked questions such as the following before approving personnel action requests:

- Was the bulk of the fire on the inside of the house extending out, or was this a fire that started on the exterior that extended inside?
- Were the hoselines on Side Charlie being directed into the structure, or were they just flanking the exterior?

Moments after TR23 forced the front door, personnel on the fireground noted smoke conditions changed on the first floor from what was originally described as a "wall of smoke" throughout to a rush of smoke tunneling inward.

References:

1. NFPA 1403, Standard on Live Fire Training Evolutions, National Fire Protection Association (2018).
2. UL's Fire Safety Research Institute (FSRI), Fire Dynamics Boot Camp, (last visited Apr. 6, 2022) https://fsri.org/programs/fire-dynamics-boot-camp.

Recommendation #1: The IC must match all tactical requests coming from other officers (tactical or strategic officers), against what they themselves know, and what they see. When the request is unclear, lacks information, or is counterintuitive to the conditions, the IC must resolve it before the action is implemented.

Recommendation #2: DFRS operational doctrine should clearly spell out that once the Strategic IC is in place, it then becomes the IC's responsibility to develop and drive the incident action plan, not the unit officers. The IC should be utilizing the feedback (CAN reports) from the officers to either confirm that the IAP is appropriate and working, or confirm that they need to make changes to the plan when it is not working.

Recommendation #3: The ESRP recommends that DFRS should require all personnel to complete the UL-FSRI Fire Dynamics Boot Camp coursework. *See reference #2.*

Observation #3: Once the IC became aware that the structure in fact had a basement and signs of fire and smoke were present in that location, he failed to change from what was originally a first floor fire plan and implement an IAP appropriate for a basement fire.

Analysis: Because the 360 was not completed or communicated by E251A, and TR23's 360 radio report was incorrect, units began operations assuming this was a first-floor fire. Once the basement fire was discovered there was no change in firefighting tactics. Even after the MAYDAY information provided by E251A confirmed that he fell into the basement, operations continued as

if it were a first-floor fire, allowing and assigning companies to operate on the first floor even with the knowledge the floor had collapsed.

DFRS does not have a standardized policy in its SOP for operations involving basement fires. The basement fire is one of the most dangerous fires for several reasons. Most of the critical operations are performed above the fire, there is limited ingress and egress, the basement is difficult to ventilate, etc. Basement fires also increase the chances of firefighters being caught in the flow path when attack and ventilation are not coordinated.

Upon notification that Captain Laird had fallen through the floor and into the basement, several companies entered the first floor and at times operated without a charged hoseline despite the obvious fire and smoke conditions. Even when E231A discovered the exterior entrance to the basement on Side Delta of the structure, there was no change in the firefighting strategy and tactics. Personnel reported operating at the point of the collapsed area, witnessing blow torch fire conditions coming from floor vents on the first floor, and encountering spongy or non-existent floor sections in zero visibility.

These crews operated courageously to rescue Captain Laird, but their actions, in hindsight, could have led to a greater loss of life. These actions seem to be indicative of a loss of situational awareness and understanding of how stress was impacting their decision-making as opposed to willful and blatant disregard of policy.

Lastly, when the IC became aware of a collapse within the structure, it requires an immediate assessment of structural stability. This assessment will influence the decision of the IC to either remove all personnel from the structure or isolate and deny entry to the immediate area near the collapse. When the IC was made aware of the collapse, no transmissions were made by the IC to either acquire more information about the scope of the collapse, or request an assessment of the first floor, in order to determine if a change in the mode of operations or tactics would be appropriate. Lastly there was no incident wide radio transmission from the IC that there was a collapse of the first floor.

References:

1. *NFPA 1001*, *Standard for Fire Fighter Professional Qualifications*, Chapt. 5 § 5.3.2, National Fire Protection Association (2019) (*stating* the Fire Fighter II Standard requires familiarization with building construction and hazards such as indicators of an imminent building collapse.
2. NIOSH Alert, Preventing Injuries and Deaths of Firefighters due to Truss System Failures, Centers for Disease Control (May 2005).
3. *NFPA 1700, Guide for Structural Fire Fighting*, Chapt. 12 § 12.9, National Fire Protection Association (2021).
4. *Officer Development Handbook*, International Association of Fire Chiefs (Aug. 2010).

Recommendation #1: DFRS should revise SOP § 5.00.07 to include clear and defined strategies and tactics for fighting basement fires. This revision should include strategies and tactics for fires in structures with both interior and exterior entrances to the basement and structures with only interior basement access. When the structure has an exterior basement entrance, provisions must be made for the first hoseline to enter at the basement level. The policy must also include options for when there is no exterior basement access.

Recommendation #2: When the IC is notified of a collapse, or hole in the floor, the IC must act. This notification requires an immediate assessment including an evaluation of the area affected and an assessment of structural stability overall. Based on that information, the IC must determine whether the situation requires a full evacuation of the structure, or isolation of the affected area.

DFRS should incorporate this concept into any or all relevant policies and doctrines. The notification should include an alert tone and safety message warning of a hole in the floor/partial collapse. This decision should be communicated through the tactical channel, and the IC should request the ECC to activate the high/low alert tone to the units operating.

Recommendation #3: DFRS should provide and require basement fire operations training for all members. The utilization of UL FSRI and ISFSI Training Class "Understanding and Fighting Basement Fires" is a valuable tool for DFRS to implement. Additionally, this training should encompass the information contained in DFRS revised SOP on basement fire-tactics.

Recommendation #4: DFRS should require building construction training for all personnel. The International Association of Fire Chiefs (IAFC), *Officer Development Handbook* provides a framework for Fire Departments to develop and implement a pathway for aspiring officers. Specifically, the Handbook's Supervising Fire Officer program provides the language that Building Construction (SFO-14) studies should be undertaken through an accredited institution of higher education. DFRS, if unable to develop and implement a program on its own, should follow the IAFC framework.

Observation #4: Personnel utilized the technique of "sounding the floor" upon entering the structure after a catastrophic collapse of the first floor.

Analysis: At the Ball Road incident, personnel reported sounding the floor as they proceeded to the front door. Personnel performed this action to determine the structural stability of the floor system and determine if they should or should not be operating on the floor. This technique is ineffective and can provide a firefighter with a false sense of security. Determining the integrity of a floor by "sounding it" is ineffective unless it is being compared against a section of the floor that you know is solid.

Firefighters must understand that regardless of what material is on top of the floor or roof from a weight perspective, a firefighter can "punch through" sheathing well before the supporting member fails -- especially if a fire involving utilities is concentrated in a specific area of the floor. In addition to the weight of the tile on the floor, floor coverings like tile can also mask the elevated temperatures from below and prevent the firefighter from sensing "sponginess" in the floor before failure.

If there is fire below the floor, firefighters must assume it is unstable. Additionally, without knowing the type of construction (i.e., ply-Is, solid beam, protected or unprotected), and duration of the fire, firefighters are exposing themselves to undue risk.

References: None applicable.

Recommendation #1: DFRS should revise all training material to remove the term "sounding the floor" and replace it with "checking for the presence of a floor." This revision should also include information on the size up and risk assessment that should occur when personnel are checking for the presence of a floor. This assessment should include (1) the type of material used in the floor's construction, (2) whether the flooring system is protected by drywall, (3) the duration of the fire, and (4) the fuel load in the basement.

Recommendation #2: DFRS should require building construction training for all personnel commensurate with their position. This includes basic building construction principles for firefighters and more advanced knowledge for chief officers.

Observation #5: Personnel operating in the IDLH in zero visibility moved throughout the structure standing up and did not move down to a crawling or head-up/leg out position consistent with industry best practices.

Analysis: During the interviews and first-hand accounts from personnel on the fireground, the visibility in the structure was completely obscured. Personnel recalled hitting walls and furniture while standing up and moving within the structure. However, personnel only got low to the ground once they began to feel the heat from the rapidly spreading fire and were forced to do so.

Unfortunately, it is common practice in the fire service for firefighters to move throughout a zero-visibility environment standing and walking despite being taught in Fire Essentials Class that "if you can't see your feet, you should be low." Even when newer firefighters were recently taught to stay low, they mirrored their leaders by standing and walking when engaged in fire operations, thus developing the poor habit of standing or walking in zero visibility conditions. At the Ball Road incident, there was zero visibility; that fact, coupled with the collapsed floor's unknown location, necessitated firefighters' need to remain low to the ground.

References:

1. International Fire Service Training Association, *Essentials of Firefighting*, 7th Edition, pg. 454 (Feb. 2019).
2. NFPA 1710, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, National Fire Protection Association (2020).

Recommendation #1: DFRS should evaluate and correct this behavior during real incidents and during scheduled drills and other hands-on training.

Observation #6: When Command communicated the emergency evacuation order following the extraction of Captain Laird, personnel were not fully compliant with the actions required in the Standard Operating Procedure § 5.00.08, *Safe Interior Structural Firefighter Guidelines*.

Analysis: During the rapid discovery and removal of Captain Laird, the IC was operating in an offensive mode with personnel located in the basement and operating on the first floor. The IC maintained constant dialogue on the tactical channel, with OPSAC900 overseeing the RIT Rescue effort in the basement. When the IC was made aware of Captain Laird's successful removal from the structure, he directed the Emergency Communications Center (ECC) to activate the evacuation tones, which were as follows:

- Incident Command, 17:16:53: "Command to Frederick, sound the evacuation tone."
- Frederick ECC, 17:17:28: "Frederick to all units, Ball Road Command has ordered an emergency evacuation, 17:17."

The IC then immediately advised all units on the fireground that he would commence a PAR check which he did. One firefighter was not accounted for during the initial PAR but was located shortly thereafter. The IC then declared that the continued firefighting effort would be a defensive operation.

Between the time the IC ordered the evacuation and PAR check, no apparatus on the fireground completed the required five (5) air horn blasts for three (3) to five (5) seconds. Additionally, no personnel reported or recollected personnel utilizing the apparatus PA system to state "evacuate the building" three (3) times as required by SOP § 5.00.08.

The IC role would end up transitioning moments after the evacuation order, as Chief 900 left to deal with the injured firefighter. However, despite the order to evacuate and switch to defensive operations, the new IC approved a request to allow RS3, E31, and BC901 to return to the basement to conduct firefighting operations. The IC then communicated to units on Side Bravo regarding the need to attack the fire from within the garage to limit its spread.

Reference: *Safe Interior Structural Firefighter Guidelines*, Standard Operating Procedure § 5.00.08 Frederick County, Md. Div. of Fire & Rescue Serv. (Jan. 16, 2013).

Recommendation #1: DFRS should revise SOP § 5.00.08, *Safe Interior Structural Firefighter Guidelines*, to remove the Evacuation Signal from the Definitions section. The definition as written describes a task to be completed by personnel, not a definition of the action itself. The description should be moved to SOP § 5.00.08 § IV, *Procedures*. Additionally, because the implementation of the Evacuation Signal is a task ordered by the IC, the description should also be included in SOP § 5.00.25, *Incident Command Policy*. Finally, DFRS should further revise the Evacuation Signal description to include information on when the IC should order an evacuation, not just the procedure for executing the order.

Recommendation #2: DFRS should revise SOP § 5.00.25, *Incident Command Policy,* and SOP § 5.00.08, *Safe Interior Structural Firefighter Guidelines*, to include the option of a tactical repositioning "withdrawal" for the IC to implement on the fireground. Currently, the policy only addresses the option for an emergency evacuation. The introduction of the "withdrawal" would allow for the IC to have the option to remove personnel from specific areas of the structure while maintaining personnel in other areas that the IC deems appropriate and necessary.

Recommendation #3: DFRS should revise SOP § 5.00.08 to remove the requirement that personnel utilize the PA system on their apparatus to state "evacuate the building" three times. The order is ambiguous and does not state which unit is to conduct this operation. DFRS does not standardize the specifications for all apparatus so personnel would be unsure of what units may have the PA system or not.

Observation #7: A demobilization plan was never implemented at the Ball Road incident.

Analysis: As an incident deescalates, a clear plan must be developed and communicated to units operating on the fireground. This action ensures continued accountability for units, proper rehabilitation, and accomplishment of the incident action plan. During the Ball Road incident, it was unclear when the incident was declared under control, and personnel were not relieved from their positions until much later in the incident, including the SAFETY901, T1 Driver, TR41A and Chief 23-1 (WSO).

Reference: None applicable.

Recommendation #1: DFRS should develop and implement a policy to define a clear plan for how to demobilize an incident including communication of the updated IAP, accountability of personnel, rehabilitation of personnel, and a formal debrief of the incident.

9.4.7 Water Supply

A reliable and sustained water supply is essential for firefighting where adequate municipal water supply systems do not exist. More commonly and as building construction continues to evolve, large estate dwellings exceeding 5,000 square feet with open floor plans allow for large, rapidly developing fires. These fires require fire departments to quickly apply a high volume of water to control the fire. Water supply operations in areas without a municipal water supply system are complex. Management of water supply operations is often given a lower priority than the management of basic operations occurring in or around the structure fire. The need for well-established procedures, skilled apparatus operators, a water supply group supervisor, and training are essential for successful water supply operations in non-hydrant areas.

Observation #1: The initial water supply operations on the Ball Road incident had some significant operational challenges to overcome. The challenges included an outdated water supply policy, a lack of personnel, non-compliance with SOPs and inefficient use of the equipment and available water on-scene. In addition, many of the resources assigned to water supply operations focused their efforts on establishing a sustainable water supply system instead of delivering the water immediately available on the apparatus to the incident site.

Analysis: The issues associated with the water supply on Ball Road were multifaceted. Establishing an effective water supply system in the rural setting is complex, dynamic, and challenging even when everything goes right. In the non-hydrant setting, there will always be obstacles to overcome and unanticipated complications requiring contingency plans. A comprehensive non-hydrant water supply plan must account for: proper equipment, adequate staffing, clear operational procedures, and dedicated supervision. Without all of these components, the timely establishment of a continuous water supply will continue to be problematic at best, and will continue to cause safety concerns for firefighters and needless property loss to the residents. Issues identified in the Ball Road incident include:

1. Engine 251A failed to provide the location of an adequate water source to be used as a fill-site. Not hearing this water supply information in the IOSR, E231A provided two options.

2. The initial engines laying and completing the water supply (E251 and E231) did not leave their clapper valve siamese attached to the end of their supply lines as the policy dictates. This appliance facilitates the quick off-loading of water from the tankers and incoming engines before establishing a sustainable system.

3. The first due tanker, who was supposed to be the nurse tanker, never made it up to the scene because the driver was fearful of driving over the supply line and getting the hose stuck between the dual rear wheels.

4. Policy dictates that the second due engine is expected to take a position at a location where a dumpsite can be established. That location should be easily accessible for tankers while at the same time not blocking out the incoming unit. E231 proceeded up the driveway to complete the layout for E251. The extended driveway required a deviation in policy.

5. Engine 331 was dispatched as the 5th due engine. Per policy, their responsibility was to go to the identified fill site and serve as the fill site engine. Instead, Engine 331 arrived on location 3rd and asked the IC if he wanted them to assume the 3rd due engine responsibilities or keep their 5th due position. The IC told E331, “if you're 3rd arriving, take 3rd due.” The IC never replaced the 5th due engine assignment. This resulted in not having an engine from the 1st alarm assignment at the fill site location.

6. Engine 331 ended up setting up the dumpsite. The crew from Engine 331 reported to the scene per policy, leaving only the driver to set up and manage the entire dumpsite operations. It is unreasonable to expect one person to coordinate and manage the operations of a dumpsite under any circumstances.

7. Initial efforts at the dumpsite focused on dropping off and setting up dump tanks, consistent with current policy. This delayed getting all the available water on the location delivered to E251 for suppression efforts immediately. Although there was an initial delay in establishing a continuous water supply, tank water from E231 and E153 was quickly pushed to the scene and utilized as a part of the initial fire attack. The ESRP is confident that this brief period of water loss had no impact on the rescue efforts.

8. While no units from the first alarm established a fill site, it was inaccessible when a unit finally did.

9. Policy does not indicate which personnel should switch to the water supply channel when established. Unit operators such as the first two to three engines and first tanker become involved in fireground communications that are on the fireground talk group and the water supply talk group. These personnel should not be expected to carry two radios. The Water Supply Group Supervisor was also put in this situation to operate on two radio channels. This is confusing and often personnel are unable to differentiate which channel the radio communication occurred on.

References:

1. *Operational Guidelines for Structural Fires*, Standard Operating Procedure § 5.00.07, Frederick County, Md. Div. of Fire & Rescue Serv. (Nov. 15, 2016).
2. *NFPA 1901, Standard for Automotive Fire Apparatus*, § 18.3, National Fire Protection Association (2016).
3. Mobile Data Terminal (MDT) Map, Frederick County.

Recommendation #1: DFRS should revise the current water supply operations policy, which is inadequate, outdated, and does not capitalize on industry best practices. Therefore, the ESRP recommends a complete overhaul and update of DFRS non-hydrant water supply operations. This comprehensive policy should include the following recommendations:

- The new policy must address a shift in DFRS's rural water supply operational philosophy. Historically, water supply operations in non-hydrant areas prioritized the establishment of a dumpsite over getting water quickly to the scene for initial fire suppression efforts. While the rapid establishment of a reliable and expandable water supply is essential, this must occur concurrently with rapidly delivering all available water to the firefighting operation.\

- The new policy must reinforce mandating the use of the LDH Siamese. In addition, the stowing policy of this piece of equipment should be standardized and have a uniform mounting location for current and future apparatus specifications allowing for easy access and deployment.

Recommendation #2: In order to address the incident priorities identified in SOP § 5.00.07, *Operational Guidelines for Structural Fires*, in non-hydrant areas, the ESRP recommends that the new policy consider some alternative approaches that would greatly assist in overcoming many of the challenges that occurred on Ball Road.

- The 1st and 2nd due Engines, 1st due Tanker, both Trucks, and the Rescue Squad should be committed to initial fire/rescue efforts. These actions would be initiated with the water carried on the apparatus.

- The 1st and 2nd due Engines and 1st Tanker would report directly to the front of the structure. The remaining engines and tankers should be committed to the coordination and establishment of a sustainable water supply. This may require reconsidering one of the three special services on the response to serve as the RIT.

- The entire crew from the 3rd due engine should be dedicated as the Water Supply Engine, with the unit officer being assigned as the Water Supply Officer (WSO). The primary focus of the WSO is to determine the most appropriate strategy to move water from the sustainable water source to the fireground. The remaining crew would assist the Driver in setting up and managing the dump site.

Recommendation #3: DFRS should conduct training for members on setting up and operating a dumpsite. The training should include a review of required components at the dumpsite, the uses and limitations of each component, and the evaluation criteria of a dumpsite. After initial training, further opportunities should be available to allow members to practice the skills necessary to set up a dumpsite. These evaluations should be timed trials and evaluate the time required to set up the dumpsite from the arrival of the crews of varying sizes from two to four personnel. DFRS should use this information to determine resource allocation on response assignments.

Recommendation #4: DFRS should establish a county-wide list of accessible water sources available to all engine companies. These water sources need to be added to the MDT map.

Recommendation #5: DFRS should establish policy defining which channel units should operate on when multiple radio channels are established. The incident command post should have a designated command level officer monitoring and coordinating operations on the water supply channel to streamline communications with the Water Supply Group Supervisor. This will allow the incident commander and the aide to focus on overall incident strategy and operations within the IDLH.

SECTION 10: IMPROVEMENT PLAN

Section 10 identifies the recommendations and corrective actions that the Committee strongly urges DFRS to implement to order to mitigate the risk of a similar tragedy occurring in the future.

NOTE: The Improvement Plan is NOT in this document. It can be found in an Excel Spreadsheet that accompanies this report. It is titled CaptLairdLODD.AARIP.xls

A screenshot of the Improvement Plan is displayed below simply for reference and familiarity purposes.

SECTION 11: APPENDICES

11.1 Acronyms

Acronym	Term
ATF	United States Bureau of Alcohol, Tobacco, and Firearms
CSST	Corrugated Stainless Steel Tubing
ECC	Emergency Communications Center
EMT	Emergency Medical Technician
GPM	Gallons Per Minute
IC	Incident Commander
ICS	Incident Command System
IDLH	Immediately Dangerous to Life and Health
IMS	Incident Management System
ISSO	Incident Scene Safety Officer
MDT	Mobile Data Terminal
NIMS	National Incident Management System
NIOSH	National Institute for Occupational Safety & Health
PAR	Personnel Accountability Report
PASS	Personal Alert Safety System
RID	Rapid Intervention Dispatch
RIT	Rapid Intervention Team
SCBA	Self-Contained Breathing Apparatus
SOG	Standard Operating Guidelines
UFSA	United States Fire Administration

11.2 Glossary

Term	Definition
Apparatus	Any vehicle that serves a specific function other than just transportation of people. Engines, Trucks, and Medical Intensive Care Units (MICUs) are examples of apparatus.
Battalion Chief	Supervisory position responsible for fire suppression, emergency medical services (EMS/ALS), or other assigned fire and rescue program areas for DFRS.
Box	A means of determining which companies are closest to an emergency location.
Captain	Supervisory position responsible for overseeing the daily activities of fire/rescue stations and schedules career personnel assigned to these stations or manages programs in specialized areas as assigned.
Charge a hose	To make water pressure available on a hose in final preparation for its use. This is done on the scene after the hose is deployed.
Command/Command Post	A designated physical area that serves as the center of all on scene emergency operations.
Cross lay	Arrangement of hose on a pumper such that it can be quickly unloaded from either side of the apparatus; often pre-connected to a pump outlet and equipped with a suitable nozzle.
Defensive Attack	A primarily exterior form of attack often used when fighting the fire directly or from within a structure is not feasible due to dangers from direct flame, heat, structural collapse, or the presence of hazardous materials. Often structures which are fully involved are attacked defensively with the main goal being the protection of nearby exposures.
Emergency Medical Technician "EMT"	A person who is specially trained and certified to administer basic emergency services to victims of trauma or acute illness before and during transportation to a hospital.
Engine	A fire suppression vehicle that has a water pump and, typically, is designed to carry firehose and a limited supply of water.
Engine Company	A group of firefighters assigned to an apparatus with a water pump and equipped with firehose and other tools related to fire extinguishment.
Engine Pressure	The pressure in a fire hose is measured at the outlet of the pump.
Evacuation	Removal of personnel from a dangerous area, a HAZMAT incident, burning building, or other emergency. Also refers to the act of removing firefighters from a structure in danger of collapsing.
Extrication	The systemic and safe freeing or removal of persons who are trapped or pinned.
Fireground	The operational area at the scene of a fire; an area in which the incident commander is in control. Also used as the name of radio frequency to be used

Term	Definition
	by units operating in the fireground, as in "Responding units switch to fireground."
Fire load (Btu/sq. ft.)	An estimate of the amount of heat that will be given off during ordinary combustion of all the fuel in each space, e.g., a bedroom or a lumberyard.
Fit test	Periodic test of how well the facepiece of an SCBA fits a particular firefighter.
Forcible entry	The act of gaining access to a structure or vehicle through means other than an open door or window.
Forward lay	Procedure of stringing water supply hose from a water source toward a fire scene.
GPM	Gallons Per Minute or how many gallons are being pumped out of a piece of equipment every minute.
IDLH	Any situation deemed **I**mmediately **D**angerous to **L**ife and **H**ealth (IDLH).
Incident Commander	The officer in charge of all activities at an incident.
Incident Command System	A standardized approach to the command, control, and coordination of on-scene incident management, providing a common hierarchy within personnel from multiple organizations can be effective.
Incident Safety Officer	The officer in charge of scene safety at an incident.
Initial attack	First point of attack on a fire where hoselines or fuel separation are used to prevent further extension of the fire.
Interior attack	Inserting a team of firefighters into the burning structure, to extinguish a blaze from inside the structure, minimizing property damage from fire, smoke, and water. Requires a minimum of four fully equipped firefighters: an entry team of at least two to enter the structure and fight the fire, and two standing by to rescue or relieve the entry team (see two in, two out). If the entry team(s) cannot extinguish the blaze, it may become an Exterior Attack.
Lieutenant	Supervisory position responsible for fire suppression, EMS, or other assigned fire/rescue program areas for DFRS.
Master stream	A large nozzle, either portable or fixed to a pumper, capable of throwing large amounts of water relatively long distances.
Mayday	Code that indicates a firefighter is lost, missing or requires immediate assistance.
Mobile Data Terminal "MDT"	An MDT is a computer system that allows firefighters to receive, view, and store critical information sent to them from the communications center or "9-1-1".

Term	Definition
National Fire Incident Reporting System "NFIRS System"	A system by which fire departments provide computerized records of fires and other fire department incidents in a uniform manner.
National Institute for Occupational Safety and Health "NIOSH"	National Institute for Occupational Safety and Health is a U.S. agency responsible for investigation of workplace deaths, including firefighters.
National Incident Management System "NIMS"	The National Incident Management System is a federally mandated program for the standardizing of command terminology and procedures. This standardizes communications between fire departments and other agencies. It is based upon simple terms that will be used nationwide. Currently, U.S. federally required training programs, from DHS and FEMA, are in the process of standardizing many terms and procedures under NIMS.
Offensive Attack	Method of firefighting in which water or other extinguisher is taken directly to the seat of the fire, as opposed to being pumped in that general direction from a safe distance.
Passport	This is just one type of many, personnel accountability systems in use today. In the past, command would just try to keep track of the personnel in a hazardous environment or situation by just writing down vehicle numbers. But that was not very accurate at times. Today each company has some type of object with each person's name on it. The names can be written on, or they can have a name tag that is affixed by a clip or Velcro. The officer gives this object to command or the sector officer prior to entering a hazard zone. This way someone can always tell exactly who is where. If it becomes necessary to divide up companies, this can be done by moving names around and attaching them to other boards.
Personnel Accountability Report "PAR"	Personnel Accountability Report is "PAR" a term used to confirm that all personnel assigned to a group, division, unit, or incident have been identified and located.
Personnel Accountability System	Tag, 'passport', or other system for identification and tracking of personnel at an incident, especially those entering and leaving an IDLH area; intended to permit rapid determination of who may be at risk or lost during sudden changes at the scene.
Personal Safety Alert System "PASS Device/PASS Alert"	A PASS device (Personal Alert Safety System) is a personal safety device used primarily by firefighters entering a hazardous or Immediately Dangerous to Life and Health (IDLH) environment such as a burning building. The PASS device sounds a loud (95 decibel) audible alert to notify others in the area that the firefighter is in distress. On a fireground, the sound of an activated PASS device indicates a true emergency and results in an immediate response to rescue the firefighter(s) in distress.
Pump operator	A person responsible for operating the pumps on a pumper and typically for driving the pumper to an incident. *See also Technician*

Term	Definition
Rapid Intervention crew/Group/Team (RIC, RIG, RIT)	This is a standby crew whose purpose is to go in for the rescue of firefighters in trouble. While all these versions of the name for a firefighter rescue crew either have been used or continue to be used in several areas, the National Incident Management System (NIMS) has adopted the term Rapid Intervention crew/Company, ("RIC") to be the standard in the Incident Command System (ICS). Currently, U.S. federally required training programs, from DHS and FEMA, are in the process of standardizing many terms and procedures under NIMS.
Response time	The time a fire company takes to get to a fire and begin fire operations.
Reverse lay	The process of stringing hose from a fire toward a source of water, e.g., a fire hydrant.
Second Alarm	(Third alarm etc.) In short, this is the number of times that companies are requested or dispatched to a fire. A full first alarm or "box" is a predetermined number of companies. The "second alarm" is the incident commander requesting another predetermined group of resources.
Self-Contained Breathing Apparatus "SCBA"	Self-Contained Breathing Apparatus which you have your oxygen tank and mask, keeps you from breathing in smoke or hazardous gasses. Part of your personal protective equipment (PPE).
Siamese (connection)	A fire department hose appliance that connects two supply hoses into one discharge hose.
Sides A, B, C, and D	Terms used by firefighters labeling the multiple sides of a building starting with side A or Alpha being the front of the structure and working its way around the outside of the structure in a clockwise direction. This labels the front side A or Alpha,
Tanker	A fire truck designed to carry water to fires, usually 1,500 gallons or more; it is also equipped with a pump.
Technician	A person responsible for operating the pumps on a pumper and typically for driving the pumper to an incident. *See also Pump operator.*
Tillerman	Member who is tasked with steering the rear wheels in a tractor drawn aerial apparatus.
Truck Company	A group of firefighters assigned to an apparatus that carries ladders, forcible entry tools, possibly extrication tools and salvage covers, and who are otherwise equipped to perform rescue, ventilation, overhaul, and other specific functions at fires; also called "ladder company".
Turnout Gear	The protective clothing worn by firefighters.
Two-in, two-out (or two in/two out)	Refers to the OSHA standard safety tactic of having one team of two firefighters enter a hazardous zone (IDLH), while at least two others stand by outside in case the first two need rescue — thus requiring a minimum of four firefighters on scene prior to starting interior attack. Also refers to the "buddy system" in which firefighters never enter or leave a burning structure alone.

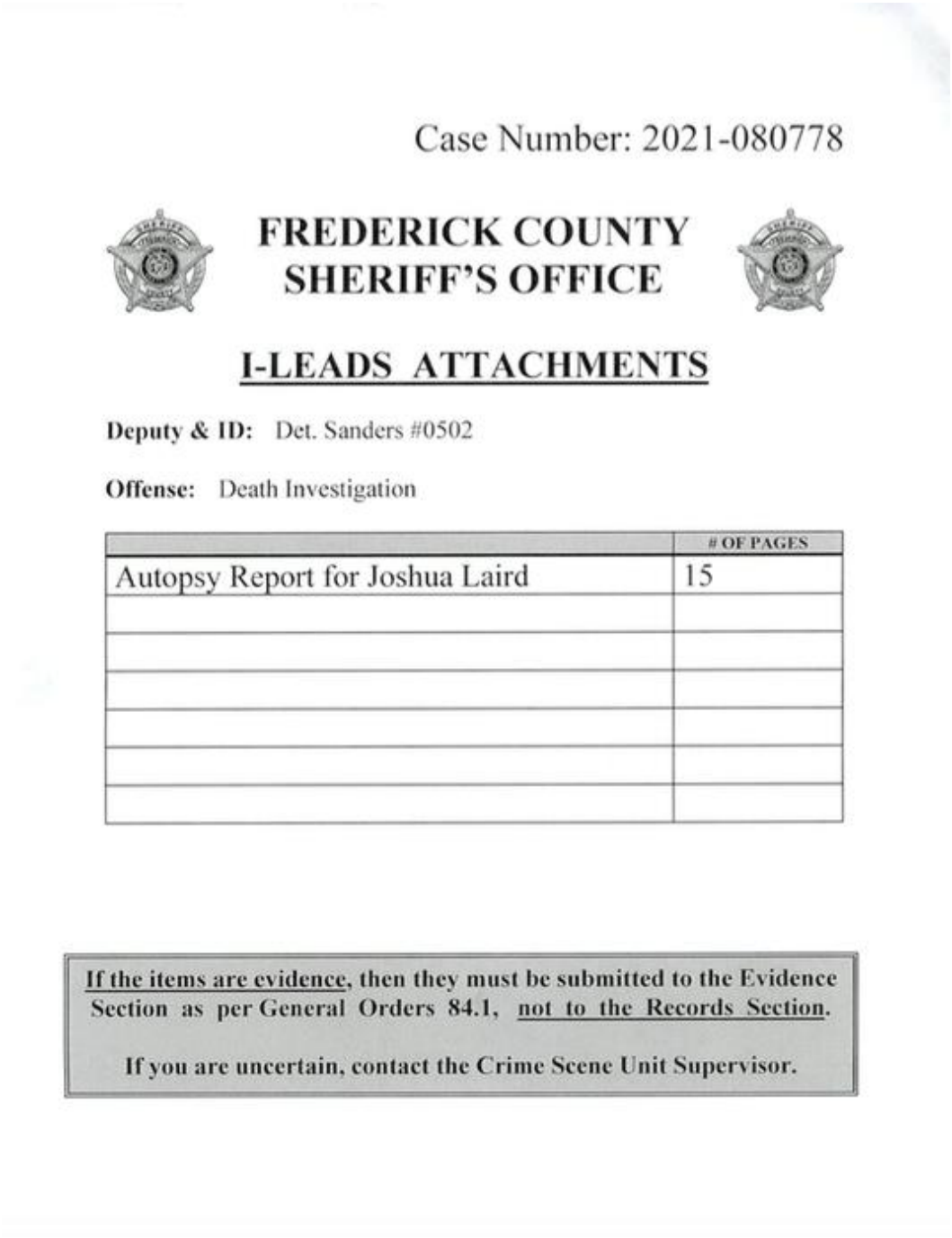
Term	Definition
United States Fire Administration "USFA"	A division of the Federal Emergency Management Agency (FEMA), which in turn is managed by the Department of Homeland Security (DHS)
Vibralert	Vibralert low air warning device. Activated when the cylinder gets to 1833psi or 1/3rd of 5500psi. Regulator will vibrate and give audible warning down to approx. 500 psi.

11.3 Supporting Plans and Documentation

This section describes key plans, reports and other related documentation that was highly applicable to this incident and/or was referenced significantly in the development of this report. For the purposes of brevity, a screen shot of the cover page is provided along with a short description.

11.3.1 Autopsy Report

This document is the autopsy report for Cpt. Joshua Laird, conducted by Constance R. Diangelo, MD. and provided by the Frederick County Sheriff's Office.



Case Number: 2021-080778

FREDERICK COUNTY SHERIFF'S OFFICE

I-LEADS ATTACHMENTS

Deputy & ID: Det. Sanders #0502

Offense: Death Investigation

	# OF PAGES
Autopsy Report for Joshua Laird	15

If the items are evidence, then they must be submitted to the Evidence Section as per General Orders 84.1, not to the Records Section.

If you are uncertain, contact the Crime Scene Unit Supervisor.

11.3.2 Radio Communications Analysis

This document is the analysis of radio communications during the "Mayday period" of the incident, conducted by the Montgomery County Fire and Rescue Service. The report includes findings from the analysis, as well as recommendations for improvements to communication FCDFRS procedures.

MONTGOMERY COUNTY FIRE AND RESCUE SERVICE

Marc Elrich
County Executive

Scott E. Goldstein
Fire Chief

November 30, 2021

Frederick County Fire and Rescue Service
Attention: External Review Committee (ERC) – Laird – LODD August 11, 2021
5370 Public Safety Place
Frederick, Maryland 21704

External Review Committee Members,

On September 4, 2021, I was contacted by Fire Chief Thomas Coe, requesting my assistance to the External Review Committee in reviewing the communications components of incident number F21023102 occurring at 9510 Ball Road on August 11th, 2021, which resulted in the line of duty death of Battalion Chief Josh Laird. This report of findings is based on all information, facts, and transcriptions made available to me as of October 10, 2021.

My evaluation of this incident is limited to the duration of the mayday by Battalion Chief Laird. The mayday was transmitted at 17:00:52 on August 11th, 2021, via radio subscriber with the P25 identification number 2407963 aliased as E251A on Frederick County P25 Radio System talk group nine delta (9D). The mayday was subsequently cleared by a unit (not verbally identified) at 17:16:44 via radio subscriber P25 identification number 2408303, aliased as OPSAC900 on Frederick County Radio System Talk group nine delta (9D).

The total time of this review is fifteen minutes and fifty-two seconds (15:52) and will be hereinafter referred to as the "Mayday Period".

Support Services – Technology Section

100 Edison Park Drive, 2nd Floor, Gaithersburg, Maryland, 20878 - 240/773-7103, FAX 240/777-2415

Serving with dedication, courage, and compassion

11.3.3 Motorola Radio Evaluation

This document is a summary of Motorola Solutions' analysis of Cpt. Laird's radio device.

MOTOROLA SOLUTIONS

Motorola Solutions, Inc.
809 Pinnacle Drive, Suite G
Linthicum Heights, MD 21090

Telephone: +1 410 712 6200
Fax: +1 410 712 6501

Radio Evaluation for Frederick County, MD Fire and Rescue

We have completed our evaluation of the Motorola APX-8000XE radio (S/N: 581CTT2187) and Remote Speaker Microphone (RSM) (Model #: PMMN4106B), which you provided to us. We understand that this equipment was used earlier this summer by Captain Laird. As part of our evaluation, we made a visual inspection of the radio, reviewed software logs, and performed various audio and functionality tests. By agreement, no destructive testing was performed. Based on our evaluation, we conclude that the radio works as normal and as expected.

Our visual inspection of the radio housing surfaces noted nicks, scrapes and residue consistent with use in a fire environment. We did not observe any melting or significant dents in the equipment. There appears to be some film over most of the exterior surface of the radio and RSM, which is likely a combination of dirt and smoke, typical of a fire environment. We also reviewed the RSM-to-radio interface, to confirm that when the RSM is attached and sealed correctly, no water or debris can enter. Upon disconnecting the RSM, it was found that the interface was clean and no debris or damage was noted in the interface, indicating a good seal. Therefore, we did not observe any factors suggesting any physical damage or physical factors that would adversely affect the radio's performance.

After performing talk and listen -- radio functionality -- testing, we conclude that the radio performs normally. We reviewed all of the buttons and knobs on the radio and on the RSM. We did not observe any loss of functionality. We also tested the radio in both the customer's settings, and in radio test mode, and confirmed that the radio was seeing the expected inputs.

We tested the radio's RF performance, both receiver and transmitter parameters, using an Aeroflx 3920 Digital Radio Test Set. All RF parameters except for "reference oscillator" were within optimal limits. This offset of -600 Hz noted in the "reference oscillator" would not affect conventional radio communication that is used on a "fireground" setting. We confirmed this by performing conventional "TalknListen" functionality tests.

Our conclusion after reviewing the radio logs and resets, is that the radio works normally. When received, the radio logs indicated the radio previously contained software version R16.20.00. Log analysis shows consistent resets when the radio was in a low battery conduction with version R16.20.00. The customer later updated the software to version R17.01.01, and similar resets continued. Because the resets consistently occur at exactly the same Radio Uptime value, we conclude that the resets are due to a low battery condition. The remaining errors we noted did not affect performance, for example: MsgOpcode: 0xb405 => Physical User Input broadcast message, not impacting normal operation. Other errors are due to low battery, for example: OB RESET CAPTURE - USB Error - Ping Failure, => likely due to a low battery condition, not impacting normal operation

11.3.4 NIOSH Report

This document is the National Institute for Occupational Safety and Health (NIOSH) investigation report on Cpt. Joshua Laird's Self-Contained Breathing Apparatus (SCBA). The report includes the results of the tests conducted by NIOSH to determine the working condition of the SCBA.

PPE CASE

Personal Protective Equipment Conformity Assessment Studies and Evaluations

Evaluation of a Self-Contained Breathing Apparatus Involved in a Fatality While Operating at a Structure Fire

Division of Safety Research Requested the Evaluation of a Scott® Safety Air-Pak® Model X3

The National Institute for Occupational Safety and Health (NIOSH) conducts a Fire Fighter Fatality Investigation and Prevention Program, which is executed by its Division of Safety Research (DSR). In support of this Program, NIOSH's National Personal Protective Technology Laboratory (NPPTL) inspects and evaluates the self-contained breathing apparatus (SCBA) used by the fire fighter during a fatality.

This report provides a summary of NPPTL's inspection and evaluation methods, as well as findings, for an SCBA that was on air and was being used by a fire fighter when he fell through the first floor into a basement that was on fire. The SCBA used was a Scott® Safety Air-Pak® Model X3, 45-minute, 5500 psi unit. The NIOSH Division of Safety Research (NIOSH DSR) was advised that NIOSH NPPTL would provide a written report of the investigation and any applicable test results.

NIOSH received an SCBA used by a fire fighter involved in a fatality. The SCBA was not found to contribute to the incident.

A qualified service technician must inspect, repair, test, clean, and replace damaged components of any SCBA involved in an incident before it may be returned to service.

What NIOSH Did to Protect the Worker

Upon receipt of the SCBA, NPPTL managed the custody of evidence throughout the inspection and evaluation process at its Morgantown, West Virginia, facility. NPPTL staff inspected all SCBA components and documented its findings with written and photographic evidence. NPPTL also tested the SCBA to determine conformance to NPPTL's approval requirements as outlined in Title 42, Code of Federal Regulations, Part 84 (42 CFR 84). Further testing was conducted to provide an indication of the conformance of the SCBA to the National Fire Protection Association (NFPA) Air Flow Performance requirements of NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus for the Fire Service, 2013 Edition. If the inspection or evaluation data suggested that the SCBA unit may have contributed to the fatality, NPPTL would have engaged in corrective action to ensure that no other users of the product would experience a similar incident. In this case, no such corrective action was necessary. NPPTL then managed the disposition of the SCBA.

11.3.5 NIOSH SCBA Summary and Analysis Letter

This document is a letter from NIOSH regarding the summary and results of NIOSH's tests on Cpt. Laird's SCBA unit.

DEPARTMENT OF HEALTH & HUMAN SERVICES

Centers for Disease Control and Prevention (CDC)
National Institute for Occupational Safety and Health (NIOSH)
National Personal Protective Technology Laboratory (NPPTL)
1000 Frederick Lane., MS 2703
Morgantown, WV 26508
Phone: 304-285-5858

October 6, 2021

Chief Coe
Frederick County Fire and Rescue
5370 Public Safety Place
Frederick, MD 21704

Dear Chief Coe:

The National Personal Protective Technology Laboratory (NPPTL) Morgantown Testing Team has concluded its examination of a Scott® Safety Air-Pak® Model X3, 45-minute, 5500 psi unit self-contained breathing apparatus (SCBA) under Task Number 25250.

The NIOSH Division of Safety Research (DSR) and the Frederick County Fire and Rescue were advised that NIOSH NPPTL would provide a written report of the inspection and any applicable test results.

Summary: The Scott® Safety Air-Pak® Model X3, 45-minute, 5500 psi, self-contained breathing apparatus was delivered by FedEx in a paper bag inside a FedEx box to Lab H1513 at the NIOSH facility in Morgantown, West Virginia, on September 7, 2021. The SCBA unit remained in secured storage in Lab H1513 throughout the inspection and testing process.

An extensive visual inspection of the unit was conducted on September 15, 2021. A corresponding facepiece and cylinder were provided with the unit. Overall, the SCBA was in good condition. The unit was identified as having NIOSH approval number TC-13F-772CBRN.

The SCBA unit inspected and evaluated by NPPTL was a Scott® Safety Air-Pak® Model X3, 45-minute, 5500 psi unit with NIOSH Approval Number TC-13F-722CBRN. A corresponding facepiece and cylinder were provided with the unit. Overall, the SCBA was in good condition. The NFPA approval label was present and readable. The PASS, HUD, and alarm systems functioned as designed.

The SCBA met the requirement of the NIOSH Positive Pressure Test, as the SCBA maintained a positive pressure for the 45-minute minimum duration of the test. The unit passed all other NIOSH tests as well as meeting the requirements for the NFPA "Airflow Performance" test.

11.3.6 PPE Inspection

This document is a complete analysis of Cpt. Laird's PPE, conducted by International Personnel Protection, Inc. The report includes an overview of the line-of-duty death events, an analysis of the condition of the PPE, and recommendations for the FCDRFS.

Examination of Selected PPE Worn by LODD
Frederick County Division of Fire & Rescue Services
(FCDFRS) Battalion Chief
During August 11, 2022 Structure Fire at
9500 Block Road, SE of Frederick, MD

Deputy Chief Steve Leatherman
Division of Fire & Rescue Service
Administrative Services Section
5370 Public Safety Place
Frederick, MD 21704

Jeffrey O. Stull
International Personnel Protection, Inc.
P. O. Box 92493
Austin, TX 78709

4 April 2022

International Personnel Protection, Inc.