

Line of Duty Death
Board of Inquiry Report
Lieutenant James E. Bethea



710 E. North Avenue

Baltimore, MD USA

November 12, 2014

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I. Letter from Chief Ford

CITY OF BALTIMORE

STEPHANIE RAWLINGS-BLAKE, Mayor



FIRE DEPARTMENT

NILES R. FORD, PhD
Chief of Fire Department
401 E. Fayette Street
Baltimore, Maryland 21202

During the early morning hours of November 12, 2014, the Bethea family, members of the Baltimore City Fire Department and the citizens of Baltimore experienced the line of duty death of 41 year veteran, Lieutenant James Bethea. The loss of such an iconic figure within the Baltimore City Fire Department not only sent a rippling effect of devastation throughout our organization, but the impact was felt citywide.

Shortly after this tragic incident occurred I commissioned an eight member panel to serve as a board of inquiry to uncover the facts that led to Lieutenant Bethea's untimely death. This group was tasked with the responsibility of objectively collecting information, evaluating that data and conducting a post incident analysis for the purpose of examining every factor that served as a primary or contributing cause of Lieutenant Bethea's death. The members of this board hold various ranks within the fire service; they each have strong investigative backgrounds and are representatives of three Metropolitan fire departments.

Over the course of my more than 23 years in the fire service, I have personally experienced the loss of a firefighter on three separate occasions. The anguish that is felt as a result of these tragedies always resonates in the hearts, minds and spirits of those individuals affected. So, as the Chief of the Baltimore City Fire Department my charge to the board investigating the line of duty death of Lieutenant James Bethea was to produce a thorough and comprehensive report that would not only reveal the facts of what occurred, but also serve as a tool in preventing a tragedy like this from occurring to another family, in another city or to another fire department. I am pleased with and thankful for each of the members who served on this board. As a result of their commitment, dedication and pursuit of transparency they were able to follow the facts of the case and their findings and recommendations are outlined in this report.

Lieutenant James Bethea will always be remembered by his colleagues and members of the community for his larger than life personality, positive energy, radiant smile and his love for the fire service. His lead by example personality helped to inspire countless people to achieve their personal and professional goals. Lieutenant Bethea's name and legacy will forever be synonymous with the motto of the Baltimore City Fire Department, "Pride Protecting People", because that level of service was his life's work.

To Lieutenant Bethea's widow, Dr. Brenda Pridgen and the Bethea family, I would like to personally take this opportunity to thank you on behalf of the Baltimore City Fire Department and the citizens of Baltimore City for allowing us to be a part of his life for 41 years; the lessons that we learned from him are priceless and will always be treasured by each of us. Throughout our continuous communications, I hope that I have been able to ensure you that we exhausted every resource to provide answers for you and your family.

Sincerely,

A handwritten signature in black ink, appearing to read "Niles R. Ford".

Niles R. Ford, PhD
Chief of Fire

 Printed on recycled paper with environmentally friendly soy based ink.

II. Introduction

An eight-person Board of Inquiry was formed by Dr. Niles Ford, Chief of Fire Department, Baltimore City Fire Department, to investigate the tragic line-of-duty death of Lieutenant James Bethea. At the Board's first meeting, Chief Ford directed the members to "Seek the truth and report it." Those were the watchwords for everything the Board undertook over the ensuing months. From the beginning, the Board members were unanimous in their desire to honor Lieutenant Bethea's life by conducting the most comprehensive and thorough investigation they were capable of. The Board was dedicated to ascertaining what caused Lieutenant Bethea's death and, just as importantly, making recommendations to prevent future losses of life.

The Board included one senior chief officer from Anne Arundel County (Maryland) and one from Howard County (Maryland). These members proved to be particularly valuable because they provided fresh eyes to evaluate the operations of the Baltimore City Fire Department.

From the outset, the Board worked to thoroughly and fully document the events of November 12, 2014. During the course of the investigation, the Board conducted 74 interviews, reviewed many hours of video and audio tape, and considered many dozens of pieces of other evidence. Some of the most valuable evidence came in the form of photos taken by an off-duty Washington, DC fire officer who happened by the scene and stopped to document it.

The Board also cooperated with representatives from the National Institute of Occupational Safety and Health (NIOSH) and Maryland Occupational Safety and Health (MOSH), who came to Baltimore and conducted independent investigations.

The Board sought help from internal (BCFD) subject matter experts, three federal agencies and two equipment manufacturers. NIOSH oversaw tests performed by the manufacturers of Lieutenant Bethea's portable radio and fire helmet. The National Institute of Standards and Technology (NIST) performed airflow path tests in the fire buildings, and the National Oceanic and Atmospheric Administration (NOAA) provided information on weather conditions at the time of the E. North Avenue fire.

While the Board of Inquiry was confident that it had a pretty clear understanding of the sequence of events, in the end several questions, including why Lieutenant Bethea entered the dwelling where he died, could not be definitively answered. Nonetheless, this investigation revealed some operational deficiencies that the Board of Inquiry worked to remedy through its recommendations for improvements.

It is with heavy hearts that we offer the following report. We would like to especially extend our condolences to Lieutenant Bethea's family, friends and brother and sister firefighters. He is greatly missed by all who knew him.

The Board of Inquiry members were:

Frank H. Hazzard, Board Chair
Deputy Chief, Shift Commander
Baltimore City Fire Department

Keith D. Swindle
Division Chief, Health & Safety
Anne Arundel County Fire Department

John D. Jerome
Assistant Chief, Executive Officer
Howard County Department of Fire and Rescue Services

Joe S. Wade
Deputy Chief, Shift Commander
Baltimore City Fire Department

Charles S. Svehla
Battalion Chief, Suppression
Baltimore City Fire Department

Michael R. Roth
Captain, Fire Investigation Bureau
Baltimore City Fire Department

Ronald W. Flynn
Captain, Fire Investigation Bureau
Baltimore City Fire Department

Andrew E. Doyle, Sr.
Fire Fighter Paramedic, Suppression
Baltimore City Fire Department

Respectfully Submitted,

A handwritten signature in blue ink that reads "Frank Hazzard 470".

Frank H. Hazzard, Deputy Chief
Chairman, Board of Inquiry

III. Profile of Baltimore City Fire Department

Baltimore is a port city located along the Chesapeake Bay in Central Maryland. It is an independent jurisdiction (not located within any county) and is the largest municipality and the cultural center of the State of Maryland. The population of Baltimore City is estimated at 622,104 (US Census Bureau). The city has a total area of 92.1 square miles, of which 80.8 square miles is land and 11.3 square miles is water.

The Baltimore City Fire Department (BCFD) has more than 1,600 employees, the majority of whom are assigned to operations. The Chief of Fire Department oversees all facets of the department's operations. Three assistant chiefs report directly to the Chief of Fire Department. Field personnel (suppression and EMS) are overseen by the Assistant Chief – Operations and an on-duty Deputy Chief (Shift Commander), who functions as a city-wide tour commander. Seven on-duty battalion chiefs (six in suppression and one in EMS) and members assigned to the Telestaff Office report directly to the Shift Commander. He/she indirectly supervises the operational activities of 31 engines, 4 squads (rescue engines), 17 trucks, 1 heavy rescue, 2 fire boats, 4 EMS district officers, 24 medic units, and various support units.

The Shift Commander responds citywide on all working fires, additional alarms and incidents of an unusual or serious nature (hazardous materials, building collapses, mass casualty incidents, technical rescues, dive rescues, widespread utility outages, extreme weather events, etc.), and assumes command as necessary.

The department is divided into six suppression battalions and one EMS battalion, on four shifts. All field personnel work a schedule that repeats every eight (8) days. The work schedule for suppression is comprised of one 24-hour shift on, followed by 24 hours off, followed by another 24-hour shift on, and followed by five (5) days off. Approximately every 32 days, members work an extra 24-hour shift ("impact day"). The work schedule for EMS is comprised of a 4-days-on, 4-days-off rotation where the first two days on are 10-hour day shifts, and the second two days are 14-hour night shifts, which are followed by four (4) days off. Minimum staffing for engines, trucks, squads and the rescue is four (4) personnel per unit. Minimum on-duty staffing for the department as a whole is 292.

The City is divided geographically into box areas. Each box area corresponds to a map which allows units to precisely locate where they are responding. The first number in the box area correlates to the first-due station. The second number is a sequential number within that station's area. Box areas are numbered after the engine company in the first due station. If there is no engine in the station, then a T will precede the number, indicating that it is a truck's station. For example, box area 33-1 is the first map inside Engine 33's area. Box area T6-11 is the eleventh map in Truck 6's area. Each box area has a predetermined list of the closest units by station. This allows the Fire Communications Bureau to send the closest appropriate units to each incident.

A first alarm assignment for a structure fire, also known as a "box alarm," includes the dispatch of five engine/squad companies, two truck companies, one medic unit and two battalion chiefs.

Rescue 1, Fireboat 1 and Fire Rescue Boat 1 will also respond on the first alarm in a predetermined area of the City. Rescue 1 responds on all second alarms citywide.

On structure fires, units are to operate per standard operating procedures that assign tasks based on the order of dispatch. Assignments may be altered and units may deviate from the standing orders, but deviations must be communicated by radio to other responding units. If no communications are made indicating a deviation from the standing assignments, it is assumed that the standing assignments are being carried out. All battalion chiefs and most captains who act as battalion chiefs have been trained as incident safety officers (ISO). The second-assigned battalion chief is to assume the role of incident safety officer upon arrival.

When the incident commander determines that all hands on the first alarm will be engaged for at least 30 minutes, he or she is supposed to transmit a “working fire.” A working fire transmission is an automatic request for one additional engine/squad company, one additional truck company, an Air Flex unit (breathing air, floodlight and high-expansion foam), the on-duty shift Safety Officer and the on-duty Shift Commander (deputy chief).

Each subsequent alarm calls for 4 engines, two trucks and various ancillary support units.

IV. Description of Buildings

At the time of the incident, the structures located at 706, 708 and 710 E. North Avenue were brick, middle-of-the-group, ordinary-construction, rowhouse dwellings. 708 and 710 E. North Avenue were both vacant while 706 E. North Avenue was occupied. The fire building was 708 E. North Avenue. Exposure bravo was 706 E. North Avenue and exposure delta was 710 E. North Avenue.



(Photo taken by FOA W. Harris BCFD on 11-21-2014)

Each dwelling was essentially one room wide by three rooms deep on the first and second floors, and one room wide by two rooms deep on the third floor. They were three stories in the front (side alpha), and the two-story portion extended farther back than the three-story portion (on side charlie). The two-story portions of the dwellings were narrower than the three-story portions, leaving an exterior passageway on one side of each dwelling. Each was attached via a masonry (brick and mortar) “party” (shared) wall to an adjacent dwelling on the side opposite the side where the exterior passageway was located. The three-story portions of the dwellings were attached via party walls to similar structures on both sides.

The homes were constructed in 1920 and were listed as rental properties in the Baltimore City tax record. The front of the dwellings faced south towards North Avenue. They each had two basement windows in the front wall, located a few inches above the exterior grade, two windows and a front door on the first floor, and three windows on the second and third floors. Each had one rear door and one window in the first-floor rear, two windows on the second-floor rear, and two windows on the third-floor rear. Because the first and second floors extended farther back than the third floor, a roof was located under the third floor, rear windows.

The buildings had gradually sloped roofs of continuous pitches with high points at the front walls and lower points in the rears. The roofs on the three-story portions of the buildings each contained one glass skylight and one scuttle. The roofs that covered the two-story, rear portions

of the buildings were of a similar slope with high points at the walls that separated the three-story portions from the two-story portions and low points at the rear walls. These roofs contained no designed openings.

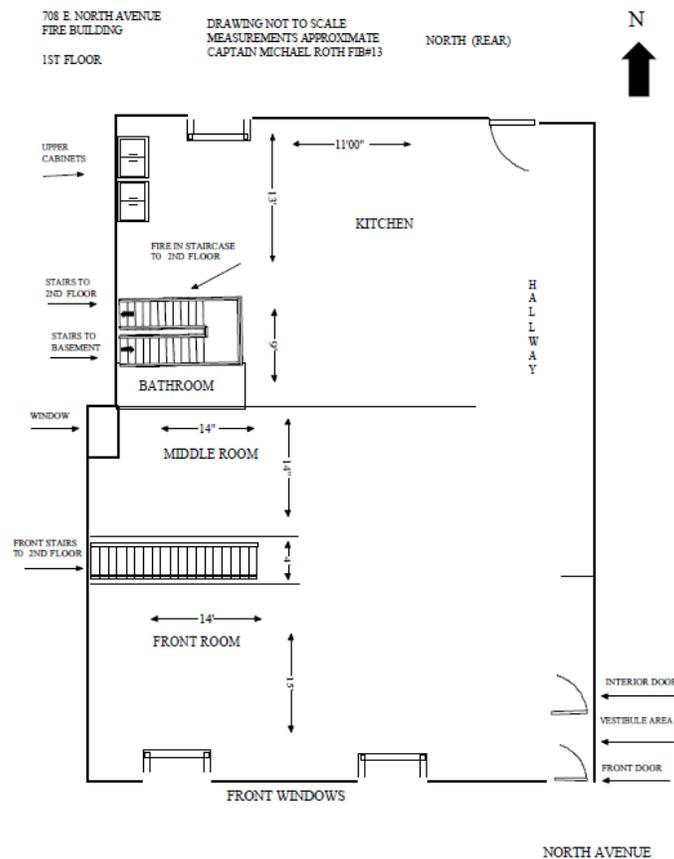
The area in front of the dwellings contained steps up from a concrete sidewalk to their front doors. The sidewalk was a continuous surface that spanned the full length of the block and from the base of the dwellings' exterior, front foundation walls to the street, except for several small unpaved plots where natural cover existed.

Each dwelling had a rear yard that was mostly grass with a few shrubs and trees. The rear yards of 708 and 710 E. North Avenue both contained piles of trash and debris and were divided by a dilapidated chain-link fence. Each yard had a chain-link fence along parts of its rear perimeter that partially separated them from a paved, one-lane alley.

Additional property photos can be found in Appendix F

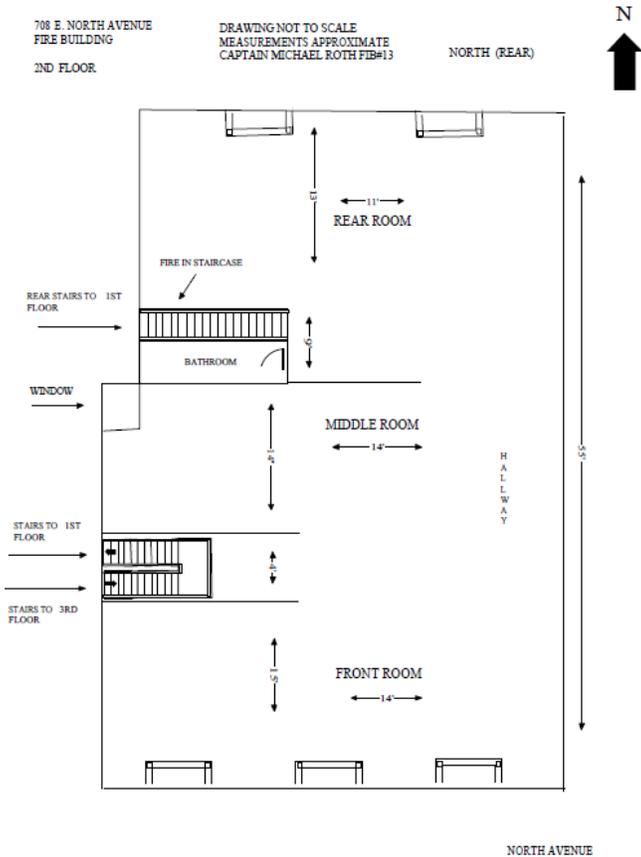
708 E. North Avenue (Fire Building)

The first floor consisted of a front room, middle room, bathroom, and kitchen area. There were two sets of stairs, one near the front and one near the rear. The front staircase was a fold back configuration with a half-flight up to a landing and then a second half-flight up to the second floor. This configuration was repeated between the second and third floors.

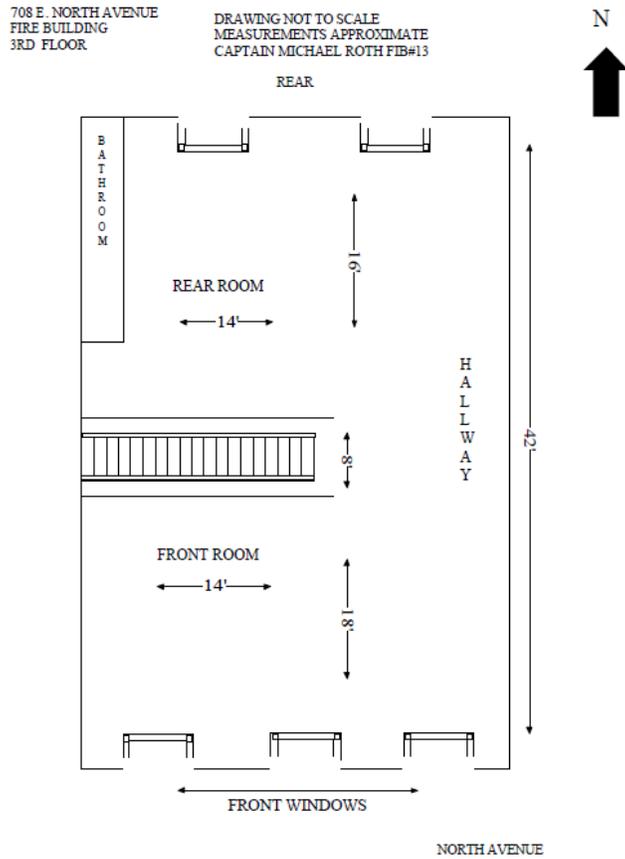


The rear staircase traversed the dwelling from side bravo of the first floor up to side delta of the second floor. It did not extend to the third floor. The rear stairwell formed a separation between the rear and middle rooms on the first floor and a rear room and a bathroom on the second floor. The only stairs to the basement were also in the rear of the dwelling under the staircase to the second floor. A vestibule measuring 3 feet by 3 feet and 6 inches was located just inside the front door and between the front door and a second door that provided access to the first floor.

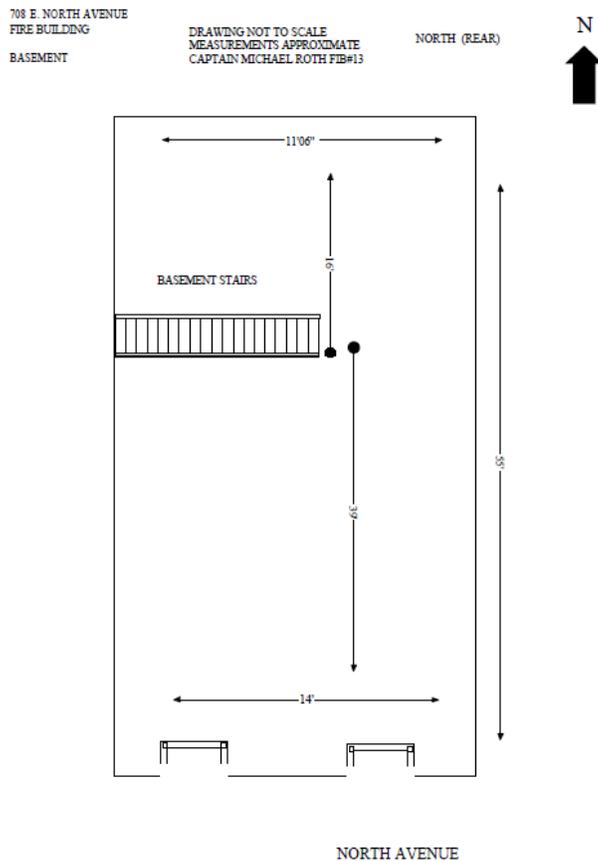
The second floor consisted of a front room, middle room, bathroom, and rear room.



The third floor consisted of a front room, bathroom, and a rear room.



The basement was unfinished and contained non-operating utilities (electricity and natural gas). The basement's front (south) wall extended 4 feet below grade and contained two windows. The rear (north) wall extended 4 feet and 4 inches below grade and contained no openings to the outside. The top of the basement stairs originated on the west side of the first floor and terminated near the east wall of the rear portion of the basement. This stairwell was the only point of access to the basement from the interior.



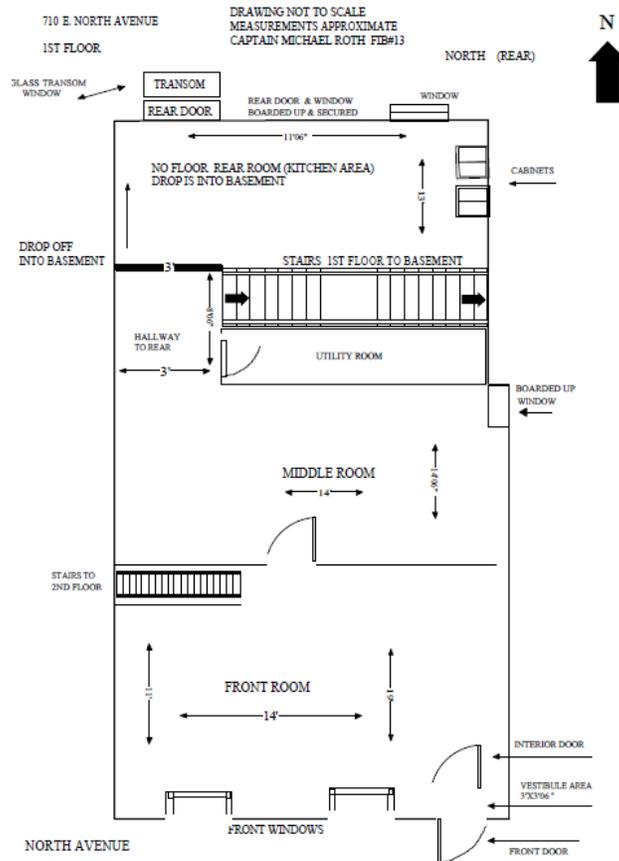
Examination of all 3 floors revealed glass and plastic bottles, discarded wood, cigarette butts, drug paraphernalia, and trash throughout. The basement contained several discarded fishing rods and a tackle box.

Conflicting reports were received about which doors and windows were boarded up with plywood at the time of the fire. It is believed that the first-floor front and rear windows and doors were boarded. Some upper story windows may have been boarded up although their statuses were not fully determined.

At the time of the fire, the roof above the three-story portion of the fire building appeared to be structurally sound. The scuttle and skylight were found intact.

710 E. North Avenue (Delta Exposure)

The first floor consisted of a front room, middle room, and utility room. A hallway began near the rear wall of the middle room, and ran alongside the west party wall, and between the west party wall and a utility room and a staircase (down) that provided access to the basement, that was behind the utility room.



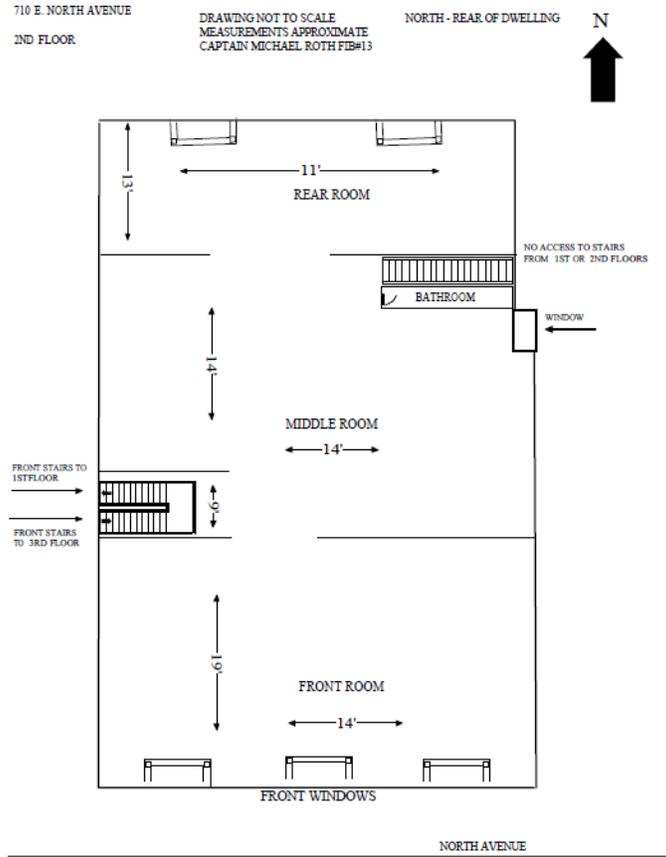
At one time this hallway ended at a kitchen that was located behind the staircase, however the flooring, including floor joists, in this former kitchen area was completely removed leaving an open space that measured approximately 11 feet by 12 feet and exposed the basement area approximately 7 feet below the first floor.

There were two sets of stairs, one near the front and one near the rear. The front staircase was a fold back configuration with a half-flight up to a landing and then a second half-flight up to the second floor. This configuration was repeated between the second and third floors.

The rear staircase traversed the dwelling from side bravo of the first floor down to side delta of the basement. A staircase existed above the stairs to the basement, however it provided only direct access from the second floor, through the east (side delta) exterior wall to a walkway that ran alongside the exterior of the east side of the building. This staircase was sealed off at the second floor and the exterior forming a void to which there was no access.

A vestibule measuring 3 feet by 3 feet and 6 inches was located just inside the front door and between the front door and a second door that provided access to the first floor.

The second floor consisted of a front room, middle room, bathroom, and rear room.



Basement of 710 E. North Avenue

The overall dimensions of the basement were 14 feet and 2 inches wide by 55 feet long. It was unfinished, had a concrete floor, except in its rear, north end (side charlie) and contained non-operating utilities (electricity and natural gas). The basement's front, south (side alpha) wall extended 4 feet below grade and contained two windows (above grade). The rear wall extended 6 feet and 10 inches below grade and contained no openings to the outside. The two basement windows on the front wall measured 2 feet by 2 feet and had windows with side hinges allowing them to swing inward when opened. The west window had a piece of plywood nailed over the interior of the window and the east window had several pieces of wood nailed to the exterior of its frame. The exterior of both windows were covered with metal, honeycomb, steel grates. The remains of an old, nonfunctioning furnace were located along the east (side delta) wall and approximately 19 feet from the front wall (side alpha).

An area measuring 11 feet by 12 feet at the north end of the basement had no ceiling, permitting an unobstructed view of the first floor's ceiling from the basement. This opening was the space where the kitchen floor was once located.

The hallway that at one time provided access to the first-floor-rear kitchen ended abruptly, forming a drop-off with no barrier to prevent a person from falling off the edge into the basement approximately 7 feet below. A pile of scrap lumber and a discarded wooden door were found piled on the basement floor directly below the drop-off. The concrete flooring in the area under the former kitchen appeared to have been demolished and removed leaving a dirt and gravel surface.

706 E. North Avenue (Exposure Bravo)

706 E. North Avenue (exposure bravo) was a similar, occupied structure. It was attached to the fire building (708 E. North Avenue) via a party wall. According to Baltimore City tax records it was a rental property.

Additional maps can be found in Appendix F.

V. Description of Incident

The pertinent events of November 12, 2014, are described below. Multiple source documents and data sets were coalesced to create this description. The Board of Inquiry did its best to put the events in chronological order. All times are expressed using the “hour” and “minute,” without “seconds,” format. Events that share the same time are presented in chronological order. A timeline that includes all events, including some that are not included in this description, is contained in Appendix A of this report, and it includes times with seconds.

Each member of the Baltimore City Fire Department was issued an “accountability card” (photo ID) prior to the E. North Avenue fire and standard procedures (MOP 602-12) in effect at the time of this incident required members assigned to emergency units to attach their personal accountability cards to a master ring kept in the cab of each vehicle. The Board of inquiry was unable to determine if accountability cards were properly attached to units’ master rings.

At approximately 0019 hours on Wednesday, November 12, 2014, a series of four 911 telephone calls reporting a dwelling fire were received at the Baltimore City Unified Call Center (UCC). One of these calls was received from an occupant at 706 E. North Avenue reporting visible smoke inside her house from an unknown source. The other three calls were from passersby who reported smoke coming from a vacant dwelling in the 700 block of E. North Avenue, one of these callers gave the address as 710 E. North Avenue.

At 0019 hours, Box Alarm 33-14 was dispatched to 706 E. North Avenue. A standard first alarm assignment consisting of 5 engine companies, 2 truck companies, 1 medic unit (advanced life support transport unit) and 2 battalion chiefs was directed during the dispatch to conduct operations on radio talk group “Fireground 1.”

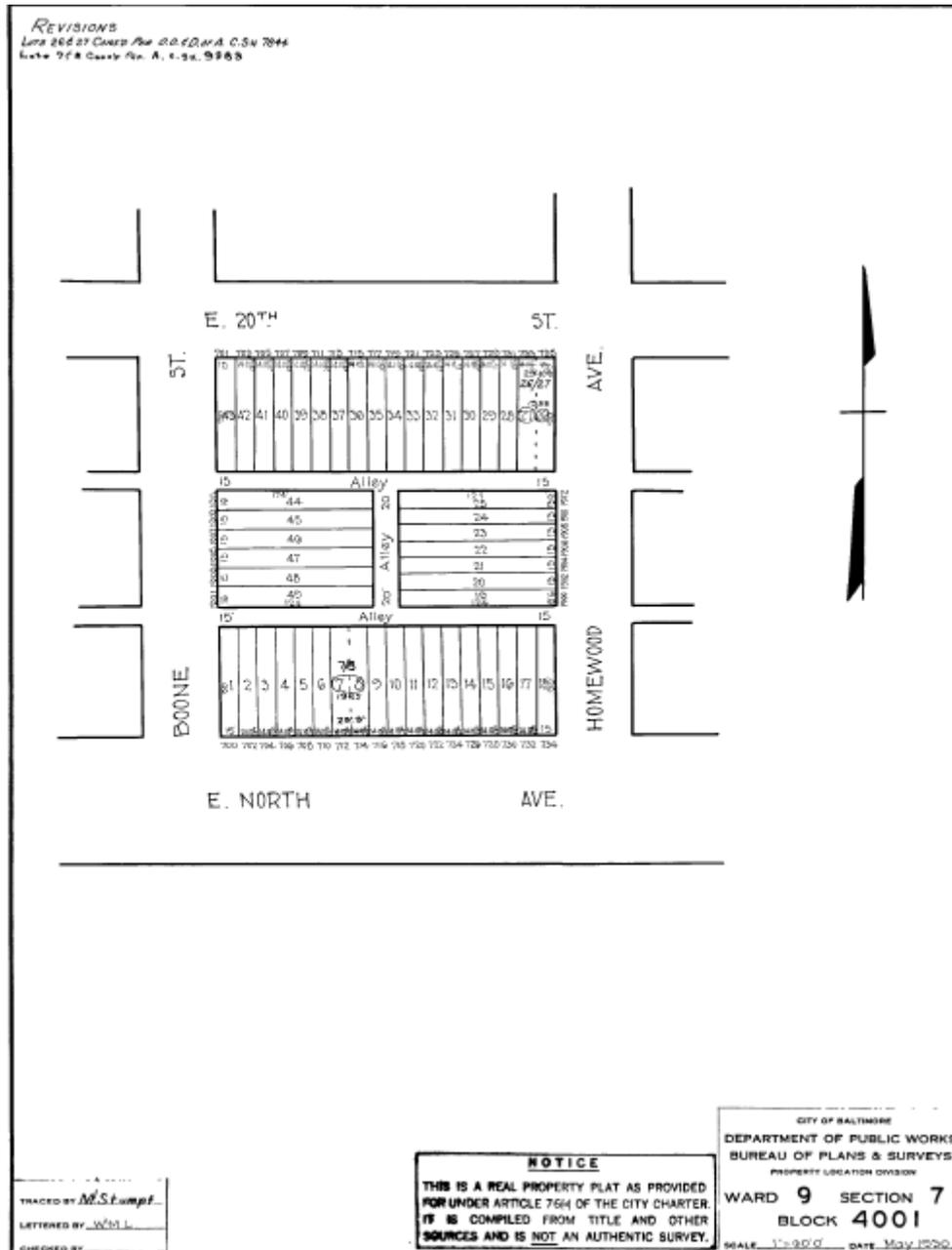
Units Dispatched, in Order

Engine 31
Engine 6
Engine 13
Engine 33
Engine 23
Truck 5
Truck 1
Medic 16
Battalion Chief 2
Battalion Chief 6

At 0020 hours Engine 13 transmitted by radio that it was responding as the rapid intervention team (RIT) unit. This message was acknowledged by a dispatcher.

North Avenue is a six-lane, east-west thoroughfare with parallel parking permitted along the north and south curbs and two undivided travel lanes in each direction. The 700 block of E. North Avenue had 12 conjoined three-story rowhomes on its north (even) side and a stone wall and cemetery on its south (odd) side. The 700 block of E. North Avenue was bordered by

Homewood Avenue (on the east) and Boone Street (on the west). Boone Street and Homewood Avenue both ended at North Avenue. A paved alley ran parallel to North Avenue between Boone Street and Homewood Avenue and to the north of (behind) the structures on the north side of E. North Avenue. Note: there is no 600 block of E. North Avenue – the 500 block is immediately west of Boone Street and the 700 block is immediately east of Boone Street.



The home at 706 E. North Avenue (exposure bravo) was an occupied dwelling. The home at 708 E. North Avenue (the fire building) was vacant with at least some of the first and second floor windows and doors, front and rear, boarded up. The home at 710 E. North Avenue (exposure delta) was vacant.

Truck 5 arrived at 0022 hours, and its officer reported by radio “fire, smoke showing.” Truck 5 positioned its apparatus headed westbound just east of the front of 710 E. North Avenue (on side alpha) and its officer, a lieutenant, established incident command via a radio message. Note: Truck 5’s status was not changed to on scene until just before Truck 5’s status was changed to in-service, much later.

Medic 16 arrived at 0022 hours and parked its vehicle on Boone Street just north of North Avenue.

Engine 31 arrived at 0022 hours and laid a 3” supply line from the fire hydrant on the southeast corner of Greenmount Avenue and North Avenue (west of the fire building) and positioned its apparatus headed eastbound in the westbound slow lane, just west of 706 E. North Avenue (on side alpha).

Truck 5 transmitted a radio message at 0023 hours stating it had a report that all occupants were out of the dwelling.

The officer of Truck 5 forced entry through the first-floor-front door of 708 E. North Avenue as the firefighter and tillerman extended ground ladders to the second- and third-floor-front windows. The driver raised the aerial ladder to the roof and ascended it.

At the same time Truck 5’s crew were performing their actions, Engine 31’s officer and one of Engine 31’s firefighters advanced a 250’ pre-connected 1-3/4” hoseline through the front door and up the interior-front stairway to the second floor.

Upon reaching the second floor, the officer of Truck 5 and the members of Engine 31 encountered heat and smoke and could see flames toward the rear of the dwelling while looking down a hallway. Shortly thereafter, Engine 31 began flowing water on the fire. Within a few seconds the hoseline lost water pressure due to what was later determined to be a burst section of hose located just inside the dwelling’s front door. The officer of Engine 31 called his pump operator (driver) several times via radio to report the loss of pressure, but the officer was unknowingly on the wrong radio frequency and the pump operator did not hear these messages.

Truck 1 arrived at 0023 hours and positioned its apparatus headed northbound on Boone Street in front of Medic 16. Two of Truck 1’s firefighters placed ground ladders to the rear of 708 E. North Avenue (side charlie) while the officer and driver forced entry through a first floor rear door using a chain saw.

Engine 6 arrived at 0023 hours and positioned its apparatus near Engine 31’s hydrant. The officer and two firefighters walked from the location where its apparatus was parked to Engine 31’s apparatus. The members pulled and advanced a 150’ pre-connected 1-3/4” hoseline through the front door of 708 E. North Avenue to back up Engine 31’s hoseline.

Engine 13 arrived at 0023 hours and positioned its apparatus headed eastbound in the westbound slow lane of the 500 block of E. North Avenue and reported by radio “13’s on the scene as RIT.”

All four members walked to Truck 5's apparatus, retrieved a RIT bag and reported to the front of the fire building.

Battalion Chief 2 arrived at 0024 hours, parked his vehicle along the curb on the south side of 700 block of E. North Avenue, headed eastbound, and transmitted "I'm on location, three-story brick, middle of the group, looks like we've got smoke showing third floor alpha side, units are initiating an interior attack at this time, you can make Battalion Chief 2 command."

At 0024 hours, Truck 5's officer, who was confronted with an extending fire and no water pressure, transmitted "Truck 5, Battalion Chief 2, fire second floor goin' up to the third."

Engine 33 arrived at 0024 hours, and laid a supply line from a fire hydrant on the northwest corner of Homewood Avenue and North Avenue (east of the fire building) and positioned its apparatus on Homewood Avenue, headed northbound, north of E. North Avenue. The officer and one firefighter pulled and advanced a 250' pre-connected 1-3/4" hoseline through the rear alley to the rear of 708 E. North Avenue (side charlie). Note: Engine 33's status was not changed to on scene until just before Engine 33's status was changed to in service.

At 0025 hours, Truck 1's officer transmitted "Truck 1 to command, in the rear, we got, uh, smoke showing from the second floor."

Beginning at 0025 hours, Truck 5's officer transmitted three messages to Command over a period of two minutes about advancing fire and insufficient water pressure.

Shortly after entering the fire building, Engine 6's officer's helmet was knocked off of her head and she could not locate it. She had to exit the building, go back to her apparatus, borrow a helmet from Engine 6's pump operator and return to the fire building. While she was gone, the firefighters on Engine 6 advanced their hoseline up to the second floor, past Engine 31's position, and began extinguishing the fire in the second floor middle and rear rooms.

At 0027 hours, Engine 33 made entry through the rear door of 708 E. North Avenue and encountered flames and smoke with little heat in the first-floor-rear room. Engine 33's officer transmitted "Engine 33 command, advise companies they got, uh, fire on the first floor also."

At 0027 hours, Battalion Chief 2 transmitted "Ok; command to 33, uh, if you got a shot at it go ahead and hit it."

The driver of Truck 5 climbed the aerial ladder to the roof and, operating alone, initiated vertical ventilation operations on the fire building. This included opening the scuttle and skylight and cutting two holes in the roof, one near the front and one near the rear. This member also swung a ceiling hook over the rear wall and broke out a window in the third floor rear of the fire building in an effort to provide additional horizontal ventilation.

Battalion Chief 6 arrived at 0027 hours and parked his vehicle headed northbound on Boone Street just north of North Avenue.

At 0028 hours, Engine 33 transmitted “Yeah, we’re gonna be able to get it...33 charge that line.”

Engine 23 arrived at 0028 hours and positioned its apparatus near Engine 33’s hydrant. The officer and two firefighters walked from Engine 23’s apparatus to Engine 33’s apparatus. The members advanced a 300’ pre-connected 1-3/4” hoseline down the alley and stood by in the rear alley. Water was never put in this hoseline.

At 0028 hours, Truck 5’s officer transmitted “We still got heavy fire in the rear.”

Based on that report, at 0028 hours Battalion Chief 2 transmitted “Okay, command to communications, go ahead and make this a working fire.”

At 0028 hours, a working fire assignment was transmitted for Box Area 33-14:

Units Dispatched

Engine 8

Truck 16

Safety Officer 2

Car 5

Air Flex 2*

*Air Flex 2 was dispatched by the Fire Communications Bureau (FCB) dispatchers based on a perceived need without receiving a request for it, two minutes before the working fire was transmitted. This was a common practice at the time of the E. North Avenue fire.

At 0028 hours, Engine 33’s officer transmitted “33 command, advise them they still got, uh, they got heavy fire on the second floor...be in the rear mainly.”

The members of Engine 33 discovered the rear staircase leading to the second floor. The officer of Engine 33 observed flames in that stairwell with extension up to the second floor.

At 0028 hours, Battalion Chief 2 transmitted “Ok, command to 33, if you can advance your line, I want you to put the fire out on the first floor, advance your line to the second floor, and continue up to the third floor.”

As the members of Engine 33 attempted to advance their hoseline up the rear staircase to the second floor, they realized that the line was too short. They had only enough slack to enter the stairwell, but not to ascend it. They squirted water up the stairway, extinguishing the flames in the stairwell that they could reach from the bottom of the stairs.

At 0029 hours, Battalion Chief 6 transmitted “Battalion 6, I’m on the scene as Safety.” Battalion Chief 6 reported directly to the rear of the fire building.

At 0029 hours, Engine 33’s officer transmitted “33 one to two, we’re gonna have to add some more hose on.”

At 0029 hours, Engine 33's pump operator transmitted "33 two to 33 one, I've gotta shut your line down momentarily to add."

Air Flex 2 arrived at 0029 hours and parked headed eastbound along the curb on the south side of the 700 block of E. North Avenue.

At 0030 hours, Battalion Chief 2 transmitted "Command to Truck 5, how we lookin' in there?"

At 0030 hours, Engine 33's officer transmitted "33 command, it looks like they're startin' to hit it on the second floor...we're gonna hold what we got on the first; we do have the fire knocked on the first."

At 0030 hours, Truck 5's officer transmitted "Truck 5 command, we're starting to get a knock on it on the second floor."

At 0030 hours, Battalion Chief 2 transmitted "k, I copy...command to Engine 6, you need to get your line to the third floor."

Several members worked to replace the burst section in Engine 31's hoseline. Once a new section was installed, the pump operator charged the hoseline with water.

At 0030 hours, Safety Officer 2 (Lieutenant Bethea) transmitted "Safety Officer 2 en route." Safety Officer 2's status was changed to en route via manual entry by a dispatcher.

At 0031 hours, the officer of Truck 5 transmitted "Truck 5 to command, have...I need people at the bottom of the stairs to start pullin' the second line, we need more line."

At 0031 hours, Battalion Chief 2 transmitted "Command to, uh, Truck 1, you got that place all opened up in the rear?"

At 0032 hours, Truck 1's officer transmitted "That's affirmative; we are start movin' the line in the rear, waitin' to add two more sections on to it."

At 0032 hours, Battalion Chief 2 transmitted "Command to Safety, give me a report from, uh, back there on charlie side."

Truck 16 arrived on the scene at 0032 hours.

At 0032 hours, Battalion Chief 2 transmitted "Command to the working fire units, I want you to stage at North and Greenmount for right now."

At 0032 hours, Battalion Chief 6 transmitted "Safety to Command, charlie side's opened up, all visible fire is knocked at this time, we just got light smoke showin' from the second floor."

At 0033 hours, Truck 5's officer transmitted "Truck 5 Command, I'm up on the third floor with, uh, Engine 33, we're hittin' some hot spots and some fire."

At the same time, two members of Truck 1 found a stairway from the first floor to the basement (located under the rear stairs to the second floor), descended to the basement and confirmed that electricity and natural gas services were shut off.

At 0033 hours, one of Truck 1's firefighters transmitted "Command, Truck 1 portable 4, utilities are shut off."

At 0033 hours, Battalion Chief 2 transmitted "Ok, command I copy...command to the roof, how we lookin' up there, you got the scuttle open?"

Car 5 arrived at 0034 hours and parked heading northbound on Boone Street north of North Avenue. The Acting Deputy Chief (Car 5) and his aide, walked down to the front of the fire building, spoke briefly to Battalion Chief 2, and then told Battalion Chief 2 that they were going to the rear. The Acting Deputy Chief did not assume command.

At 0034 hours, Battalion Chief 2 transmitted "Command, update, uh, we still...units are reporting the, uh, bulk of the fire knocked, checking for extension, still have, uh, moderate smoke conditions on all sides."

Engine 8 arrived at 0034 hours.

Engine 8 and Truck 16 parked at North and Greenmount Avenues (1.5 blocks to the west of the fire), and none of their personnel left that area before being placed in service later by command.

At 0035 hours, Truck 5's tillerman transmitted "Truck 5 portable 3; I still have some fire in the back bedroom, charlie side."

At 0035 hours, Battalion Chief 2 transmitted "k, I copy, you have a line back there?"

At 0035 hours, Truck 5's tillerman transmitted "Negative sir."

At 0037 hours, Truck 5's officer transmitted "Yeah Chief, it looks like all the fire on the third floor has been extinguished, we'll work our way back down the steps."

The pump operator of Engine 33 shut down Engine 33's hoseline, added two sections to it, and charged it again with water. The members of Engine 23 and Engine 33 then pulled more hose down the alley, into the rear of the fire building, and up the rear stairwell. This allowed Engine 33 to reach the second floor rear room.

Safety Officer 2 (Lieutenant Bethea) arrived at 0038 hours and parked his vehicle headed eastbound in the westbound, slow lane of E. North Avenue at the intersection of North Avenue and Boone Street. Note: Safety Officer 2's status was never changed to "on scene." Its arrival was documented via police surveillance camera #524, located on the southwest corner of Greenmount Avenue and North Avenue.

Car 5's driver (aide to the Acting Deputy Chief) reported seeing Lieutenant Bethea arrive shortly after Car 5 arrived and confirmed that the Safety Officer 2 vehicle was parked by Lieutenant Bethea exactly where it was found and photographed hours later.

The two members assigned to Medic 16 reported that they saw Lieutenant Bethea several times during the incident. One reported seeing Lieutenant Bethea as he arrived and then again later as he walked from the rear of the fire ground (side charlie) to the front of it (side alpha) by way of Boone Street. The other member assigned to Medic 16 reported that he saw Lieutenant Bethea walk past him several times near the corner of North Avenue and Boone Street, and that he saw Lieutenant Bethea direct bystanders near the fire building to move back during the incident.

At 0040 hours, Battalion Chief 2 transmitted "Command to 33, is this a vacant dwelling?"

At 0040 hours, Engine 33's officer transmitted "That's affirmative; it's all boarded up in the back."

At 0040 hours, Battalion Chief 2 transmitted "Ok I copy, command to communications, you can cancel neighborhood services."

At approximately 0042 hours, Safety Officer 2 (Lieutenant Bethea) reported in person to Battalion Chief 2 in front of the building and informed him that he was on the scene. Lieutenant Bethea then walked away from Battalion Chief 2, presumably to perform a 360-degree inspection of the fireground.

At 0042 hours, Battalion Chief 2 transmitted "Command Battalion Chief 6, Safety Officer 2 will be Safety; you're going to be, uh, charlie Division."

At 0042 hours, Battalion Chief 6 transmitted "Copy."

At 0043 hours, the officer of Engine 33 transmitted "33 to command, we're lookin' pretty good on the second floor, got everything opened up, we're just checking for any hot spots."

Battalion Chief 6 reported that Lieutenant Bethea arrived in the rear yard of the fire building and used his flashlight to examine the exterior rear walls of the fire building and exposures bravo and delta. He further reported that Lieutenant Bethea remained in that area for an extended period of time and did not enter any buildings.

At 0045 hours, the officer of Engine 33 transmitted "Engine 33 command, second floor is opened up, front to back, lookin' pretty good." Battalion Chief 2 then directed the members of Engine 13, who were assembled in front of the building as the RIT, to enter 706 E. North Avenue (bravo exposure) to check for fire extension and ventilate it.

At 0045 hours, Battalion Chief 2 transmitted "K. Command, I copy...command you can place this fire under control."

At 0045 hours, Battalion Chief 2 transmitted “Command to, uh, working fire units, you can go in service.”

After visiting the rear, the Acting Deputy Chief returned to the front and informed Battalion Chief 2 that he was leaving. Battalion Chief 2 acknowledged this. At 0047 hours, Car 5 cleared the scene.

At approximately 0047 hours, Battalion Chief 2 noticed smoke coming from several locations in the first-floor front of 710 E. North Avenue (delta exposure) and directed the officer of Truck 5 to force entry into it. The officer used a maul to force entry and was met with a large volume of smoke but no heat. Battalion Chief 2 directed the members of Engine 13, who were exiting 706 E. North Avenue (exposure bravo) through its front door, to enter 710 E. North Avenue (exposure delta) to check for fire extension and ventilate it. Based on the volume and quality of the smoke showing, Battalion Chief 2 directed the members of Engine 13 to advance a 1-3/4”, 150’ hoseline from the front bumper of Engine 31 into 710 E. North Avenue (exposure delta). The members of Engine 13 donned the face pieces of their SCBA. Battalion Chief 2 did not designate another unit as RIT.

At 0047 hours, Battalion Chief 2 transmitted “Command Truck 1.”

At 0047 hours, the officer of Truck 1 transmitted “Truck 1.”

At 0047 hours, Battalion Chief 2 transmitted “Hey, uh, get in that delta exposure and, uh, get that place opened up...it’s pretty charged with smoke. I’m sending a unit in from the front with a line just in case.”

At 0047 hours, the officer of Truck 1 transmitted “Alright I copy.”

At 0047 hours, Truck 1’s driver transmitted “Truck 1 portable 2, I got it.”

During a Board of Inquiry interview, the Acting Lieutenant of Engine 13 reported that his company advanced the hoseline from Engine 31 (bumper line) into 710 E. North Avenue. He reported that the interior was “tight,” meaning it had heavy smoke banked down to the floor on the first floor with very minimal visibility, but no heat. He reported that they advanced their hoseline directly to the second floor and then searched for fire extension on the second and third floors. They encountered no fire.

The Acting Lieutenant on Truck 1 and one of Truck 1’s firefighter exited 708 E. North Avenue (fire building) through its front door and entered 710 E. North Avenue (exposure delta) through its front door. The officer reported that he broke windows on the second floor to vent smoke. At approximately the same time, the other two members of Truck 1, the driver and a firefighter, reported that they went to the rear yard of exposure delta and saw that the first-floor-rear window and door were boarded up. They reported that they began efforts to force entry into it using hand tools. As they were working, they reported that Lieutenant Bethea directed them to stop. They said that at the moment that he ordered them to stop they heard glass breaking above their heads. They said they assumed that Lieutenant Bethea directed them to stop because of a falling glass hazard, but they said he didn’t give them a reason for his order and they didn’t ask for one. They

said they stepped back while the glass was falling. One said that after Lieutenant Bethea stopped them from working, he went to the truck to get lighting for the fire building. The other reported that after the glass stopped falling both members stepped toward the building to resume working on the door and window and Lieutenant Bethea again told them to stop work. Battalion Chief 6 and the officer of Engine 23, who were in the immediate vicinity at the time, reported that they did not hear this exchange between Lieutenant Bethea and the members of Truck 1. The rear window and door were never opened, however what appeared to be tool marks were visible on a sheet of plywood on the rear door. The members of Truck 1 said that they did not report their inability to carry out the “open up” order to anyone. Battalion Chief 2 reported that Lieutenant Bethea did not report these events to Battalion Chief 2.

A firefighter assigned to Engine 23 reported that he saw Lieutenant Bethea in the rear yard of the fire building, but could not provide any more information about Lieutenant Bethea’s actions. The officer of Engine 33 reported that after the fire was placed under control, he and his firefighters exited the rear of the fire building. As they were exiting the building, the officer saw Lieutenant Bethea and they greeted each other.

At 0053 hours, Truck 5’s driver, who was still on the roof, transmitted “You got a decent amount of smoke pumpin’ out of the delta exposure rear.”

At 0053 hours, Battalion Chief 2 transmitted “Yeah, I got companies in there, uh, checking it out.”

Truck 5’s driver reported that the roof of 710 E. North Avenue (exposure delta) was “spongy” and that he felt uneasy about walking on it. He reported that he did what he could to effect vertical ventilation, and used an axe and his foot to punch several holes in the rear portion of the roof of 710 E. North Avenue. He reported that smoke vented through the holes that he created.

At 0056 hours, Safety Officer 2 (Lieutenant Bethea) transmitted “Second floor delta, come up.”

At 0056 hours, a firefighter on Engine 13 transmitted “13 to command...right now we don’t have any fire, just trapped smoke, we’re opening up now checking it out.”

At 0056 hours, Safety Officer 2 (Lieutenant Bethea) transmitted “Copy.”

When asked about the above apparent exchange of radio messages between Lieutenant Bethea and the firefighter on Engine 13, the firefighter said that his radio transmission was not in response to Lieutenant Bethea’s message. He said he did not hear Lieutenant Bethea’s transmission. He was providing an update to the incident commander at the direction of his Acting Lieutenant. He said that he neither listened for nor heard a response or acknowledgment to his message from anyone. He said he did not recall hearing Lieutenant Bethea’s “copy” message.

At 0057 hours, Battalion Chief 2 transmitted “Command to Truck 5, let’s, uh, get some fans in service, see if we can get the smoke out of here.”

At 0057 hours, the officer of Truck 5 transmitted “Copy Chief.”

Truck 5’s firefighter reported that shortly after that order was given, he removed his SCBA and then set about putting fans in the front doorways of the fire building and exposure delta. He reported that he first retrieved a smoke ejector from Truck 5’s apparatus and placed it blowing out in the front doorway of 708 E. North Avenue (fire building), and then retrieved a positive-pressure fan from Truck 5’s apparatus and placed it blowing out in the front doorway of 710 E. North Avenue (exposure delta). He reported that as he was placing the positive-pressure fan in the doorway of 710 E. North Avenue (exposure delta), Lieutenant Bethea walked up to him. He reported that Lieutenant Bethea and he had a brief verbal exchange and then the firefighter moved the fan aside so that Lieutenant Bethea could enter exposure delta. He reported that Lieutenant Bethea entered exposure delta and that was the last time that he saw Lieutenant Bethea.

At 0058 hours, Safety Officer 2’s portable radio was turned off.

At 0058 hours, Safety Officer 2’s portable radio was turned on.

At 0058 hours, Battalion Chief 2 transmitted “Command to Truck 1, if, uh, you got somebody freed up, uh, let’s get some lights in the, uh, original fire building.”

At 0059 hours, the officer of Truck 1 transmitted “I copy, it looks like its just trapped smoke in the delta exposure, we haven’t found any fire.”

The pump operator (driver) of Engine 31 reported that he saw Lieutenant Bethea walk past him (and Engine 31’s apparatus) several times during the fire, but the pump operator could not provide specific times when he saw Lieutenant Bethea.

At 0102 hours, photo #2893 was taken showing the positive pressure fan in the doorway of 710 E. North Avenue blowing out, and Engine 13’s hoseline stretched beside the fan and charged with water. Lieutenant Bethea was not visible in this photo.

At some point after Truck 5’s firefighter placed the positive-pressure fan, another member of Truck 5 observed the fan blowing out and, believing it was not being used properly, took it upon himself to reposition the fan on the sidewalk blowing in so that the fan’s discharge cone covered the front door opening of 710 E. North Avenue (exposure delta).

At 0103 hours, photo #2894 was taken showing that the positive-pressure fan had been removed from the front doorway of 710 E. North Avenue.

At 0104 hours, photo #1987 was taken showing Lieutenant Bethea walking away from the fire building and toward Battalion Chief 2 who was standing in the middle of E. North Avenue. In the background Engine 13’s hoseline is visible in the front doorway of 710 E. North Avenue, but the positive-pressure fan is not visible.

At 0104 hours, photo #2896 was taken showing Lieutenant Bethea facing the fire building and speaking to Battalion Chief 2. Neither the positive-pressure fan nor Engine 13's hoseline are visible in the front doorway of 710 E. North Avenue, but the hoseline may have been present and obscured from view by a parked vehicle in the foreground.

At 0104 hours, photo #2897 was taken showing Lieutenant Bethea facing the fire building and speaking to Battalion Chief 2. Battalion Chief 2 reported that they had a brief discussion on several topics including weather conditions and the weather's potential effect on smoke dissipation. At the conclusion of this conversation, Battalion Chief 2 reported that Lieutenant Bethea walked away, headed to the west, and that was the last interaction that Battalion Chief 2 had with Lieutenant Bethea.

At 0107 hours, Safety Officer 2's portable radio keyed up but no audible transmission was heard. That was the last documented transmission made by that radio until after Lieutenant Bethea's body was discovered hours later.

At approximately 0110 hours, Engine 13's crew backed their hoseline out of 710 E. North Avenue. The Acting Lieutenant stated that as they were exiting 710 E. North Avenue he noticed far less smoke than when he entered. He stated that before they exited, he and the other members of his crew walked to the first-floor rear, saw that the kitchen floor was missing and saw "heavy" smoke in the basement. He stated that they did not see the stairway to the basement. He said that they did not report the missing floor or smoke condition to anyone by radio or in person, and did not attempt to search the basement or ventilate it.

Several members of Engine 13 reported seeing Lieutenant Bethea on the sidewalk in front of the fire building as Engine 13 was putting up the hoseline that it had used during its entry into exposure delta.

When Truck 5's firefighter was shown the photographic evidence that refuted his recollections regarding the positive-pressure fan and Lieutenant Bethea's entry into the delta exposure, Truck 5's firefighter offered two possible explanations: 1) the photographs were not presented in chronological order; or 2) perhaps Lieutenant Bethea entered 710 E. North Avenue at least twice, once when he was placing the positive-pressure fan in the front doorway of the dwelling, and then later, after the fan was moved and Lieutenant Bethea was photographed with Battalion Chief 2.

Truck 5's firefighter also said that the positive-pressure fan was still positioned in the doorway of 710 E. North Avenue (exposure delta), blowing out, much later in the incident, shortly before his company was putting up its equipment. He could not explain the report given by the other member of his company that the fan was moved.

At 0117 hours, Battalion Chief 2 transmitted "Command Truck 5 portable 1."

At 0117 hours, Truck 5's officer transmitted "Go ahead."

At 0117 hours, Battalion Chief 2 transmitted “Meet me in the back, uh, first floor of this, uh, the original fire building.”

Battalion Chief 2 investigated the fire and determined the cause to be drug activity and the point of origin to be upon the third tread above the first floor of the rear stairway in the fire building. A fire investigator was not requested.

At 0128 hours, Engine 13 went in service via its mobile radio’s data entry key (DEK).

At 0131 hours, Engine 23 went in service via DEK.

The driver of Air Flex 2 reported that he saw Lieutenant Bethea in the middle of the 700 block of E. North Avenue at about the same time that he was attempting to retract his unit’s light tower. He reported that he had trouble getting the light down to retract and it was during that effort that Lieutenant Bethea walked past him and stood in the middle of E. North Avenue. The driver of Air Flex 2 estimated that he lowered the light tower about 10 minutes before he went in service.

At 0128 hours, photo #2917 was taken showing Air Flex 2 and its driver. When shown this photo, the driver confirmed that it was he and that he was attempting to lower Air Flex 2’s light tower at the time the photo was taken.

At 0137 hours, Air Flex 2 went in service verbally by radio and its status was changed by a dispatcher via manual entry. When asked if he recalled where he was when he reported in service by radio, the Air Flex 2 driver stated that he was still on North Avenue, driving eastbound. He stated that his route back to quarters (Oldtown Station) was eastbound on E. North Avenue and then southbound on Aisquith Street. Aisquith Street intersects the 1100 block of E. North Avenue, four blocks from the fireground.

At some point, Lieutenant Bethea apparently entered 710 E. North Avenue and died in the basement (see Description of Buildings section for additional information). No one that the Board of Inquiry interviewed stated that they had witnessed Lieutenant Bethea inside 710 E. North Avenue (exposure delta). Only Truck 5’s firefighter stated that he saw him enter that dwelling. No one stated that they saw him exit exposure delta.

At 0151 hours, Battalion Chief 2 transmitted “Command communications, 708 East North Avenue, we had a, uh, fire first floor rear with extension into the second floor of a vacant dwelling, I’m going to be going in service, officer of Truck 5 will be assuming command and Battalion Chief 2 will write the card.”

At 0151 hours, the dispatcher transmitted “Box Alarm 33-14, Truck 5 assumes North Avenue command at 151.”

The officer of Truck 5 stated that he knew he was left in Command but he did not interpret that role to include releasing other units from the fireground and checking on the welfare of other units. He stated that he thought his primary role was to oversee a complete overhaul of the burned areas of the fire building.

At 0154 hours, Battalion Chief 2 went in service via DEK

At 0203 hours, Medic 16 went in service via DEK

At 0208 hours, Engine 31 went in service via DEK

At 0208 hours, Engine 6 went in service via DEK

The officer of Truck 5 reported that shortly before Truck 5 left the scene, he secured the first floor front of 710 E. North Avenue by pulling the inner and outer front doors closed.

At 0215 hours, Engine 33's officer transmitted "33 to Truck 5, I'm packed and I'm out."

At 0215 hours, Truck 5's officer transmitted "Thanks Mike."

At 0215 hours, Truck 5's status was changed to on scene via DEK.

At 0216 hours, Truck 5's status was changed to in service via DEK.

At 0216 hours, Truck 5's officer transmitted "Truck 5, we're clearing the fire ground, we're gonna be en route to, uh, Fallsway for much needed diesel."

At 0218 hours, Engine 33's status was changed to on scene via DEK

At 0220 hours, Truck 1's officer transmitted "Truck 1, we'll be in service clearing the fire ground." Truck 1's status was changed to in service via manual entry by a dispatcher.

At 0221 hours, Engine 33's status was changed to in service via DEK.

No one that the Board of Inquiry interviewed stated they were aware that Lieutenant Bethea was still on the scene at the time that he left.

Baltimore City Police detectives analyzed video recorded by Camera #524 from 0030 hours to 0900 hours. Detectives noted that the last fire apparatus in the camera's view left the scene at approximately 0208 hours, and that Safety Officer 2's vehicle was present at 0209 hours, "parked in an obvious manner on North Avenue." At 0314 hours, an unidentified person was seen walking by Safety Officer 2's vehicle. At 0645 hours, a vehicle stopped next to Safety Officer 2's vehicle, and an unidentified driver got out and appeared to be talking on a phone. At 0812 hours, an unidentified white male wearing a bright orange shirt stopped by Safety Officer 2's vehicle. At 0824 hours, Fire Department units arrived back on the scene, and members were seen going through Safety Officer 2's vehicle. The vehicle did not appear to move during this observation period. Note: several trees obscured Camera #524's view of the fire building, exposures bravo and delta, and much of the 700 block of E. North Avenue, however, Safety Officer 2's vehicle was visible in the camera's frame.

At 0334 hours, Safety Officer 2 (Lieutenant Bethea)'s status was changed to in station via manual entry by a dispatcher. No attempt to make verbal contact with Lieutenant Bethea was made.

At 0350 hours, the incident was closed out via manual entry by a dispatcher.

The Fire Department's official relief time is 0700 hours. Individual reliefs of up to two hours earlier are permitted. By 0630 hours, almost all night shift members had been relieved city-wide and a new group of members were on duty.

At 0643 hours, a 911 call-taker at the City's Unified Call Center (UCC) received a 911 call from an off-duty auxiliary firefighter. The caller asked to be connected to Fire Department dispatch. The call-taker didn't connect him, nor did she give him Fire Communication Bureau (FCB)'s phone number. She took information from the caller. The caller stated that a Fire Department car was parked on the wrong side of the street in the middle of the street in the "500 block of E. North Avenue" and he gave the license plate number as "U435Z." He said the vehicle was sitting in middle of the street with no lights on and no one was in it. He said he was wondering if everything was alright because there was "no one around." At 0646 hours, the UCC call-taker ended the 911 call. No case was created in City's Computer-Aided Dispatch (CAD) system, and no information was entered into CAD.

At 0647 hours, the UCC call-taker called FCB on an administrative telephone line and accurately relayed the information, including the address (500 block of E. North Avenue) and the license plate number (U435Z), as given by the caller, to dispatcher #1, who answered the call. Dispatcher #1 told the call-taker that the car may be broken down. He asked her for the tag number and she gave it to him. Dispatcher #1 told her "We'll look into it."

At 0700 hours, Dispatcher #1, who was visible on office surveillance video, appeared to realize that he didn't tell anyone about the call he received from UCC 13 minutes earlier. He started telling a supervisor, the FCB Lieutenant, that the police called about a Fire Department vehicle being parked somewhere on North Avenue on the wrong side of the road. He told the FCB Lieutenant that he had a tag number but he didn't remember it. As Dispatcher #1 was telling the FCB Lieutenant, the FCB Lieutenant was in the process of making morning radio announcements. As soon as the FCB Lieutenant completed her announcement, she asked dispatcher #1 to repeat the information, but dispatcher #1 was in the middle of dispatching an incident. By the time dispatcher #1 was finished dispatching the incident, the FCB Lieutenant was side-tracked by another task and dispatcher #1 didn't repeat the information.

After making the call to 911 to report the unattended vehicle, the auxiliary firefighter drove to the Station of Truck 5 and verbally reported to the Acting Lieutenant in charge of the company his concern about an unattended fire department vehicle parked in a travel lane on North Avenue. In an interview, the Acting Lieutenant stated that the auxiliary firefighter only said that a vehicle was parked facing the wrong way on North Avenue and never specified that it was a fire department vehicle. There is no record of the Acting Lieutenant taking any action regarding the report he received.

At 0708 hours, the same male caller (auxiliary firefighter) called in on an FCB administrative line and the same FCB Lieutenant answered the phone. The caller asked if we had a vehicle out at “North and Bond.” The FCB Lieutenant asked for clarification. The caller said that there was a Fire Department vehicle sitting in the “500 block of E. North Avenue,” in the middle of the street, facing the opposite way, with no lights on and no driver. The caller said he had been there for about 20 minutes and hadn’t seen anyone. Note: Boone Street splits the 500 and 700 blocks of E. North Avenue (there is no 600 block of E. North Avenue). Bond Street splits the 1500 and 1600 blocks of E. North Avenue (10 blocks to the east of Boone Street). The two intersections are not within sight of each other.

The FCB Lieutenant asked if the car was running and caller said no. The FCB Lieutenant asked if he had said it was in the middle of the street and he said “Yes ma’am, on the opposite side of the street facing oncoming traffic.” He said it was an “SRO” car. He said it had “SRO on the side of it.” The FCB Lieutenant asked if it had a number or any other markings on it. He repeated that he hasn’t seen anyone around it and the back window is “cracked” and there is still equipment in the back of it. The FCB Lieutenant asked what color it was. He said it was “a little Ford truck” with “SOR2” on it. The FCB Lieutenant told the caller “We’ll find out who that is.” The caller said he was “worried about the driver.” The FCB Lieutenant thanked the caller and the call ended.

The FCB Lieutenant turned to the on-duty FCB Captain and told him that a car with “SRO2” is still in the middle of the road. The FCB Lieutenant continued, saying it was a Fire Department vehicle with no driver and the windows were half down with equipment in it. The FCB Lieutenant then repeated “SRO2” and asked the FCB Captain what the Fire Apparatus Coordinator (FAC)’s phone number was. The FCB Captain gave her the phone number and she dialed it. There was no answer. The FCB Captain then called the FAC by radio and no reply is received. The FCB Captain called again by radio and the FAC answered. The FCB Captain asked the FAC to call FCB on an administrative line.

At 0711 hours, the FAC called in on an administrative line and the same FCB Lieutenant answered. The FCB Lieutenant asked the FAC who had “SOR2.” The FAC said he never heard of it and asked the FCB Lieutenant if she had a vehicle number or tag number. The FCB Lieutenant said she thought it was just “Baltimore City” tags on all vehicles. The FAC replied that they were, but that they still had numbers on them. The FCB Lieutenant said she didn’t ask because it was someone calling in. The FAC said “we don’t have an SOR so I can’t tell you.” The call ended.

At 0712 hours, the FCB Lieutenant told the FCB Captain that they had a Fire Department vehicle at “North and Bond.”

At 0731 hours, dispatcher #2 answered a call on an administrative line. It was the same male caller (auxiliary firefighter) and he asked to speak to the FCB Lieutenant by name. The caller identified himself to the FCB Lieutenant as the same person who called earlier and asked her if he driver of the unattended vehicle was okay. The FCB Lieutenant replied that she was still trying to find out who it was. The FCB Lieutenant asked if it was still out there and he told her “Yes, it’s still sitting here.” She then asked if he said it was “SOR1 or SO.” He answered

“SOR2.” He then gave her the tag number “U435Z.” The FCB Lieutenant said “That makes a big difference,” and that she would track the person down. He said he was worried because the back windows were cracked open a little bit and he didn’t want anyone to steal anything. The FCB Lieutenant thanked him and the call ended.

At 0734 hours, the FCB Lieutenant called the FAC by radio and told him to call her by phone.

At 0734 hours, the FAC called in on an administrative line and the FCB Lieutenant gave him the license plate number. The FAC said he would look it up and call her back.

At 0736 hours, the FAC called back and told the FCB Lieutenant that the car belonged to Safety Officer 2.

At 0736 hours, the FCB Lieutenant transmitted on talkgroups A1 (main) and A2 (dispatch), “Communications to Safety Officer 2, Safety Officer 2.” A few seconds later the FCB Lieutenant repeated the call, “Safety Officer 2, Safety Officer 2.” The FCB Lieutenant then went onto a computer to check Telestaff to see who was assigned to the Safety Officer 2 car on that day. She determined it was a Lieutenant (Safety Officer 2 Lieutenant).

At 0738 hours, the FCB Lieutenant again transmitted on A1 and A2, “Safety Officer 2, Safety Officer 2.”

At 0742 hours, the FCB Lieutenant called the Assistant Chief—Operations to get the cell phone number of the Lieutenant assigned to Safety Officer 2.

At 0743 hours, the day shift Safety Officer 2 Lieutenant called in on an administrative line and asked if FCB had located Safety Officer 2. The FCB Lieutenant asked the Safety Officer 2 Lieutenant if he was at North and Bond. The Safety Officer 2 Lieutenant said “No I’m still in the firehouse. Lieutenant Bethea took the incident. I didn’t even know where he was at.” The FCB Lieutenant told the Safety Officer 2 Lieutenant that “Civilians have been calling in and he (Lieutenant Bethea) is parked at North and Bond the wrong way on the street, half way out, with the windows in the back down. People have been calling in for 45 minutes and we just found out whose vehicle it is.” The Safety Officer 2 Lieutenant said “...I haven’t seen him. I’ve tried to call him a couple times since I came in this morning.” The FCB Lieutenant said “Well he’s maybe somewhere sleeping. Or...” The Safety Officer 2 Lieutenant asked “Was there an incident up there this morning?” The FCB Lieutenant replied “I don’t know, but this isn’t good. Suppose something happened to him?” The Safety Officer 2 Lieutenant said “Yeah, but Jimmy don’t leave the firehouse for no reason.” The FCB Lieutenant said “Let me see. But does he have the, um, pager?” The Safety Officer 2 Lieutenant said, “He should have the phone. You know I’ve tried calling him. I know you guys. They just came back in the kitchen and told me they’re trying to find you, and I said they’re not trying to find me, and, uh, I tried calling him before I walked back from the kitchen again.” The FCB Lieutenant turned to another person at FCB and said “The car. Go ahead and send police. We’ll send someone out there and Shift Commander too.” The FCB Lieutenant then told the Safety Officer 2 Lieutenant “They’re breaking in the car now. Alright let me send the Shift Commander up there.” The call ended.

At 0744 hours, while the FCB Lieutenant was on the phone with the Safety Officer 2 Lieutenant, Dispatcher #1 answered a call from UCC on an administrative line. The caller advised the dispatcher that earlier that morning they had someone call over to FCB about an unattended Fire Department vehicle. Dispatcher #1 told the caller "Yeah, we're working on it." The UCC caller said she had another citizen saying there were people around the vehicle now. Dispatcher #1 told the UCC caller that he thought the car broke down and that there was a miscommunication with the tow truck. The caller said she could send a police officer up there if they were trying to break into it and there is stuff in it. Dispatcher #1 said if there are people breaking into it, send the police. The caller said she had a report that people were around the car, looking at it and wondering why it was parked the way it was. Dispatcher #1 said if someone was trying to break into it, he would send the police. The caller said "Okay." The call ended.

At 0745 hours, the FCB Lieutenant called the Shift Commander by telephone and told him "We have a problem." The Shift Commander asked "What's the matter?" The Lieutenant replied "SO2 Bethea. Citizens have been calling in here for the last 45 minutes for a car parked the wrong way at North and Bond and the back windows are cracked. It's a Fire Department vehicle, no one around. So I sent out a page to the Safety Officer, after we researched and found out it was the Safety Officer, to call here. Nothing, called him on the air, nothing."

At that moment, the Safety Officer 2 Lieutenant was in the room with the Shift Commander. A face-to-face conversation between the shift Commander and the Safety Officer 2 Lieutenant was recorded over the phone line. The Shift Commander asked Safety Officer 2 Lieutenant "Are you working today? Have you been relieved?" The Safety Officer 2 Lieutenant answered "He was out when I came in." The Shift Commander asked "He was out. Out for what?" The Safety Officer 2 Lieutenant said "I don't know. I tried calling him two or three times." The Shift Commander asked "Does he live over there? Did he get dispatched on an incident?" Then the conversation between the Shift Commander and the FCB Lieutenant resumed. The Shift Commander asked "Did he?" The FCB Lieutenant replied "Not that I know of. See the thing is that this person's been calling here and no one is around. Like I said, [Safety Officer 2 Lieutenant] had called here and I said 'hey where's the car at?' He said 'I don't know, I came in and Bethea wasn't here. I don't know where he is. I've been calling him.' Now they're breaking into the car." The Shift Commander asked "Who's breaking into the car?" the FCB Lieutenant said "People on the street." The Shift Commander asked "Really?" The FCB Lieutenant said "We have police going." The Shift Commander said "Ok. Do we have a suppression unit close? Where is it again, North and Bond?" the FCB Lieutenant said "Do you want me to send Engine 6 up there?" The Shift Commander, speaking to the Safety Officer 2 Lieutenant, said "And, uh, I'll have, go get on Engine 6 and go up with them." The Shift Commander then spoke to the FCB Lieutenant "I'll have [Safety Officer 2 Lieutenant] go get on Engine 6 and you can place Engine 6 out of service." The FCB Lieutenant asked if the Shift Commander was going to call Engine 6 or should she, and the Shift Commander said he would call Engine 6."

At 0748 hours, the FCB Lieutenant placed Engine 6 out of service to North and Bond. Upon arriving at North Avenue and Bond Street, Engine 6 could not locate the vehicle and so it returned to quarters, arriving at 0807 hours.

Meanwhile, FCB received another phone call from the original caller (auxiliary firefighter). In that conversation, the location was corrected to North and Boone. This information was relayed by FCB to Engine 6 by telephone.

At 0809 hours, the FCB Lieutenant placed Engine 6 out of service to North and Boone. At approximately 0812 hours, Engine 6 arrived at North Avenue and Boone Street, found the Safety Officer 2 car, and began investigating and searching for Lieutenant Bethea.

At approximately 0845 hours, a firefighter assigned to Engine 6 made entry into 710 E. North Avenue by opening the outer front door and kicking (once) in the interior front door. Another firefighter on Engine 6 discovered Lieutenant Bethea's body in the basement of 710 E. North Avenue (exposure delta), and a medic unit was requested.

At 0845 hours, FCB created a CAD case for injured fire department personnel. The initial response included a medic unit, EMS District Supervisor and EMS Battalion Chief. The members of Engine 6 attempted to initiate resuscitation, but immediately abandoned those efforts due to pronounced rigor mortis.

At 0852 hours, the EMS supervisor evaluated Lieutenant Bethea and declared him deceased. The body was left undisturbed and the area was treated as a crime scene. Homicide detectives and police crime lab representatives investigated. A Fire Department fire investigator also examined the scene, although his investigation was not intended to determine an official origin and cause because custody of the premises was not maintained by the Fire Department prior to his investigation.

Over a period of several hours, various units were requested and dispatched.

Units Dispatched (in chronological order, based on the CAD record)

EMS 3
Medic 7
Battalion Chief EMS
Engine 82
Chaplain 85
Critical Incident Management Team
Car 2
Medic 4
Engine 6
Truck 1
Engine 31
Police District Cars
Police Homicide Detectives
Police Crime Lab Technicians

Other units known to be on the scene, but not documented in CAD

Battalion Chief 2
Car 5
Deputy Chief 5
Truck 5
FIB 13
Office of the Medical Examiner Investigator

At 1051 hours, Safety Officer 2's portable radio keyed up on talkgroup Fireground 1. The Office of the Medical Examiner's field investigator confirmed that she tested Lieutenant Bethea's radio by pushing the lapel microphone's push-to-talk button before the radio was removed from Lieutenant Bethea's body, and she heard a transmission chirp.

Several members left the scene and reported to Lieutenant Bethea's home to notify his family of his death.

After the on-scene investigation was completed, members placed Lieutenant Bethea's body in a stokes basket, covered it with a Baltimore City Fire Department flag and removed the body to a medical examiner's van. The body was transported to the Office of the Medical Examiner for autopsy.

VI. Fire Investigation

After the fire was placed under control, Battalion Chief 2 (incident commander) performed an investigation to determine fire origin and cause. He determined that the fire started on the rear stairway and was caused by illicit drug activity. Confident that he had ascertained the origin and cause, Battalion Chief 2 saw no need to request a trained fire investigator to perform an investigation. This decision was consistent with policy in effect and past practice.

When Lieutenant Bethea's body was discovered, the Assistant Chief – Operations ordered an investigation of the fire scene by a trained Fire Investigation Bureau investigator (a suppression Captain). Because the Fire Department relinquished custody of the premises prior to this investigation, the fire investigator's findings were not considered official. Therefore, the resulting report was considered an "informational report."

The fire investigator's findings are summarized below.

Fire Travel 708 E. North Avenue

The fire originated in the rear interior stairway to the second floor. There were signs of burning of the tread and riser of the fourth step with extension to the entire stairway. The riser above the fourth step had heavier burning and showed a distinct burn pattern. All the treads in the staircase had a linoleum type product covering them with burning to same. The leading edge of the treads in the staircase had what appeared to be aluminum alloy skid resistance plates. Melting of this alloy was noted and molten material had dripped down to lower risers/treads. The fire extended to and burned the stairway ceiling and wall covering causing them to drop down into the stairway. The fire extended to and burned the wood structural members of the wall and ceiling of the stairway. The fire burned through the south and north partition walls of the stairway. The fire extended to and burned the adjacent second floor rear room and the adjacent second floor bathroom. The fire extended to and burned the upper level of the second floor hallway. The fire continued to burn the wood floor joists of the underside of the third floor wooden floor. The fire extended to and burned the upper level portion of a wooden door leading into second floor front room. The fire also burned the ceiling inside that door. The fire caused smoke damage to all of the second floor rooms. The fire caused smoke and soot damage to the stairway to the third floor and all of the third floor rooms. The fire caused smoke damage to the rear portion of the underside of the third floor wood floor joists of exposure delta. Soot deposits were also observed in the basement of the delta exposure's open joist pockets.



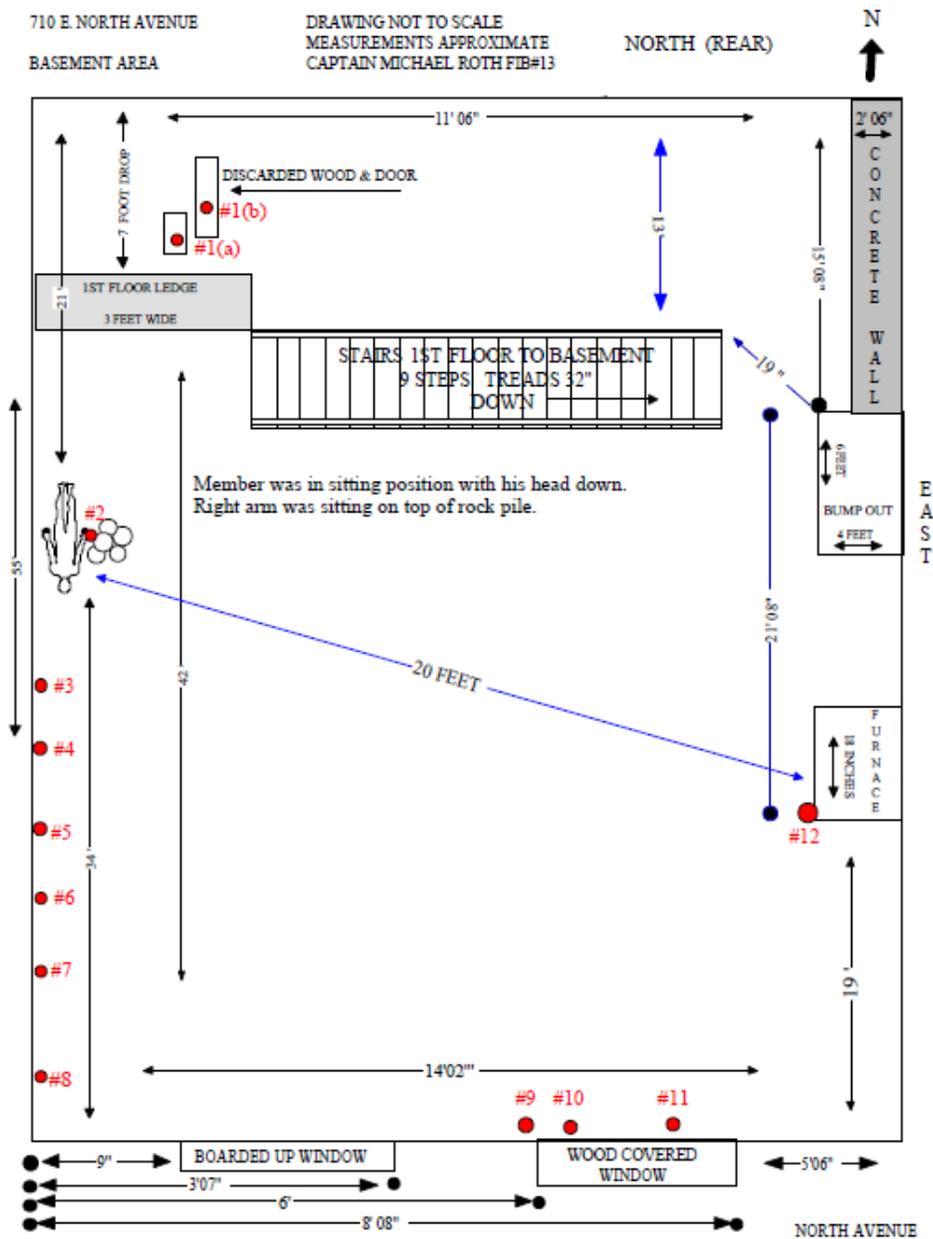
(Photos above taken by Captain Flynn on 12-02-2014. Left photo shows the rear stairwell on the first floor of 708. Right photo shows the rear stairwell on the second floor of 708.)



(Photos above taken by Captain Flynn on 12-09-2014. Left photo shows soot deposit in the basement of exposure delta. Right photo is taken without light in exposure delta and a flash light in the fire building, showing the open joist pocket. There were several other joist pockets that had similar properties between 708 and 710.)

Basement 710 E. North Avenue

Examination of the basement area revealed Lieutenant Bethea's body in a seated, upright position facing north, toward the rear (side charlie) wall and next to the west (side bravo) wall. His right arm was resting upon a pile of broken-up concrete. He was approximately 21 feet from the north wall and 34 feet from the south wall. He was in full turnout gear with his flashlight and radio microphone attached to the left side of his turnout coat. The portable radio was inside the left pocket of his turnout coat. His left glove was on his left hand and his right glove was off of his right hand and was clinched in his left hand. The flashlight and radio were in the "on" position and working. The flashlight's beam was dim. His helmet was sitting just off his right leg and showed pooling of blood on it. His nose was still dripping blood from the nostrils. Signs of facial trauma were present.



Blood Evidence

The following is a description of blood found in the basement of 710 E. North Avenue. See the diagram in Appendix F4 for more information.

No.1 (a) – blood drops on several pieces of scrap lumber that was lying in a haphazard arrangement on the floor below the 7’ drop into the basement.

No.1 (b) – blood smears on a discarded wooden door in the same area as the scrap lumber.

No.2 – blood drops and smears on floor and pile of concrete immediately east of Lieutenant Bethea’s body.

No.3 – blood smear on the west wall 38’ from the south wall and 3’02” above the floor.

No.4 – blood smear on the west wall 23’07” from the south wall and 2’02” above the floor.

No.5 – blood smear on the west wall 17’ from the south wall and 2’06” above the floor.

No.6 – blood smear on the west wall 15’08” from the south wall and 2’06” above the floor.

No.7 – blood smear on the west wall 12’08” from the south wall and 2’10” above the floor.

No.8 – blood smear on the west wall 9’05” from the south wall and 3’05” above the floor.

No.9 – blood smear on the south wall 5’05” from the west wall and 3’07” above the floor, below the east basement window.

No.10 – blood smear on the south wall 6’01” from the west wall and 3’07” above the floor, below the east basement window.

No.11 – blood smear on the south wall 8’01” from the west wall and 3’03” above the floor, below the east basement window.

No.12 – blood smear on a furnace located along the east wall 19’ from the south wall and 4’04” above the floor.

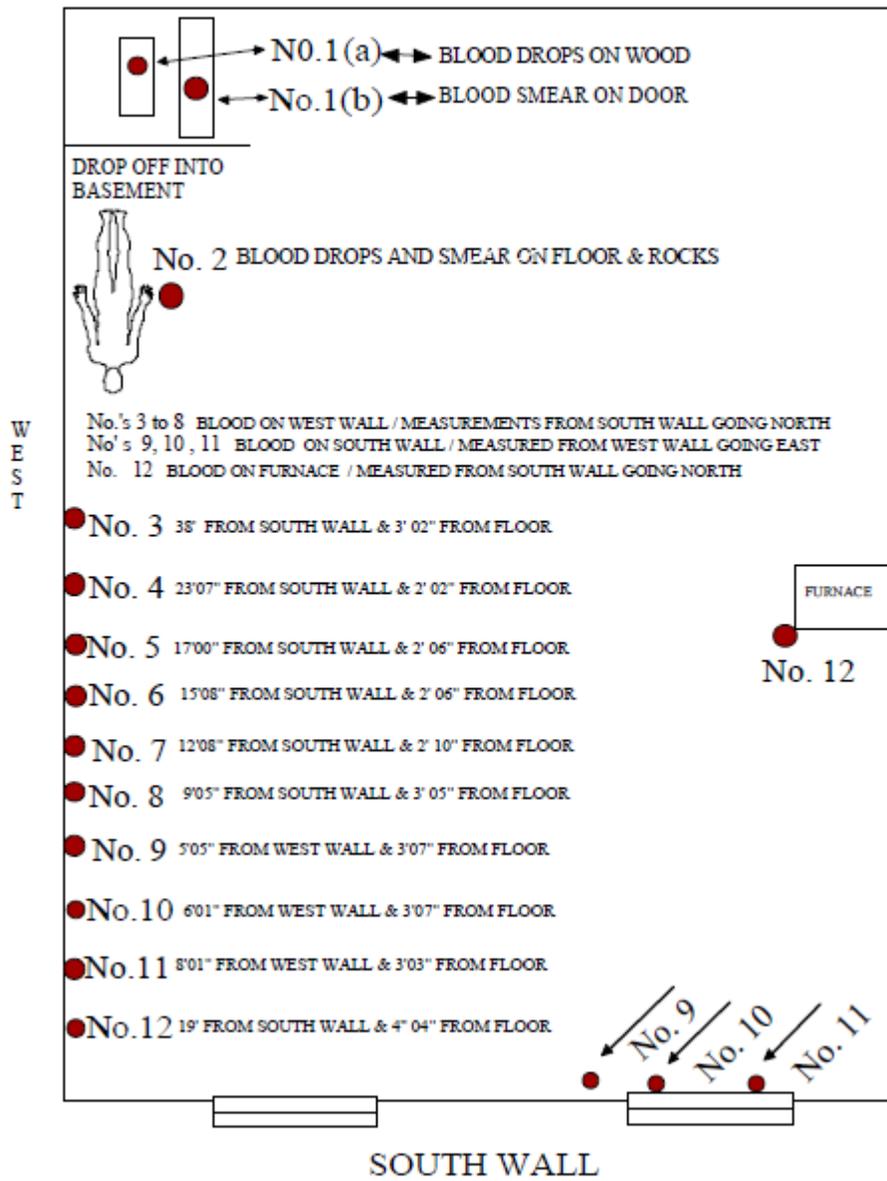
The following blood drops were on the basement floor next to the west wall.

- 25’ from the south wall on top of a piece of broken glass.
- 24’ from the south wall on both a piece of broken glass and a concrete floor.
- 21’ from the south wall on a concrete floor.

710 E. NORTH AVENUE
BASEMENT AREA

MEASUREMENTS APPROXIMATE
DRAWING NOT TO SCALE
BLOOD EXAMINATION

NORTH (REAR)



Blood on Clothing and Equipment

The Board of Inquiry performed two (2) examinations of Lieutenant Bethea's clothing and equipment on December 2, 2014 and December 9, 2014. The Board of Inquiry's findings are summarized below.

Turnout Coat

- Right sleeve, including the reflective strip (majority on lower half)
- Right front, including the reflective strip
- Left sleeve
- Right side, upper part, in the interior liner
- Both left and right wristlets



Turnout pants

- Left leg, upper front, and below the knee pad
- Right leg, rear upper portion



Boots

- Top/front portion of both boots



Gloves

- Spots on both gloves, front and back
- Label of right glove



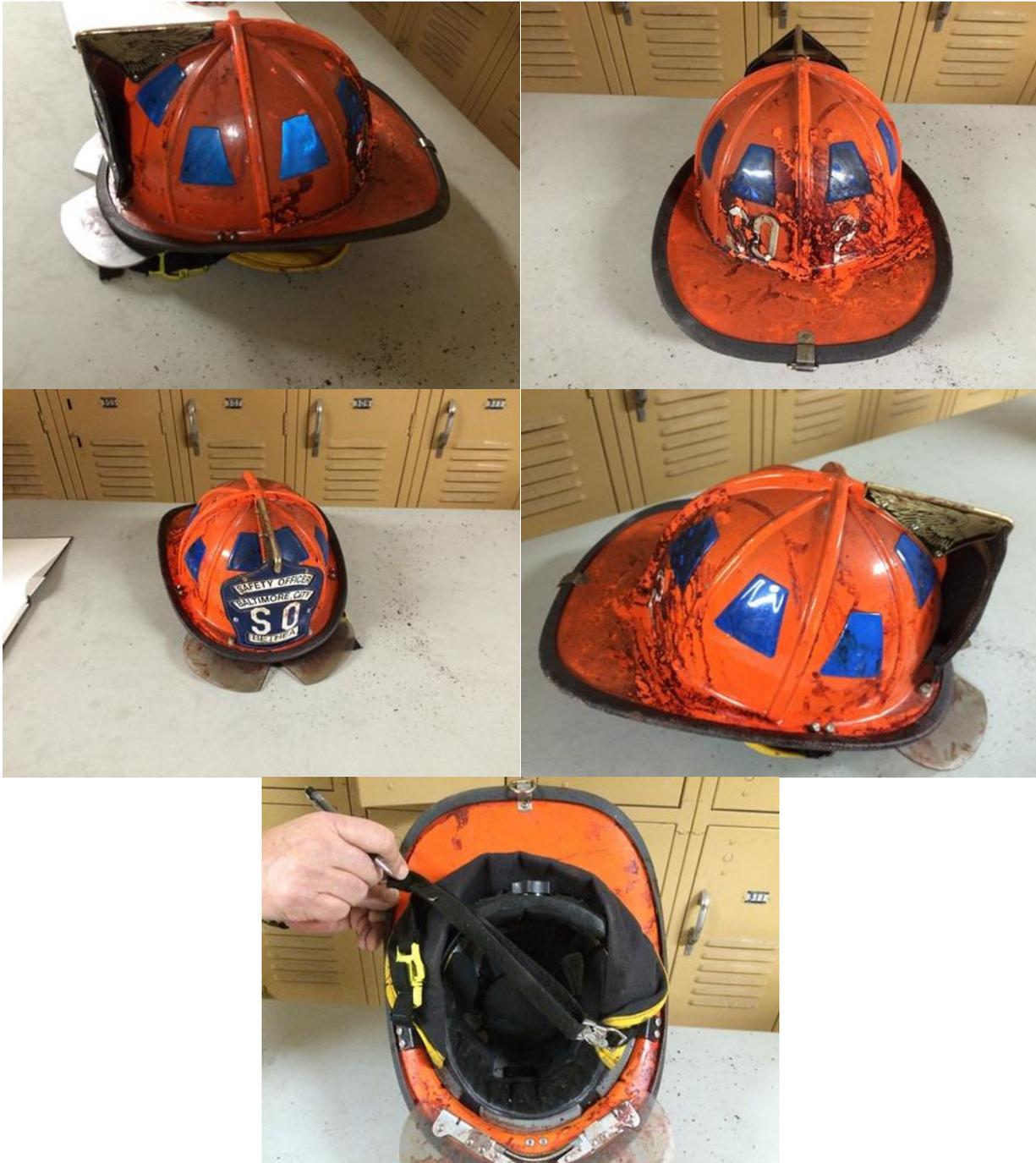
Flashlight

- All four sides of the flashlight including the black plastic clip on its back.



Helmet

- Exterior and interior shell
- Helmet liner
- Front shield
- Eye shields (attached to front of helmet)



(All photos above taken by Captan Roth on 12-02-2014 at BCFD Pimlico Facility)

VII. Clothing and Equipment

The following clothing and equipment belonging to Lieutenant James Bethea, were transported to the Medical Examiner's office with the body on the day of the E. North Avenue fire. Police homicide detectives and Baltimore City Crime Lab Technicians collected the equipment and belongings from the Medicals Examiner's office. They placed it in sealed evidence bags and transported it to the Baltimore City Police Evidence Control Unit on November 14, 2014, at 1320 hours. The clothing and equipment was released by police and picked up by Fire Department personnel on November 20, 2014, at 1502 hours. The belongings were all transported to the BCFD fire supply office located at the Pimlico facility where it was secured in a locked closet.

The Board of Inquiry performed several evaluations of Lieutenant Bethea's protective clothing and equipment. This included an inventory complete with photographs on December 2, 2014, at the BCFD Pimlico facility. The equipment was found where it had been stored in a locked closet. The equipment was packaged in police evidence bags that were sealed with tamper-proof tape.

A second assessment of the clothing and equipment was performed and photographs were taken on December 9, 2014, with members of Maryland Occupational Safety and Health (MOSH) & National Institute for Occupational Safety and Health (NIOSH).

The Board of Inquiry's findings are summarized below. Blood was found on several pieces of clothing and equipment. See the "Fire Investigation" section for more details.

Turnout Coat

Janesville

MFG Date: 6/11/2008

Model: CDXM

Liner: C2X7CDXM

Size: 4635L



Turnout Pants
 Janesville
 MFG Date: 6/11/2008
 Model: PSDM
 Liner: P2X7PSDM
 Size: 38 X XL



Boots

Servus Firebreaker II
Serial # S1483W012503
MFG Date: 09/2003
Stock # W1483
Size 10.5 wide (men's)



Gloves

American Firewear
MFG Date: 1/2011
Model: 6500
Lot# 165428
Size XL regular



Flashlight

Streamlight Survivor in the "on" (powered up) position



Helmet

MSA Cairns 1010
Model: C-TRD
Size: 6 3/8 to 8/38
Ear Flap: L655X
Chinstrap: M696
Eye Protection: S10
Liner: LK29
Weight: 61oz



Portable Radio with Lapel Microphone

Motorola XTS 5000

SO2 P1 Unit ID: 226043

- portable radio found in left pocket of turnout coat
- portable microphone found attached to upper left side of turnout coat
- portable microphone push to talk plastic dust cover was not attached
- portable radio was on FG1 / A16 and in the “on” (powered up) position



(All photos above taken by Captain Roth on 12-02-2014 at BCFD Pimlico Facility)

Condition of Equipment

All of Lieutenant Bethea's protective equipment appeared to be in good overall condition and in working order.

Helmet

The helmet appeared to have two cracks to its exterior shell to the left of the front shield.

- #1 crack was approximately 3 inches long and appeared to have breached the exterior shell showing a similar crack on the interior side in the same area.
- #2 crack was approximately 1 ¼ inches long and did not appear to have breached the exterior shell

Portable Radio with Lapel Microphone

A plastic dust cover that covered the push-to-talk (PTT) button on the portable radio's lapel microphone was missing, exposing the PTT button. An extensive search of the basement of 710 E. North Avenue did not locate the missing cover. The Board of Inquiry spoke to the member that Lieutenant Bethea relieved on the morning of November 11, 2014, and he said the PTT dust cover was present when he passed the radio to Lieutenant Bethea.

Equipment Testing

Helmet

On December 17, 2014, the helmet was shipped via FedEx for evaluation to:

Mr. Jay Tarley
NIOSH/NPPTL

1095 Willowdale Road
Morgantown, WV 26505
Tracking# 800044609737

On January 5, 2015, Mr. Tarley took the helmet to its manufacturer's (MSA) Pittsburgh facility and oversaw a thorough evaluation of it.

The findings of the evaluation team were, "Based on the inspection, the protective helmet performed as expected for a fall of this magnitude and it is not believed to have contributed to the fatality of this incident."

The helmet was returned to the Baltimore City Fire Department on January 6, 2015.

NIOSH Helmet Test Report in its entirety can be found in Appendix C

Portable Radio with Lapel Microphone

There was no standard for testing fire service radios at the time of this incident. NFPA was developing a standard, but it was not yet in effect. Several tests were conducted with Lieutenant Bethea's portable radio and lapel microphone. These tests were done in several places including the basement area where Lieutenant Bethea's body and his radio were found.

On November 12, 2014, at 10:51:50 hours, the push-to-talk button on the lapel microphone was activated by Ms. Dawn Epperison, a forensic investigator of the Medical Examiner's Office. She noted that it appeared to be working properly.

On December 9, 2014, at 12:54:42 hours, a radio test was performed from the interior ground floor of the Baltimore City Fire Department's Pimlico Training Facility, 3500 W. Northern Parkway. Captain Donald Crusse, Fire Communications Bureau (FCB), participated in the test from the main dispatch office. The test was performed on Fireground 1, which was the talkgroup at the time of the North Avenue fire. The test consisted of test counts via the push-to-talk button on the lapel microphone and the push-to-talk button on the main body of the radio. The radio's emergency ("mayday") button was also tested. FCB confirmed that all tests were normal and that the radio appeared to be functioning properly.

On December 11, 2014, at 08:38:43 hours, a radio test was performed from the location where Lieutenant Bethea's body was discovered, in the basement of 710 E. North Avenue. Captain Paul Demme, Fire Communications Bureau (FCB), participated in the test from the main dispatch office. The test was performed on Fireground 1, which was the talkgroup at the time of the North Avenue fire. The test consisted of test counts via the push-to-talk button on the lapel microphone and the push-to-talk button on the main body of the radio. The radio's emergency ("mayday") button was also tested. FCB confirmed that all tests were normal and that the radio appeared to be functioning properly.

On December 11, 2014, the portable radio with lapel microphone was turned over to Mr. Timothy Merinar, safety engineer for National Institute for Occupational Safety and Health for testing.

On January 6, 2015, two, more sophisticated, radio tests were performed via a joint effort by NIOSH, Motorola and BCFD personnel. The first test took place at 1015 hours in a classroom on the second floor of the Oldtown Fire Station, 1100 Hillen Street. During this test, nine (9) performance measures were evaluated and all tests were successful. It was noted that with the plastic dust cover missing from the push to talk button, it was difficult to key-up the microphone with a turnout glove on, but it was possible.

A second test took place at 1215 hours on January 6, 2015, at a Motorola facility in Lanham, Maryland. Eleven diagnostic "performance check" tests were conducted by Mr. Manuel Ramirez, a technician with Motorola. The radio was found to be functioning properly and all test results were found to be within the acceptable ranges.

NIOSH Radio Test Report in its entirety can be found in Appendix B

VIII. Special Considerations

The Board of Inquiry gave special consideration to several aspects of the E. North Avenue fire that it felt may have influenced the course of events. Pertinent findings are elucidated below.

Video Evidence

DriveCam Video

Multiple attempts were made to determine if video recordings could be obtained from DriveCam devices that were located inside the vehicles used by Engine 31, Truck 5, and Safety Officer 2. The BCFD Director of Logistics determined that no recordings were saved from the multi-hour period in question. DriveCam overwrites itself on short intervals unless it is triggered by an event.

Baltimore City Police CCTV Camera #524, Located at Greenmount & North Avenues

Camera Data Sheet for November 12, 2014, 0030 to 0830 hours

- 0030 hours – Fire Department on the scene.
- 0208 hours – Last fire truck left camera's view.
- 0209 hours – Lieutenant Bethea's vehicle observed.
- 0314 hours – An unknown person was seen around the fire scene and vehicle.
- 0645 hours – A vehicle stopped next to Lieutenant Bethea's vehicle and the driver spoke on a phone.
- 0812 hours – unknown person was next to Lieutenant Bethea's vehicle and remained on scene until the first Fire Department personnel arrive back at vehicle
- 0824 hours – Fire Department personnel arrived back at on the scene.

Interpretation of Camera 524 by Detective Shannon McSpadden, Baltimore Police Department

We conducted a search of the scene at the request of Homicide Detective Vaughn. Midnight monitors did pull up camera # 524 (Greenmount/North) at 0030 hours when the call was dispatched. They monitored the scene sporadically. The request from Det. Vaughn was to try to locate the victim's departmental vehicle. We did notice that the last fire apparatus left the scene at 0208 hours. When the camera continues the tour at 0209, we do observe what we believe to be the victim's vehicle. It is parked in an obvious manner on North Avenue. At 0314 hours, we observe a person walking by the vehicle. At 0645 hours, there is a vehicle that is stopped next to the FD vehicle, with the driver outside and appears to be on the phone. At 0812 hours, a W/M wearing a bright orange shirt is stopped by the FD vehicle. At 0824 hours, the FD is back on the scene and going through the vehicle that was left there. The camera was on tour during these time frames.

Weather Conditions during the Incident

On the evening of November 11, 2014, WBAL TV and other news outlets reported that the Baltimore area was experiencing a temperature inversion.

During the incident, Lieutenant Bethea and Battalion Chief 2 discussed the presence of a temperature inversion and its potential effect on smoke from the E. North Avenue fire.

Because of this, the Board of Inquiry sought an expert opinion about the weather conditions during the operational period. On December 5, 2014, the Board of Inquiry interviewed Mr. Ken Widelski, Emergency Response Meteorologist, Maryland and NCR Liaison, National Weather Service Baltimore/Washington. The purpose of this interview was to 1) understand what a temperature inversion was and 2) determine the weather conditions at the time of the incident and whether weather may have contributed to Lieutenant Bethea's death.

Mr. Widelski told the Board of Inquiry that a temperature inversion occurs when warmer air is found in the atmosphere above cooler surface air. He said that temperature inversions act much like placing a lid over the city, trapping cooler air, moisture and pollutants near the earth's surface. He confirmed that a significant temperature inversion was in effect during the operational period. Mr. Widelski said that although temperature inversions have been known to affect brush and wild-land fires, he could not find anything in academic literature indicating that they had affected urban structure fires. When asked specifically if the temperature inversion could have affected the disbursement of smoke from the basement of exposure delta (where Lieutenant Bethea died), he said he did not have sufficient data to make a determination.

The air temperature throughout the incident was approximately 60 degrees and the humidity was above 95%. BWI and Annapolis were reporting foggy conditions.

National Weather Service's Weather Condition Report in its entirety can be found in Appendix E.

Positive Pressure Ventilation

During the course of the investigation there was speculation among members of the Board of Inquiry that the deployment of a positive-pressure ventilation (PPV) fan in the front door of 710 E. North Avenue (exposure delta) may have contributed to a high concentration of carbon monoxide and soot-laden smoke in the basement where Lieutenant Bethea died.

Because of this, the Board of Inquiry sought an expert opinion from a representative of the U.S. National Institute of Standards and Technology (NIST) concerning the possible effects of the PPV fan.

On December 11, 2014, a team of investigators lead by Dr. Daniel Madrzykowski of NIST came to the scene of the incident to perform air pressure and velocity tests. The members of Truck 5 who positioned the PPV fan at the incident were present to help recreate the conditions at the time of the incident.

Numerous tests were conducted with various combinations of windows and doors open and boarded up with plywood.

With the windows and doors of 710 E. North Avenue configured as they were when Lieutenant Bethea was thought to have entered the dwelling, the PPV fan had little effect on air movement.

In Dr. Madrzykowski's opinion, the PPV fan had little to no effect on ventilation of the basement. While it did not appear capable of holding smoke in the basement it also didn't appear capable of pushing smoke out of the basement with the windows and doors configured as they were believed to be.

When the front basement windows were opened and the status of all other windows and doors remained unchanged, the speed of the wind exhausting at the front basement windows increased, indicating to Dr. Madrzykowski that the PPV fan would have assisted with ventilation of the basement had those front basement windows been opened.

Dr. Madrzykowski said that the smoke in the basement had likely cooled to a point where it was stagnant and without forced ventilation (by a fan or natural wind); it likely would have settled and remained stationary.

NIST Airflow Test Report in its entirety can be found in Appendix D.

Medical Examiner's Report

The following is the Board of Inquiry's summary of autopsy of Lieutenant Bethea. This information was gathered from the medical examiner's report and the Board of Inquiry's interview of J. Laron Locke, MD, on December 5, 2014, at Oldtown Fire Station.

An autopsy was performed on the body of Lieutenant Bethea on November 13, 2014. The autopsy revealed that Lieutenant Bethea was a healthy adult male. The autopsy also revealed that Lieutenant Bethea sustained minor injuries of the face (lacerations and abrasions) as well as a fracture of the nose. During the autopsy, a comprehensive drug test was performed; the results were negative. The autopsy revealed that Lieutenant Bethea had soot deposited in nasal passages, oral cavity, and airway, to the level of bilateral lobar bronchi. Lieutenant Bethea had an elevated blood carbon monoxide level at the time of autopsy (73.5%). Lieutenant Bethea had not been consuming alcoholic beverages prior to his death. The cause of death was smoke inhalation; the manner of death was determined to be accidental.

Medical Examiner's Report in its entirety can be found in Appendix H.

Members' Experience and Training

The Incident Commander at the E. North Avenue fire (Battalion Chief 2) was 43 years old, had 16 years of service and had held the rank of Battalion Chief since 2010. He had been a fire officer with the department since being promoted to Lieutenant in 2002. The fire department's training records showed that he had completed training in subjects including: Responder to Hazardous Materials/WMD Incident – Awareness; Responder to Hazardous Materials/WMD Incidents – Operational; Fire Fighter I; Fire Fighter II, Emergency Medical Technician, Basic; Vehicle & Machinery Technical Rescuer I & II; Fire Service Instructor I; Fire Service Instructor II; Fire Service Instructor III; Health & Safety Officer; and others.

Lieutenant Bethea was 62 years old, had more than 40 years of service and was promoted to lieutenant on September 5, 1984. He had worked in the Safety Office for the past 10 years and was the senior shift safety officer. The fire department's training records showed that he had completed training in subjects including: Hazardous Materials/WMD Incident – Awareness; Hazardous Materials Operations; Responder to Hazardous Materials/WMD Incidents – Operational; Hazardous Materials: Recognizing and Identifying; Self-contained Breathing apparatus (SCBA) Training; Protective Envelope Foam Training; Fire Investigator; Fire/Arson Investigation; IS-00100.a Introduction to the Incident Command System (ICS-100); IS-00200.a ICS for Single Resources and Initial Action Incidents (ICS-200); IS-00700.a National Incident Management System (NIMS) – An Introduction (ICS 700); IS-00800.b National Response Framework, An Introduction (ICS-800); EMS Basic Life Support Skills Training; EMS Advanced Life Support Skills Training; Fire Suppression Skills Training; City Driver Permit Training; Fire Department Driver Training; 2-Minute Drill (donning personal protective clothing and SCBA); Maze Training; Lead Off (supply hose and hydrant connection); One-man Ladder Carry; Two-man Ladder Carry; Charged Hoseline; and several others.

IX. Conjecture based on Evidence and Testimony

Evidence discovered during the Board of Inquiry's investigation and testimony it heard from members on the scene and subject matter experts helped the Board of Inquiry form the following unanimous opinions concerning the events surrounding Lieutenant Bethea's death.

The Board of Inquiry believed that at some time between 0104 hours when Lieutenant Bethea was photographed standing in the middle of the street in 700 block of E. North Avenue and approximately 0215 hours when the officer of Truck 5 secured 710 E. North Avenue by pulling shut the inner and outer front doors, Lieutenant Bethea entered 710 E. North Avenue (exposure delta) through its front door for an undetermined reason. The Board of Inquiry believed that Lieutenant Bethea would not have closed two doors behind himself as he entered a vacant dwelling if he intended to later exit it. Therefore, the Board of Inquiry believed that Lieutenant Bethea was inside 710 E. North Avenue when Truck 5's Lieutenant secured it. The Board of Inquiry believed that Lieutenant Bethea did not notify anyone that he was entering 710 E. North Avenue and that he entered alone.

The photograph taken at 0105 hours (see below) showed that the dwelling's front room was brightly illuminated with a fire department floodlight. There was no visible smoke in the photo. If Lieutenant Bethea entered 710 E. North Avenue while the floodlight was on, The Board of Inquiry believed that the bright light may have caused his pupils to constrict, thereby compromising his night vision and diminishing his ability to see in the dark interiors of the middle room, hallway leading to the rear kitchen and the kitchen area where the floor was missing.



The Board of Inquiry believed that as he entered the dwelling there was no indication that there was an IDLH atmosphere in the basement. There probably was no visual indication from the exterior or interior first floor that smoke was in the basement. Evidence showed that Lieutenant Bethea was not wearing self-contained breathing apparatus (SCBA) and was not carrying air monitoring equipment (a handheld multi-gas meter), however the Board of Inquiry felt that given that there was no indication of a hazardous environment, SCBA and air monitoring equipment would not be mandatory.

The Board of Inquiry believed that Lieutenant Bethea unknowingly walked off the unprotected ledge and fell to the basement floor below where he struck his face and head on assorted debris with enough force to cause facial trauma and crack the outer shell of his helmet. The Board of Inquiry believed that Lieutenant Bethea may have suffered a concussion from the fall, and may have been disoriented from it. He may have lost consciousness for a period of time. The Board of Inquiry believed that Lieutenant Bethea fell into an IDLH (smoke-laden) atmosphere that included carbon monoxide (CO) and airborne soot.

The Board of Inquiry believed that Lieutenant Bethea probably recognized that he was in peril and attempted a right-hand search in an effort to find a way out of the basement. Blood drops on the basement floor along the walls and blood smears on the basement walls were evidence that he probably crawled along the west wall (side bravo) to the front wall (side alpha) to the east wall (side delta) and along that wall as far as a furnace where the blood trail appeared to end.

The Board of Inquiry could not explain how Lieutenant Bethea may have moved from the furnace to the place where his body was found without dripping more blood. Although it was possible that he returned to the point where his body was found via the route that he came, the blood droplets and smears did not appear to indicate that this was the case. Investigators, who found his body hours later, reported seeing blood still dripping from his nostrils.

The Board of Inquiry believed that as he searched for an exit route he was breathing in toxic gases. It was probable that exposure to CO began to compromise his cognitive ability. At some point he probably lost motor function, went unconscious and then died.

The Board of Inquiry was unable to explain why there was no evidence of an attempt to transmit a mayday message by radio. Multiple tests of Lieutenant Bethea's radio revealed that it was likely working properly at the time of his death. The missing dust cover on the push-to-talk button on the lapel microphone could have made keying up the microphone more difficult, especially with a gloved hand, but the push-to-talk button still worked without the dust cover. When his body was discovered his right glove was off which may have indicated that he was attempting to use his radio, but investigators found no blood on the radio in spite of blood being found on much of the rest of his equipment and clothing, including his flashlight which was located next to his radio microphone on his left chest. This evidence led the Board of Inquiry to conclude that Lieutenant Bethea probably did not attempt to use his radio.

The Board of Inquiry interviewed Roy Meyers, MD, who was recognized for his expertise in hyperbaric medicine. Dr. Meyers indicated that it would be improbable for someone to reach a blood CO concentration of 73%, which was extremely high, via a low-concentration, extended

exposure to CO. A short-duration exposure to a high atmospheric concentration of CO was a much more likely scenario for reaching the blood CO level noted during autopsy. Lieutenant Bethea's autopsy also revealed soot in the smallest bronchi in the deepest areas of his lungs. Such deep contamination takes time to occur – perhaps as long as 15 minutes, according to the expert testimony that the Board of Inquiry heard. Furthermore, the Board of Inquiry ruled out the possibility that Lieutenant Bethea was exposed to an appreciable dose of CO prior to the E. North Avenue fire. This response came approximately 18 hours into Lieutenant Bethea's 24-hour shift and the only other incident during that tour of duty where he may have been exposed to smoke and CO was a dwelling fire that occurred at 0848 hours on November 11, 2014.

When Lieutenant Bethea's body was discovered, the members who discovered it noted pronounced rigor mortis. The Board of Inquiry sought an expert opinion concerning rigor mortis from J. Laron Locke, MD, the Assistant Chief Medical Examiner who performed the autopsy on Lieutenant Bethea. The following facts were reported by Dr. Locke:

- Lt Bethea's body was in full rigor mortis upon arrival at the State Medical Examiner's Office.
- Rigor mortis begins immediately upon death. Signs of rigor mortis begin to be detectable within 1 to 2 hours after death.
- The exact time of onset and extent of rigor mortis are affected by environmental temperature.
- Rigor mortis starts to diminish 24-36 hours after death.
- In general, rigor mortis can be used to fix a time of death to a 6-8 hour period. Because Lieutenant Bethea was missing for less than 8 hours before his body was found, rigor mortis could not be relied upon to fix his time of death to a more finite period than the period that was already known.

Based on the evidence and testimony, the Board of Inquiry believed that Lieutenant Bethea was in the basement between 15 and 30 minutes before he died.

X. Findings and Recommendations

FINDING A

The accountability system used was inadequate.

Recommendation A1

Revise the Department's accountability system to include unit-level check-in at all "working fires," mandatory use of an effective tactical worksheet for all incidents where a hazard zone is identified or suspected that can be passed between transitioning incident commanders (IC), mandatory PAR checks at specified intervals, and criteria for implementation of a point-of-entry accountability system.

Rationale

- NFPA 1407 3.3.7 (2015)-Standard Personal Accountability Report
- The National Incident Management System (NIMS) establishes *accountability* as one of the 14 proven management characteristics upon which the system is based, and that effective accountability during incident operations is essential.
- NFPA 1500 (2013) 8.1.7 and 5.1.11 establishes that the IC is responsible for initiating an accountability and inventory worksheet, and that all members shall receive training in accountability procedures.
- BCFD MOP 601 establishes that incident commanders shall maintain a tactical worksheet for all "working fires," and that it be reviewed as part of any transfer of command.
- NFPA 1561 (2014) Section 8.5 establishes that the IC shall initiate an accountability system that includes functional and geographical assignments at the beginning of operations and that the system shall be maintained throughout operations. This can be accomplished via tactical worksheets that include the location and function of all members operating at an incident scene.

Implementation

A committee should be immediately established and charged with developing and implementing a flexible, tiered, and NFPA 1561 (2014)-compliant accountability process that can be effectively employed by the Department at all scenes with a known or suspected hazard zone. Objectives for this committee should include:

- Developing policy for an incident scene accountability system.
- Acquisition of required resources.
- Developing and implementing initial and ongoing training.

The accountability system should assure that:

- An effective level of accountability is practiced in all hazard zones.
 - Strategic
 - Implementation of an effective incident organization.
 - Strict command and control.
 - Deploying resources to specific tasks, locations, and objectives.

- Maintaining awareness of location and air supply for crews operating in the hazard zone.
 - Maintaining an accurate tactical worksheet.
 - Ongoing status and PAR reports from operating units.
 - Tactical
 - Implementation of division and group supervisors as the incident dictates, preferably at distinct entry points to hazard zones.
 - Task-level
 - Ensuring all units are properly deployed by a supervisor into a hazard zone with an objective (i.e., ensuring there is no freelancing)
 - Working in pairs, with one person designated as the crew leader, and with supervision while in a hazard zone. That supervision may be accomplished by radio.
 - Maintaining an adequate air supply to safely exit.
- Accountability management is assigned to someone or assumed by the IC for all incidents involving a hazard zone.
 - This assignment could be given to a fire operations aide (see separate recommendation), or as an alternative, an EMS supervisor, which could be specified by modification of MOP 602-9 and MOP 602-12.
 - An incident check-in procedure that utilizes provider tags organized by units should be established for all incidents involving an IDLH atmosphere. The procedure should include designation of an accountability location where tags are delivered to each geographically distinct side of the structure prior to IDLH entry. Such a system:
 - Provides for a tactical worksheet that can be transferred between incident commanders during transitions of command.
 - Provides for an enhanced level of accountability that can be instituted at complex incidents
 - Division or group supervisors shall be assigned to every point of entry, and they shall actively monitor those points of entry into the structure, confined space, or areas involved.
 - All personnel operating in hazard zones shall be assigned to a division or group supervisor. Given adequate resources, the IC shall assign an accountability manager to assist each of the division or group supervisors.
 - Should include updates to MOP 601 to require the dispatcher to start and monitor a timer and notify the incident commander of incident duration on 10-minute intervals.

Comments

“Hazard zones” include “immediately dangerous to life and health (IDLH)” atmospheres and other environments that pose safety threats and warrant higher vigilance. A critical strategic function of incident command is maintaining awareness of the location and air supply of crews operating in hazard zones. At the strategic level, two practices that are intended to assure this awareness are the incident check-in procedure and the maintenance of a tactical worksheet. Had an incident check-in procedure been employed at the E. North Avenue fire, Lieutenant Bethea

likely would have been discovered missing prior to termination of command. The Department's MOP 602-12 establishes that upon reporting for work, each member will attach his/her issued accountability card to his/her assigned unit's master ring. However, the procedure does not establish that any incident check-in or check-out procedure shall be employed at incident scenes. It does, however, allow for incident check-in to be initiated at the discretion of the IC. At this incident, neither of the ICs elected to exercise their option to collect accountability tags, which was consistent with common practice at the time of the E. North Avenue fire.

At the E. North Avenue fire, a tactical worksheet was initiated but not maintained. Battalion Chief 2 declared a "working fire" at 0028 hours and initiated a tactical worksheet at that time in keeping with Department practice. He then placed the fire "under control" at 0045 hours, and discontinued the use of the tactical worksheet. Under these circumstances, continued use of a tactical worksheet was required per BCFD MOP 601. Battalion Chief 2's awareness for the location and assignment of operating crews would likely have been increased with the continued use of a tactical worksheet. Not maintaining a tactical worksheet also reduced the effectiveness of the command transition that occurred during demobilization. Upon transferring command to the Truck 5 Lieutenant, Battalion Chief 2 was likely unaware of the operating positions and assignments of every crew operating in a hazard zone, including Safety Officer 2. In any case, he did not pass on that information to the next IC. The Truck 5 Lieutenant, after assuming command, also apparently made no attempt to become aware of the operating position or assignment of units not taking part in overhaul, seemingly not understanding the breadth of his responsibility as the IC. Battalion Chief 2 made no effort to contact Safety Officer 2, who was functioning directly under his supervision, prior to transferring command and going in service, nor did the Truck 5 Lieutenant make an effort to communicate directly with each unit on the scene, including Safety Officer 2, who was then under his direct supervision, in the process of placing them in service. These actions appeared to have contributed to Safety Officer 2's absence not being recognized.

Accountability may have been improved by implementing a slightly expanded command structure for this incident. As the incident unfolded, there were three dwellings in which operations took place. In addition to the primary fire structure, there were elements of three companies operating in exposure delta when it was found to be an IDLH. With the simultaneous overhaul and ventilation operations still in progress in the primary fire structure, the tactical management and accountability in the delta exposure could have been improved by designating a division officer for exposure delta, and thus delegating the management of the delta exposure operations and the associated accountability for crews entering it to a subordinate.

When units self-deploy into a hazard zone per standing orders (BCFD MOP), units must communicate with the IC or division/group supervisor when their statuses, positions and or incident conditions change.

BCFD MOP 602-9 establishes that after significant incident events, such as changing from an offensive to defensive strategy, incident-wide unit Personnel Accountability Reports (PARs) may be conducted and compared to incident check-in records (typically provider tags on unit accountability rings). However, a critical part of ongoing accountability, even during normal operations, is the incident commander's tracking of the location and status of units operating in

hazardous zones. This is greatly facilitated by effective ongoing status reports and regular requests for PARs from units. These unit-level PARs are quick confirmations that supervisors can account for their assigned personnel, the tracking of which can be facilitated on the tactical worksheet. PARs are status reports transmitted to provide positive confirmation of the location, assignment, and number of personnel assigned to a division, group or unit operating within a hazard zone. Being “PAR” signifies that *all personnel assigned to a division, group or unit operating in the hazard zone have been identified, positively located, and are accounted for (uninjured)*. For example, “Engine 31 to Command, Engine 31 is PAR.”

Applicable Policies, Standards, Best Practices, References

- BCFD MOP 601 Fireground Operations and Command
- BCFD MOP 602-8 RIT
- BCFD MOP 602-9 PARs
- BCFD MOP 602-12 Accountability Cards
- BCFD MOP 602-13 Mayday
- BCFD MOP 622-3 Personal Alert Safety System
- Firefighter Close Calls. (October 31 2009). *Safety-Personnel Accountability System Model Policy*. Retrieved from http://www.firefighterclosecalls.com/filelocker/download/file_id/6363
- NFPA 1500 (2013) 5.1.11-Accountability Training, 8-Emergency Operations
- NFPA 1561 (2014) 8.5-Accountability Systems
- NFPA 1500 (2013) 8.2-Incident Clock
- ICS Field Operations Guide
- OSHA Standard 29 CFR 1910.134: Standard on Fire Department Incident Management System
- US Department of Homeland Security. (December 2008). *National Incident Management System*. Retrieved from http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf
- Brunacini, N., Brunacini, J. (October 2014). *Model Command SOPs*. Retrieved from www.bshifter.com/about_sop.aspx

Recommendation A2

Maintain crew integrity; work in pairs when in a hazardous zone.

Rationale

- NFPA 1500 (2013) Section 8.5 establishes that members operating in hazardous areas at emergency incidents shall operate in crews of two or more, and that they be in communication with each other through visual, audible, or physical means.
- NFPA 1500 (2013) Section 8.4 establishes that members assigned as a company shall be responsible to remain under the supervision of their assigned company officer, and that company officers must maintain an ongoing awareness of the location and condition of all company members.
- NFPA 1561 (2014) Annex D.1-Fire Service Responder Safety, an informational section of the standard, puts forth that that members operating in “hazardous areas at emergency incidents” should operate in crews of two or more, and Annex A.4 recommends that a supervisor be responsible for each crew.
- NFPA 1710 (2010) Section 5.2.4.2 Initial full alarm assignment capability
- NFPA 1710 (2010) Section 5.2.4.3 Additional alarm assignments
- OSHA 29 CFR 1910.134 (g)(4)(i), a general industry standard for operating in IDLH atmospheres and for interior structural firefighting, stipulates that in an IDLH atmosphere crews should operate in teams of two or more and remain in visual or voice contact at all times.
- BCFD MOP 602-8 (p.4) states “it should be noted that good practice dictates that members should work in teams of at least two.”
- BCFD MOP 602-8 restates the OSHA requirement that, when operating within an IDLH atmosphere, members must operate in teams of at least two.

Implementation

- Revise BCFD MOP 602-8 and other operational MOPs to require that no member shall operate alone in an IDLH or potentially hazardous environment, including, specifically, single-person units such as safety officers, Fire Investigation Bureau personnel, chief officers, and EMS officers.
- Revise BCFD operational MOPs to require that a division/group supervisor or the incident commander assign a member to assist a single-person unit if they are required to enter a suspected or known hazard zone.
 - If a single member is sent to the roof, one member from the Rapid Intervention Team (RIT) shall be assigned to work with that member on the roof until relieved by another member. This procedure would solve the common problem of having a truck’s driver operating on a roof alone. It is recommended that the RIT unit’s officer not be the member sent to the roof because scene safety would be better served by keeping him/her with the other members of the RIT. Note: if the incident escalates above a first alarm assignment, NFPA 1710 requires a full RIT that consists of an officer and three firefighters who are equipped and trained in RIT operations. This means that if an incident goes to a working fire or greater, the member sent to the roof would have to be relieved on the roof by another member so that he/she can rejoin his/her company as part of RIT.

- Revise BCFD operational MOPs to require that, when operating in a hazard zone, all proper personal protective equipment is to be worn, including the wearing of SCBA, if an IDLH is known or suspected to exist. When SCBA cylinders are worn, they are to be turned on and ready to use, with the integrated personal alert safety system (PASS) device activated.
- Revise BCFD operational MOPs to require air monitoring from within each level of the structure before use of SCBA is discontinued (see separate recommendation).
- Revise BCFD operational MOPs to require a formal declaration by the IC via radio before use of SCBA may be discontinued.
- Provide separate PASS devices for use when SCBA (with integrated PASS devices) are not worn by personnel operating in a hazard zone (see separate recommendation).

Comments

It is generally accepted that in the context of requiring members to work in pairs, “audible” contact does not include radio contact. “Supervision,” however, may be maintained by radio contact.

The Department’s standing operational orders/procedures for first-alarm units, as prescribed in the MOP, which include fireground positions, assignments and responsibilities, satisfy the requirement that units must have assigned tasks in hazard zones, however, the MOP by itself does not necessarily satisfy the requirements for fire ground personnel accountability. The IC still must maintain an awareness of the location and function of all companies or crews at the scene of an incident.

Crew integrity is an integral part of safety and accountability. Personnel working alone cannot meet the requirement of being in audible contact with another member of their crew, and their supervisors cannot reasonably assure their safety or account for their location or wellbeing via radio contact.

On the E. North Avenue fire, both Safety Officer 2 and the Truck 5 EVD (driver) worked alone in a hazard zone. During the course of this inquiry, it was determined that it was common practice for safety officers and truck drivers (who typically go to the roof alone) to work in this manner. In both cases, such activities place personnel at an unreasonable risk. Lieutenant Bethea encountered an unanticipated hazard and had no partner to report the problem to or rely on for assistance. It is not hard to imagine similar situations that could be encountered by a member performing roof operations without a partner.

Policies, Standards, Best Practices, References

- NFPA 1500 (2103) 8.5-Members Operating at Emergency Incidents.
- NFPA 1561 (2014) Annex D.1-Fire Service Responder Safety.
- NFPA 1561 (2014) Annex A.4.5.10 IMS Performance Requirements.
- NFPA 1561 (2014) 8.5-Accountability System
- MOP 106-3 Shift Safety Officer Duties.
- MOP 602-8 RIT.

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- MOP 622-3 Personal Alert Safety System.
 - MOP 625-11 Carbon Monoxide Detector Situation.
 - OSHA 29 CFR 1910.134(g)(3) Procedures for IDLH Atmospheres.
 - OSHA 29 CFR 1910.134(g)(4) Procedures for Interior Structural Firefighting.

Recommendation A3

Practice effective command transitions, including during demobilization

Rationale

- NIMS (2008) requires that the transfer of command process include a briefing that captures all essential information for continuing safe and effective operations.
- NFPA 1561 (2014) Annex G.7 discusses a recommended transfer of command process, and suggests that, at a minimum, transitions include the above as well as a review of incident conditions, the incident action plan, the status of tactical objectives, safety considerations, and an assessment for resource needs. Annex A.8.5 recommends that accountability systems required by section 8.5 be maintained from the initial first alarm assignment up through multiple alarms, and references that this necessity is apparent from review of NIOSH firefighter fatality investigations where there were failures tracking all resources and their assigned locations.

Implementation

- Revise BCFD MOP 601 so that it includes incident commander responsibilities as established in NFPA 1561 (2014).
- Revise BCFD MOP 601 so that it ensures that each member who functions in a designated position within the incident management system, especially the IC, possess the qualifications to do so consistent with NFPA 1021 (2014), NFPA 1026 (2014), NFPA 1061 (2014), and NIMS.
- Revise BCFD MOP 601 so that it includes a more detailed procedure for transfer of command. The process should specify the elements of the briefing that must take place, and allow for the limitation of command transitions, when possible, in order to minimize the risk of information being lost. This should include a provision for an *incident advisor* position, which is typically filled by a superior officer who arrives on the scene and instead of electing to take command supports and reinforces the existing IC (see separate recommendation).
- Revise operational MOPs to require a PAR of all operating units when command transitions occur during the demobilization phase of operations.
- Revise operational MOPs to add formal demobilization procedures, to include:
 - That each unit shall notify the IC verbally by radio that it is leaving the incident scene.
 - A thorough search for occupants of any structure(s) will be undertaken prior to BCFD securing the structure(s).
- Revise MOP 601 concerning tactical worksheets to:
 - Standardize the tactical worksheet in a format that will:
 - Be useful under hectic conditions (simplify it as much as possible).
 - Be easily read in all conditions (low light, rain, etc.)
 - Assist with tracking units' positions and assignments.
 - Facilitate the transfer of command during incident escalation and demobilization.
 - Disallow deviations from the standard format (all members will use tactical worksheets of the same design).

- Require the use of a tactical worksheet on every incident to which a first alarm or greater is dispatched and a hazard zone exists.
- Issue waterproof-paper pads of printed tactical worksheets to all chief officers so that the worksheets will:
 - Be easy to write on (it is difficult to write on a plastic surface with a grease pencil).
 - Remain usable even when wet.
 - Serve as a record following significant incidents (there is no need to erase the worksheet so that it can be reused, as is the case with laminated sheets).
 - Be easily handed from one IC to the next without concern for maintaining a specific unit's assigned equipment (laminated tactical worksheets are sometimes not handed off during demobilization because they belong to the units that initiate their use).
- Provide specific training to all members who may assume the IC role on MOP 601 as it applies to the transfer of command process and command responsibilities, particularly as they relate to accountability and the assumption of all responsibilities of incident command not otherwise assigned to subordinates.

Comments

Command transitions should include a review of all units operating on the incident, their positions, and their task assignments. During the E. North Avenue fire, two face-to-face transfers of command occurred after the initial incident command was established by the Truck 5 Lieutenant. Upon his arrival, Battalion Chief 2 assumed command from Truck 5. Then, during demobilization BC 2 transferred command back to the Truck 5 Lieutenant.

Lieutenant Bethea's safety was impacted by the last command transition to take place. During this transition, which occurred at 0151 hours, Battalion Chief 2 was unaware of the operating position of Safety Officer 2, and thus did not include his operating position in the information passed on to the Truck 5 Lieutenant. During this transition, neither of the ICs adequately accounted for personnel operating at the scene. When interviewed, the Truck 5 Lieutenant said he had command only "for overhaul purposes," and apparently did not fully appreciate the totality of his command responsibilities. The Truck 5 Lieutenant left the scene with a member unaccounted for.

A tactical worksheet was apparently initiated for the incident by the IC (Battalion Chief 2), but was not maintained once the fire was placed under control. The on-duty shift commander (acting deputy chief) was on the scene but did not verify that the tactical worksheet was being maintained. This contributed to an ineffective awareness of unit accountability. At best, incomplete verbal information about units still functioning on the scene, their positions, and their task assignments was communicated as part of the last transition of command.

Policies, Standards, Best Practices, References

- NFPA 1561 (2014) Annex G.7-Transfer of Command Process.
- NFPA 1561 (2014) Annex A.8.5-Accountability Systems
- NFPA 1561 (2014) 5.3-Incident Commander
- NFPA 1561 (2014) 4.7-System Qualification Process

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- NFPA 1021 (2014) Chapters 4 and 5-Fire Officers and Emergency Services Provision
 - NFPA 1026 (2014) Including (but not limited to) chapter 4 - Incident Commander, chapter 5 - Safety Officer, and chapter 11 - Operations Division/Group Supervisor
 - US Department of Homeland Security (December 2008). National Incident Management System. Retrieved from http://www.fema.gov/pdf/emergency/nims/NIMS_core.pdf
 - BCFD MOP 601 Fireground Operations and Command

Recommendation A4

Removal of SCBA must be directed by the IC, and only after gas monitoring data from all levels of each structure, including exposures, has verified that there is no inhalation hazard.

Rationale

NFPA 1001 (2013) Section 5 establishes that all firefighters must be able to recognize conditions that require respiratory protection. However, the ability to recognize these conditions is significantly enhanced through the use of air monitors and education regarding the health risks posed by the byproducts of combustion.

Implementation

- Revise operational MOPs to require the IC to receive gas monitoring data from within each level and part of a structure or area where an IDLH was present before members may discontinue using SCBA.
- Revise operational MOPs to require that the IC must grant permission, via radio transmission, before for members operating in a former IDLH may discontinue using SCBA.
- Reinforce that the above procedures apply to exposure structures and basements.
- Develop and deliver training for Department personnel, especially ICs, about the health risks associated with smoke and the typical behavior of combustion byproducts during overhaul at structure fires.

Comments

A more formal process that requires air monitoring at each level of a structure fire will serve to identify unrecognized IDLH atmospheres and provide a basis for determining when it is appropriate to discontinue the use of SCBA.

At the E. North Avenue fire, there was no evidence that air monitoring was conducted. Furthermore, it did not appear that a formal declaration was made regarding the continued use of SCBA in the primary fire structure or the bravo and delta exposures.

Policies, Standards, Best Practices, References

- NFPA 1001 (2013) Section 5 Firefighter I.
- Fire Smoke Coalition (February 2013). *Field Application for GC/MS to Firefighter Exposure to Fire Debris Contaminants*. Retrieved from <http://www.firesmoke.org/wp-content/uploads/2014/04/Fire-Smoke-Coalition-GCMS-2014.pdf>

Recommendation A5

Provide for and require use of stand-alone PASS devices when SCBA are not worn in hazard zones.

Rationale

- NFPA 1561 (2014) section 8.13 establishes that when operating in forward or hazardous positions, the safety officer must be attired in appropriate personal protective equipment, including self-contained breathing apparatus, have a radio, and be accompanied by another responder. Annex D.3 recommends the use of PASS devices in all IDLH atmospheres.
- MOP 622-3 Personal Alert Safety System
- MOP 441 Maintenance of Breathing Apparatus.
- BCFD Training Manual 101-Drager Breathing Apparatus.

Implementation

- Develop policies and procedures to govern the use of SCBA. Note: MOP 441 addresses the care and maintenance of SCBA, but not its use. The Department's Training Manual addresses how to use SCBA but it does not fully address when to use it. In addition, the training manual is construed as a guidance document that may lack enforcement teeth. The new SCBA policies/procedures should:
 - Require all personnel to wear an SCBA harness/cylinder when in a hazard zone unless permission to dispense with same is transmitted via radio by the IC (see recommendation above).
 - Require that when SCBA cylinders are worn, they must be in the "on" position, regardless of whether the member is "on air," to ensure that the built-in PASS device is activated.
 - Provide a means by which members operating in a hazard zone without SCBA are equipped with a stand-alone PASS device that will provide PASS protection. This may be accomplished by re-issuing stand-alone PASS devices that were removed from service when the current SCBA was placed in service.
- Revise (update) MOP 622-3 to reflect current and proposed new PASS equipment and use.

Comments

At times, hazard zones exist that are not breathing air-deficient. It is sometimes prudent to remove SCBA harnesses in such environments to make work easier, more efficient and in some cases, safer. When an IC authorizes personnel to discontinue use of SCBA, and members remove their harnesses/cylinders, it leaves them without a PASS device.

At the E. North Avenue fire, after floors one, two, and three of the delta exposure had been vented of smoke, Lieutenant Bethea apparently entered exposure delta, a hazard zone, without an SCBA unit on his back. Although there was no visual indication of an IDLH in the basement, there was, in fact, one present there. It may have been reasonable for Lieutenant Bethea to enter the first floor of exposure delta without an SCBA, but had he been wearing a stand-alone PASS device, his peril may have been signaled by it to other members on the scene.

MOP 622-3 is outdated and needs to be overhauled.

Policies, Standards, Best Practices, References

- NFPA 1561 (2014) Annex D.3 Fire Suppression
- MOP 622-1 Search and Rescue
- MOP 622-3 Personal Alert Safety System

Recommendation A6

Better define the responsibilities of and adopt credentials that are compliant with national standards for those functioning in the role of incident safety officer (ISO).

Rationale

- NFPA 1521 (2015) specifies standards for “health and safety officer” and “incident safety officer.”
- NFPA 1561 (2014) 4.7 establishes that emergency services organizations ensure that personnel that function in the incident management system are qualified to do so.
- Section 5.9 establishes that individuals designated as ISOs must meet the technician-level requirements of NFPA 1006 and NFPA 472.
- Section 5.1 establishes that all positions meet the requirements of NFPA 1026 (2014).

Implementation

- Revise BCFD policy to require members to obtain Maryland Fire Service Personnel Qualifications Board (MFSPQB) certification as an *Incident Safety Officer* before being authorized to function in that role, especially as Safety Officer 2.
- Revise BCFD policy to require members to obtain MFSPQB certification as an *Incident Safety Officer* before being authorized to function as a battalion chief.
- Revise MOP 106-3 to incorporate responsibilities consistent with NFPA and NIMS.
 - Incorporate incident responsibilities as established by NFPA and NIMS.
 - Define the safety officer’s role in accountability management.
 - Define the safety officer’s role in the assuring that air monitoring takes place and advising the IC regarding the continued need for SCBA use during overhaul (see separate recommendations).
- Set an expectation for when the safety officer will wear an SCBA harness/cylinder.

Comments

The Department’s minimum qualifications for a *Shift Safety Officer* (the position Lieutenant Bethea held) should be revised to meet the national NFPA (2015) standards for *Incident Safety Officer* for Fire, EMS, and Rescue. The NFPA Incident Safety Officer standard is comprised of several certifications (a combination of course work) that must be pro-boarded.

At the time of Lieutenant Bethea’s death, most of the Department's shift safety officers had received training and or had experience that was essentially equivalent to the NFPA standard in effect. Lieutenant Bethea had completed Incident Safety Officer training at the National Fire Academy.

The current minimum qualifications for a “*Shift Safety Officer – Suppression*” are 1) Incident Safety Officer Course (16 Hour NFA curriculum, which does not meet NFPA standards), 2) in the rank of Lieutenant, with at least 5 years in grade, and 3) currently assigned to the Suppression Division.

The Safety Office has very few written, bureau-specific policies or procedures concerning the on-scene duties and responsibilities of an incident safety officer. What exists has not formally been adopted Department-wide, lacks detail, and is outdated.

MOP 515-11 states Safety Officer 2 shall be dispatched on all 1st alarm assignments, which is not the current practice.

Policies, Standards, Best Practices, References

- BCFD Bulletin dated 12/19/2014 - Shift Safety Officer - Suppression Position
- BCFD MOP 106-3
- BCFD MOP 515-11
- NFPA 1521 (2014) 4.7-System Implementation - System Qualification Process
- NFPA 1521 (2014) 5.1
- NFPA 1521 (2014) 5.9-
- NFPA 1026 (2014) Chapter 5 - Safety Officer
- NFPA 472

Recommendation A7

Establish a clear and effective on-duty supervisor for Safety Officer 2.

Rationale

- Fire and Emergency Services Company Officer, 5th Edition
- Effective Supervisory Practices: Better Results Through Teamwork (Municipal Management Series)
- The Fire Chief's Handbook, 7th Edition

Implementation

- Revise policies and procedures to establish that Safety Officer 2 reports directly to the Shift Commander.
- The Shift Commander and the Chief Safety Officer should work out a method for coordinating Safety Officer 2's activities and tasks. This should be modeled after the way hazmat taskforce units report directly to Battalion Chief 6 and get tasking from Hazmat Coordinator 1.

Comments

Safety Officer 2, the Department's shift safety officer, is staffed 24/7 by a Lieutenant or acting Lieutenant. At the time of the E. North Avenue fire, Lieutenant Bethea and the other members assigned to Safety Officer 2 directly reported to the Chief Safety Officer, which is an administrative (staff), day-shift, Monday-through-Friday position. Line personnel that are on-duty should have a line supervisor that is on-duty as well.

The current arrangement leaves Safety Officer 2 without a direct supervisor when the Chief Safety Officer is not on duty. Even when the Chief Safety Officer is on duty, it leaves a member assigned to an operations position without an operations supervisor.

At the time immediately before and after the E. North Avenue fire, Safety Officer 2 had no on-duty supervisor. This lack of a supervisor may have contributed to Lieutenant Bethea being unaccounted for over an extended period.

Policies, Standards, Best Practices, References

- MOP 106-3

Recommendation A8

Establish a policy that defines the role of a superior officer who reinforces the IC but does not take command.

Rationale

- NFPA 1561 (2014) Annex G.6 and G.7 discuss the importance of reinforcing Command and supporting the incident commander using a higher ranking command officer in the role of an “incident advisor.”
- Widely accepted best practices give the incident advisor specific responsibilities (see below).

Implementation

- The responsibilities of the superior officer should include obtaining an initial briefing from IC regarding incident action plan, reconnaissance of the incident scene, overall incident strategy assessment (offensive vs. defensive), conducting an operational resource assessment, risk assessment, safety practice assessment, command resource assessment, and obtaining a follow-up IC briefing.
- The process should include verification that the appropriate level of personnel accountability is being used by the IC.
- A policy statement should clearly establish that a superior officer who arrives on an incident is responsible for assuring compliance with all operational and safety policies and procedures regardless of whether he/she assumes command.

Comments

Current BCFD procedure includes the dispatch of a superior officer (Deputy Chief—Shift Commander) on incidents declared “working fires” by incident commanders, but no policy exists as to the superior officer’s specific functions should they choose not to take command.

The Department should establish policy that defines the roles and responsibilities of a superior officer who arrives on the scene incident and does not assume command (a “Senior Incident Advisor”). On the E. North Avenue fire, an Acting Deputy Chief (Shift Commander) arrived on the scene and assessed the situation for various quality markers, but did not take action to assure that an effective accountability system was implemented.

Policies, Standards, Best Practices, References

- NFPA 1561 (2014) Annex G6.2 and G.7-Transfer of Command Process.
- BCFD MOP 601 Incident Command
- Brunacini, N., Brunacini, J. (October 2014). Model Command SOPs. Retrieved from www.bshifter.com/about_sop.aspx

Recommendation A9

Establish policy and training to assure the functions of command occur from within a stationary command post.

Rationale

- NFPA 1561 (2014) 8.4-Command Safety establishes that the incident commander shall establish a stationary command post,
- NFPA 1561 (2014) 5.3.7.1-Structure of Command calls for the incident commander to ensure that the command post is located in or tied to a vehicle, that the location be transmitted to Communications, and that the IC or designee remain present at the command post.
- NFPA 1561 (2014) Section A.5.3.7 discusses that in order for command to be effective, commanding from the most advantageous position possible is necessary. The standard establishes that the best position is a fixed, visible, and accessible location such as a designated command vehicle. This allows for an optimal environment that is free of distractions and quiet so that the incident commander can closely monitor the radio for critical transmissions, which is noted to be a vital responsibility.

Implementation

The Department should strongly consider establishing policy that requires that incident commanders establish and function from within a stationary command post.

- Revise BCFD MOP 601 to include expectations of a stationary command post by battalion level commanders.
- Add a requirement that if the IC desires to relocate the command post after one is established, the IC must announce that change and the new location.

Comments

While this Board of Inquiry recognized certain advantages of having a mobile IC, it is also noted errors that occurred during the E. North Avenue fire that may have been prevented if the functions of command were being carried out from a stationary position. Furthermore, the Board of Inquiry felt that had the IC operated from a less distracting environment, the operation may have been more efficient and safer. While it is possible to accomplish all of these command functions effectively without functioning from within a stationary command post, it is certainly more difficult, and doing so is not congruent with NFPA standards.

Policies, Standards, Best Practices, References

- NFPA 1561 (2014) 5.3-Command Post
- NFPA 1561 (2014) 8.4-Command Safety
- NFPA 1561 (2014) 8.5-Accountability Systems
- NFPA 1561 (2014) Annex 5.3-Command Post
- NIOSH. (Feb 11 2009). *Nine Career Fire Fighters Die in Rapid Fire Progression at Commercial Furniture Showroom – South Carolina [Recommendation #7: Fire Departments should ensure that the Incident Commander establishes a stationary command post, maintains the role of director of fireground operations, and does not become involved in fire-fighting efforts]*. Retrieved from <http://www.cdc.gov/niosh/fire/reports/face200718.html>

Recommendation A10

Assign fire operations aides to battalion chiefs

Rationale

- NFPA 1710 section 5.2.2.2.5 establishes that supervisory chief officers have aides assigned for purposes of incident management and accountability at emergency incidents.
- NFPA 1561 (2014) sections 5.3.10, 5.3.11, 8.6, 8.12.2, and 8.12.4 set forth that the incident commander shall be responsible for overall responder accountability, and recognizes the importance of accountability command functions by establishing that *the IC have an additional person (an aide) assigned to facilitate the tracking and accountability of assigned companies.*
- Sections 8.5 and 8.12.3 require that the accountability system track functional and geographic assignments, and that it be initiated at the beginning of operations and maintained throughout the incident. The command aide is a dedicated officer or technician whose primary function is to enhance the effectiveness of incident management through technical support of the IC. This position is assigned to assist the IC in the command post with documenting the position and function of assigned resources and units on a tactical worksheet, assisting with closely monitoring tactical radio channels, keeping the incident action plan (IAP) current, and other assigned duties that support the functions of command.

Implementation

- Revise BCFD policy and procedure to define the role of the fire operations aide (FOA).
- Develop and deliver training that allows ICs and aides to practice and improve their teamwork, preferably in a simulation environment.
- Increase staffing and assign aides to battalion chiefs.
- Identify groups or levels of providers that may be suitable to function as aides and include them in training.
- Implement policy and procedure that provides for their assignment as aides to group or division supervisors.

Comments

Providing support for command functions helps to free up the IC and assures that critical command functions, such as confirming the overall incident strategy, confirming and continuing to formulate an IAP, regular assessment of presenting critical incident factors, establishing objectives based on the incident's critical factors, evaluating the need for additional resources, directing and assigning responding resources, assisting with accountability of personnel, and coordinating activities necessary for overall operational control can get the IC's full attention. The aide position is an integral part of the initial strategic command team, which is, at a minimum, comprised of an incident commander and a fire operations aide. The team can be expanded as required.

On the E. North Avenue fire, accountability management was neglected largely due to a lack of human resources. Functions such as incident check-in/check-out, maintenance of a tactical

worksheet, and PARs may have been accomplished if the IC had an aide. Better accountability management may have resulted.

Policies, Standards, Best Practices, References

- NFPA 1710 (2010) 5.2-Fire Department Services - Staffing.
- NFPA 1561 (2014) 5.3-Functions and Structures of Command - Command Post
- NFPA 1561 (2014) 8.5-Command Safety - Accountability Systems.
- NFPA 1561 (2014) 8.6-Command Safety - Assignment of Staff Aides.
- NFPA 1561 (2014) 8.12-Command Safety - Command Post.
- Brunacini, N., Brunacini, J. (October 2014). *Model Command SOPs*. Retrieved from www.bshifter.com/about_sop.aspx

FINDING B

The ventilation and search of the delta exposure were incomplete.

Recommendation B1

Implement and train to an effective fireground communications model.

Rationale

- NFPA 1561 (2014) 3.3.7, A.6.2.2, and D.4.1 establishes that fire departments should use clear text/plain language radio messages for emergency incidents.
- NFPA 1021 (2014) establishes that supervisory-level officers shall be able to communicate instructions that are complete, clear, concise, and convey desired outcomes. There are numerous best practices, including one outlined in the National Incidents Management System student handbook.

Implementation

- Create and train to a new procedure that specifies:
 - The use of an order model for communicating using plain language where specific procedures to communicate by radio should outline four steps:
 - Calling the unit one intends to contact.
 - Receiving acknowledgement from that unit that it is listening.
 - Transmission of the message.
 - Acknowledgment via a confirmatory repetition of the message by the receiving party.
 - Example 1:
 - “Engine 13 to Command.”
 - “Command.”
 - “We have no visible fire in exposure delta.”
 - “Command copy. Engine 13 has no visible fire in exposure delta.”
 - Example 2:
 - “Command to Engine 31.”
 - “Engine 31.”
 - “Advance your line to the third floor.”
 - “Engine 31 copy, advancing our line to the third floor.”
 - A disciplined structure for units to transmit “status reports” upon task completion (or non-completion). Unit status reports should specify:
 - The unit’s operating location
 - Conditions noted
 - Actions being taken
 - Resources needed to ensure that desired outcomes are being achieved (or explanation of why a task could not be completed).
 - A requirement that command must assign tasks to operational units via radio so that all units on the scene can maintain good situational awareness.
 - A definition of the specific limited circumstances for when it is appropriate for an operational unit to initiate radio communication.

- Once a procedure is developed and implemented, initial and annual training should be developed that allows acting company officers, company officers, and chief officers to practice the elements of the above policy in a simulation laboratory environment.

Comments

On the E. North Avenue fire, there appeared to be several examples of ineffective radio communications, some of which had detrimental effect on the incident.

At one point, Command assigned Truck 1 via radio to *“get in that delta exposure and, uh, get that place opened up ... it’s pretty charged with smoke. I’m sending a unit in from the front with a line just in case.”* To which Truck 1’s acting Lieutenant replied *“Alright, I copy.”* Truck 5 and Engine 13 were given face-to-face orders to assist with the operations in the delta exposure. However, at no point were the basement front or first-floor-rear windows and door “opened up.” After receiving the order to “open up,” Truck 1’s acting Lieutenant and one firefighter, all four members of Engine 13, and two members of Truck 5 entered exposure delta through its front door, and initially went up the front stairs to concentrate efforts on the second and third floors, areas that were immediately adjacent to where the bulk of the fire had been in the primary fire structure. Although Battalion Chief 2 later said he had a clear idea of what he wanted the companies to do, it was apparent that his intent was not clearly conveyed or understood. Primary and secondary searches of exposure delta were not explicitly ordered by the IC, and were not completed.

Truck 1 never provided a status report back to the IC that the "opening up of delta" had been partially accomplished, and never reported the inability to open the rear of the first floor and the front basement windows. None of the three units operating in delta provided a status report back to the IC regarding primary or secondary search completion in exposure delta.

Engine 13’s fire fighter transmitted a status report to the IC regarding conditions found in the delta exposure. He did not confirm contact with “Command” prior to transmitting the status report, and didn’t monitor the radio afterward to assure acknowledgement of message by the IC. The IC later reported that he did hear that message.

Prior to exiting exposure delta, Engine 13’s Acting Lieutenant saw smoke thick enough that it completely obscured the floor of the basement, and that the first floor was missing in the kitchen. Neither condition was reported to the IC.

The ventilation tactics employed in the delta exposure were poorly communicated, and this resulted in mixed tactical methods being employed (see separate recommendation).

Lieutenant Bethea transmitted the words *“Second floor delta, come up,”* possibly attempting to have someone who he saw operating on the second floor of the delta exposure answer him on the radio. Just after that transmission, Engine 13 made its delta status report transmission (see above) which it intended for Command. After that transmission, Safety Officer 2 transmitted *“Copy.”* Engine 13 later reported not hearing this return message from Safety Officer 2. The whole exchange appears to be an example of neither the sender nor the receiver effectively communicating.

Policies, Standards, Best Practices, References

- NFPA 1561 (2014) A.6.2.2-Communications and Information Management.
- NFPA 1561 (2014) 5.8.4-Progress reports.
- NFPA 1021 (2014) 4.2.1-Fire Officer I.
- FEMA. (January 2005). *NIMS ICS for The Fire Service Student Manual (1st ed.)*. Pages 1-17 and 1-18.
- *Best Practices for VHF and 800MHz Trunked Radio Systems* (2008) City of Phoenix Fire Department.
- Brunacini, N., Brunacini, J. (October 2014). *Model Command SOPs*. Retrieved from www.bshifter.com/about_sop.aspx

Recommendation B2

Revise policy to assure the report via radio and mitigation of all identified, potentially life-threatening hazards.

Rationale

- NFPA 1561 (2014) 5.8.5 and 6 establish that supervisory personnel have the responsibility to be alert to recognizing conditions that create a hazard within their span of control, to take immediate action to correct imminent hazards, and to advise their supervisory personnel.
- NFPA 1021 (2014) sets standards for operating properly as a company officer, to include proper actions when confronted with hazards (see additional full recommendation).

Implementation

- Develop, issue, and train to policy that requires units to report all identified potentially life-threatening hazards, preferably via radio so that all units operating on the incident scene are simultaneously made aware.
- Develop, issue, and train to policy that specifies the inclusion of “mitigation of all potentially life threatening hazards” into all incident action plans.

Comments

Policy should be established and training developed and delivered to ensure that all personnel operating on an incident, especially company officers, are required to report any discovered significant hazards to the IC, and that mitigation of all existing hazards that have potential to be immediately dangerous to life and health is an objective included in all incident action plans, even for vacant structures.

During the E. North Avenue fire, the IC ordered Engine 13 to take a hoseline into exposure delta. After working on the upper floors and prior to exiting the structure, Engine 13’s acting Lieutenant observed “heavy smoke” conditions in the basement as well as the missing kitchen floor. The Truck 1 acting Lieutenant, who had been ordered to “*open up*” the delta exposure, did not assure that a search or inspection was accomplished of the rear area of the first floor and the basement. Truck 5 initially deployed negative pressure ventilation using a PPV fan at the front door blowing outwards. Within a few minutes, without coordination with the Truck 1 officer or with the IC, Truck 5 then changed the tactic to positive pressure ventilation by using the PPV fan blowing inward, but failed to establish any flow path through the first floor rear and basement. No observation of conditions or ventilation effectiveness of the basement level was made by Truck 5 or Truck 1.

Engine 13’s acting Lieutenant stated that all four members of Engine 13 were made aware that there was no floor in the first floor rear of exposure delta, however neither the other members working in that dwelling nor the IC were notified. Apparently the IDLH conditions in the basement of the delta exposure were never mitigated.

Members assigned to the delta exposure did not act in accordance with MOP 602-2, p.4, in that they did not conduct a proper search of their assigned sector, specifically the basement. If it had

been searched, it is likely that steps to mitigate the IDLH atmosphere would have been undertaken.

The use of SCBA was discontinued by personnel operating in exposure delta without the benefit of air monitoring information or a complete assessment of the structure.

Policies, Standards, Best Practices, References

- BCFD MOP 602-2 (pg. 4).
- BCFD MOP 611
- NFPA 1561 (2014) 5.8 Supervisory Personnel.
- NFPA 1021 (2014) 4.7 Health and Safety.

Recommendation B3

Implement command benchmarks for “Primary Search Complete” and “Secondary Search Complete.”

Rationale

- NFPA 1710 (2010) Section 5.2.4 establishes that an initial full-alarm assignment shall provide for at least one victim search and rescue team.
- NFPA 1561 (2014) Annex A explains that an offensive strategic plan involves operations to provide search and rescue, and to control and extinguish the fire.
- BCFD MOP 602-2 requires members to conduct a search of their assigned sector
- MOP 622-1 establishes that the prime responsibility of the first arriving truck company is to initiate search and rescue operations while simultaneously ventilating, and in the absence of a truck company, engine companies are to begin an immediate search.

Implementation

Revise, issue, and train to policy that:

- Defines “Primary Search” and “Secondary Search.”
- Requires both searches to be accomplished in all structures where an IDLH exists or existed.
- Requires that attached or threatened exposures must be entered and checked for hazards.
- Requires the use of “primary search complete” and “secondary search complete” IAP benchmarks and radio transmissions from the IC to FCB when accomplished (similar to the way a fire is presently reported “under control”). And that FCB will note completion of these tasks with a CAD entry.

Comments

On the E. North Avenue fire, despite a recognized IDLH atmosphere in the delta exposure, the IC neglected to specifically assign the tasks of conducting primary and secondary searches of the structure. Though specified in MOP 602-2, neither Truck 1 nor Truck 5 nor Engine 13 initiated a thorough search of the delta exposure that included the basement, nor did they report that one had been completed (or couldn’t be completed).

Policies, Standards, Best Practices, References

- BCFD MOP 602-2 Fireground Operations p.4 pp.4.
- BCFD MOP 622-1 Search and Rescue.
- NFPA 1710 (2010) 5.4.2 Deployment.
- NFPA 1561 (2014) Annex A.
- IFSTA. (2013). Essentials of Firefighting (6th ed.). Prentice Hall.

Recommendation B4

Revise and train to a policy that outlines procedures for when conflicting orders are given or received.

Rationale

- NFPA 1561 (2014) Section 5.8.8 establishes a standard for handling conflicting orders via two-step process: 1) the individual receiving the order shall inform the individual giving the order that a conflict exists, and 2) the individual giving the conflicting order shall inform the individual who provided the initial order that the initial order was countermanded or modified.
- NFPA 1561 (2014) 8.13.2 (5) establishes that the ISO must notify the IC of any actions taken to correct imminent hazards.

Implementation

- Revise BCFD MOP 106-3. The current policy only covers when conflicting orders given by the incident safety officer to prevent imminent unsafe acts, but other situations where conflicting orders are given are not explicitly covered.
- Develop, issue, and train to an NFPA-compliant policy that specifies how personnel are to handle a wide variety of situations when conflicting orders might be given or received.
- In cases where units are operating per standing orders (MOP), the IC shall be considered the individual who gave the initial order.
- Review and train members on existing policy that says the ISO will immediately notify the IC if tactical operations are stopped for safety reasons.

Comments

When interviewed, two members of Truck 1 reported that while they were operating on the exterior, charlie side of the delta exposure, they were ordered by Lieutenant Bethea to “hold up,” presumably because the members were threatened by an imminent hazard. Battalion Chief 2 reported that Lieutenant Bethea did not inform him of this action, nor did the members of Truck 1 report to anyone their inability to complete their task.

Policies, Standards, Best Practices, References

- BCFD MOP 106-3 Safety Officer Duties
- NFPA 1561 (2014) 5.8.8-Conflicting Orders.
- NFPA 1561 (2014) 8.13.2 (5)-Incident Safety Officer procedures

Recommendation B5

Assure those functioning in the role of company officer are trained to national standards for fire officers.

Rationale

- NFPA 1561 (2014) sections 5.8.5, 5.8.6, and A.5.3.26 establish that supervisory personnel shall be alert to recognize conditions and actions that create a hazard within their span of control, and shall have the authority and responsibility to take immediate action to correct imminent hazards and to advise their supervisory personnel regarding such actions.
- NFPA 1021 (2014) section 4.7 establishes that officers must be able to identify safety hazards and communicate about them.

Implementation

- Revise MOP 342, the BCFD Acting Suppression Lieutenant Training Manual and other influencing policy/memoranda (including labor agreements) so that all members who function in a company officer role, including when “acting out of title,” are trained in compliance with NFPA 1021 (2014) and meet the minimum qualifications, certifications and licenses for the position in which they are acting.
- Revise MOP 110-3, job classifications, and other influencing policy/memoranda (including labor agreements) so that minimum requirements for promotion to officer ranks are in compliance with NFPA 1021 (2014).

Comments

BCFD should assure that all members who function in company officer positions (officers and acting Lieutenants) are well prepared to do so. These members should meet national standards for training. There were several recognized issues with company officers’ performance during the E. North Avenue fire that may have stemmed from inadequate training.

During the investigation it was discovered that BCFD’s minimum qualifications for becoming approved to act as a Lieutenant are less stringent than the minimum qualifications for promotion to Lieutenant. This disparity in minimum qualifications may have negatively impacted multiple company officers’ performances on the E. North Avenue fire. Specifically, acting Lieutenants’ performance could have been improved as it related to the ventilation and search of the delta exposure, reporting the missing kitchen floor, mitigation of the IDLH atmosphere that existed in the basement, and proper radio communications.

Policies, Standards, Best Practices, References

- BCFD MOP 342
- BCFD MOP 110-3.
- NFPA 1561 (2014) 5.8 Supervisory Personnel.
- NFPA 1021 (2014) 4.7 Health and Safety.

Recommendation B6

Establish and train to a standard procedure for use of positive pressure ventilation (PPV), emphasizing coordination of ventilation tactics with the IC.

Rationale

- NFPA 1410 (2015) Section 11.5 Ventilation Operations Evolutions establishes several performance requirements for firefighters to identify the appropriate type of ventilation and to coordinate its implementation.
- NFPA 1410 (2015) A.3.3.9 establishes awareness of and methods for controlling airflow paths as a means of optimizing ventilation.
- NFPA 1561 5.3.12 Incident Action Plan establishes that the incident commander shall be responsible for developing and/or approving an incident action plan (IAP) and communicating it to all staged and assigned members at an incident.

Implementation

- Develop, issue, and train to policy that:
 - Provides for the proper use of PPV, including the need to establish, control and limit airflow paths.
 - Specifies the applications where PPV can be advantageous.
 - Specifies the differences from natural or negative pressure ventilation.
 - Stresses the importance of communication and coordination of ventilation strategy through the IC.
 - Stresses the importance of coordinating timing with water application if used as part of a fire control strategy.
- Design and deliver a training program that allows for practical application of PPV in a learning environment.
- Revise ventilation sections of the current BCFD Training Manual to include information on PPV fans and lesson plans for practical evolutions.
- Furnish several PPV fans to Fire Academy.
- Incorporate PPV into initial firefighter trainee curriculum.

Comments

Coordinated, timely and appropriate ventilation is critical to safe and effective fireground operations. On the E. North Avenue fire, there was extensive evidence of a haphazard approach to ventilation. Specifically, natural, negative-pressure and positive-pressure ventilation tactics were employed independently and intermittently by individuals, without coordination, and without the full knowledge and consent of the IC. The Department should develop and train to procedures that specify the application of PPV techniques.

Communication is vital to good ventilation. Decisions concerning ventilation tactics must be coordinated by the IC (or, when established, a ventilation group supervisor) and specific orders must be given to units and members performing ventilation.

Positive Pressure Ventilation is a tactic that uses the combination of ventilation blowers or fans to pressurize a structure, coupled with the subsequent creation of an airflow path throughout that structure, to ventilate smoke, high temperature combustible products, and gases, either prior to

suppressing a fire or afterwards. Advocates of the tactic argue that under certain circumstances using PPV can serve to make fire attack easier and safer than with traditional ventilation tactics. PPV became a popular method of ventilation in the fire service in the 1980s on the west coast. From then until now, many Departments across the country have successfully used PPV fans to accomplish the ever important tactic of ventilation (Robertson, 2014). Use during fire attack is typically accomplished by having crews get the hoseline ready at the door, and then placing the fan outside the door, usually about ten feet from the opening so that the fan's air cone will completely cover the door opening. Timing and coordination with fire attack is critical. When crews are ready with hose lines to make entry and attack the fire, ventilation is initiated, causing the fire to intensify due the sudden influx of air, but at the same time providing a clearer path to the seat of the fire as the smoke is pushed higher into the structure, away from the door, allowing crews to enter the building with greater visibility and have an easier time locating and extinguishing the flames. The PPV fan can also be used after the fire is extinguished for effective smoke, carbon monoxide, and other harmful gas removal in a relatively short time. For example, a three story 20' x 50' middle-of-the-group row home has approximately 30,000 cubic feet of air inside of it. A 16-inch specialized PPV fan can produce between 7,000 and 10,000 cubic feet per minute of air movement into a structure, which can create a positive relative air pressure throughout the structure. With proper use of the fan at the inlet, creating an effective airflow path throughout the structure, and limiting the size of the exhaust outlet, the air within this structure could effectively be turned over in about five to 15 minutes.

It is generally accepted that the IC should indicate the ventilation tactic(s) to be employed. During the E. North Avenue fire, the IC ordered ventilation but failed to specify the tactics to be used. *“Command to Truck 5, let's uh get some fans in service, see if we can get the smoke out of here.”* In response to that order, a small, low-volume, electric PPV fan was placed by Truck 5's firefighter on the front door threshold of exposure delta, facing outwards, and thereby drawing negative pressure. Within a few minutes, Truck 5's tillerman saw the placement of the fan and took it upon himself to move it a few feet away from the doorway, turn it around, and aim the fan's air cone around the front door. When asked why he did this he explained that he observed that a PPV fan was being used improperly and he wanted to correct its placement so that it would be used properly. The PPV fan was left in that positive-pressure position for about an hour. Neither Truck 1's acting Lieutenant nor the IC were informed that PPV had been initiated. Apparently no one took any action to provide for an airflow path.

The Board of Inquiry found that four BCFD units currently have Department-issued PPV fans (Truck 5, Truck 21, HazMat 1, and Rescue 1), and that the Training Academy does not have a PPV fan.

During the E. North Avenue fire, upon entering exposure delta, companies encountered heavy brown smoke on the first, second, and third floors. Crews from Truck 1, Truck 5, and Engine 13 ventilated by opening three front windows on the second floor, breaking two rear windows of the second floor, and opening three front windows on the third floor. In addition, Truck 5's driver created two openings in the roof, one about 2' x 2', and one about 3' x 2'.

Apparently no one attempted to open two front basement windows that were secured with plywood. Later flow tests conducted by representatives of the National Institute of Standards

and Technology (NIST) revealed that opening only one of the basement windows very likely would have effectively ventilated the basement in a short time and may have mitigated the IDLH atmosphere that apparently killed Lieutenant Bethea.

Initially it was theorized that the PPV fan placed in service blowing into the delta exposure created enough pressure and velocity within the structure to trap a lethal concentration of smoke and carbon monoxide in the basement. It was determined, however, through testing by representatives of NIST, that the placement of the PPV fan on the sidewalk in front the delta exposure had little or no effect on the smoke conditions in the basement. Nonetheless, the PPV fan blowing in would have helped ventilate the basement had one or both basement windows been opened.

Policies, Standards, Best Practices, References.

- BCFD MOP 602-2.
- Clinton, H. (1999). *Carbon Monoxide and Gasoline Powered Smoke Blowers: Strategic Management of Change*. National Fire Academy: Executive Fire Officer Applied Research Project. Retrieved from <http://www.usfa.fema.gov/pdf/efop/efo30813.pdf>
- Easter, D. (2008). *Evaluation of Positive Pressure Ventilation*. National Fire Academy: Executive Fire Officer Applied Research Project. Retrieved from <http://www.usfa.fema.gov/pdf/efop/efo42516.pdf>
- Madrzykowski, D. (December 11, 2014). On-site testing of 1710 E. North Avenue. NIST: Gaithersburg, MD.
- Phoenix Fire Department (n.d.). *Carbon Monoxide and Positive Pressure Ventilation*. Retrieved from http://www.tempest.us.com/documents/Phoenix_Test_Rprts_121499.pdf
- Phoenix Regional SOPs (1995). *M.P 202-12D: Positive Pressure Ventilation*. Phoenix Government, Phoenix AZ. Retrieved from <https://www.phoenix.gov/firesite/Documents/074732.pdf>
- Robertson, H. (January 2014). *Positive pressure ventilation basics*. Fire Rescue Magazine.

FINDING C

A mayday was neither transmitted by nor received from Lieutenant Bethea.

Recommendation C1

Develop and deliver recurring training for the existing BCFD Mayday Policy

Rationale

- NFPA 1407 (2015)-Standard for Training Fire Service Rapid Intervention Crews establishes guidelines for annual training in RIT and mayday operations.
- NFPA 1561 A.6.3.2.1 Responder Mayday
- NFPA 1500 Section 8.2 Communications-establishes the terms “Emergency traffic” and “Mayday” and outlines procedures for both.
- BCFD MOP 602-13 (Mayday) provides a procedure to be used by a member to transmit and report a Mayday situation.

Implementation

Develop a curriculum and use existing Fire Academy training props to deliver annual training to all operational members that provides practical training on initiating a mayday via radio under duress, and allows for practice of subsequent incident operations (including the outlined Fire Communications Bureau components) for mayday incidents.

Comments

The Board of Inquiry found no evidence that Lieutenant Bethea attempted to transmit a mayday via radio or activate his radio’s emergency button in spite of strong evidence that his radio was powered on, on the proper talkgroup and working properly at the time of his death (see radio test information).

A review of BCFD training records indicated that formal, Department-wide training on mayday procedures took place in 2010. Records also indicated that mayday procedures were included as part of force protection measures training that was covered during battalion-level training in November 2013.

A review of Lieutenant Bethea’s training records showed no indication that he personally participated in the above training, but it was believed that he did.

Policies, Standards, Best Practices, References

- MOP 602-13 (Mayday)
- Hoffman JJ [2002]. *MAYDAY-MAYDAY-MAYDAY*. Fire Department Safety Officers Association Health and Safety for Fire and Emergency Service Personnel 13(4):8
- Fire Fighter’s Handbook [2000]. Essentials of Firefighting and Emergency Response. New York: Delmar Publishers.

Recommendation C2

Set specific criteria for when a mayday transmission is mandatory.

Rationale

- NFPA 1561, Emergency Services Incident Management System (NFPA 2002b). Paragraph 4.2.6 requires that emergency service organizations prepare plans that address “both routine and unusual incidents and shall provide standardized procedures that can be applied to the needs of situations of differing types, sizes and complexities.”
- NFPA 2002b, p. 1561-6, Annex A (“Explanatory Material”) 17 items that an IC should consider when a firefighter is in a life-threatening situation.

Implementation

Develop a set of criteria under which transmission of a mayday is made mandatory, and add the notion of mandatory mayday criteria to policy and training.

Comments

It has been widely recognized in the fire service that, in spite of training, members in peril frequently fail to promptly transmit a mayday. Survivors interviewed after the fact cited reasons such as “I didn’t want to get everyone excited for nothing,” “I didn’t want to admit I was in a situation that I couldn’t get out of by myself,” and “I didn’t think my situation was bad enough to warrant a mayday.”

As a result, multiple fire service thought leaders have suggested that the fire service adapt mandatory mayday guidelines modeled after military pilot ejection doctrine. Military leaders have found that making pilot ejections mandatory under certain circumstances serves to remove any stigma associated with ejecting, has improved decision-making by pilots under duress, and has saved lives. In fact, since the military implemented mandatory ejection guidelines, its culture has evolved to a point where failure to eject when it is indicated has more of stigma than ejecting does.

The Board of Inquiry had no way of knowing whether Lieutenant Bethea was hesitant to transmit a mayday on the E. North Avenue fire. This recommendation (C2) was made independent of evidence derived during the Board of Inquiry’s investigation.

Policies, Standards, Best Practices, References

- Amarillo Fire Department (Texas) Mayday Guidelines.
- *When Would You Call Mayday! Mayday! Mayday?* By Dr. Burton A. Clark. http://wps.prenhall.com/wps/media/objects/5123/5246605/Article_When_Would_You_Call_Mayday.htm

FINDING D

Operations were conducted in an IDLH atmosphere without a rapid intervention team (RIT) in place.

Recommendation D1

Develop and train to a revised RIT policy to include criteria for when a RIT is required, a provision for conducting annual RIT operations training, and reinforces that a RIT shall not be used for tactical assignments.

Rational

- NFPA 1407 (2015)-Standard for Training Fire Service Rapid Intervention Crews establishes guidelines for annual training in RIT and mayday operations.
- NFPA 1561 A.6.3.2.1 Responder Mayday
- NFPA 1561 (2015) 8.8-Command Safety, Rapid Intervention Crew/Company Assignment, requires that the incident commander designate and assign a rapid intervention crew to initiate the immediate rescue of injured, lost, or trapped responders.
- In Annex D.1-Fire Service Responder Safety, that standard indicates that this crew should be designated and dedicated, and remain in “standby mode,” with equipment.
- NFPA 1710 (2010) 5.2.4.3.2 provides criteria for when Initial RITs (IRIT) are to be upgraded to full RITs.
- BCFD MOP 602-8 establishes provisions for IRIT and RIT.
- NFPA 1407 (2015) section 4.4.1 Rapid Intervention Training Policy and Procedures outlines that annual performance evaluations of RIT operations be conducted.

Implementation

- Develop and deliver annual RIT training to all operational providers.
- Reinforce with all incident commanders that their incident action plans must be compliant with MOP 602-8 in that if it becomes necessary to deploy the RIT for life-saving tactical operations, the IC will immediately assign another company as RIT.

Comments

During this incident, Engine 13, which was the assigned RIT, was deployed by the IC on multiple tactical assignments which included entering an IDLH atmosphere in the delta exposure for purposes of potential fire control without another RIT being established.

Policies, Standards, Best Practices, References

- MOP 602-1
- MOP 602-8 RIC
- MOP 606-10
- NFPA 1407 (2015)
- NFPA 1500
- NFPA 1561 (2015) 8.8-Command Safety, Rapid Intervention Crew/Company Assignment
- NFPA 1561 (2015) Annex D.1-Fire Service Responder Safety
- NFPA 1710

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- OSHA 29 CFR 1910.134(g)(3) Procedures for IDLH Atmospheres
 - OSHA 29 CFR 1910.134(g)(4) Procedures for Interior Structural Firefighting

FINDING E

Lieutenant Bethea entered the delta exposure alone and without the ability to deploy his SCBA or PASS device.

Recommendation E1

Develop and train to a policy to establish, designate, and communicate hot, warm, and cold hazard control zones.

Rationale

NFPA 1500 (2013) 8.6-Hazard Control Zones requires that hazard control zones be established at all emergency incidents to identify the appropriate level of PPE and level of risk to emergency responders.

Implementation

- Incorporate into policy and develop/deliver training that creates and reinforces requirements that personnel:
 - Only enter warm zones if they have a specific purpose as communicated by the IC or a group/division supervisor (personnel must be assigned into a warm zone, no self-deployment).
 - Work in crews of two or more when working in a warm zone.
 - Wear SCBA and a PASS device in warm zones.

Comments

While hot zones are typically reserved for IDLH areas, warm zones serve to denote that significant risk of human injury can still exist even in the absence of an IDLH atmosphere. As a result, warm zones should be designated and communicated to all personnel. Access should be limited to those directly aiding or supporting operations. The IC, as well as all officers, should ensure that PPE levels for those entering should be commensurate with the known and potential hazards.

On the E. North Avenue fire, had exposure delta been designated as a warm zone until it was properly searched and ventilated, and had Lieutenant Bethea worn SCBA when he entered it, the events of November 12 may have been much different.

Policies, Standards, Best Practices, References

- NFPA 1500 (2013) 8.6-Hazard Control Zones

FINDING F

BCFD did not notate discovered hazards in CAD

Recommendation F1

Provide a way for personnel who encounter hazards in structures to document them so that the pertinent information will be made available to units responding to reported emergencies before they arrive on the scene.

Rationale

- NFPA 1620 (Chapter 4) Pre-incident Planning provides for, among other things, documentation of hazards during inspections.
- ISO rating criteria

Implementation

- Establish the capacity to record discovered life-threatening hazards in CAD, and for that information to be available to responding emergency crews.
- Develop and implement a policy and procedure that provides for the ability for emergency crews to initiate notations in CAD regarding potential threats that are discovered in the course of their duties.

Comments

At the E. North Avenue fire, the structure presented with a large area of missing floor. If there had been a previous opportunity to discover this structural deficiency, and the information had been recorded and been made available to emergency responders, a line-of-duty death may have been prevented.

While it would be difficult to know of every hazard that exists in a jurisdiction, particularly if there the jurisdiction has a significant number of vacant structures within it, there would be opportunities to discover and document potentially life-threatening hazards to increase safety.

An upgraded CAD is the logical way to achieve this goal. An electronic system that allows hazards to be efficiently recorded at the company officer level when discovered and effectively communicated during a future emergency response to that address is recommended. The Department's implementation of Command CAD and Fire Records offers a new capability to document hazards whether through pre-plan inspection, discovery during a previous response (such as during a medical or some other call), or area familiarization activities. A written procedure for all necessary related functions (for personnel to recognize and report dangerous conditions, for company officers to enter information into the system, and for responders to effectively receive that information) is also recommended.

Policies, Standards, Best Practices, References

- NFPA 1620 (2010) Pre-Incident Planning
- BCFD MOP 610 Fire Pre-Planning

FINDING G

The second battalion chief, Battalion Chief 6, who was assigned as the incident safety officer (ISO), gave operational orders and updates from the rear of the fire building.

Recommendation G1

Second-assigned battalion chiefs should be automatically assigned by standing order (MOP) as the charlie division supervisor.

Rationale

- NFPA 1500 (Section 8.1) The IC shall have overall responsibility for incident management and the safety of all members involved.
- NFPA 1561 (Section 5.3) The IC shall have the responsibilities and duties of all unassigned ICS positions.
- NFPA 1561 (Section 5.9) The ISO shall have overall responsibility for the safety of all members.
- NFPA 1561 (Chapter 8) Span of control
- NFPA 1561 Annex G.7 Benefits of divisions and groups

Implementation

Revise BCFD MOP 601 so that:

- The incident commander retains the overall responsibilities of the ISO (particularly for side alpha), unless he/she assigns a specific officer as ISO, until the arrival of Safety Officer 2.
- Unless given another responsibility by the IC, the second-arriving battalion chief shall automatically assume the “charlie Division” with responsibility for the companies assigned to side charlie by MOP (according to order of dispatch).
- The Charlie Division supervisor shall:
 - Ensure safety for side charlie operations and assigned companies.
 - Ensure accountability is in place for side charlie.
 - Deploy resources to specific tasks, locations, and objectives in the charlie division.
 - Obtain ongoing status and PAR reports from operating units.
 - Maintain awareness of location and air supply for crews operating in the charlie division.
 - Manage the work-rest cycle for assigned companies.
 - Ensure adequate resources for the division.
- When a division supervisor is assigned, the IC will provide him/her with a list in writing or via radio of all units assigned to the division.
- The IC is ultimately responsible for incident safety until the ISO function has been established.
- Before and after an ISO is established, all division or group supervisors are responsible for safety in their respective areas.

Comments

As an incident escalates, the IC should use command officers to fill division, group, branch or section positions to improve safety, decrease the span of control, improve communication, improve accountability and improve incident management.

Battalion Chief 6 was assigned as the incident safety officer based on the order of dispatch (MOP 601). Battalion Chief 6 was positioned in the rear (side charlie) and was not able to provide an adequate incident safety evaluation. Battalion Chief 6 gave tactical orders to units in the rear that had not been assigned to him by the IC.

These circumstances illustrate a common BCFD operational issue. Often fires in rowhomes present physical barriers to members operating on the scene. Simply stated, a unit and its members can go to the front or the rear, but cannot easily move from one to the other. Because of this reality, MOP 601 stipulates that half of the first alarm units report to the front of the building while the other half, including the second-dispatched battalion chief, report to the rear. By making the second battalion chief the ISO, it limits his/her ability to provide command oversight of the units operating in his/her immediate area (and out of sight of the IC, who is typically in the front of the building).

The Board of Inquiry believes that it would make operations safer and more efficient if the second battalion chief were designated as the Charlie Division supervisor from the outset of the incident. This would require the IC to retain the role of ISO, continuing to monitor conditions, activities, and operations to ensure they fall within the Department's risk management criteria, until he/she designates another member (such as Safety Officer 2) to fulfill that role.

Although this proposed new organizational scheme may delay the designation of a dedicated ISO, the Board of Inquiry believes it would likely increase safety since the person in the best position to supervise companies operating in the rear will be their supervisor. It would also improve accountability of the members assigned to the three companies assigned to the rear.

The Board of Inquiry imagines that the officer of the second-dispatched truck company, which is assigned to side charlie, would, upon arrival, be assigned the role of Charlie Division supervisor, unless the second battalion chief arrives before the second truck. If the second truck officer assumes the Charlie Division supervisor role, the second chief would upon arrival relieve the second truck officer and assume charlie division.

Under this organization, the IC would no longer directly supervise the units in the rear and any direction given them would have to go through the Charlie Division supervisor.

Policies, Standards, Best Practices, References

- MOP 106-3
- MOP 601
- MOP 611

FINDING H

A Fire Communications Bureau (FCB) dispatcher changed the computer-aided dispatch (CAD) status of Safety Officer 2 to “In Station” without first making contact with the unit. A second dispatcher mishandled information which contributed to a delay in recognizing that a fire officer was missing.

Recommendation H1

Units must make all status changes via verbal or electronic contact with FCB.

Rationale

- NFPA 1221 (2013) 10.5 CAD capabilities. CAD systems shall provide the tracking of resources before, during and after alarms.
- NFPA 1561 (2014) 3.3.7, A.6.2.2, and D.4.1 establishes that fire Departments should use clear text/plain language radio messages for emergency incidents.
- NFPA 1021 (2014) establishes that supervisory-level officers shall be able to communicate instructions that are complete, clear, concise, and convey desired outcomes. There are numerous best practices, including one outlined in the National Incidents Management System student handbook.

Implementation

Revise BCFD MOP 515-2 to:

- Require use of electronic signal (Direct Entry Keyboard – DEK or Mobile Data Terminal –MDT) initiated by unit as the primary means of making a status change.
- Allow, as a last resort, manual status changes via CAD entries by dispatchers, but only after verbal (radio or telephone) confirmation of the status change has been received from the unit.

Comments

On the E. North Avenue fire, a fire dispatcher unilaterally changed the status of Safety Officer 2 without making contact with that unit. This concealed the fact that Lieutenant Bethea was missing and added to confusion about his whereabouts once he was missed.

Changing units’ statuses electronically is preferable because it is less fallible than dispatchers’ manual entries and the resulting metadata create permanent records.

Other members assigned to Safety Officer 2 interviewed by the Board of Inquiry stated that they did not make unit status changes via DEK or MDT. When asked why, they explained that Safety Officer 2 (SO2) typically was not added to an incident until after they called “en route” verbally. Upon further investigation, it was confirmed that it was FCB’s practice to alert SO2 by adding a phantom unit, “SO,” to an incident and then replacing that phantom unit with SO2 once response was confirmed verbally. Although once SO2 was added to an incident all other status changes could have been made via DEK, apparently members assigned to Safety Officer 2 routinely made all of their statuses verbally. This common practice may have contributed to the erroneous manual status change of Safety Officer 2 on November 12, 2014.

Multiple units assigned to the E. North Avenue fire did not activate their DEKs at the times when they changed their statuses, so the practices detailed above may not have been isolated to Safety Officer 2.

Policies, Standards, Best Practices, References

- MOP 515-2

Recommendation H2

Develop and train to a policy that requires dispatchers to periodically check the welfare of units when they are not in station.

Rationale

- NFPA 1221 (2013) 10.5 CAD capabilities. CAD systems shall provide the tracking of resources before, during and after alarms.
- NFPA 1561 (2014) Annex A.4 recommends that a supervisor be responsible for each crew.
- NFPA 1500

Implementation

- Program CAD to enable a timer that will alarm after a specific interval to facilitate unit monitoring.
- Require dispatchers to make radio contact with units not in station at specific intervals to assure their well-being.
 - Multi-person units during off hours (2300 to 0700 hours)
 - Single-person units at all hours.

Comments

On the E. North fire, Lieutenant Bethea's unit, Safety Officer 2, never cleared the scene. Although it was put in service manually by a dispatcher, that didn't occur for an extended period after all of the other units left the scene. By adopting a standard policy that requires dispatchers to check on the welfare of units showing in service and on the air for an extended period, the Board of Inquiry hopes to avoid circumstances like those that played out on November 12, 2014.

Policies, Standards, Best Practices, References

- MOP 515-2

Recommendation H3

Develop written Fire Communications Bureau (FCB) policies and procedures.

Rationale

- MOP 001
- Center for Public Safety Excellence Criterion 9B.5: Communication Systems specifies that standard operating procedures or general guidelines are in place do direct all types of dispatching services provided by the communications center.
- *Policy, Process and Procedure Qualities* by KCG Consulting Group (www.kcggroup.com)
- *The Policy and Procedure Manual: Managing "By the Book,"* by Paul Rao, PhD (http://www.asha.org/slp/healthcare/policy_procedures/)

Implementation

- Revise all MOPs relating to FCB
- Develop FCB-specific MOPs
- Include a policy that requires FCB supervisors to document all working fires, additional alarms of fire and other significant incidents and review them with oncoming personnel at shift change.

Comments

It became apparent to the Board of Inquiry during the investigation that FCB had very few written, bureau-specific policies and procedures, and that those in place were inadequate or outdated.

Members in various levels of the FCB chain of command, from top to bottom, expressed confusion in interviews when asked about policies and procedures. Members gave contradictory testimony as to what their bureau's policies and procedures stipulated. Members stated that most of the direction they recalled receiving came in the form of multiple email messages from the Battalion Chief of FCB, but that those email messages were not coalesced and archived in a way that made them readily accessible. Furthermore, apparently no provision was in place to provide new employees with historical email.

Regarding written policies, the Battalion Chief of FCB told the Board of Inquiry "Well, um, unfortunately we don't really have, we have some MOPs that go over general things in the bureau but there have never been any SOPs done specific to communications, um, as a matter of fact, I have some that have been developed, started a couple months ago or more, uh, developing them, um, prior to this happening and just they nothing's been published yet because it's, there are a lot of activities going on there in there and to be able to fine-tune exactly what you want people to do, um, the unfortunate thing in my bureau, you have to be very nit-picky with when you tell people things. I mean, I had to send out an email to tell people how to sit in a chair properly."

This lack of written guidance may have contributed to mishandled information and inappropriate/slow reactions to multiple expressions of concern by the auxiliary firefighter about Lieutenant Bethea and his unattended vehicle. Specifically, FCB personnel may have failed to

follow EPD/EFD/EMD procedures when handling non-emergency calls. They didn't appropriately ascertain the location of the unattended car and the telephone numbers from which callers were calling.

Policies, Standards, Best Practices, References

- *Best Practices in Policies and Procedures*, by Stephen Page, Copyright 2011, ISBN: 1929065078

Recommendation H4

Implement standardized training for FCB personnel to include maintaining certifications and complying with national standards.

Rationale

- Center for Public Safety Excellence Criterion 9B.9: Communication Systems specifies that a communications training program for emergency dispatchers must be in place that ensures adequate, timely and reliable fire agency emergency response.
- NFPA 1061
- NFPA 1221

Implementation

- Ensure all members remain compliant with licenses and certifications as required by HR and MOU.
- Require all dispatchers, supervisors, managers and administrators within FCB become certified by the Maryland Fire Service Personnel Qualifications Board in Public Safety Telecommunicator I/II.
- Ensure all Supervisors document training in the E-Journal in a manner consistent with practices in other BCFD divisions.

Comments

It became apparent to the Board of Inquiry during the investigation that FCB did not have a strong culture of training. Multiple managers and supervisors stated that little to no training took place at FCB.

When asked specifically about training on procedures for changing a unit's status to "in service" manually, one FCB captain said "...it's been a long time since I've trained someone so I'll be honest with you, I don't recall."

Members in various levels of the FCB chain of command expressed confusion in interviews when asked how new dispatchers were trained and approved to act Lieutenant. Multiple members have expired licenses and certifications in spite of supervisors stating that they thought EMD and CPR certifications must be kept current. Members gave contradictory testimony as to who is responsible for training and how it was to take place. Multiple members said they were too busy to do any training.

There was no indication that training was being tracked or documented. The Battalion Chief of FCB said "Because we don't have any training, there's nothing to keep record of."

Policies, Standards, Best Practices, References

- MOP 500 series
- BCFD R&R 43:02, 43:06
- MIEMSS EMD
- NAED EFD, EMD, EPD
- NFPA 1061

Recommendation H5

Make better use of CAD to support field and FCB operations.

Rationale

- NFPA 1221 (2013) 10.5 CAD capabilities. CAD systems shall provide the tracking of resources before, during and after alarms.
- NFPA 1500
- NFPA 1561

Implementation

Establish written guidelines requiring that a CAD event be created for any occurrence that requires action by a fire department unit, specifically:

- Calls received concerning problems/concerns related to fire department vehicles
- All instances when service of any type is rendered to the public
- All incidents involving a fire department unit.

Comments

On November 12, 2014, the first call from the Unified Call Center (UCC) to FCB furnished accurate information concerning Lieutenant Bethea's unattended fire Department vehicle (correct location and license plate number). Based on testimony that the Board of Inquiry heard, the UCC call taker acted within policy when she called FCB on an administrative line to relay the information she received. No record of this call was entered into CAD by the dispatcher who took it, and as a result the location and license plate number were lost. This resulted in a significant delay in identifying the vehicle and determining that a fire officer was missing.

Had a CAD case been created by the dispatcher or UCC call taker, the lost information would have been recorded electronically and preserved. Subsequent calls to FCB and UCC with additional information could have been added to a case helping to improve situational awareness.

Policies, Standards, Best Practices, References

- NIMS ICS for the Fire Service, Student Manual
- NFPA 1710 4.1.2.3-Alarm Handling
- NFPA 1061