Huntingtown Volunteer Fire Department and Rescue Squad, Inc.

Significant Injury

Investigative Report

3380 Soper Road

March 19, 2011

April 2012

Sunday March 27, 2011

Chief Billy Goldfeder-FF Close Calls and Deputy Chief Loveland-Symmes FD

Chief Don Heinbuch-Baltimore City

Chief Bill Corrigan-Prince Georges County/College Park VFD

Chief Jon Starling-Loudoun County/Sterling VFD

Chief Mike Robinson-Baltimore County

Captain Justin Green-Loudoun County

On Saturday March 19, 2011, the Huntingtown VFD responded to a reported chimney fire on Soper Road in Huntingtown, MD. Units arrived on location of an approximate 10,000 square foot mega-mansion with fire quickly spreading in the attic and walls. While firefighters were operating inside, conditions quickly deteriorated resulting in firefighters taking drastic actions in fear of their life such as running through sheet rock walls, jumping out of 2nd floor windows, etc.

In the history of the Calvert County Fire/Rescue/EMS service, there had never been a fire of this magnitude resulting in so many injuries; 2 life-threatening. In past years, fire departments would internally review firefighter injuries and accidents. Less than a week before this fire, a fire occurred in Prince Frederick (less than 10 miles south of Huntingtown) where a MAYDAY occurred and 2 firefighters were burnt. As the Chair of Chief Council, I immediately notified every department and their staff that I wanted to develop a "Calvert County Accident Safety Review Committee" comprised of the department Safety Officers. Their objective would be to investigate every firefighter injury and accident as well as the particulars behind the incident.

Seeing into the seriousness of the Soper Road fire, I took it upon myself to reach out to Chief Billy Goldfeder to develop a team of fire service experts in the Metropolitan Area to investigate this fire. I am asking for an in depth proactive investigation to review our past practices, SOG's, training, etc. The final result will be distributed for all interested departments across the country. I appreciated your valued time, experience and knowledge.

Respectfully,

_____

Jonathan Riffe
Fire Chief

Investigative Team

Deputy Chief Billy Goldfeder
Loveland-Symmes, Ohio Fire Department
Chairman of Investigative Team

Assistant Chief Donald W. Heinbuch
Baltimore City, MD Fire Department

Division Chief Michael W. Robinson
Baltimore County, MD Fire Department

Chief Jonathan R. Starling
Sterling, VA Volunteer Fire Department

Chief William Corrigan
College Park, MD Volunteer Fire Department

Captain Justin L. Green
Loudoun County, VA Department of Fire, Rescue and Emergency Management

Support Staff

James W. Richardson
Coordinator, Fire-Rescue-EMS Division
Department of Public Safety, Calvert County, MD

Katie Hanko
Department of Public Safety, Calvert County, MD

Table of Contents

ACKNOWLEDGEMENTS

The investigative team is grateful to all those who participated in the development of this report. Without their cooperation and assistance, this report would not have been possible.

Specifically, the investigative team would like to recognize the following individuals and organizations for their assistance with the project and thank them for their contributions and insight.

Jon Riffe
Fire Chief
Huntingtown Volunteer Fire Department

Bo McKenny
Safety Officer
Huntingtown Volunteer Fire Department

Rebecca K. Weems
Communications Assistant Chief
Calvert County 911

Marc S. Bashoor
Fire Chief
Prince George's County Fire/EMS Department

Trisha Case
Breathing Apparatus Technician
Apparatus Maintenance Division
Prince George's County Fire/EMS Department

Daniel Benedetti
Fleet Manager
Apparatus Maintenance Division
Prince George's County Fire/EMS Department

Letter to Chief Riffe from Billy Goldfeder, Chair of Investigative Team

Dear Chief Riffe,

On behalf of the entire investigative team, attached is the final report for the house fire at 3380 Soper Road. We all appreciate the opportunity to help your Department, Calvert County and the fire service in general learn from this incident. Reviewing the facts of this incident helped us to determine specific recommendations and identify lessons learned. We would like to express our thanks to you and the many people who helped us gather the facts and information used to develop this report.

We found great value in the time spent with the officers and members of the Huntingtown VFD and related agencies. Without question, these are people who provide an excellent service to their communities, day in and day out. Unfortunately, Huntingtown, like other fire departments, experienced a serious and frightening close call. In speaking with you, your officers and members, and other Calvert County officials, both staff and volunteer, it is clear that you all are committed to change so that you never experience an event like this again. Your request for an outside, independent review of this fire is indicative of that commitment.

We urge you and those in leadership roles in Calvert County to review these recommendations immediately and develop a working plan to implement changes so that the injuries to the firefighters on Soper Road are not in vain. Some of these changes will take time and require funding while others can be implemented immediately with no associated cost. We are glad to assist in providing direction and suggest outside sources that can help accomplish these goals.

To be clear, the Soper Road fire could have absolutely resulted in the line of duty death of one or more firefighters. It is for this reason that we urge our recommendations be acted upon as a top priority of your Department, the Calvert County Fire and Rescue Association and Calvert County Government leadership.

The process of gathering information and reviewing the facts surrounding the incident took several months while, it should be noted, the responding firefighters had only seconds and minutes to make critical decisions and take action. Unfortunately, there are numerous examples of extreme close calls, critical firefighter injuries and line of duty deaths that have occurred in other jurisdictions across North America because of the same factors addressed in this report. Firefighting is clearly a risky business. However, it is our goal with the findings in this report to help identify what risks can be managed to help minimize negative outcomes in the future for your Department and others in the fire service. The investigative team determined several factors that significantly impacted the events on Soper Road, a few of which are summarized below:

Pre-Incident Information:

There is a need to have pre-incident building information available to responding firefighters for a variety of situations, including residential structures. While time consuming, it is a part of any fire departments responsibility to know what they will potentially be dealing with before they have to deal with it. In as much as a football team studies the other team before the game, firefighters must fully understand what they may encounter before hand as well. Capturing data and organizing information for ready reference by responding firefighters can greatly improve effectiveness of operations. In some cases it can be done by recording details on specific buildings such as size, hazards and layout and in others, recording general neighborhood layouts with driveway lengths for hose lays and water supply locations can be sufficient. Information can include anything a fire command officer and firefighters would want to know before a fire occurs. **There was no pre-incident planning on the Soper Road fire.**

Dispatching and Resource Allocation:

There is a need to conduct a comprehensive review and assessment of Calvert County dispatch procedures for all emergency incidents. This should include the dispatching of apparatus based upon the pre-determined need and worst case scenario. For example, if a building has a required fire flow of 2000 gpm, then – especially in the non-hydrant areas –***the first alarm assignment*** should include the minimum amount of apparatus necessary to establish and maintain a minimum, uninterrupted and consistent water flow of 2000 gpm. Additionally, Calvert County should ensure that successive alarms are equal, in terms of resources, to the previous alarm and that the first alarm has resources that will allow numerous tasks to be **conducted simultaneously** based upon water supply, construction type, square footage, access, staffing etc. Simply put, when there is a verbal report of a building fire to a dispatcher, they should send what may be needed (what matches that type of building and life risk) with the assumption that it ***will be*** a fire, before it has to be confirmed by arriving units. **The Soper Road fire did not have a response plan that matched the potential fire risks or the conditions that the firefighters encountered upon arrival.**

Initial On-Scene Actions:

Policy should be established that requires a 360 degree size up prior to conducting interior, offensive operations. Incident commanders must understand that while certainly committed to saving lives, they are also equally responsible to protect the lives of the firefighters under their command. **The Soper Road fire was not effectively sized up until after the fire ground emergency.**

We cannot emphasize enough the critical importance of establishing command by the first arriving officer and communicating the strategy to responding or on scene units. An

initial radio report should include relevant information (fire/life conditions, actions, needs etc), a strategy statement and direction so that units and personnel understand what they are to do and what they are not to do. It is also important that all Calvert County Companies/Departments follow the same procedure for initial actions as the volunteer departments, to their credit, operate as one County-wide fire system when responding to alarms. **Responding units to Soper Road did not have a clear understanding of the fire conditions and the tactical strategies.**

Incident Command and Organization:

More and more departments understand the proven need for command support roles by trained and qualified officers responding on the first alarm assignment. Roles such as command, command support aide, accountability, rear (Charlie) division, RIT supervisor and Safety Officer should be performed by command level officers arriving separate from the apparatus. Officers riding on apparatus are just that, company officers and should be part of that unit during operations. If an officer on apparatus is "pulled" to provide one of the above roles, that unit or company loses that supervision. **The Soper Road fire did not have an adequate number of responding command level support officers to assist the incident commander.**

Water Supply:

One of the greatest challenges that firefighters can be faced with is, operating in developed areas that do not have adequate municipal water supply. It is our opinion that new construction should not be permitted without a municipal water supply system or a plan to assure adequate water to fight fires. One solution is to require fire sprinkler systems in all future built structures. However, since buildings already exist in numerous non-hydrant areas in Calvert County, we recommend that the Calvert County seek out a subject matter expert to be contracted to conduct a rural water supply evaluation and develop a plan in cooperation with County Departments and Companies. The plan should include a requirement to analyze the current resources, develop training for Calvert County firefighters in rural water supply, implement upgrades to all apparatus supply hose to LDH, and the development of additional rural water supply sites**. The Soper Road fire did not have an adequate water supply.**

Common Policies and Procedures:

The volunteer fire and rescue companies in Calvert County are understandably very proud of and dedicated to their organizations. One of the challenges when multiple volunteer fire and rescue companies operate on one incident scene is the independent policies, procedures and equipment specific to each organization. These may conflict and can interfere with what is best for the firefighters and the communities they serve. In some cases where firefighters also work or serve in other jurisdictions, learned

strategies, tactics and procedures from that jurisdiction may conflict with what is appropriate for operations in Calvert County. **The Soper Road fire demonstrated the need for all Calvert County Companies and Departments to have common policies and procedures which are enforced in mutual agreement.**

The Soper Road fire brought out numerous examples of the need for more aggressive, disciplined collaboration regardless of personalities and past history. One critical objective is to best meet the needs of those who are risking their lives, your volunteer fire and rescue personnel. The report will cover many concerns to address this objective: the need for regular multi Company/Department drills, coordinated training (based upon common County-wide procedures) from firefighter to company officer to command level, defining acting roles (such as "who" is qualified to ride the front seat and what the minimal training should be), integration of EMS into the command structure, a portable radio for every riding position, providing every firefighter with modern self contained breathing equipment with annual fit testing and record keeping, and a county-wide PPE replacement program**. Not only will better collaboration between the companies result in a safer, more effective system, it can also result in significant costs savings at all levels.**

Firefighters take their responsibility very seriously and the members of the Huntingtown VFD and other Calvert County Departments and EMS agencies all possess that sense of pride. Like a firefighter operating on the fireground, organizations and agencies must be flexible and able to adapt to changing conditions. Today's fire environment is much different than in the past, even just ten years ago, and both organizations and firefighters must adapt to this new environment, constantly sizing up and adapting based upon changing conditions, be it on the fireground or in the communities they serve.

We earlier stated that the Soper Road fire could have clearly resulted in the line of duty death of one or more firefighters. All of us who participated in the development of this report could not be any clearer in that statement, to anyone reading this report. The fireground must be a coordinated scene with strict, disciplined, and trained command, control and accountability at every level. It is for this reason that we urge our recommendations be acted upon by your Department, the Calvert County Fire and Rescue Association and Calvert County Government leadership.

Each one of us is available at any time to further assist in any way.

EXECUTIVE SUMMARY

On March 19, 2011, fire and rescue personnel from the Huntingtown Volunteer Fire Department, other departments throughout Calvert County and numerous mutual aid departments from Anne Arundel County, Charles County and Prince George's County responded to a reported house fire at 3380 Soper Road in Huntingtown, Maryland.

Approximately fifteen minutes after interior firefighting operations were initiated conditions rapidly deteriorated on the second floor as the main body of heavy fire in the attic and void spaces dropped down on operating personnel. This rapid change in conditions forced an emergency evacuation of the second floor. During the course of the incident, ten responders were injured. Of those injured, four firefighters received significant burn injuries.

Given the severity of the injuries and magnitude of the event, Huntingtown Volunteer Fire Department Chief Jon Riffe contacted Chief Billy Goldfeder, a respected expert in the field of firefighter risk mitigation, safety and survival, to request that an independent investigative team review the incident.

After discussing the incident, Chief Riffe requested that the team prepare an honest and open report so that he, his members, other Calvert Departments and others elsewhere can learn about what happened at this incident and how to prevent injuries in the future.

Chief Goldfeder assembled a diverse team that jointly understands the local culture of the affected Departments, but also offers experience, education, training and expertise on a larger scale. The team convened in multiple sessions to gather, analyze and prepare this report.

This investigative report contains the results of the team's comprehensive review and analysis. All of the information presented is factual and, to the greatest extent possible, was validated by multiple sources prior to inclusion in this document. It is important to note that the investigative team had months to examine the incident, form conclusions, and develop recommendations. In contrast, the first personnel to arrive on the scene had only seconds to make critical decisions and take action.

INTRODUCTION

Methodology

The Investigative Team gathered a wide variety of data and conducted dozens of interviews during the course of the investigation.

Data gathered included:

- Policies
- Procedures
- Manuals
- Pictures
- Videos
- Written statements from personnel who responded to the incident
- Radio tapes
- Personal Protective Equipment (PPE) worn by injured personnel
- Incident reports
- Fire Marshal's Office origin and cause investigation
- Training records
- Apparatus and equipment specifications
- Building material information

Members of the investigative team obtained statements from and/or interviewed the majority of personnel who responded to 3380 Soper Road. From these interviews and material gathered during the research process, the operations and actions of the personnel operating on the scene were analyzed to determine if they met established policy. Recommendations were then developed to address areas where operations or actions did not meet policy. In instances where operations or actions met policy, or there was no relevant policy, recommendations were developed to refine or improve established policy and future operations. When research determined there were no policies or standards that correlated with a specific action, national, consensus based standards and recognized best practices were utilized in developing necessary recommendations.

Over the course of the investigation, the team determined that specific medical treatment of the injured firefighters was outside the scope of this report. Rather, the report addresses the management and coordination of EMS resources on the scene and the process by which additional resources were requested and obtained as part of the overall incident.

Terminology

All of the times used in this document are expressed using the 24-hour clock.

The International Phonetic Alphabet, which assigns a word to each letter of the alphabet, is listed below:

A – Alpha	H – Hotel	O – Oscar	V – Victor
B – Bravo	I – India	P – Papa	W – Whiskey
C – Charlie	J – Juliet	Q – Quebec	X – X-ray
D – Delta	K – Kilo	R – Romeo	Y – Yankee
E – Echo	L – Lima	S – Sierra	Z – Zulu
F – Foxtrot	M – Mike	T – Tango	
G – Golf	N – November	U – Uniform	

These words are used whenever it is necessary to identify any letter of the alphabet over the radio system or refer to the sides and interior quadrants of a building (see Figure 1).

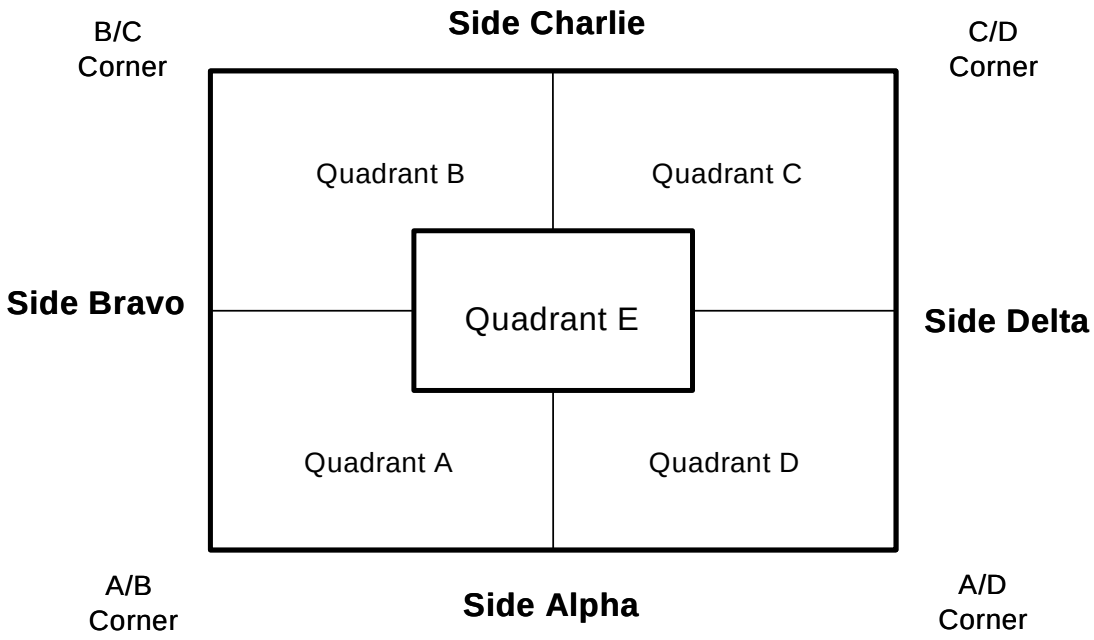


Figure 1. Terms used to describe building sides and interior quadrants.

Exposures are commonly identified with a letter and a number to describe the location of the structure relative to the fire building. The term “exposure” refers to a structure that is attached or adjacent to the fire building.

Note: All of the quoted text in the document was taken directly from recorded radio transmissions or phone calls. As a result, there may be deviations from the phonetic alphabet listed above.

Organization of this report

This report is organized into eight Sections and eight Appendices.

Each Section is divided into various sub-sections, which include relevant background information, specific discussion pertaining to the incident on Soper Road, and, where applicable, recommendations for future action.

The Appendices include supporting documentation, analyses of equipment used by the injured personnel, a listing of the report's recommendations and transcribed radio traffic.

BACKGROUND

Calvert County Maryland was originally founded in 1650 as Charles County, and then later changed to Patuxent County in 1654. In 1658 the name was changed to Calvert County recognizing the family name of Lord Baltimore, proprietary of the Maryland Colony. Calvert County is located roughly 40 miles southeast of Washington, D.C. bordered by the Chesapeake Bay to the east, Patuxent River to the west, Anne Arundel County to the North and St. Mary's County to the South. The 2010 Census reports the population of Calvert County as 88,737 living in an area of 345 square miles.

Figure 2. Map of Metro Washington, D.C. area

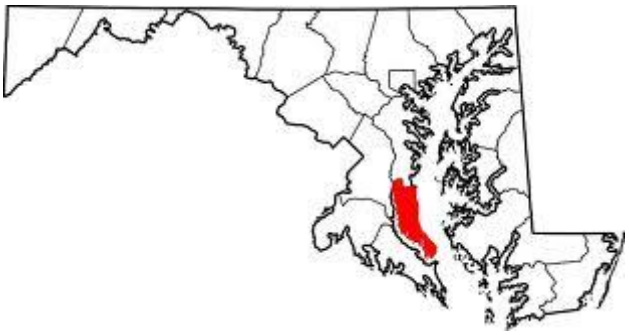


Figure 3. Map of Maryland. Calvert County highlighted in red.

Figure 4. Map of Fire and Rescue Departments in Calvert County

The emergency fire and rescue response agencies in Calvert County are:

-Co. 1, North Beach Volunteer Fire Department and Rescue Squad

-Co. 2, Prince Frederick Volunteer Fire Department

-Co. 3, Solomons Volunteer Rescue Squad and Fire Department (Operates from a main and substation)

-Co. 4, Prince Frederick Volunteer Rescue Squad

-Co. 5, Dunkirk Volunteer Fire Department and Rescue Squad

-Co. 6, Huntingtown Volunteer Fire Department and Rescue Squad

-Co. 7, St. Leonard Volunteer Fire Department and Rescue Squad

-Co. 10, Calvert Advanced Life Support

-Co. 12, Calvert Rescue Dive Team

The Huntingtown Volunteer Fire Department and Rescue Squad Inc., Company 6, was officially chartered on February 24, 1972.

Presently the Huntingtown VFD operates two Class A Engines, one Tanker, two Brush Units, one Heavy Rescue Squad, two Ambulances, a Mobile Air Cascade and several command and support vehicles protecting a response area of approximately 45 square miles bordered by the Chesapeake Bay, Patuxent River, as well as the towns of North Beach, Dunkirk and Prince Frederick.

The Insurance Services Organization rates the area served by the Huntingtown VFD as a 7 out of 10. ISO's Public Protection Classification (PPC) Service gauges the public fire protection capability of the local fire department to respond to structure fires. ISO collects information and then uses this data collected using their Fire Protection Rating Schedule (FSRS) to grade a community on a scale of 1 to 10, with one being the highest rating and a 10 indicating no recognized fire protection.

The Huntingtown VFD responds to approximately 2,000 calls for assistance annually. The membership of the Department is comprised solely of volunteers. Operational leadership of the Department consists of a Fire Chief, an Assistant Chief and two Deputy Chiefs. Below Chief officers, two Captains (one fire and one EMS) are elected to their positions. Officers below Captains such as Lieutenants, Sergeants and Safety Officer are recommended by a panel of Captains and Chief officers before being appointed by the Fire Chief. The Department currently has 98 operational volunteers and 10 administrative volunteers.

In calendar year 2011, Calvert County fire and rescue Departments responded to 21240 recorded emergency incidents. Of that total, the Huntingtown VFD responded to 2593 emergency calls for service.

Policy and governance

Emergency operations in Calvert County are governed by various local, state, and federal policies, procedures, ordinances, and regulations. Many of these policies and procedures are discussed at length elsewhere in this document.

Local

Emergency operations are governed by a combination of County level policies and regulations and individual department policies. At the County level, Calvert County Communications and the Calvert County Chief's Association both have established

policies and regulations that govern the operations of the nine independent volunteer fire departments.

State

The Maryland Occupational Safety and Health Compliance Program (MOSH) enforces occupational safety and health laws, standards and regulations. For purposes of compliance, Maryland is considered a "state plan" state and therefore adheres to the minimum of OSHA requirements, augmented by Maryland specific regulations. A non-binding agreement exists between MOSH and the Maryland fire service organizations whereby NFPA 1500 in its current edition has been adopted by all Maryland fire departments. This adoption however does not constitute enforcement or legally binding oversight relative to volunteer fire departments.

EMS agencies, including the Huntingtown VFD, must comply with the rules, regulations, and procedures disseminated by the Maryland Institute for Emergency Medical Services Systems (MIEMSS), which addresses the licensure and performance of Emergency Medical Services providers.

Federal

Chapter 29 of the Code of Federal Regulations (CFR), Part 1910 establishes Occupational Safety and Health Standards, which apply to public and private employers.

Specifically, 29 CFR 1910.134 addresses respiratory protection requirements for firefighters and others.

INCIDENT TIMELINE

This section describes the sequence of events beginning on March 19, 2011 and ending with the last units clearing the Soper Road scene in the early morning of March 20, 2011. This timeline was developed using information gathered from personnel statements, post-incident interviews, radio transmissions, photographs and video.

Sequence of Events

Saturday, March 19, 2011 was a relatively fair day with clear skies, temperatures in the high 50s and light winds. At 23:55 hours, the weather was observed at Andrews Air Force Base, approximately 25 miles west, northwest of Huntingtown, with a temperature of 47.5 degrees Fahrenheit, a relative humidity of 48%, clear skies and winds of 10.4 miles per hour out of the North, Northeast.[1]

Pre-incident conditions

3380 Soper Road was a large two story single family home with a finished basement that was built in 2006. The home included 6,453 square feet of living space and was located on 2.2 acres of land. The home was constructed of wood framing with areas of stone veneer or vinyl siding as an exterior finishing. The home was listed as having nine bedrooms, 6 full bathrooms, a half bathroom and a two car garage. The finished basement contained a living area with two bedrooms and a full bathroom.

Figure 5. Side A 3380 Soper Road

[1] www.weatherunderground.com archives.

Figure 6. Side C 3380 Soper Road

Figure 7. Aerial view of 3380 Soper Road. The left branch of the right most driveway in the picture leads to 3380 Soper Road.

Figure 8. Aerial view of 3380 Soper Road, looking at Side Charlie.

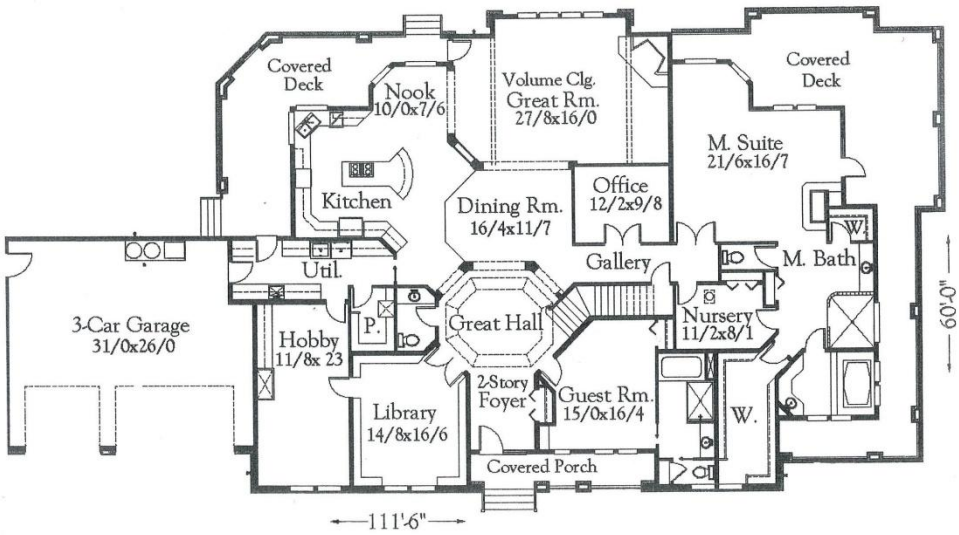


Figure 9. First floor plan of 3380 Soper Road.

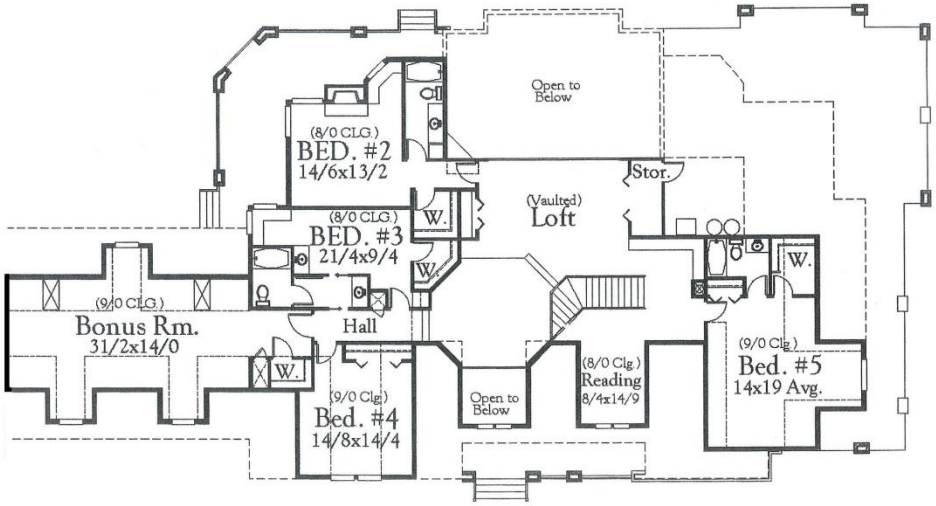


Figure 10. Second Floor Plan of 3380 Soper Road.

The home on Soper Road was located in a rural neighborhood with a variety of homes, both older and recent construction as well as several larger homes. The home at 3380 Soper Road was located on a point of land that projects in to the Patuxent River, accessed by an approximately 1800 foot long gravel driveway that was shared with a second address. The distance from the point where the driveway splits to the home is approximately 800 feet.

At least four occupants were home at the time of incident, with an older male occupant residing in the basement “in-law” suite. This occupant was reported to have used the fireplace in the room adjacent to the bedroom extensively, almost on an around the clock basis. On the evening of the incident, the occupants had returned home from an outing around 2100 hours when the older male occupant started a fire in the fireplace of the basement living area.

When a female occupant “walked up from the down stairs she heard a “popping noise” coming from the upstairs fireplace”. Upon entering the great room on the first floor, she observed smoke coming from the fireplace area, leading her to, at first, believe that another occupant had also started a fire in the first floor fireplace. Upon investigation, the female occupant along with another occupant discovered that there appeared to be a fire in the chimney. Concurrent with this discovery, the smoke alarms in the house began to sound. The female occupant alerted other occupants who called 911.

911 Call Received from Occupant

> 23:56:11 – St. Mary's County Department of Emergency Communications received a 911 call from an occupant at 3380 Soper Road. Once the call taker determined that the incident location was in Calvert County, the call was transferred to Calvert County Communications.
>
> 23:56:30 – Calvert County Communications received a transferred 911 call from an occupant at 3380 Soper Road, who reported a "*fire in the chimney".*

The caller reported seeing "*flames and smoke…in the chimney*". Answering questions from the call taker, the caller detailed that it was a "*built-in chimney*" and that there were *"two floors*". Additionally, the caller reported that "*no one* [is] *trapped*"

Further questioning of the caller detailed that the fire was on *"the first floor, through the chimney.*" After giving the caller instructions to leave the house and not try to fight the fire, the caller replied *"yes, I'm trying to put it out*".

> 23:58:26 –Calvert County Communications announced "*Area Box 601, 3380 Soper Road for Chimney Fire*" and dispatched Engine Company 6, Squad 6, Engine Company 2, 5, 1, Tanker 5, Tanker 7, Tower 2, Ambulance 6 and the North Duty Chief.

This dispatch falls within the established Calvert County standard, Standardized Run Assignments (Effective February 12, 2007) for Area Box – Non-Hydrant incident types and the Duty Chief Standard (Effective March 15, 2011). Additional units from other companies also responded.

The current protocols for dispatching emergency incidents in Calvert County warrant further study to determine their suitability for current conditions. Currently, resources for an initial alarm Area Box are designed so that no more than two resources are dispatched from any single station.

In practice, this is evident in the dispatch for 3380 Soper Road when Engine Company 6 and Squad 6 were dispatched, but not Tanker 6. The same situation applied when the resources dispatched from Station 2 included Engine Company 2 and Tower 2, but not Tanker 2.

Dispatching algorithms in Calvert County have evolved over time and previously included more than two resources from one station. Some time ago, the algorithm was changed to avoid requesting more resources from a single station than that station could feasibly provide on a consistent basis. While this is understandable from a resource management perspective, Calvert County should consider thorough analysis of the current algorithm to determine if it meets resource demands. For incidents in non-hydrant areas, establishing an uninterrupted, expandable and consistent water supply is critical to overall incident mitigation. The existing algorithm places a priority on Truck

and Squad resources over Tankers. This in effect places the mobile water supply apparatus farther away at time of dispatch and delays the initiation of a water supply.

Revising the algorithm however, has consequences. Making Tankers a priority in dispatch over Trucks or Squads then places these units farther away, which could result in a delay of specialized rescue resources.

Calvert County should conduct a thorough review and assessment of the dispatching algorithms as described above to determine whether the priority resources should be changed or whether or not a return to more than two resources from a single station is feasible.

Regardless, Calvert County should consider enhancing the dispatch complement of the first alarm in a non-hydrant area to include at least one additional tanker. This would ensure that at a minimum, 6000 gallons of water is available in mobile water supply apparatus.

The effective water delivery rate, in gallons per minute (GPM), of an individual Tanker is dependent upon several factors: tank capacity (gallons), dump time, travel time and fill time. Improving the effective gallons per minute (GPM) of a water supply involves decreasing the above times for the individual tankers and increasing the total tank capacity of Tankers in the shuttle. While reducing dump, travel and fill times is possible, increasing the total tank capacity is most easily achieved by adding additional Tankers in to the water supply shuttle. For this reason, adding a third Tanker to the initial alarm is the easiest way to increase effective water supply at fire incidents in non-hydrant areas.

Furthermore, Calvert County should consider “over” dispatching tankers for credible reports of fire incidents. This would initiate response of a larger number of Tankers so that these resources are already responding in anticipation of an incident escalation and resulting need for more capacity in the water supply.

Recommendation 1: Conduct a comprehensive review and assessment of Calvert County dispatch algorithms for all emergency incidents. Determine if the priority of dispatch for Tankers, Trucks and Squads should be revised. Determine if requesting more than two resources from a single station is feasible. Additionally, consider adding a third tanker on an initial alarm in non-hydrant areas. Consider “over” dispatching tankers for credible reports of fire incidents.

23:59:22 – After a second announcement Engine 2 – 1, Chief 5B, Tower 2, Engine 6 – 2 and Chief 6C marked responding to the Soper Road location.

Chief 6C is the fourth ranking Chief officer in the Huntingtown VFD, behind Chief 6, Chief 6A and Chief 6B. Chief 6C was at home when the incident was dispatched and was able to respond directly to the scene with a marked Chief’s vehicle.

00:00:45 – Responding units switched to a tactical channel, Tac 1, and were updated with information that the caller *"had flames coming from his chimney...he was attempting to put the fire out himself*". Chief 6C was then updated with the same information.

00:01:56 – Responding units were updated with directions to "*go almost all the way to the end of the driveway. It's going to be a long gravel driveway, lined by trees on your left hand side, sits very far…very far distance off the road".*

00:02:44 – Squad 6 marked responding.

00:03:27 – Chief 6A marked responding.

Second 911 Call received from occupant

00:03:35 – An occupant again calls to report the chimney fire. When asked by the call taker about what has changed since the first call, the caller responded with "*the chimney is fully engulfed from the inside out. It's in the attic now*." After asking again the caller confirmed that everyone was out of the house.

00:04:10 – Calvert Communications informs Chief 6A that:

> *"[*the caller is*] advising the fire's now spread to his attic.*"

Chief 6A acknowledges the information and asks:

> *"Chief 6A is okay, [Chief] 6C should be there in just a few minutes"*

Chief 6C:

> *"I'm turning on Soper now."*

A Lieutenant from the Huntingtown VFD, who lived approximately a mile away from 3380 Soper Road, responded directly to the scene by personal vehicle. The Lieutenant did not have a portable radio as it is a general procedure for the Huntingtown VFD that only Captains and above carry portable radios. As the Lieutenant did not carry a radio for this incident, the investigative team was unable to get an accurate estimate of when the Lieutenant arrived on-scene. It is assumed, however, that the Lieutenant arrived on-scene a few minutes prior to the arrival of Chief 6C.

Upon approaching the home, the Lieutenant did not notice any smoke or fire visible from side Alpha.

The Lieutenant arrived at the home and positioned to the right side of the driveway in a grassy area. Upon exiting the vehicle, the Lieutenant met a female occupant of the home who said that the chimney was on fire, another occupant was attempting to put

the fire out and that there was an older male occupant in the basement who wasn't going to leave. The Lieutenant questioned the female occupant to ensure the occupant in the basement was physically able to get out of the home.

The Lieutenant then walked inside the home, through the foyer and the great room to a door in the rear of the home to access the rear deck. While transiting the great room, there was a slight haze of smoke, but the Lieutenant could not localize it to a source such as the fireplace. On the back deck the Lieutenant encountered another occupant who was utilizing a garden hose in an attempt to put out fire in the chimney. When asked to stop, the occupant pointed to eaves and the Lieutenant saw fire that had broken out of the chimney and was involved in the eaves and gutter area.

The Lieutenant then walked back through the great room where the haze was still observed. The Lieutenant then exited the home on side Alpha to await Chief 6C.

Chief 6A:

"Alright…it's supposed to, uh, possible getting in to his cockloft, okay?"

Chief 6C:

"Yeah, I was direct. Uh, 6 – 2 just hold up at the, uh, hold up on the road until I get back there since it's such a long lay. I'll give you layout instructions."

Engine 6 – 2:

"Copy Chief."

Calvert Communications:

"6A, they still have not evacuated the residence, he's still attempting to put the fire out."

Chief 6A:

"Okay, 6C did you copy that?"

Chief 6C:

"Yeah, I'll get them out."

Calvert Communications:

"Now being advised they're now out of the residence. He is given up his attempt.

Chief 6A:

"Thank you sir."

An analysis of the information received from the occupant's two 911 calls indicates that information about the house and the fire's progress was effectively relayed to responding units. One item that wasn't clearly communicated from the occupant was that the house was actually three levels at the rear of the house. While the information regarding the three levels was important, it was not critical to the overall outcome of this incident. Such information, if not obtained from the caller, must be discovered and communicated after a complete 360 degree size up once units arrive on scene.

Critical information about the fire's location and progress to the attic as well as the status of occupants was clearly communicated and updated to the responding units.

00:05:42 – Chief 5B inquires if the North End Duty Chief has marked up yet. After Calvert Communications replies in the negative, Chief 5B offers if *"it's okay with 6A, I will go ahead and take the North End Duty Chief."* Chief 6A then answers in the affirmative, *"come on."*

The dispatch of a North End Duty Chief was based upon the Calvert County Duty Chief Standard that requires a regional Duty Chief officer be dispatched on a specified list of incident types which includes Area Boxes.

This Duty Chief Standard, first enacted four days prior to the incident at 3380 Soper Road, was revised with an effective date of July 26, 2011. The Standard is intended to "establish a program with guidelines to ensure that the key elements of the command structure, as well as actions of high priority, are performed while operating at emergency scenes."

Chief 5B offered to "*take the North End Duty Chief*" role because Chief 1A had not marked up and Chief 5B was closer to the incident scene and thereby in a better position to arrive earlier than Chief 1A and assume the Duty Chief role. As it transpired during the incident, Chief 1A assumed a supervisory role over water supply.

00:06:18 – Engine 6 – 2:

"6 – 2 to 6C, I'm about half way down Soper. You still want me to hold off on the layout?"

Chief 6C had arrived on scene and was investigating which branch of the divided driveway the house was located on:

"Yeah, I'm still trying to find it, hold on"

Engine 6 – 2:

"Copy".

Calvert Communications:

"6A, no response from Engine 1, 5. Would you like to replace them?"

Chief 6A:

"That's correct."

Chief 6C:

"All units stand by."

Chief 6C intended on visually checking out the driveway up to the house before returning to the road to give Engine 6 – 2 layout instructions. A detailed program of response maps that notes driveways that will require complex layouts would provide first due companies with advanced information regarding special layout situations and reduce time spent on scene figuring out hose lays and reduced confusion when communicating instructions.

Recommendation 2: Develop street maps that identify properties with complex or long hose lay requirements.

Units arrive on scene 3380 Soper Road

Chief 6C is the first fire department unit to arrive on scene at 3380 Soper Road.

00:06:51 – Chief 6C:

"Alright, 6C is on scene. Side Alpha two story, large single family. I got heavy smoke from the attic area, working fire dispatch Calvert."

Chief 6C arrived on scene and gave an initial on-scene report as detailed above. Chief 6C recalled in an interview that moderate, dark smoke with little to no velocity (described as "wafting") was observed coming from the eaves of the second floor gable ends in the area of the Side Alpha/Delta corner but no fire was observed. Not communicated during this on scene report was the condition of three levels in the rear of the house. Chief 6C reported that the size-up was made from the vehicle's driver's seat with the window down which was parked in a grassy area to the right of the driveway facing side Alpha of the house.

The completion of a 360 degree size up was complicated by an occupant of the home who was present at the Chief's vehicle window and may have indicated that there was an older occupant still inside the home. While it is understandable that the three levels may not have been visible from the positioning of the first arriving unit and that it may be necessary to complete other tasks prior to a full size up, it is critical to conduct a full 360 degree size up as soon as the situation may allow.

> Recommendation 3: Reiterate and train on the importance of visualizing the entire structure as soon as possible or designating a separate unit or officer to complete a full 360 degree size up with a radio report prior to conducting interior, offensive, operations.

After being acknowledged by Calvert Communications, Chief 6A asks about the structure:

> *"6C, is this one of them mega mansions on the end on the river?"*

Chief 6C:

> *"That's correct."*

Chief 6A:

> *"Forget that…uh…working fire dispatch Calvert and put a second alarm dispatch on this, copy?"*

Calvert Communications:

> *"Calvert's direct."*

Chief 6A:

> *"In addition to that, add an additional tanker."*

After discussing the size of the structure, Chief 6A directs 6C to "skip the working fire dispatch" and go "to a second alarm."

According to Calvert County Communications dispatching procedures, an Area Box dispatch in a non-hydrant area receives four engines, one truck, one squad, two tankers and one ambulance. A second alarm would receive two engines, one truck, one tanker and a medic (ALS) unit.

There is no existing defined dispatch for a "working fire". In practice, Calvert County Communications would dispatch a working fire when they receive credible information from 911 callers that indicates an active fire. Such a dispatch would receive a

combination of the first alarm of an Area Box along with a second alarm as detailed above.

Regionally, fire departments take a varied approach to dispatching additional resources upon report or confirmation of a “working fire”. One commonality is the utilization of a group of resources upon report or confirmation of a working fire for Rapid Intervention and firefighter rescue duties. Usually, these “working fire” dispatches are a separate and distinct group of resources from a second alarm. If Calvert County considers developing a “working fire dispatch” for Rapid Intervention and firefighter rescue roles it is critical that in the escalation of an incident, the working fire dispatch is not skipped. Skipping a working fire dispatching has the unintended consequence of elimination pre-designated firefighter safety resources.

Additionally, Calvert County should consider revising greater alarm dispatch complements to replicate the previous alarm. For instance, a second alarm should receive the same number of engines, trucks, squads, tankers and EMS units as the first alarm. Successive alarms would also receive the same type and number of resources.

The reason for replicating alarms is that it simplifies the process for ensuring adequate resources for escalating incidents. This simplification is easier on dispatchers and incident commanders alike and ensures that resource requests are organized, easily understood and scalable. Due to the geography of Calvert County, resources for a rapidly escalating incident should be requested early in an organized manner such as a second alarm, rather than piecemeal requests, i.e. one engine and one truck. Replicating alarms ensures that these geographically diverse resources are notified earlier in the process of an escalating incident, can respond and arrive on scene earlier thereby positively contributing to incident operations.

> Recommendation 4: Calvert County should research and determine the suitability of establishing a “working fire” dispatch. Conduct a review and assessment of Calvert County dispatch protocols for first and second alarm resource complements. Ensure that successive alarms are equal in terms of resources to the previous alarm.

Chief 6A also requested that an additional tanker be dispatched to 3380 Soper Road. At this point in the incident, no tanker had yet responded.

The Huntingtown VFD Standard Operating Guideline for Running Assignments requires that the response order for Area Boxes (structure fires) places Tanker 6 third out behind Engine 6 – 1 and Squad 6. Staffing requirements in the SOG are such that Engine 6 – 1 is minimum staffed at 3, Squad 6 at 4 and Tanker 6 at 1. For structure fires, particularly in non-hydrant areas, water supply is critical for fire suppression. Huntingtown VFD should consider revising the response order for non-hydrant structure fire responses so that the Tanker is second, behind Engine 6 – 1. This would allow Engine officers the flexibility of utilizing the Tanker in a nurse tanker evolution or, if time permits, water shuttle operation.

Recommendation 5: Revise Huntingtown VFD response SOG to reflect the priority of response with Tanker 6 second out after Engine 6 – 1 for Area Boxes (structure fires) in non-hydrant areas. Develop a county-wide response plan for Area Boxes in non-hydrant areas that reflects the priority of establishing a uninterrupted, expandable and consistent water supply.

In addition, a specific reinforced dispatch should be formulated to provide a defined and organized mobile water supply resource to incidents that require a significant and sustained water supply. Following NIMS guidelines, this dispatch could be a Strike Team or Task Force. Regardless of the term chosen, the dispatch should contain enough resources to establish a water supply shuttle.

Currently, no defined dispatch exists for rural water supply resources. Defining and organizing mobile water supply resources will provide incident commanders with a prepackaged group that can respond and establish a water supply shuttle with little direct oversight from the IC. This defined group of resources will also simplify dispatching and streamline incident organization.

Recommendation 6: Develop and implement a County-wide specific dispatch of a water supply Task Force or Strike Team. Develop and deliver periodic rural water supply shuttle drills involving multiple companies to maintain proficiency.

Chief 6A also recognized early that the house was of a significant size. It is commendable that this was recognized, but this information needs to be captured and disseminated for any structure of a significant size or complexity that may complicate fire suppression operations.

The Huntingtown VFD has a Standard Operating Procedure on First Due Pre-Plans (effective date 10/27/2009) that requires pre-plans for any commercial occupancy as defined by groups in the National Fire Protection Association Standard 101 – Life Safety Code. While the current Huntingtown VFD SOP on First Due Pre-Plans adequately addresses pre-fire planning for commercial and multi-family structures, more pre-fire intelligence gathering is necessary for any structure of significant size or complexity.

Calvert County should consider developing a program of identifying such structures and capturing critical pre-fire information so that it can be disseminated and shared with all emergency response agencies. While the Huntingtown VFD SOP and common pre-fire plan programs in the fire service traditionally exclude single family homes, significant consideration should be given to capturing basic but critical information for fire suppression. Such information includes, but is not limited to: number of levels, accurate square footage, driveway length for hose lays, access issues and water supply. While it is not common to obtain this information from private residences, much of it is readily available through County tax maps and Geographical Information Systems (GIS).

Recommendation 7: Develop a County-wide program of identifying and disseminating information on structures of significant size or complexity. Whether through pre-incident plans or notations on street maps, this information should be readily available to all responding units.

Despite the absence of visible fire, Chief 6C interpreted the smoke conditions as indicating the presence of a significant fire in the attic space and intended on the first in Engine (Engine 6 – 2) laying dual lines from the driveway split, with the second in Engine (Engine 2 – 1) completing the lay. However, the plan for dual lines was not communicated to responding units:

> *"[Engine] 6 – 2, lay out from the gravel portion, lay out from the gravel portion. Next engine in complete the lay out to…err…excuse me…to Soper. [Chief 6A] go ahead and take command when you get here, I'm going inside."*

Chief 6A:

> *"Yeah, I got you."*

In interviews, Chief 6C based his decision on entering the house on information relayed from Calvert Communications and the occupant who arrived at the vehicle and mentioned that there was still someone inside.

As the first arriving unit on scene, Chief 6C had the opportunity to establish command, formulate an incident action plan and communicate a strategy to incoming units. Chief 6C instead requested that 6A take command upon his arrival. It is critical for effective firefighting operations to have a quickly developed and clearly communicated strategy from the first arriving Chief or unit officer. Establishing command and communicating strategy does not preclude, however, Chief or unit officers from entering the structure, especially when a life hazard exists.

Recommendation 8: Reiterate the importance of establishing Command by the first arriving officer and communicating strategy to responding or on scene units.

00:07:01 – Safety Officer 6:

> *"Safety Officer 6 on 1"* (SO6 is acknowledged by Calvert Communications)

Chief 6A:

> *"Go get the Tanker."*

Safety Officer 6:

> *"Direct."*

With this transmission Chief 6A directed Safety Officer 6 to respond with Tanker 6 as its driver/operator.

While mobile water supply apparatus are critical to fires in non-hydrant areas, by committing Safety Officer 6 to the position of driver/operator, the only identified Safety Officer for this incident was in effect eliminated.

Both functions of mobile water supply apparatus and a designated Safety Officer were critical enough to all facets of this incident that there should have been a separate driver/operator for Tanker 6. This would have allowed Safety Officer 6 to respond and operate as the designated Safety Officer for the incident.

As it developed later in the incident, a separate driver for Tanker 6 responded to the station and functioned as the driver/operator for this incident. Regardless, it is imperative that if a Safety Officer is dispatched on an incident, they respond and function in the Incident Safety Officer role. With designated Safety Officers in all Calvert County Departments, an excellent opportunity presents itself for further development of a Safety Officer program that can ensure the response of a trained and qualified Incident Safety Officer to all significant incidents where their function is warranted.

Recommendation 9: Calvert County should consider developing or enhancing a Safety Officer program to ensure consistent and reliable response of a trained and qualified Incident Safety Officer to all significant incidents.

Engine 6 – 2 is the first suppression unit to arrive on scene:

"6 – 2 laying out at the end of the driveway, gravel portion."

Chief 6C:

"I do not have an all clear, I'm going in."

Chief 6A:

"I copy."

Chief 6C exited the vehicle and met the Lieutenant, who had arrived before 6C, at the rear of the vehicle where they both donned their PPE and SCBA carried in 6C's vehicle. Once equipped, they both entered the home via the front door on Side Alpha.

Once inside the home, Chief 6C entered the open door and traveled across the foyer where the stairs to the second floor were visible. Chief 6C reported that there was a haze on the first floor, while light smoke was visible at the ceiling level of the second floor when looking up the stairwell.

The Lieutenant remained in the foyer, while Chief 6C accessed the two-story great room to the rear of the home where he found the fireplace. No fire or signs of fire were visible around the fireplace. On the way back towards the foyer, Chief 6C met an older occupant of the home who was carrying pictures from a den/office area. The occupant was instructed to exit and Chief 6C quickly checked the remainder of the first floor for occupants before returning to the foyer.

An exchange between Chief 5B and Chief 6A establishes that Engine 5 – 2, Tanker 5 and Chief 5B are en route to the incident scene. This radio traffic, while important, could interfere with on scene operations, especially if an on scene unit has critical information that needs to be broadcast. Much of this exchange of radio traffic, as well as many others like it, can be eliminated by the use of mobile data computers or terminals placed in command and front line response apparatus. Such computers can display dispatched units so that Incident Commanders can readily see their dispatch complement without tying up radio traffic. Calvert County should investigate the feasibility of procuring and installing mobile data computers in command and front line response units. Additionally, all departments in Calvert County should be encouraged to equip their command units with one style of command board or similar resources to ensure interoperability with chief officers from all departments in the County. These resources can greatly assist Incident Commanders in tracking units and tasks on the fire ground as well as ensure accountability of all personnel. While the current Duty Chief Standard (effective July 26, 2011) establishes a common incident command worksheet, Calvert County should consider assessing the current worksheet for effectiveness and consider reproducing the worksheet on a larger scale for installation in command units.

> Recommendation 10: Consider purchasing and installing mobile data computers County-wide in command and front line response units. Equip all command vehicles County-wide with standardized command boards or similar resources.

Engine 6 – 2 arrived on scene with five personnel. After laying out from a position in the driveway where the surface changed from asphalt to gravel, Engine 6 – 2 laid approximately 800 feet of 3 inch supply line. Interviews with crew members indicate that the layout was done with the intention of providing an option for dual lines of 3 inch supply hose. As such Engine 6 – 2 laid hose up to a position approximately 125 feet from the front of the house. Interviews indicate that the Engine 6 – 2 may have encountered vehicles, either Chief 6C's vehicle or a vehicle belonging to the homeowner. What is unclear is whether or not Engine 6 – 2 had the opportunity to position closer to the house, either by moving the vehicles or driving around them.

After positioning Engine 6 – 2, the crew dismounted and began stretching the preconnected, 400 foot, 1 ¾ inch hand line with a 15/16" smoothbore nozzle. This line was chosen by the unit supervisor[2] of Engine 6 – 2 due to the distance from the front door and the overall size of the structure. The pump operator stayed with the Engine,

[2] The unit supervisor of Engine 6 – 2 was at the rank of firefighter.
[3] A "red-hat" firefighter is one that has not yet received certification or authorization to

while the Officer, two firefighters and one “red-hat” firefighter proceeded to stretch the 400 foot line to the front door and enter the structure. [3]

The flow rate for a 15/16” tip at 50 PSI nozzle pressure is 185 GPM. The overall pump discharge would need to be approximately 262 PSI, which exceeds the generally accepted maximum pump discharge pressure of 250 PSI.

Utilizing the National Fire Academy’s required fire flow formula of: Length x Width / 3 x % of involvement results in an estimated required fire flow of 215 GPM.

> 6453 total sq ft / 3 = 2151 x 10% (A conservative estimate for fire involvement in concealed spaces) = 215 GPM

To achieve higher flow rates (GPM), nozzle size must be increased. A 1” tip with the nozzle pressure at 50 PSI would result in a 200 GPM fire flow but the overall pump discharge pressure would be 298 PSI. Consideration could be given to replacing the 15/16” tip with a 1” tip and lowering the nozzle pressure to 35 PSI. This arrangement will achieve 175 GPM and result in a lower overall pump discharge pressure of 225 PSI. One additional drawback to a lower GPM of increasing the tip size and lowering the nozzle pressure is the increased potential for the hose line to kink and reduce water flow.

Consideration should be given to utilizing a 2” attack line in the complement of pre-connected hose lines. With a 1-1/8” tip and 50 PSI nozzle pressure, 400 feet of 2” line results in 250 GPM fire flow from a hose line that is nearly identical to the 1-3/4” in terms of maneuverability and results in an overall pump discharge pressure of 250 psi. Reducing the tip size back to 1” with a 400’, 2” line achieves 200 GPM with a overall pump discharge pressure of a manageable 178 PSI.

Regardless of the hose line and nozzle size combination chosen, the Huntingtown VFD should consider reviewing their pre-connected hose complement to determine adequacy for potential fire flow requirements. Strong consideration should be given to using a pre-connected 2” attack line.

> Recommendation 11: Consider reviewing the pre-connected hose complement on all Huntingtown VFD suppression apparatus to determine adequacy for potential fire flow requirements. Consider adding a 2”, pre-connected attack line to the hose complement.

[3] A “red-hat” firefighter is one that has not yet received certification or authorization to enter an IDLH [Immediately Dangerous to Life and Health] environment.

Safety Officer 6:

> *"Chief, I'm driving the Tanker, so count me out…Squad 6 also attempting to make radio transmission at this time."*

Chief 6C:

> *"*[garbled]…*hooks inside ASAP!"*

Engine 6 – 2 Driver/Operator:

> "[garbled]…*Chief…tell us when you're ready for water."*

00:09:18 – Calvert Communications on Fire Main channel:

> *"Additional on Area Box 601, 3380 Soper Road. Engine Company 7, Charles County Engine Company 83, Tanker 6, Tower 1, and Medic Due, triple zero, nine."*

Initiation of Fire Attack

Chief 6C reports that they have stretched the 400 foot, 1 3/4" preconnected attack line to the front door of the house:

00:09:36 – Chief 6C:

> *"Alright, everybody's out the house,* [Chief 6A]. *We're running the 400 right now."*

Chief 6A:

> *"Alright, you're reporting an all clear and you're running the 400."*

Chief 6C:

> *"Yeah, that's right; we're going to have heavy fire in the attic."*

Once the first floor was checked and no occupants were found, Chief 6C returned to the foyer, met with the Lieutenant and they both ascended the stairs to the second floor. As they were ascending the stairs, Engine 6 – 2 arrived in the foyer.

Engine 6 – 2 had stretched the 400 foot, 1 ¾ inch hand line to the front door and proceeded, with the line dry, to the second floor. Upon entering the house, the crew reported that there was no sign of smoke on the first floor. In the foyer, they found the

stairwell to the second floor which they ascended and found light smoke at the ceiling level.

Once at the top of the stairs, Chief 6C checked the side Delta area of the second floor and the Lieutenant turned to the left and moved towards Side Bravo over the garage where there was a Bonus Room. Chief 6C returned briefly to the top of the stairs and told Engine 6 – 2 that they "couldn't find attic access and [they] would need to find a way in to the attic."

Upon reaching the second floor, the unit supervisor of Engine 6 - 2 moved to the Bravo side of the house where the Bonus Room was located over the garage. The intent was that firefighters were "going to go that way and work our way back." In the Bonus Room, firefighters utilized pike poles to open inspection holes in the ceiling looking for fire. They did not find any signs of fire and firefighters moved from the Alpha and Bravo quadrants, across the open area and towards a bedroom on Side Delta. At this point, the hose line had still not been charged.

Interviews revealed that there was a large amount of firefighters in the open area with most of them working to find the fire by hooking the ceiling. Several firefighters reported that there was little coordination or direction beyond "bring long hooks" and "hook the ceiling". Units generally stayed together, but eventually spread around the open area.

With a large amount of firefighters operating in a relatively small area, it is critical that a supervisor be appointed to direct tactics and operations to prevent congestion and redundancy of efforts. Additionally, a supervisor can coordinate the search for fire, direct units to appropriate areas and ensure crew integrity. Where possible, units should maintain voice contact with their assigned supervisor. At 3380 Soper Road, Chief 6C was operating as the de facto Division 2 Supervisor until Chief 2 was assigned the role by Huntingtown Command.

> 00:09:52 – Calvert Communications made the second announcement of the additional area box. Additionally, Medic 102 marked on the scene at 3380 Soper Road and Engine 2 – 2 marked responding. Medic 102 is the first EMS unit to arrive on scene.

Medic 102 and Engine 2 – 2 were not initially dispatched on this incident but instead added themselves on. Medic 102 responded with one EMT-Intermediate to augment the Ambulance from Company 6 that was initially dispatched on the call. The Calvert County standard for dispatching resources to a fire incident such as a house fire does not include ALS resources on the initial alarm. Instead, ALS resources are dispatched on second and greater alarms.

While typically the dispatching of EMS resources on fire incidents is meant for any potential victims discovered on the scene or reported by callers, consideration should be given to dispatching additional EMS resources, in particular Advanced Life Support (ALS) providers, for firefighters that may get injured on the scene. In addition to

potential firefighter injuries, EMS resources are critical to providing effective rehabilitation of firefighters engaged in fire attack in the IDLH.

Firefighter rehabilitation, or rehab, is designed to ensure that the physical and mental well-being of members operating at the scene of a fire don't deteriorate to the point where it affects the safety of any other members. Firefighting is inherently dangerous in the best of circumstances, and any additional physical or mental stress increases the danger of injury or illness.

The primary mission for firefighter rehab is to identify, examine, and evaluate the physical and mental status of personnel who have been working during the emergency incident or a training exercise. Following a proper survey, it should be determined what additional treatment, if any, may be required.

If the Incident Commander determines that rehab is necessary, qualified paramedics or EMTs (who should be assigned to the first alarm response) should be designated to manage the Rehab Sector under the command of a fire or EMS officer or supervisor. EMS personnel must be on scene and available to provide treatment to personnel at a moment's notice.

Recommendation 12: Consider revising dispatch protocols to include ALS resources on initial dispatch of credible reports of fire or possibility of trapped victims. Subsequent alarms should also include ALS resources to account for and support the potential needs of the additional personnel. Consider County-wide training on firefighter rehab that involves all levels of EMS providers.

00:10:27 – Chief 6C:

"Operations to Command."

Chief 6A:

"Go ahead Chief."

Chief 6C:

"I'm doing my 360 right now. I got heavy fire on side Charlie."

Chief 6A:

"Alright, get inside with them guys, don't worry about anything else, I will be there in about 30 seconds…get that place opened up. Squad 6, long hooks when you get there…copy, long hooks."

Chief 6C:

> *"Bravo, Charlie corner. Bravo, Charlie corner is where I need everybody."*

In interviews, Chief 6C believes that the indication of "Bravo, Charlie" was transposed when it was intended to report that the focus of efforts on the second floor should have, instead, been on the Charlie/Delta corner.

Chief 6A:

> *"Alright, Bravo, Charlie corner. Come on [name redacted], get that thing up the driveway."*

Squad 6 arrives on scene and proceeds to the second floor of the house where they join with Engine 6 - 2:

> *"Rescue Squad 6 on scene."*

Incident Command System established

Chief 6A:

> *"Chief 6A to Calvert, I'm on the scene, got a 2 ½ floor mega mansion, got heavy fire showing from B/C quadrant. Chief 6A establishing Huntingtown Command. Chief 6C will have the operations sector. Let me have, uh, a run, uh, a list of my chief officers."*

With Squad 6's arrival on scene, they brought six additional personnel, with the driver initially staying with the unit before joining with the remainder of the crew. The Squad's officer and four firefighters proceeded to the second floor with tools that included long hooks and a thermal imager. After setting up a light tower, the driver/operator of Squad 6 joined the crew already on the second floor. The officer and four firefighters from Squad 6 ascended the stairs and found conditions similar to that described by Engine 6 – 2, very light smoke mainly up near the ceiling level. At the direction of Chief 6C, they began horizontal ventilation as well as hooking the ceiling, looking for fire. These actions were mainly centered in the open area between the Bravo side laundry room and the Delta side bedroom.

One of the firefighters from Squad 6 was equipped with a thermal imager. The firefighter reported that a 360 scan at eye level and then overhead revealed a completely white screen. The firefighter at first thought that the thermal imager had broken as the firefighter had not encountered a screen "white-out" before. While this firefighter has experience in working fires, experience with thermal imagers, in particular with using imagers to recognize high heat fire conditions, is difficult to achieve. For instance, there

exists a great variability in the “refresh rate” of thermal imagers in use in the fire service today. The fire service in general regularly trains with thermal imagers to locate victims, a skill that should be maintained. However, thermal imagers can and should be used to “find fire” in situations such as this where the seat of the fire is not immediately known.

> Recommendation 13: Develop a training program for all Department firefighters that emphasizes skill development in using a thermal imager for victim location, search, zero-visibility navigation as well as locating fire and gauging its progress and severity.

With Chief 6C already on the scene and committed to interior operations, development of a coherent strategy was left to Chief 6A when the tactics had already be initiated. This left Chief 6A in the position of having to “chase tactics with strategy”, that is to say develop a game plan when the game had already started.

Furthermore, both Chief Officers refer to the “Operations” or “Operations Sector” when designating Chief 6C’s function on the incident scene. This contravenes a strict interpretation of ICS or NIMS, but in general can also lead to confusion. As the fire service in general has adapted to local and national requirements for an Incident Management System, confusion can be created when previous methods, such as sectors or “Operations”, are utilized in concert with current ICS procedures.

With this incident on Soper Road, a rare situation occurred whereby a Chief officer arrived as the first on scene fire department resource. Commonly, Chief officers direct operations based upon a developed strategy and incident action plan. Unit officers are relied upon to direct operations at the task level by functioning as unit supervisors or, in the case of a larger incident, division or group supervisors.

On this incident, a Chief Officer (6C) arrived on scene at 00:06:51 hours and conducted a size up from the exterior and then entered the house to account for occupants. Chief 6C primarily remained inside to help direct operations at the task level as a de facto Division Supervisor (Division 2 or Division A) until Division 2 was assigned to Chief 2.

While this is understandable, this action created a situation where the function of Incident Commander was first effectively transferred to Chief 6A, who was not yet on scene. While there were Fire Department personnel outside of the house (pump operators, etc.), from the arrival of Engine 6 – 2 until Chief 6A’s arrival, there was no one person with an overall picture of the incident directing tactics from the exterior.

Although this time gap may have been minimal, at approximately four minutes, any time period where there is no designated Incident Command on scene should be avoided. If resources permit, Chief officers could be more effective by establishing an Incident Command System, develop and communicate strategy, and initiate an accountability system.

Furthermore, when Engine 6 – 2 arrived on scene, the unit supervisor and two firefighters entered the house leaving a “red-hat” firefighter and driver/operator outside. The fact that the unit supervisor of Engine 6 – 2 was not of officer rank further complicated incident management efforts on the second floor. Since the unit supervisor was not trained and experienced in the role of a company officer, the role of Division Supervisor on the second floor was left to Chief 6C to fulfill.

Recommendation 14: Whether through training or adoption of procedure, emphasize the importance of size up, IAP development, formulating strategy and direction of operations by the first unit or chief officer on scene as the Incident Commander. Additionally, develop skills and abilities of Unit Officers to assume the role of Division or Group Supervisors.

Chief 2:

“Chief 2’s on Soper.”

Calvert Communications:

“Chief 2, Chief 5 as Duty Chief, Chief 6C is on the scene and yourself.”

Huntingtown Command:

“Chief 2 on Division 1, and the Duty Chief, I want him on Division 2 immediately.”

Chief 1A:

“Duty Chief’s responding Calvert.”

Chief 5B:

“5B to 1A, you gonna cover duty chief then?”

Chief 1A acknowledges covering the North End Duty Chief:

“Yeah.”

This action of acknowledging coverage of the North End Duty Chief role after Chief 5B had offered to cover the role at 00:05:42 hours created redundancy and possible confusion. At this point in the response, Chief 5B was most likely closer to the incident scene than Chief 1A, who was now responding as the North End Duty Chief.

This confusion would persist for several minutes.

Engine 2 – 1:

*"Two – One to [*covered by Chief 1*], did you layout next to all these trees?"*

Unknown Unit:

"There's a layout at the end of the driveway, you can't have any problems seeing it."

Engine 2 - 1:

"I'm trying to find out if it's the driveway with all the trees running it?"

Unknown Unit:

"You will see the layout at the end of the road way to your left, it's the yellow fire hose."

Engine 2 – 1 and Tower 2 arrive on scene at the end of the driveway at 3380 Soper Road. Chief 6A calls for the Duty Chief and then transmits an assignment:

"Alright, take water supply when you get here."

Duty Chief:

"Alright."

Engine 2 – 1 proceeds up the driveway and positions behind Squad 6. Tower 2 positions parallel to Engine 6 – 2 and Squad 6. Engine 2 – 1 brought five personnel, one of which remained at the Engine as the pump operator. Four personnel from Engine 2 – 1 joined the interior crew of three from Tower 2. The driver/operator and a firefighter from Tower 2 remained outside with directions to throw ground ladders to the house.

Engine 2 – 1:

"*2 – 1 is on the scene with 6's line."*

Tanker 6:

"Tanker 6."

This transmission from Tanker 6 indicates that a driver/operator had reached the station and responded with the Tanker.

00:13:47 - Huntingtown Command:

"Chief Two, you here yet?"

Chief 2:

"Right behind the Tower."

Huntingtown Command:

"Division One right away."

Chief 2:

"I'm coming."

Huntingtown Command:

"What's my next closest chief?"

00:14:07 - Calvert Communications:

"It's probably going to be the Duty Chief from 1."

Huntingtown Command:

"Alright, Chief 2 scratch that, get to the second floor, get to the number two floor, okay?"

Chief 2:

"Division 2, copy."

Chief 2 arrived on the scene while Engine 2 – 1 was completing the hose lay in to Engine 6 – 2. After donning PPE and SCBA, Chief 2 left a Personnel Accountability Tag with the driver/operator of Tower 2 before entering the house and ascending the stairs to the second floor to assume the Division 2 Supervisor role.

Personnel among the last to arrive to the second floor reported a decrease in visibility due to a lowering smoke layer along with a gradual increase in the heat level. At this point, the single hose line to the second floor had not yet been charged.

The seven total members from Engine 2 – 1 and Tower 2 joined Chief 2, Chief 6C, the Lieutenant and nine total members from Engine 6 – 2 and Squad 6 for a total of 18 personnel on the second floor.

Unknown Unit:

"6A, you've got fire showing outside."

Huntingtown Command:

"I got, I know I've got fire showing."

Huntingtown Command:

"Duty Chief, you're gonna have Division One, Duty Chief Division One, copy?"

Duty Chief:

"I copy, about a minute out."

What is unclear is whether or not the Duty Chief from Company 1 was previously given the assignment of water supply. Reviewing radio transcripts, the Duty Chief was originally assigned Water Supply when he advised he had a 2 minute ETA. Chief 2 was then assigned Division 2. When Command inquired who his next Chief Officer was, Calvert Communications advised "*probably going to be the Duty Chief from 1*". Command then advised the Duty Chief "*you're gonna have Division 1, Division 1 copy*". It is certainly unclear who, or if anyone, was assigned the Water Supply Supervisor role at the early stages of the incident.

Based upon interviews conducted after the incident, the confusion over who was responding as the Duty Chief and the arrival order of Chief officers was later resolved with Chief 2 assuming the Division 2 Supervisor role, Chief 5B assuming the Division 1 Supervisor role and Chief 1A assuming the Water Supply Supervisor role. It is clear that Chief 6A as Huntingtown Command understood which Chief officers were assigned which roles, but it may not have been clear to others, including the responding Chief officers designated to assume specific roles.

Incidents that require a rural water supply evolution achieve success by the success of the water supply shuttle. Due to the complex nature of the rural water supply shuttle, it is critical that a Water Supply Supervisor be identified in the early stages of the incident. Consideration should be given to identifying the Water Supply Supervisor in policy or procedure to avoid confusion or delay in organizing the water shuttle.

The Calvert County standard, Non-Hydrant Structure Operations, Effective Date: March 1, 2009 identifies the roles and responsibilities of arriving units and officers. It does not, however, address the role of Water Supply Supervisor. Calvert County should consider a revision to the Non-Hydrant Fire Operations Standard, to reflect the option for designating a specific unit or Chief officer to assume the role as the Water Supply Supervisor at the dump site.

Recommendation 15: Consider revising County-wide tactical guidelines that establish roles and responsibilities for units on various incident types. For Non-Hydrant Structure Operations, establish when and who the Water Supply Supervisor will be on fires in non-hydrant areas.

Huntingtown Command:

> *"Alright, I want that Tower Ladder to get up in here in case I got to use it, get in tight, get in tight up in here. I want the guys in here with long hooks, probably got 16, 18 foot ceilings, copy?"*

Huntingtown Command requested a rundown of the units dispatched or on-scene of the Soper Road incident. Calvert Communications responds:

> *"Engine 6 – 2 with 5, Engine 1 – 2 with 5, Engine 2 – 1 with 5, Engine 5 – 2 with 6, Squad 6 with 6, Tanker 7 with 3, Tanker 5 with 5, correction with 2. Tower 2 with 4."*

Huntingtown Command:

> *"Alright…give me the 2nd alarm real quick."*

Calvert Communications:

> *"2nd Alarm, you got Engine 833, Tower 1 no response as of yet, the Medic, Engine 7 – 1, and your Tanker."*

Chief 6C:

> "[Chief 6A]…*let me know what you got back there, I don't know, what the status looks like."*

Huntingtown Command:

> *"Can't hear you, try it again."*

Chief 6C:

> "*What do we got showing outside now?"*

Huntingtown Command:

> "*Heavy smoke pushing out of side one, correction, side A, Alpha."*

Chief 6C:

> *"Alright, whatever people you got out there with long hooks…we got cathedral ceilings up in here."*

Huntingtown Command:

> *"Alright, I've told everyone on the fireground and smoke appears to be pushing more so out the D side, D."*

Chief 6C:

> "*Okay let's…[*covered by Engine 2 – 1 asking if Engine 6 – 2 is ready for water.]"

The radio traffic asking if Engine 6 – 2 is ready for water indicates that there has not been a water supply established from the supply Engine to the attack Engine. At this point in the incident, and taking in to account the next radio transmissions that follow, it is clear that the fire has been burning for at least 15 minutes since the first 911 call and the crew from Engine 6 – 2 has been operating on the second floor for at least 5 minutes without a charged hose line.

If the driver/operator from Engine 6 – 2 charged the hose line with the water carried in the on board booster tank, it would use 50 gallons of water in the hose line which would leave at most three and a half minutes of sustained water flow before the booster tank would be exhausted.

This lack of water being applied to the fire most certainly allowed the fire to gain momentum and involve greater areas of the attic.

Huntingtown Command:

> *"All units on the fireground in Huntingtown. All units come in with long hooks."*

Huntingtown Command:

> "*He saying no on water yet and the fire is breaking through chief; you gotta get ahead of it."*

Units operating on the second floor worked for several minutes to attempt to locate interior access to the attic, via a scuttle hole or interior stairs. Chief 6C then met with the Lieutenant again at the top of the stairs. With crews already operating on the second floor, Chief 6C left the second floor, descended to the first floor foyer and moved towards Side Charlie in the great room.

Despite being assigned the Division 2 Supervisor role, Chief 2 did not physically see Chief 6C on the second floor. Chief 2 reported that the conditions were “zero-visibility” on the second floor and that Chief 6C was audible issuing orders to “open up, open up.” Chief 2 and Chief 6C did not meet and discuss strategy at any time on the second floor.

At some time while operating on the second floor, Chief 6C encountered a free flow of air from the primary regulator or the SCBA cylinder valve. When Chief 6C descended the stairs, a replacement SCBA was obtained from the “red-hat” firefighter from Engine 6 – 2.

At the rear of the home, Chief 6C exited a sliding glass door on to a porch where part of Side Charlie was visible. Chief 6C was able to visualize fire from the second floor gable end area on Side Charlie which would have placed the bulk of the fire in the void, attic space over the second floor in the Charlie Quadrant where the bulk of the firefighters were operating. Chief 6C reported the conditions from Side Charlie, but as is evident from the following quoted radio traffic, the data capture program for the radio system in Calvert County did not record Chief 6C’s portable radio as transmitting.

Unknown Unit:

“Engine 6 – 2, I need water.”

Unknown Unit:

“*Roof to command… (*Inaudible).”

Huntingtown Command:

“*The unit calling Command?”*

Unknown Unit:

“Roof Division, I have fire through the roof.”

Huntingtown Command:

“I know that, I know you’ve got fire showing, let’s get some water on it.”

Chief 6C:

“Chief what side?”

Huntingtown Command:

> *"Dead in the middle it looks like from where I'm at. Heavy fire on the Charlie side as well."*

Despite the presence of several units on the second floor, conditions and especially the change in conditions inside the house were not relayed to the Incident Commander. The Incident Commander had a position that afforded a view of three sides of the incident. For an incident involving a structure of this size, it is critical that personnel be appointed to monitor conditions from vantage points where the Incident Commander does not have direct line of sight, including the interior. For a structure of this size, it is critical to maintain a presence on Side Charlie to monitor conditions as well as detailed, continuous reports on conditions from the interior.

Recommendation 16: Reinforce the need for Division or Group Supervisors to relay condition reports to the Incident Commander on a regular basis. Emphasize the need for Incident Commanders to appoint monitors early in the incident to observe any areas of the Incident Scene that they cannot directly visualize.

00:17:59 – Huntingtown Command:

> *"Alright, who is on the roof at this time?"*

Chief 5B had arrived on scene and conducted a brief face-to-face where Chief 5B communicated a safety concern that a firefighter was on the roof without SCBA. Shortly thereafter, Chief 5B entered the house and assumed the role of Division 1 Supervisor with instructions from Huntingtown Command to "go in and give me a report on Division 1."

When Chief 5B entered the first floor the 400' 1 ¾" hoseline had not been charged.

Unknown Unit:

> "(Inaudible)"

Huntingtown Command:

> *"Get off the roof now. Tower 2, rig for the Tower, get that Tower up and stand by."*

Huntingtown Command:

> *"Water Supply."*

00:18:33 – Engine 6 - 2:

"*6 – 2 to Engine 2, go ahead and send me water."*

It remains unclear, but it is assumed that this radio transmission signifies that water supply had been established to Engine 6 – 2 and a second hose line was readied for service. It is shortly after this that the first attack line is operated, flowing water on the fire, on the second floor by Engine 6 – 2.

Huntingtown Command:

"Tower 2 driver come in."

Several attempts are made to contact Tower 2's driver/operator.

00:19:02 – Tower 2:

"Go ahead Chief."

Huntingtown Command:

"Get the Tower ladder up and ready."

Tower 2:

"It's soft, it's too soft to put it up. I need the hard surface where 6 is."

Tanker 6:

"Tanker 6 is on location."

Chief 6C:

"Charge the second hand line."

Huntingtown Command:

"North Duty Chief, are you here yet?"

Duty Chief:

"I'm going in right now."

This transmission reveals that Huntingtown Command had an understanding of which Chief Officer was assigned to enter the structure, in this case Chief 5B. At the same

time this contradicts earlier radio traffic where Chief 1A had acknowledged the North End Duty Chief role after Chief 5B had initially responded in the same role.

To avoid confusion in further radio communications Calvert County should consider a revision to the Duty Chief Standard (Effective July 26, 2011) to eliminate the term "Duty Chief" during radio transmissions. Instead, Calvert County should consider using their company designation and corresponding rank letter using the International Phonetic Alphabet (i.e. Chief 6 – Bravo, etc.). Using a Chief officer's individual company designator and rank letter will be more specific whereas the term "Duty Chief" could apply to more than one individual.

Recommendation 17: Consider revising the Calvert County Duty Chief standard to eliminate the term "Duty Chief" during radio transmissions. Consider using company number designations and rank letters using the International Phonetic Alphabet.

Huntingtown Command:

> *"Alright, let me know what's going on inside, I haven't had an update lately."*

Chief 6C:

> *"6C to Command."*

Huntingtown Command:

> *"Go ahead Chief."*

Chief 6C:

> *"We're on Division 2. We're doing the best we can opening this thing up in the ceiling alright, we can't find any attic access."*

Chief 6C had returned to the second floor to check on progress there when notification was made of a second hose line at the front door. Engine 2 – 1 had arrived and stretched a hose line to the first floor foyer. Chief 6C descended the stairs to assist in stretching the line to the second floor.

Huntingtown Command:

> *"Alright, listen to me; it looks like it's in the center section coming towards the Alpha side, alright. There's heavy smoke pushing out. Get somebody over on Division 2 toward the D and center section of residence. D, center section, okay?"*

Chief 6C:

"That's where I'm at right now."

Units operating on the second floor had not had success locating the seat of the fire by hooking the ceiling in the second floor open area. In small groups, the firefighters in the open area moved towards what they thought was the seat of the fire in the area of the Delta side bedroom.

It appears that the officer and a firefighter from Engine 6 – 2 followed a firefighter from Squad 6 in to the Delta side bedroom. Almost immediately the firefighters reported a sudden decrease in visibility and a noticeable increase of heat.

The hose line stretched by Engine 6 – 2 had been charged just prior to entering the bedroom. Once inside the bedroom, the firefighter from Squad 6 joined with the officer from Engine 6 – 2 and began hooking the ceiling. As a result of a sudden increase in heat the line was operated in short bursts directed up at the ceiling in to the holes created by hooking. Once the holes were created, firefighters operating in the bedroom described a "roaring, jet engine" type sound before a rapid increase in heat along with smoke and fire began to fill the room.

Concurrent with these observations on the second floor Chief 5B, operating as Division 1 Supervisor, had operated a water can in to inspection holes created in the void space around the first floor fireplace. Chief 5B reported the same "roaring" noise before seeing flames descend the stairs and "blow out the front door".

Huntingtown Command:

"Alright, you gotta get them in there, take them in there and get this place opened up. It's pushing heavy black smoke and I've got heavy fire showing."

Calvert Communications:

"*Calvert to Command, no response from Tower 1, you want it replaced?"*

Huntingtown Command:

"That's right."

Chief 6C:

"I need someone to meet me with lights at the front door."

Huntingtown Command:

"I'm doing the best I can do for you."

Calvert Communications:

"*Chief, you need a Tower or will a Squad be adequate?"*

Unknown Unit:

"Back down your pressure [name redacted]. Back down your pressure."

Safety Officer 6:

"Safety Officer 6 on the scene Calvert."

Calvert Communications:

"Safety 6."

This transmission indicates that Safety Officer 6 had arrived on scene. As discussed earlier in this section, Safety Officer 6 was initially directed to respond with Tanker 6, but a driver/operator responded to the station before Safety Officer 6. Safety Officer 6 responded to 3380 Soper Road in a personal vehicle.

Engine 2 – 2:

"Engine 2 – 2 as well."

Huntingtown Command:

"Has anybody else laid out coming down that driveway yet?"

Unknown Unit:

"Chief, I gotta get you, get you some room if you need more line, gotta give me a minute."

Huntingtown Command:

"I want someone to lay dual lines from out there and bring them back here and park right beside Tower 2, copy?"

Engine 5 – 2:

> *"5 – 2 to Chief, we've laid a secondary line in, I'll pull a line over to Tower 2 at this time."*

Huntingtown Command:

> "*Alright, he's telling me he can't get the tower up here it's too soft, but I still want the water supply back there."*

00:20:58 – Huntingtown Command:

> *"6C, I need an update right away, it's not looking good. About two more minutes and I'm pulling them out*."

Tanker 7:

> "*Tanker 7 is on location."*

Calvert Communications:

> *"Okay."*

Unknown Unit:

> *"I've got a load of tanker water coming up before we can move anything out of the way and get you other lines in here, you copy that?"*

Unknown Unit (Possibly Engine 2 – 1 Officer):

> "(Inaudible)…*officer to Command, I need a line to Side Alpha."*

Chief 6C:

> *"6C to Command."*

Firefighters begin emergency evacuation of the home

Huntingtown Command:

> *"Evacuate the building, evacuate the building, evacuate the building. Calvert, sound the evacuation tone immediately. All units*…[covered by tones.]*"*

Calvert Communications:

> *"All units evacuate the building, evacuate...*[covered by tones.]…*evacuate now, evacuate."*

Huntingtown Command reported seeing a flash of light across the large window in the second floor open foyer concurrent with a rapid increase in fire and smoke issuing from the second floor. On the interior, firefighters operating in the bedroom as well as firefighters operating in the second floor open area reported rapidly changing smoke conditions followed by a sudden spike in temperatures that quickly changed to fire progressing from the ceiling level to the floor.

Chief 6C, at this time positioned in the foyer area assisting with hose line advancement, observed a rapid increase in smoke visible up the stairwell and then fire in the two-story great room. Chief 6C reported fire was visible to the approximate level of the first floor ceiling in the great room.

Chief 5B, positioned in the great room, near the first floor fireplace observed fire progress down the stairway and "blow out the front door."

On the exterior, Huntingtown Command recognized these conditions and called for an evacuation.

In the second floor bedroom, the officer from Engine 6 – 2 got separated from his firefighter on the nozzle and ultimately jumped from the second floor window, landing on the first floor overhang before landing on the grassy surface on Side Alpha.

The firefighter from Engine 6 – 2 and a firefighter from Squad 6 operating in the bedroom retreated to the stairway. Multiple firefighters operating in the open area on the second floor reacted to the rapid fire progress by immediately implementing survival techniques. Firefighters partnered up with other firefighters by holding on to air packs and rapidly descended the stairs.

At least one firefighter found the hose line and followed it until the banister surrounding the stairwell was located. Several firefighters, upon locating the banister, jumped or fell to the first floor.

Chief 2, operating as Division 2, on the second floor encountered a rapid heat buildup while standing next to the railing around the stairwell. Chief 2 sounded his PASS (audible warning device) to serve as a beacon for other firefighters on the second floor before following the hose down the stairs. Once in the foyer area, Chief 2 helped pull down hoselines from the second floor and gather equipment. When Chief 2 discovered a helmet from a Company 2 firefighter, Chief 2 conducted a face-to-face accountability check with Engine 2 – 1 and Tower 2 before confirming all personnel from Company 2 were accounted for with Huntingtown Command.

Safety Officer 6:

"Mike, Mike."

Safety Officer 6:

"EMS units, EMS units."

Huntingtown Command:

"Resound the evacuation tone Calvert, resound it.

Calvert Communications:

"[Tones], *all units evacuate*…[covered by other unit]."

Huntingtown Command:

"EMS units to the front, right away. Calvert, give me about 3 more Ambulances. EMS to the front."

Medic 102:

"Multiple men down, start me 2 helicopters priority 1, Category Alpha. I'll advise."

Huntingtown Command:

"I need the accountability in one minute, need accountability in one minute."

Unknown Unit:

"I've got a Priority 2 with one in front of the building."

Huntingtown Command:

"Alright let's get them moving those handlines, Safety Officer 6 get them moving those hand lines."

Firefighters operating on the interior exited the house and moved to the area adjacent to the driveway for emergency medical care and accountability.

Chief 5B, along with firefighters from Company 5, encountered a downed firefighter in the foyer and rendered assistance to help the firefighter get to EMS providers in the front yard.

Firefighters accounted for and receive medical treatment

Huntingtown Command:

> *"6C come in and I need accountability right away."*

Chief 6C:

> "[Vibralert sounds]…*I am still trying to verify that everyone has come out*…[Vibralert sounds]…*start a few ambulances, I know we've got people hurt."*

Huntingtown Command:

> *"I can not, can't copy a word you're saying Chief."*

Chief 6C:

> "[Vibralert sounds]…*I am still inside on Division 2, trying to verify that everyone is out…start an ALS unit and a few ambulances.* [Chief 6A] *I know we've got people hurt."*

Huntingtown Command:

> *"Alright, the only thing I got is that you got a couple people hurt, they're in the front yard. Your mask is going off. I can't understand a word you're saying."*

Chief 6C:

> "[Vibralert sounds]…*I'm inside verifying that everyone is out."*

Chief 6C and 5B remained in the first floor foyer area for a few minutes to ensure all firefighters were accounted for and had exited the home.

Huntingtown Command:

> *"Alright."*

Calvert Communications:

> *"Command, we copy you need three ambulances and two helicopters."*

Huntingtown Command:

> *"I did not request that. Where did that come from?"*

Calvert Communications:

"Command, I heard it from interior."

Chief 6C:

"[Vibralert sounds]…*charge the handline, charge both the handlines."*

Huntingtown Command:

"Just start me three ambulances for now Calvert. I'll get back to you in a minute."

Medic 102 had requested aero medical evacuation resources in the form of helicopters from Maryland State Police as soon as firefighters appeared in the doorway evacuating the house.

Calvert Communications:

"Okay."

Huntingtown Command:

"Please somebody get on the handlines."

Chief 6C:

"[Vibralert sounds]..[unreadable transmission]"

Huntingtown Command:

"Safety Officer 6 come in. Safety Officer 6 come in."

Unknown Unit:

"Engine 2, I need water."

The investigative team was unable to conclusively determine if this transmission was from the Driver/Operator of Engine 6 – 2. If true, it indicates a loss of water supply at a critical moment when firefighters were not fully accounted for and potentially still inside an actively burning building.

Huntingtown Command:

> *"I need to know if we're all clear. I still see people coming out that front door."*

Duty Chief:

> *"Duty Chief, Chief 2 and Chief 6C, we're all here making sure everybody's out."*

Huntingtown Command:

> "*Alright, now I want one of you to let me know who's hurt, how many guys and the severity of injuries immediately."*

Duty Chief:

> *"I'll get that to you in one second."*

Tower 2 Portable:

> *"Be advised that when I was coming out, the homeowner was inside. You need to make sure that homeowner got out."*

The investigative team was unable to definitively determine if an occupant had returned to the house, but several firefighters, both inside and outside of the house, reported seeing an occupant exiting the first floor along with firefighters evacuating the second floor.

Huntingtown Command:

> *"Yeah, I think he dove out that window, I think I saw him come out the front."*

Duty Chief:

> *"Duty Chief to Command."*

Unknown Unit:

> *"Command, I got that second supply line coming back. I'm not going to be able to make it duals with 2 – 2. I'm going to have to lay their thousand out and then use their LDH."*

Huntingtown Command:

> *"Alright, standby with that real quick. Calvert, my Safety Officer is going to have the EMS sector on Tac 3, okay? He's going to take care of that, he does need 2 helicopters."*

Calvert Communications:

> *"Okay."*

Duty Chief:

> *"Alright Command, I've got two injured."*

Huntingtown Command:

> *"Chief 6C, come in."*

Chief 6C:

> *"Go ahead* [6A]."

Huntingtown Command:

> *"Alright, I need to know if everybody is out of this house immediately."*

Chief 6C:

> *"I know this. As soon as I can get a line I'm going back to the second floor."*

Huntingtown Command:

> *"Uh, I don't think you can make that second floor, Chief, from where I'm standing. Get me an accountability, now."*

Chief 6C:

> "*You're going to have to call the individual officers,* [6A]. *I don't know who was in charge of 6 – 2.*

It is not clear where the required Personnel Accountability Tags (PAT) were located that would have readily identified the members of units on scene. A review of the Calvert County Accountability Standard (Unknown Effective Date) reveals that Calvert County utilizes the "passport" system where the "first arriving company will announce their accountability location in a follow-up report after the size up report and assumption of

command." Additionally, the Standard details that the PAT may be Velcro or clip style tags, crews entering the incident will deliver their passports to the first arriving Engine, and that a Personnel Accountability Report (PAR) is required upon any significant fireground event which includes a "sudden hazardous event".

On the incident at 3380 Soper Road, major portions of the Accountability Standard were not followed including announcement of accountability location and conducting a PAR after a sudden hazardous event. Calvert County should consider reviewing the existing Accountability Standard and evaluate its suitability given current fireground scenarios. The type of PAT should also be re-evaluated to determine one consistent type of PAT for all firefighters in Calvert County. The Accountability Standard should also be incorporated in to any opportunity available including Rapid Intervention and Incident Command training.

Recommendation 18: Consider revising the Calvert County Accountability Standard and evaluate its suitability for current fireground scenarios. Consider requiring one type of PAT for all firefighters in Calvert County. Incorporate Accountability Standard in to any available opportunity.

Huntingtown Command:

> *"Okay, Calvert. I'm going to have to bug you for one minute. Calvert, get me Engine 6 – 2's officer.*

Calvert Communications:

> "*6 – 2."*

After no success, Engine 6 – 2's driver/operator is asked "who was on your firetruck?" There was no recorded response and there is no further mention on TAC 1 regarding accountability of firefighters or EMS resources. The remainder of the radio traffic concerns logistics and suppression efforts to combat the remaining fire. Accountability of Engine 6 – 2 was accomplished through face to face communications.

Injured firefighters were treated on-scene before transport to area and regional hospitals by both ground and air resources. Firefighters remained on-scene for several hours before the fire was fully extinguished.

GENERAL ANALYSIS

This section contains analysis of general factors of this incident and, where appropriate, recommendations for actions to benefit the Huntingtown VFD, Calvert County, the region and the national fire service.

Description of the Structure

3380 Soper Road

As reviewed during the beginning of the previous section, 3380 Soper Road was a large home with almost 6500 square feet of living space. The first floor contained a master bedroom suite along with a two-story living room, referred to as the great room, and a kitchen and dining area.

Building Construction and Features

The primary construction method was lightweight, wood-frame with an exterior of vinyl siding and some areas of stone veneer. The two story great room section of the home had glue laminated wood beams of significant size. It is unknown if these were load bearing or decorative.

Of particular interest to the analysis of the factors behind the fire spread and eventual incident that caused firefighter injuries is the construction of the fireplaces, chimneys and void spaces that created a pathway from the basement fireplace to the second floor attic area.

Starting from the bottom of the house, the fireplace in the basement living area was set in to the wall at an angle and had a stone veneer. From pre-fire pictures, the presence of a void space to either side of the fireplace is clearly evident. This void space is continued upwards to the first floor fireplace, then at an angle to the second floor landing area adjacent to the laundry room.

Figure 11. Basement living area and fireplace

Figure 12. Close up of fireplace in basement living area

Figure 13. Side View of Fireplace. Note void space to left of fireplace.

Figure 14. Angled view of Side Charlie. Note stone veneer section of basement level and chimney.

Figure 15. Close-up of basement living area door. Note stone veneer columns.

Figure 16. First floor fireplace in great room. Note continuation of void space to left of fireplace. Also note angled void space above fireplace.

Figure 17. Ceiling of great room. Note angled void space from above fireplace to second floor landing of upper right of photo.

Figure 18. Second floor landing and laundry room. Note angled void space from first floor of the great room just visible to left of photo.

Origin and Cause

As detailed in the previous section, the occupant of the basement living area was known to have routinely used the fireplace adjacent to the bedroom in the basement. The State of Maryland, Office of the State Fire Marshal ruled the fire's cause as accidental with the area of origin being a fireplace, the heat source as flame and the item first ignited being a structural member or framing.

A survey of the incident scene on April 27, 2011 revealed the presence of the basement fireplace and surrounding framing members. Further investigation of the remains of the basement fireplace revealed a hole in the left side (when facing the front of the fireplace) outer metal wall of the fireplace that appeared to have been caused by corrosion over some time.

Figure 19. Basement living area fireplace. Note hole on left side of fireplace and outer edge of stone veneer of void space.

Figure 20. Close up of fireplace. Note corrosion hole in left side of fireplace.

Figure 21. Corrosion hole in fireplace.

Figure 22. Close up of corrosion hole.

Upon closer inspection, one possible cause is that radiant heat over time caused pyrolitic decomposition of the framing inside the void space to the left side of the fireplace. Another possible cause could have been a fire involving a build up of creosote within the chimney which communicated to the interior of the framed out chimney chase. In either case, the area of origin was the basement fireplace and the cause was the active fire in the fireplace.

Exposures

There were no significant exposures. The closest home was more than 250 feet away.

Impact on Incident

The construction, specifically the light weight wood frame and the presence of multiple void spaces, created a pathway that communicated fire from the area of origin to the second floor and the attic void space.

In analyzing the pre-fire photos and the floor plans, a pathway of fire is evident from the basement fireplace void space (Fig. 13) to the first floor fireplace void space. From the first floor fireplace the angled void space (Fig. 17) above the fireplace could have easily communicated fire to the void space behind and above the second floor laundry room area (Fig. 18.).

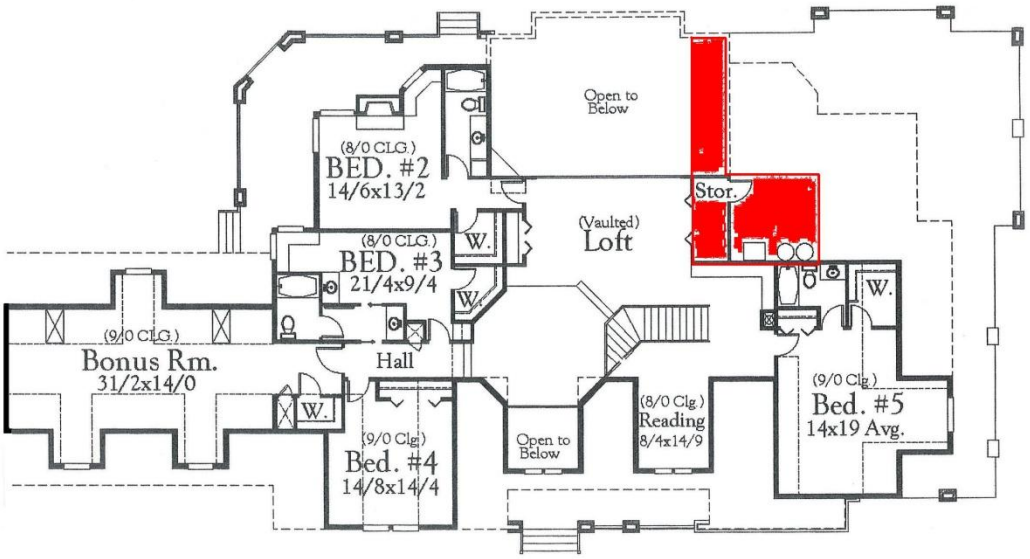


Figure 23. Second floor plan. Pathway leading to laundry room and void space highlighted in red.

Figure 24. View of laundry room and void space from top of stairs.

Figure 25. Photo of Side Charlie prior to the event on the second floor. Note that the main body of fire appears to be coming from the attic, gabled void space above the great room.

3380 Soper Road was a relatively large, wood frame house with multiple void spaces. Consideration should be given to including information on this type of construction in initial, on-going and advanced level training for all firefighters. Recognition of the amount of void space could be obtained by observing the amount and size of gabled ends on the house. As it appears in this case, the more gabled ends that are visible gave potential clues to the amount of void space that could potentially be involved in fire.

Recommendation 19: Enhance and improve the depth of information provided in initial, on-going and advanced firefighter training on light weight, wood frame building construction, particularly in custom homes with many gable ends that create void spaces.

Operations

This segment of the report addresses factors that impacted on-scene operations, including the number of personnel on the scene, strategy and tactics, and the incident command structure.

Effective Firefighting Force

Fire and rescue work is task-oriented and labor intensive, performed by personnel wearing heavy, bulky Personal Protective Equipment (PPE). Many critical fire ground tasks require the skillful operation and maneuvering of heavy equipment.

The speed, efficiency, and safety of fire ground operations are dependent upon the number of firefighters performing the tasks. If fewer firefighters are available to complete critical fire ground tasks, those tasks will require more time to complete. This increased time is associated with elevated risk to both firefighters and civilians who may still be trapped in a structure.

To ensure civilian and firefighter safety, fire ground tasks must be coordinated and performed in rapid sequence. Without adequate resources to control the fire, the structure and its contents continue to burn. This increases the likelihood of a sudden change in fire conditions, the potential for failure of structural components leading to collapse, and limits firefighters' ability to successfully perform a search and potential rescue of any occupants.

Two factors drive the availability of resources: individual unit staffing and the number of units dispatched to an incident. The National Fire Protection Association (NFPA) develops consensus-based codes and standards, which provide guidance with regard to both unit staffing and appropriate dispatch complements.

NFPA 1500, *Fire Department Occupational Safety and Health Program* recommends that "a minimum acceptable fire company staffing level should be four members responding on or arriving with each engine and each ladder company responding to any type of fire."[4]

NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* applies principles of fire behavior and emergency medicine to the basic resource requirements for effective fire and emergency service deployment.

The *Standard* does not define the composition of the initial alarm assignment. Rather, it lists the tasks the initial alarm assignment should be able to complete for a 2,000 square foot structure without a basement or exposures (e.g., "establishment of an

[4] NFPA 1500

uninterrupted water supply"). Based on the list of tasks required, the *Standard* recommends fire suppression units to be staffed with a minimum of four personnel.[5]

Additionally, the *Standard* recommends that departments also set specific response time goals, including having the capability to deploy a full structural alarm assignment within eight minutes, 90 percent of the time.[6]

NFPA 1720 is the *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*. This *Standard* does not include specific staffing recommendations. Instead, NFPA 1720 places the onus of determining the staffing and response time capabilities that ensure a sufficient number of members are available to operate safely and effectively on the local jurisdiction.[7]

While NPFA 1710 may not necessarily apply in this case, as Huntingtown VFD is not a career department, the staffing levels identified in the Standard can prove a helpful starting point to discuss appropriate staffing levels by volunteer departments. In response to the incident on Soper Road the following chart details the response time, from time of dispatch to approximate arrival on scene, and staffing levels of the first alarm units.

Table 1. Roster of responding units and response times.

Unit	Response Time	Staffing Level	Note
Lieutenant 6	6 minutes*	1	Arrived POV, no radio
Chief 6C	8:25	1	First arriving FD Unit
Engine 6 – 2	9:27	5	One Red Hat
Squad 6	12:58	6	
Chief 6A	13:02	1	
Engine 2 – 1	14:14	5	
Tower 2	14:17	4	
Chief 2	15:15	1	
Engine 5 - 2	18:26	6	
Tanker 6	21:29	2	
Engine 2 - 2	22:54	Unknown	
Tanker 7	23:32*	3	
Tanker 5	Unknown	2	
Ambulance 6 – 9	Unknown	4	
Medic 102	Unknown	1	Not originally dispatched on first alarm.

[5] NFPA 1710, 5.2.4.2
[6] NFPA 1710, 5.2.3
[7] NFPA 1720, 4.3

	*=Approximate		

Within 15 minutes of the dispatch of the call, a total of approximately 23 firefighters were operating on scene. While this may not meet the time standard of NFPA 1710 at eight minutes, the amount of firefighters responding to a rural area from geographically diverse stations is commendable. The Huntingtown VFD, along with other Calvert County Departments, was able to muster an effective firefighting force for the incident at 3380 Soper Road.

This ability to muster full staffing levels on apparatus responding to 3380 Soper Road is a direct result of the success of recruitment and retention efforts of the Huntingtown VFD and other Calvert County Departments. In order to continue these high staffing levels, Calvert County should consider capturing the individual Departments' best practices in recruitment and retention. These best practices can then be utilized to enhance the County and individual Department efforts to continue member recruitment.

> Recommendation 20: Calvert County should consider capturing best practices for member recruitment and retention from individual Departments. These practices can then be used to enhance member recruitment efforts County-wide.

Minimum Staffing Requirements

The investigative team was unable to locate a definitive County-wide standard on minimum staffing requirements for apparatus. The Huntingtown VFD has established a standard on minimum staffing levels for all Department apparatus. In reviewing the staffing levels of apparatus that initially responded to 3380 Soper Road (See Table 1), it is clear that no unit responded understaffed. In fact, many units were at their maximum staffing levels. Calvert County should consider establishing County-wide minimum staffing levels for all apparatus to ensure that future incidents receive the same, fully staffed complement on a consistent basis.

> Recommendation 21: Calvert County should consider establishing a County-wide standard for minimum staffing for all apparatus.

Soper Road Response

The initial dispatch complement for Soper Road included four engines, one aerial apparatus, one rescue squad, two tankers and one Basic Life Support (BLS) unit. This is consistent with the recommended minimum resource complement defined by Calvert County Communications' Area Box Non-hydrant dispatch. Previous analysis and

recommendations have addressed potential changes to the dispatch complement for Area Boxes, Non-Hydrant.

Strategy and Tactics on Soper Road

Firefighters and officers use industry-accepted guidelines, collectively known as "strategy and tactics," to mitigate emergency incidents. Strategies are overall objectives, initially determined by the first arriving officer and subsequent command officers until the incident is successfully mitigated. Tactics are specific actions that support the overall strategy. Officers determine appropriate strategies and tactics based on industry-accepted incident priorities. These are:

1. Searching for and rescuing threatened occupants.
2. Stabilizing the incident.
3. Conserving property.

One commonly used mnemonic to remind officers of these priorities is "RECEO-VS," which stands for Rescue, Exposures, Confinement, Extinguishment, Ventilation, and Salvage.

The overall goal is to have an adequate amount of personnel, apparatus, and equipment on the scene to assure responder and citizen safety and accomplish necessary tasks delineated by the established strateg(ies). The first arriving units to Soper Road had to complete multiple, critical, fireground tasks simultaneously.

The Calvert County Non-Hydrant Structure Operations Guideline (Effective March 1, 2009) addresses the expected critical tasks to be performed by responding units on a structure fire in a non-hydrant area.

The staffing levels appear to have been more than adequate to accomplish necessary tasks and the tasks themselves appear to have been adequately performed, but the organization of personnel and tasks appears to have affected the efficacy at which these tasks were completed.

The first task, to search for and rescue threatened occupants, was quickly accomplished by Chief 6C when the first floor was searched and the one unaccounted for occupant was removed. At that point, Chief 6C could have exited the house, established Incident Command and communicated an IAP to responding resources.

When Engine 6 – 2 arrived on scene, there appeared to be little coordination between Engine 6 – 2, Chief 6C and the Lieutenant. When Engine 6 – 2 reached the second floor, part of the crew moved to the Side Bravo area of the Bonus Room to check for fire by poking holes in the ceiling. While this may have appeared to be a correct tactic, a thorough exterior 360 degree size up, followed up by interior use of the thermal imager to locate heat and fire, could have led to a more appropriate tactic of pulling ceilings and suppressing fire in the ceiling area of the Side Delta bedroom.

One complication with the organization of work when Engine 6 – 2 arrived on scene was the status of the unit supervisor who was at the rank of firefighter. To effectively organize incident operations and tasks, fire departments have traditionally relied on a two part division of leadership.

On one level you have Chief officers (Fire Chief, Deputy Chief, Assistant Chief, etc.) who typically organize operations at the strategic level. The strategic level of organization focuses on general expected outcomes at an incident. For example, a possible strategy at 3380 Soper Road could have been "contain the fire to the attic level".

The second organizational level is Company officers (Captain, Lieutenant, Sergeant, etc.) who focus on tactics, or operations at the task level. The tactical level focuses on "selecting, placing and operating personnel, hose lines, ladders, tools and equipment" to achieve the expected outcome or strategy.[8]

At 3380 Soper Road, Chief 6C operated at the tactical level for the majority of the incident. When Chief officers act at the Company officer level it can blur the line between strategy and tactics which can lead to a breakdown in incident organization. Possibly restricting Chief 6C's ability to assume a strategic role was the lack of a Company officer on Engine 6 – 2.

Currently the Huntingtown VFD has six Company officers, a Captain-Fire, Captain-EMS, Lieutenant-Fire, Lieutenant-Rescue, Lieutenant-EMS and Sergeant-Fire. While these Company officers do have an operational role, their limited number restricts them to mostly administrative responsibilities. The Huntingtown VFD is staffed with Chief officers who can assume an operational role at an incident scene to focus on strategy development and Incident Command, however the department is in need of additional Company officers who can operate as tactical leaders responding on Huntingtown VFD apparatus. All Calvert County departments should consider reviewing their operational Chief and Company officer staffing levels and consider establishing an officer development program.

The Huntingtown VFD has begun work on an officer development program, work that should continue. In addition to the program already under development, the Huntingtown VFD and all Calvert County departments should also consider a mentorship program to coach and guide current and candidate Company officers. The main objective of either a Company officer development or mentorship program should be to ensure that whoever is riding the front right seat of an apparatus is trained and equipped to lead their crew at the tactical level.

[8] Montgomery County Fire and Rescue Training Academy "Officers Training Officers" Powerpoint presentation. 2004

Recommendation 22: All Calvert County departments should consider developing a Company officer development program to increase the number of available Company officers. Additionally, all department should consider developing a mentorship program to augment Company officer competencies. The most critical position on the apparatus is the “officer” or “right front seat” position. Training, experience and qualifications are critical as this position is the leader of that crew while responding, arriving, sizing up, operating and returning.

Chief Officer Response

At 3380 Soper Road, approximately five Chief officers and Safety Officer 6 arrived and operated on scene before the emergency evacuation of firefighters from the second floor. Chief officers traditionally respond to significant incidents to develop strategy and establish Incident Command.

Five strategies that are common to most structure fires are: Incident Command, Accountability of Firefighters, Charlie Division, Firefighter(RIT)/Civilian Rescue Coordination and Incident Safety Officer. The Cincinnati, OH area has codified these strategies in to a Structural Response/Arrival Assignments for Chief Fire Officers Standard. This standard identifies these five strategies as critical to the overall management of an incident and identifies the order in which they are staffed by responding Chief officers. (See Appendix 5)

With the availability of multiple Chief officers responding to an incident, Calvert County should consider developing a guideline of pre-established roles that responding Chief officers can fulfill once they arrive on scene. The establishment of these Incident Management Teams should be based on arrival order and reflect the criticality of strategies common to significant incidents. The responding Safety Officer should fulfill the role of Incident Safety Officer.

Recommendation 23: Calvert County should consider developing standard of pre-established roles for arriving Chief officers. These roles should reflect the criticality of strategies common to significant incidents such as: Incident Command, Accountability of Firefighters, Charlie Division, Firefighter(RIT)/Civilian Rescue Coordination and Incident Safety Officer.

Water Supply

The organization of water supply as a function or strategy at 3380 Soper Road has been partly addressed in earlier analysis and recommendations. In general, strong consideration should be given to further analysis of the capabilities of Calvert County departments to establish an effective water supply in a non-hydrant area. Recognized

subject matter experts in rural water supply should be sought to analyze and help train Calvert County firefighters in the operations of rural water supply.

The Huntingtown VFD, and other Calvert County departments, should give strong consideration to equipping fire suppression apparatus with a larger diameter supply hose than the current 3" hose. Large Diameter Hose (LDH), 4" or larger, creates a more effective delivery of water from a dump site to the attack engine with negligible friction loss.

At 3380 Soper Road, the primary water source to fill Tankers (mobile water supply apparatus) was a hydrant located at 885 Cox Road, 6.5 miles from the house. This distance resulted in an approximate round trip time of 34 minutes. When this travel time is added to the fill and dump time of the average Calvert County Tanker (approximate fill time 2 minutes, dump time 1 minute), you can formulate an effective Gallons Per Minute of a single Tanker using the following formula:

Tanker Capacity/ Travel Time + Dump Time + Fill Time

3000/34 + 1 + 2 = 81 GPM

In comparison, the initial hoseline deployed at 3380 Soper Road was configured to flow 185 GPM. In practice, a rural water supply shuttle with one Tanker, with the distances and times above, supplying this hoseline layout would result in a cessation of water flow. As it occurred at 3380 Soper Road, there were multiple Tankers involved in the rural water supply shuttle, but the addition of Tankers requires strong coordination.

In order to improve effective GPM the total tank capacity can be increased by adding Tankers (discussed in an earlier recommendation) or travel time can be reduced. The only effective method of reducing travel time is to locate alternative water supply sites, such as ponds, streams, or water cisterns, in a closer proximity to the incident scene.

Calvert County should consider developing a Geographic Information System (GIS) that identifies these alternative water supply sites. With a GIS of rural water supply sites, areas can be identified that would benefit from development of new rural water supply sites. Although the general topography of Calvert County, and in particular the area surrounding 3380 Soper Road, does not have an abundance of ponds and streams to use as water supply sites, the area is close to the Patuxent River. Strong consideration should be given to investigating the feasibility of developing access points to area rivers for drafting purposes. Although the water depth behind 3380 Soper Road may have precluded the use of water borne apparatus (e.g. fire boats), the opportunity to develop or utilize existing mutual aid water borne apparatus should also be considered.

Once water supply sites are identified the location, set up information, and directions can be compiled in to a reference program or document that can be disseminated to all Calvert County departments. This document can then be utilized to streamline organization of a water supply for a fire incident. For example, the first arriving Engine

could voice the primary and secondary water supply sites for use by later arriving units responsible for the fill site.

Recommendation 24: Consider improvements to the rural water supply capability in Calvert County including: seek out an SME on rural water supply to analyze and train Calvert County firefighters in rural water supply, upgrade apparatus supply hose to LDH, develop additional rural water supply sites and develop a document to communicate rural water supply sites to all Calvert County departments.

Apparatus Positioning

Responding apparatus to 3380 Soper Road were confronted with a long narrow driveway that complicated efforts to adequately position apparatus for maximum effectiveness.
Although possibly hampered by an occupant repositioning vehicles, Engine 6 – 2 positioned 125 feet away from the house which blocked later arriving apparatus, particularly Tower 2, from obtaining optimum positioning for incident effectiveness.

Strong consideration should be given to reviewing proper apparatus positioning with all Calvert County firefighters and including apparatus positioning concepts in driver and Company officer training curriculum. Company officers or unit supervisors should be encouraged to consider positioning factors when responding to incidents with narrow driveways and communicating these factors to later arriving units.

As discussed in an earlier recommendation, a comprehensive program of identifying long driveways or complex driveway arrangements on response maps could help with identifying potential apparatus positioning complications prior to arrival of the first unit on scene.

EMS – Initial Treatment and Transport of Injured Personnel

There were a total of ten personnel injured during the course of the incident on Soper Road; all were transported to local and regional hospitals.

The specific medical treatment provided to injured personnel is outside the scope of this report. This section addresses the management and coordination of EMS resources on the scene and the process by which additional resources were requested and obtained.

An ambulance from Huntingtown VFD, Company 6, was dispatched on the first alarm assignment. Ambulance 6 – 9 responded with four personnel and was the first EMS transport unit to arrive on Soper Road.

00:03:30 – Ambulance 6 – 9 responds to the call with “6 – 9 okay, switching”.

After the initial transmission of the response of Ambulance 6 – 9, no other radio transmission was made regarding any EMS resources until Medic 102 advises:

00:09:52 – “Medic 102 is on scene.”

When Calvert Communications gives Chief 6A a listing of the first alarm and second alarm units, only the Medic is listed as responding as part of the second alarm.

Nothing else is heard regarding EMS resources again until after the evacuation of firefighters from the structure when Medic 102 requests:

“Need two helicopters started priority one, category Alpha. Will advise.”

While the request for helicopters was certainly warranted, later radio traffic indicates that the request was not coordinated with Huntingtown Command. While the response to a firefighter emergency does not need to be directed by the designated Incident Command, operations should be coordinated within the framework of the Incident Command System.

Consistent to the ICS, the incident commander should delegate the senior level EMS responder as a “medical group” to manage initial casualties. The medical group supervisor is responsible for supervision of the functions of triage, treatment and transportation. This allows the IC to focus on the incident as EMS activities at the strategic level and below is addressed by the Medical Group Supervisor who manages all medical aspects of the incident.

At a sustained multi-resource event a Medical Unit and subsequently a Rehab Manager would be established separate from the Medical Group to address the EMS needs of the incident responders. The Medical Unit Leader would ultimately come under the Logistics Section Chief, if established, or report directly to the Incident Commander.

The staffing of these multiple functions such as Medical Group, Medical Unit, Rehab Manager or Logistical Section is often not possible unless it is a campaign style, multi-day event. On more frequent events, such as structure fires, it is common practice to establish an EMS Group that handles emergency medical care for civilians and responders. The EMS Group could initially be staffed by a single EMS unit and/or Advance Life Support provider. Once additional resources arrive, they could be utilized to augment EMS Group resources or establish Rehab for incident responders.

In Calvert County, most ALS resources are handled by Company 10, Calvert Advance Life Support. In the case of the incident at 3380 Soper, a Company 10 ALS provider was staffing an ALS response vehicle from Company 6, Huntingtown VFD. In order to better organize EMS resources and response to significant incidents such as structure fires, Calvert County should consider developing training that emphasizes the integration of EMS resources in to the Incident Command System structure. Additionally

Calvert County should consider following up such training with practical, realistic drills that challenge Incident Commanders and EMS Group Supervisors with responding to firefighter injuries and emergencies.

> Recommendation 25: Calvert County should consider developing training to emphasize the integration of EMS resources in to the Incident Command System structure. Such training should incorporate practical drills that focus on incident organization and response to firefighter injuries and emergencies.

At the incident at 3380 Soper Road, the initial request for three Ambulances by Huntingtown Command was immediately followed by Medic 102's request for 2 helicopters for "*multiple men down".* Later, Chief 6C "*still inside on Division 2"* recommends to "*start an ALS unit and a few ambulances.* [Chief 6A] *I know we've got people hurt."*

When Calvert Communications contacts Huntingtown Command regarding *"need*[ing] *three ambulances and two helicopters",* Huntingtown replies with "*I did not request that. Where did that come from?"* This exchange illustrates the lack of coordination between the Incident Commander and EMS resources. Additionally, it illustrates the need for streamlining, or packaging the requests for EMS resources to ensure a faster, more organized response.

Adequate EMS resources could be identified and deployed via the concept of EMS strike teams or task forces with predefined typing of EMS units (ALS, BLS and supervisory). Based on National Incident Management System (NIMS) guidelines, Calvert County EMS resources could be identified and deployed by the simple request of an ALS Strike Team (5 ALS transport units) or an EMS Task Force (ex. 1 EMS Paramedic Supervisor, 3 ALS transport units, 2 BLS transport units and 1 Engine). These packaged resources can simplify the request of additional EMS resources for significant or expanding incidents. Calvert County should consider defining and typing EMS resources based on NIMS guidelines and organizing them in to packages such as Task Forces and Strike teams to serve as a resource for Incident Commanders at significant or expanding incidents. At incidents where multiple patients are involved pre-packaging resources in to Strike Teams and Task Forces will simply requesting and dispatching resources rather than piecemeal request for individual units.

> Recommendation 26: Calvert County should consider defining and typing EMS resources based on NIMS guidelines. Consider organizing defined and typed EMS resources in to Strike Teams and Task Forces.

Firefighter Safety

Two-In/Two-Out

Under the Occupational Safety and Health Association (OSHA) regulation 29 CFR 1910.134(g)(4) fire departments and fire brigades are required to utilize two-in/two-out practices when engaging in interior firefighting in an immediately dangerous to life and health (IDLH) atmosphere on a fire that is beyond the incipient phase. OSHA defines the incipient phase as when the fire is in the initial or beginning phase and can safely be controlled with fire extinguishers or Class II occupant standpipe systems without the need for protective clothing or self-contained breathing apparatus (SCBA). Any structural fire beyond the incipient stage is to be automatically considered an IDLH atmosphere under OSHA.

OSHA regulations do allow flexibility within the regulation in cases of known life safety hazards. Exceptions to the regulation allow firefighters to engage in interior operations without a dedicated two-out crew when there is strong reason to believe that there is a significant and real threat to life safety. Fire service managers must realize that even though OSHA provides for exceptions to the regulations that they still in fact could receive what are known as “de minimis”, or non-monetary, citations if their personnel operate without a dedicated two-in/two-out crew, even during confirmed rescue situations.

Based on information relayed during the response to 3380 Soper Road and subsequent information gathered upon arrival from occupants outside of the home there was strong reason to suspect that at least one occupant of the home was still inside the residence upon arrival of initial Huntingtown VFD personnel. Chief 6C clearly communicated intentions to initiate an interior search of 3380 Soper Road based on intelligence gathered that one occupant was still inside of the burning structure.

Strong consideration should have been given to establishing two out once the occupant had exited the structure and Engine 6 – 2 arrived on scene.

Crew Integrity

Crew integrity can be defined as maintaining physical, visual or verbal contact between crew members. Through interviews it appears that members of units operating on the second floor maintained crew integrity to some degree by maintaining verbal contact. However, once conditions deteriorated crew integrity was negatively impacted.

Strong consideration should be given to maintaining physical or visual contact between crew members whenever a change in conditions is first noticed.

Mayday

Firefighters must be educated in the principles of a Mayday situation and practice hands-on Mayday scenarios in order to safely and effectively manage a real-life Mayday event. The Huntingtown VFD does routinely train in and practice Mayday scenarios. Furthermore, successful completion of a Mayday course is a requirement to become qualified as an interior firefighter with the Huntingtown VFD.

In analyzing radio traffic and personnel statements there is no evidence, however, that any Maydays were declared by operating personnel during the emergency evacuation of 3380 Soper Road. Numerous firefighters were forced to exercise firefighter survival skills, including bailing out of upper floor windows, wall breaches and jumping from the second floor to first floor over the interior staircase, but at no time did any of these firefighters declare a Mayday situation or report that these events were occurring to the Incident Commander.

> Recommendation 27: Continue to provide initial and on-going Mayday and firefighter survival training at a County-wide level. Reinforce the importance of recognizing what constitutes a Mayday situation and how and when to relay this information to Incident Commanders. Reinforce and continually practice LUNAR situational reports during County-wide Mayday training. Consider making a County-wide requirement for Mayday training to achieve firefighter certification.

Emergency Identifier Activation

In conjunction with the above mentioned Mayday information there is no evidence to support that any portable radio Emergency Identifiers (EI's) were ever activated during the incident. As part of Mayday training it should be reinforced that the importance of utilizing the EI feature of the portable radio is a critical part of Mayday procedures. Furthermore, the investigative team was unable to locate a County-wide standard that addresses EI activation. Instead the Huntingtown VFD policy, "Emergency Identifier" should be considered for revision and inclusion in to a Calvert County standard.

Calvert County should also investigate the technical capability of the radios to allow the radio to "hot mike" or automatically transmit for a specified amount of time without further user input. This "hot mike" capability is critical when users are in an emergency situation and allows them to activate their EI and transmit critical information without delay or interruption from other users on the system.

> Recommendation 28: Review the Huntingtown VFD "Emergency Identifier" policy and consider developing a County-wide standard for EI activation. Emphasize, through training, the necessity of activating the EI as part of Mayday procedures. Consider adding the "hot mike" feature to existing radios.

Emergency Evacuation

Chief 6A noticed a significant change in conditions and quickly called for an emergency evacuation by transmitting "*Evacuate the building, evacuate the building, evacuate the building. Calvert, sound the evacuation tone immediately. All units…*[covered by tones."

Communications sounded the alternating high-low tones and shortly thereafter firefighters evacuated the house. The alternating high-low tones are a critical signal to firefighters of the need to immediately evacuate a structure, especially when the tones can be clearly distinguished from other radio traffic. Firefighters operating on the scene of 3380 Soper Road that had a portable radio, reacted properly to the emergency evacuation that was signaled by the tones.

This behavior of appropriately reacting to an emergency evacuation order is commendable and should be reinforced to all Calvert County firefighters by integrating emergency evacuation orders, including tones, in initial and on-going firefighter training events.

The investigative team was unable to determine if apparatus operators sounded their apparatus air horns upon hearing the emergency evacuation order. It is customary in departments around the region to sound apparatus air horns concurrent with an emergency evacuation order. The investigative team was unable to locate any Calvert County standard that addresses emergency evacuation orders, evacuation tones or the sounding of apparatus air horns. Calvert County should consider establishing a standard that addresses emergency evacuation orders, expected behavior by firefighters during such an order, the sounding of tones by Calvert Communications and the sounding of apparatus air horns.

Recommendation 29: Establish a County-wide standard addressing emergency evacuation orders, expected behavior by firefighters, sounding of tones over the radio system and the sounding of apparatus air horns.

Rapid Intervention Team (RIT)

As conditions deteriorated for the operating crews on Soper Road there was no radio announcement that a Rapid Intervention Team (RIT) was in place or that a RIT was being deployed to rescue potentially trapped firefighters. Chief 6A reported that the RIT assignment was given to Engine 1 – 2 via face to face communications.

According to Calvert County, Rapid Intervention Team, Effective Date: March 1, 2009, a RIT "shall consist of a least three personnel from the 3rd or 4th arriving Engine company or assigned [by] Incident Command; one member of the team shall be a tactical officer."

In the case of Soper Road, Engine 1-2 was assigned RIT, but did not arrive on location until 0033 hours, well after the evacuation and when subsequent firefighter injuries occurred. Therefore they were not in a position to carry out any RIT functions.

Had any of the injured personnel been unable to self-evacuate there were no measures in place for a dedicated rescue team. It is a critical strategy to establish a firefighter rescue or RIT capability early in an incident so that resources are in place and ready to react in the event of a firefighter emergency. It is also critical that all personnel operating on the incident scene are aware of the RIT capability and which unit is fulfilling the RIT role.

> Recommendation 30: Consider the suitability of revising the Calvert County RIT policy or standard to specify that RIT shall consist of at least three personnel from an earlier arriving unit; one of the team shall be a tactical officer. For large scale incidents consider revising the policy to require expanding the RIT to more than one Engine under the supervision of a RIT Group Supervisor

Acknowledging Task Assignments

In order for any communication to be successful it requires both the sender and receiver to clearly understand and acknowledge the information that is being passed back and forth. However huge differences may exist between the sender's intended message and the receiver's perceived message, particularly during emergency incidents where conditions for communication are often less than ideal. During emergency incident scene communications confirming that the receiver clearly understands the intended message is critical to the safe and effective mitigation of the incident.

Numerous miscommunications occurred during the fire at 3380 Soper Road. There was confusion over initiating the water supply at the split in the driveway and at times there was misleading and conflicting information as to where personnel were operating and under whose supervision and what their tactical objectives were.

It is nearly impossible to eliminate this phenomenon in the emergency scene environment but it can be greatly reduced during the acknowledgement of communications. Information receivers should provide feedback to the sender that they have copied the sent information and more importantly that they have understood the proper intent. This can be accomplished by repeating the message back to the sender as part of the acknowledgement. This sender can then confirm that the message was in fact properly received.

> Recommendation 31: Review and emphasize County-wide the importance of radio communication concepts such as using plain English and repeating assignments to ensure clear and effective communications.

Personnel Accountability

Calvert County utilizes a multi-tiered Personnel Accountability System with a Personnel Accountability Tag (PAT) assigned to each member with a Passport assigned to each vehicle to gather all rings. Rings are to be turned over to the accountability officer upon arrival. The nature of the accountability officer varies depending on the complexity of the incident. This position may be the driver/operator, a Group or Division Supervisor or a formally assigned Accountability Officer on large scale incidents.

Two levels of Personnel Accountability are recognized within the Calvert County Standard: Level 1 Accountability is to be used on all area boxes, commercial boxes or any incident involving multiple companies. All PAT's are to be brought to the accountability officer. Level 2 Accountability is to be used on incidents such as HazMat and Technical Rescue where controlled access points are in place. Any personnel entering a controlled access point are to be accounted for upon entering and exiting the space.

Benchmarks are provided for when a Personnel Accountability Report (PAR) shall be conducted:

- Any report of a missing or trapped firefighter
- Any change from offensive to defensive strategies
- Any sudden hazardous event – collapse, flashover, backdraft, mayday
- At every 20 minutes of elapsed time – time intervals are left up to Incident Command to track
- At any time Incident Command deems it necessary

Calvert County recognizes that Personnel Accountability begins with the individual and this is to be commended. For any Personnel Accountability System to be effective it must reinforce at the individual level the importance of crew integrity and working closely with your Company Officer.

During firefighting operations at 3380 Soper Road no formal Accountability Officer was assigned. This function remained at the unit level and ultimately as the responsibility of the Incident Commander. Strong consideration should be given to assigning a formal Accountability Officer early into operations on expanding and/or complex incidents.

Consideration should be given to shortening the intervals between PAR Checks to 15 minutes to better reflect the true working time the average firefighter will have in an IDLH environment. Consideration should also be given to having Calvert County Communications prompt the Incident Commander at the 15 minute intervals for these PAR checks.

Recommendation 32: Consider revising the existing Calvert County standard on Personnel Accountability to emphasize assigning an Accountability Officer early on expanding and/or complex incidents. Consider revising the PAR check interval to 15 minutes. Consider revising the standard to reflect Calvert County Communications maintaining the "time clock" and prompting Incident Command at 15 minute intervals.

Communications

Call Processing and Dispatch

The 911 call was received and processed for dispatch within two minutes, which falls within established Calvert Communications expectations. This also falls within the national APCO, ISO and NFPA standards.

Incident Radio Channel Organization

As radio systems continue to evolve and become more complex radio discipline becomes a must on emergency incidents scenes, especially on large scale incidents such as the fire at 3380 Soper Road. Also, as jurisdictions continue to expand their radio capabilities by increasing the number of available portable radios this can become even more problematic to the Incident Management Team and for a jurisdiction's communications center.

When analyzing the radio data from 3380 Soper Road there are numerous instances of one unit talking, or attempting to talk, over top of another transmitting unit. Radio traffic that was not pertinent to the more critical events at hand often hampered truly essential radio traffic.

The presence of strong ICS with proper group and division supervision effectively managing span of control will facilitate radio discipline. Strong group and division supervisors will promote more face-to-face communications and limit radio traffic to only those transmissions occurring between the IC and his or her supervisors under NIMS.

The IC and Calvert County Communications did work together to expand this incident out over several talk groups, a practice that should be encouraged. Whenever possible functional activities such as staging, water supply, EMS, etc. should be given a dedicated frequency to operate on to diminish the amount of radio traffic on any one particular talk group or channel. Incident Commanders must quickly seek out assistance at the Command Post, however when incident communications are split onto multiple frequencies there should be at least one person dedicated to monitoring each individual talk group or channel in use. The Incident Commander can not rely solely on themselves to effectively manage this task.

Recommendation 33: Emphasize through training the necessity for Incident Commander to seek assistance at the Command Post with incident communications to include splitting incident communications to multiple channels, each with its own designated monitor.

Radio System and Portable Radios

A review of the recordings of radio traffic from the Soper Road incident reveals several opportunities for improvement. In general, the technical performance of the radios and radio system had some weaknesses that should be considered for improvement. In reviewing the technical data captured by the radio system, the investigative team was unable to identify with certainty the alias, or identifier, of every transmission. Furthermore, the limitations of the data capture capabilities restrict the ability of any investigation to accurately determine when or who is making a radio transmission.

A review should be conducted of the radio system to determine possible areas for improvement. Any improvements should be accomplished with the goal of providing reliable, consistent and clear communication from portable and mobile radios. In addition, data from transmissions should be readily available on portable, mobile and dispatch console radios so that identifiers, such as Engine 6 – 2 Officer, are displayed on all radios when that unit is transmitting. This data should also be captured in a program for use and review. Such data should at a minimum contain the following: alias or identifier of the unit transmitting, start time, end time and duration of the transmission. This data will be invaluable to reviews and investigations of future incidents.

Recommendation 34: Calvert County should conduct a review of the technical aspects of the radio system with the goal of providing reliable, consistent and clear radio communications. Additionally, new technology should be leveraged to provide data transmission and capture to aid identification of units transmitting over the radio system.

During the incident on Soper Road, only a few members from each unit had a portable radio. On Engine 6 – 2, two of the four members operating on the inside had a portable radio, yet there was no transmission from them once Engine 6 – 2 marked on scene. For firefighter safety, every firefighter operating in the IDLH environment should have the ability to communicate by radio to someone outside the IDLH environment. To achieve this, Calvert County should consider a requirement for every, front line fire suppression apparatus to have a portable radio for every riding position or SCBA.

The ability for individual firefighters to communicate to Incident Commanders is critical to their safety. In the event of an emergency where firefighters are separated from their crew members it is vital that they have their own portable radio to communicate emergency requests for assistance. At 3380 Soper Road, individual firefighters reported being separated from their crew members during the emergency evacuation from the

house. Had a firefighter without a radio become separated from crew members and unable to self-evacuate, there was no method to communicate their situation to anyone in a position to help. There were several firefighters operating on the second floor who did not have a portable radio. Additionally, a portable radio for every firefighter operating in the IDLH environment is critical to ensuring that orders, especially emergency evacuation orders and tones are heard by all firefighters operating inside a structure.

> Recommendation 35: Develop a County-wide policy of requiring a portable radio for every riding position or SCBA so that every firefighter operating in the IDLH environment has a portable radio.

Training

Several previous recommendations have addressed specific areas of focused improvement in different training curriculum i.e., RIT, Company Officer, building construction, etc. The Calvert County Fire Rescue EMS Officer Standards is attached in Appendix 4 for reference to previous recommendations.

Training Records

The Huntingtown VFD maintains copies of certifications for its members in one location at their station. The Huntingtown VFD leadership acknowledges that they do not have complete files on every member that contains copies of all training certificates that a member may have. Records are critical to any investigation, grant funding and establishment of credentials. In reviewing credentials and certifications for this report, the investigative team was able to determine the completion of some certifications for members but the records were not comprehensive. The Huntingtown VFD and all departments in Calvert County should consider utilizing the existing centralized Records Management System as a comprehensive repository for training records for all Calvert County firefighters.

> Recommendation 36: All Calvert County departments should consider utilizing the existing Records Management System to capture and retain all members training and certification records.

Apparatus and Equipment

Apparatus and Equipment Standardization

Calvert County has established standards for many types of equipment and apparatus. The Calvert County Fire and Rescue Commission have developed a comprehensive set of standards on emergency fire and rescue apparatus. These standards set forth

minimum performance and equipment criteria that must be met for an emergency vehicle, boat, etc. to be accepted in the Calvert County system.

These efforts to standardize apparatus and equipment are commendable and should be continued. Calvert County should consider further developing these standards to include design and apparatus layout. Benefits from such standardization include, but are not limited to, greater on scene effectiveness when operating with multiple companies and cost savings achieved through group buying of standardized apparatus or equipment.

Apparatus Inspections

While there appear to have been no deficiencies or failures of apparatus operating on the scene of 3380 Soper Road, the investigative team was able to capture record of a daily to do list for March 19, 2011, there was no form filled out indicating any of the front line fire suppression apparatus were checked. The current practice of the Huntingtown VFD is to check specific apparatus on a particular day. Huntingtown VFD should consider revising the apparatus inspection procedure so that a basic functional check is done on all front line fire suppression apparatus on a daily basis to include recording the check's results. The Huntingtown VFD should be commended for the thorough record keeping achieved with the results from annual pump, hose, ladder and SCBA testing for all apparatus.

> Recommendation 37: Revise the Huntingtown VFD procedure on apparatus inspections to include a basic, daily functional check of all front line fire suppression apparatus. Develop a program to record the results of daily and weekly checks that incorporates the existing thorough record on annual testing.

Thermal Imaging Cameras

The Huntingtown VFD is presently utilizing 3 Scott Eagle Series Thermal Imaging Cameras (TIC). The Eagle Series works with a 60 Hz processor refreshing the screen image roughly once per second. The Eagle Series has an effective temperature range maximum of approximately 1,100 degrees F.

During initial operations at 3380 Soper Road the TIC was used by HVFD members in an attempt to locate the seat of the fire. Members operating the camera reported in subsequent interviews that when the camera was pointed at the ceiling on the second floor the screen went completely white. These members also stated during their interviews that they believed the camera was malfunctioning. Members were not aware that TIC "white out" conditions are often a warning sign of a significant body of heat that the camera is unable to compensate for and register the typical temperature contrasts for display that most are accustomed to.

All members should train regularly with Thermal Imaging Cameras to become better acclimated with their fireground benefits as well as their limitations. This is addressed in a previous recommendation.

Self-Contained Breathing Apparatus (SCBA)

Four of the ten SCBA that was worn by firefighters who were injured were sent to the Prince George's County Fire and EMS Department Air Shop for analysis and testing. The reports from this testing are included in Appendix 2, but several findings were common in the tests.

In at least two of the tests, the SCBA facepiece were found with worn straps with "very little elasticity left" in them, which may indicate facepieces well past their life cycle. Additionally, the investigative team was unable to find any consistent record of daily checks of SCBA. Unfortunately, the SCBA that Chief 6C had difficulties with during the incident was not tested. The motivation for a record of daily checks of SCBA, is to discover and prevent issues with respiratory protection equipment.

Calvert County should consider the development of a Respiratory Protection Program that facilitates the delivery of modern, technologically superior respiratory protection equipment to all firefighters in Calvert County who may enter an IDLH. Such a program should incorporate annual fit testing, regulator flow testing, daily functional checks and record keeping.

> Recommendation 38: Calvert County should consider revising the County-wide Respiratory Protection Program to provide all firefighters who may enter an IDLH with modern, technologically superior respiratory protection equipment and includes annual fit testing, regulator flow testing, daily functional checks and record keeping.

Uniforms and Personal Protective Equipment (PPE)

A review of the uniforms and personal protective equipment provided to members of the Huntingtown VFD and other Departments is helpful in determining opportunities for improvement.

Uniforms

Huntingtown VFD members are not required to wear any specific uniform during a response. While the investigative team was unable to determine what firefighters wore under their PPE, a review of the current standards of Department identified Chief Operational Orders, Posted 6-1-03: Uniform, Clothing and Grooming Standards. This order specifies restrictions on what Huntingtown VFD members are to wear while

involved in Department functions, including emergency incidents. The order could be improved to require, at a minimum, long natural fiber pants and natural fiber short sleeve T-shirt. The requirement to wear these minimums will complement the PPE and add an additional layer of material between the skin of the wearer and the outside environment. In any case, members should be prohibited from wearing synthetic garments under PPE. In cases of exposure to high heat, synthetic materials can melt and worsen burn injuries.

> Recommendation 39: Revise the Huntingtown VFD policy on uniforms to reflect a minimum required uniform of long, natural fiber pants and a natural fiber T-shirt. Prohibit any Department member from wearing synthetic garments as part of their uniform ensemble.

Personal Protective Equipment (PPE)

In order to conduct a comprehensive review of structural fire protective clothing, Calvert County contracted with International Personnel Protection, Inc. who provided a thorough and detailed analysis of PPE recovered after the Soper Road incident. The review's summary is excerpted in Appendix 1.

The investigative team concurs with the findings of IPP, Inc. and recommends that the Huntingtown VFD and Calvert County consider that all PPE provided to members should have a manufacture date that is 10 years or less as indicated on the product label. Additionally, the Huntingtown VFD and all Departments in Calvert County should consider providing the same PPE elements as is practically possible. All members of all Departments should review the proper methods for wearing PPE and develop routine checks of PPE ensemble for any deficiencies.

> Recommendation 40: Calvert County should consider a PPE replacement program that ensures all PPE provided to firefighters is 10 years old or less and is consistent so that every firefighter has the same ensemble elements where practically possible. Review and emphasize the proper procedures for wearing PPE ensemble elements. Develop a program of routine checks and record keeping of PPE ensemble elements for any deficiencies.

Critical Incident Stress Management (CISM)

Fire and rescue incidents are by their nature challenging and stressful. Firefighters and EMS personnel are trained to deal with the stresses involved with most common incidents, but incidents that involve the injury of fellow responders can be stressful beyond what anyone is prepared or trained to handle.

Resources for firefighters and emergency personnel should be available to call upon to assist them with dealing with the stresses of any issue affecting their personal lives

and/or job performance. To ensure adequate support, these resources should provide short-term counseling and crisis intervention services in addition to longer term care.

Maryland has a Statewide CISM Team of peer counselors and mental health providers that Calvert County has utilized for incidents in the past. Additionally, Calvert County has used the services of the County's Employee Assistance Program (Business Health Services) for other issues on a fee for service basis.

While there are existing organizations that can provide acute mental health care to Calvert County firefighters and emergency service providers, more specificity and awareness of available services is needed. All Calvert County firefighters should be aware of what services are available to them for acute and long term mental health care. Calvert County should consider conducting an awareness and outreach campaign to help all firefighters understand the services available as well as encourage them to seek help when they feel it is necessary. Part of such a program should include tools and training to help Incident Commanders and individual Department leaders recognize signs and symptoms of a potential mental health or critical incident stress issue and methods to encourage firefighters to seek assistance.

Any mental health resources that provide acute and long-term services to firefighters should employ clinical specialists who have experience working with fire and rescue personnel and are trained in trauma induced stress.

> Recommendation 41: Calvert County should consider conducting an awareness and outreach program that provides information on available acute and long-term mental health resources to all Calvert County firefighters and emergency responders. Consider providing tools and training for Incident Commanders and Department leaders to assist them in recognizing the need for care as well as encouraging firefighters to seek help.

ADDITIONAL CONSIDERATIONS

Policy and Governance

Many of the preceding recommendations have addressed the need to clarify or develop County-wide standards and guidelines to address a variety of issues. Many of the independent Fire Departments have excellent Standard Operating Procedures or Guidelines. As Calvert County and the fire service in general have evolved, significant incidents such as 3380 Soper Road involve many members from multiple companies. Having each company operate according to their individual SOP/Gs is counter-productive to organized incident actions.

Calvert County should consider conducting a review of the multitude of administrative and operational policies, procedures and guidelines that may be applicable to individual

firefighters. From this review, a plan to establish and communicate County-wide policies, procedures and guidelines can be formulated to ensure that all County firefighters comprehend and operate based the same information.

As can be seen by the Officer Standard in Appendix 4, the Calvert County Chiefs Association, Calvert County Fire Rescue Association and the Calvert County Fire Rescue Commission all served as signatory agencies to one standard. These three agencies should consider continue working together to establish one set of policies, procedures and guidelines to address issues identified in recommendations contained in this report.

One helpful concept to consider when developing policies, procedures or guidelines is the development cycle of an SOP (See Appendix 6). This cycle, developed by Chief Billy Goldfeder, addresses the phases of developing and implementing an SOP. Once the need for an SOP, policy or guideline is identified, consideration is given to adopting an external existing SOP or developing one within the organization. Once drafted and reviewed, classroom training is followed by hands on training on the draft SOP. After verification and testing, the SOP can be issued. After issuance, organization leaders emphasize the required respect and adherence to the SOP so it can be affirmed and enforced by all officers, especially Company level officers. After the SOP is affirmed and enforced, corrective action can be applied if the SOP is ignored. With all SOPs, it is critical to conduct an annual review to ensure accuracy and relevancy to changing conditions.

Recommendation 42: The three Calvert County governing Fire Rescue Agencies (Chiefs Association, Association and Commission) should consider developing County-wide administrative and operational policies, procedures and guidelines. Additionally, a plan should be developed to communicate new policies, procedures and guidelines to all County firefighters. Consider utilizing the SOP development cycle to guide development of policies, procedures and guidelines.

County Wide RMS

As discussed in an earlier recommendation regarding training certification record keeping, there is an existing records management system in Calvert County that is available to all Departments.

Calvert County employs New World Systems Aegis Fire Records as their records management system (RMS) for National Fire Incident Reporting System (NFIRS) incident reports, personnel data and tracking of training events, duty schedules, meetings and responses for Length Of Service Awards Program (LOSAP).

Calvert County should consider investigating the full capabilities of the existing RMS and specifically whether modules to capture and store records and data are available. A robust RMS can help the individual Departments by serving as a repository for training records, equipment test, performance and service records, incident data, etc. Such records are vital for many purposes including performance assessment, grant justification and investigation support. All Calvert County Departments should consider utilizing the RMS for all available opportunities to capture and organize information and data.

> Recommendation 43: All Calvert County Departments should consider utilizing the existing Records Management System to capture, organize and store information and data, including training records, equipment test, performance and service records and incident data.

Residential Sprinklers

Presently, Calvert County does not mandate automatic fire sprinkler systems in one and two-family dwellings. Therefore, the residence at 3380 Soper Road was not equipped with an automatic fire sprinkler system. Although this committee is strongly in favor of residential fire sprinkler protection for one and two-family dwellings, it is our opinion that they would have had little to no impact on the outcome of this particular incident.

The fire originated in the fireplace/chimney area and communicated vertically and horizontally throughout the structure via the combustible void spaces. Current and past editions of *NFPA 13D – Standard for the Installation of Sprinkler Systems in One- and Two-Family Homes, and Manufactured Homes* do not require that these void spaces be protected, as they are not occupied living spaces of the residence.

Once the fire broke out of the non-sprinkler protected attic and dropped down on the crews operating on the second floor it was of such a volume that it would have most likely overtaxed a residential automatic sprinkler system, offering little to no protection.

It is also customary for sprinkler installers to utilize CPVC materials in residential applications and to locate the piping in these same void spaces. It is more than likely that the pipe assemblies would have failed from exposure to elevated temperatures which would have significantly reduced, if not eliminated, the available water supply to the individual sprinkler heads on the second floor.

GLOSSARY

Accountability: A system to track the number of members and their areas of operation.

Ambulance: An EMS transport unit that provides Basic Life Support (BLS) care to patients.

Area Box: A geographical response area.

Command: An incident command system position responsible for overall management of the incident. The term Command is synonymous with the Incident Commander.

Computer Aided Dispatch (CAD): A system that assists dispatchers in the proper recommendation of units based on location and call type.

Chaplain: A member of the clergy, who is a County volunteer that serves to assist fire and rescue personnel and citizens experiencing public safety related emergencies.

Chief 6A, B, C, etc.: Number and letter designations given to Chief officers in Calvert County. The number reflects the company and the letter reflects their rank of Chief officer. A number with no letter designation indicates the Fire Chief of that Department while the letter A, designates the second in the chain of command Chief officer, B designates the third in the chain of command and so on.

Command Post (CP): Location at which primary command functions are executed.

Crosslay: Refers to a hoseline that is racked across the apparatus and is designed to be deployed by one firefighter.

Division: An organizational level within the Incident Command System. Divisions are used to divide an incident into geographical areas of operation.

Division/Group Supervisor: An incident command system position responsible for supervising personnel and resources assigned to a division or group.

Duty Chief: A weekly rotating assignment of a Chief officer from either North (Companies 1, 5 and 6) or South (Companies 2, 3, 7) regions who respond on identified incidents. Reference: Calvert County, Duty Chief Standard, Effective Date: March 15, 2011.

Calvert County Communications: Work location for Calvert County communications personnel and the Public Safety Answering Point (PSAP) for Calvert County.

Emergency Evacuation: The immediate withdrawal of personnel from a structure or area.

Engine: Refers to fire apparatus that are equipped with a pump and carry water and fire hoses.

Exposure: Refers to a structure in the vicinity of the fire building. Exposures are commonly identified with a letter and a number to describe the location of the structure relative to the fire building (e.g., Bravo-3 Exposure, Charlie-1 Exposure).

Gallon Per Minute (GPM): A unit of measurement that describes the rate of fluid flow. Typically used to refer to the amount of water flowed through a hoseline or the capacity of a pump.

Group: An organizational level within the Incident Command System. Groups are used to divide an incident into functional assignments (e.g., rescue, ventilation, salvage, water supply, etc.).

Hoseline: Firefighters use hose to move water from one place to another. Hoselines are described by their size (diameter).

1 ¾ inch hoseline: Primary hoseline used for fire attack.

Immediately Dangerous to Life or Health (IDLH): An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Incident Action Plan (IAP): The incident action plan contains general control objectives reflecting the overall incident strategy and specific action plan for the given operational plan.

Incident Commander (IC): An incident command system position responsible for overall management of the incident. The term Incident Commander is synonymous with Command.

Incident Command System (ICS): A standardized on-scene emergency management concept specifically designed to allow it user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries.

MAYDAY: A term used to report firefighters who are lost, trapped, disoriented, or in a life threatening situation.

Medic Unit: A patient transport unit that provides advanced life support (ALS) care to patients.

National Incident Management System (NIMS) – In February 2003, President Bush issued Homeland Security Presidential Directive (HSPD)-5, which required all federal departments and agencies to adopt a system that provides a consistent approach incident response and includes a core set of concepts, principles, and terminology. That system is now known as NIMS.

Nomex®: Trade name for fire resistant synthetic material used in the manufacturing of PPE used by firefighters.

Mode of Operation: A strategic plan for the initiation of operations based on size up of incident conditions.

PAR Check: PAR is an acronym for Personnel Accountability Report. A PAR check is the process where the Incident Commander or division/group leader calls all assigned units to ensure the accountability of their personnel.

PASS Device: Acronym for a personal alert safety system. A PASS device is a personal safety piece of equipment used by firefighters entering a hazardous environment such as a burning building, which sounds a loud audible alert to notify others in the area that the firefighter is in distress. PASS devices may be integrated within the SCBA equipment or worn as a separate device.

Personal Protective Equipment (PPE): Equipment and clothing required to reduce the risk of injury from, or exposure to, hazardous conditions encountered during the performance of duty.

Rapid Intervention Team (RIT): A team consisting of at least three firefighters, including one tactical officer, from the third or fourth arriving Engine which is immediately available to respond to requests for help from lost, trapped or incapacitated firefighters. Reference: Calvert County, Rapid Intervention Team, Effective Date: March 1, 2009.

Safety Officer: Responsible for monitoring and assessing safety hazards, unsafe conditions, and developing measures for ensuring personnel safety during an incident.

Scan: Refers to a mode by which personnel can monitor multiple channels simultaneously.

Self-Contained Breathing Apparatus (SCBA): An atmosphere supplying respirator for which the breathing air source is designed to be carried by the user.

Sides Alpha, Bravo, Charlie, and Delta: Geographical designation that refers to the sides of a building, clockwise from the front. See Figure 1.

Situational Awareness: The knowledge of being aware of a situation as it actually exists.

Size Up: The objective of the size-up is to identify the nature and severity of the immediate problem and gather sufficient information to formulate a valid action plan.

Span of Control: A supervisor's functional ability to monitor the activities of assigned subordinates and to communicate effectively with them. An effective span of control is between three and seven subordinates, with five considered ideal.

Squad: Name given to fire apparatus in Calvert County used to carry specialty equipment such as vehicle extrication equipment, rope rescue equipment, and confined space equipment. The letter "S" is used in their unit designation.

Tanker: Name given to fire apparatus in Calvert County used to transport large volumes of water from a water source to the fire incident scene.

Thermal Imaging Camera (TIC): A camera that uses infrared technology to locate victims during search and rescue operations and locate hidden fire.

Truck: Refers to fire apparatus that are equipped with an aerial ladder, but do not have a platform for personnel to work off of or out of.

Tower: Refers to fire apparatus that are equipped with an aerial ladder and a platform for personnel to work off of or out of.

Type V Construction: As defined by the National Fire Protection Association, a form of construction where structural members consist entirely of wood.

APPENDIX 1 – Personal Protective Equipment Review

In order to conduct a comprehensive review of structural fire protective clothing, Calvert County contracted with International Personnel Protection, Inc. who provided a thorough and detailed analysis of PPE recovered after the Soper Road incident. Their report contains several points that should be considered as opportunities for training as well as updating equipment.

The summary of their report is excerpted below:

> This report describes our examination of the personal protective equipment items worn by nine different firefighters, who sustained burn injuries in the Soper Road structural fire in Calvert County, Maryland on March 19, 2011. A detailed review was conducted for the types of injuries sustained by each firefighter and the condition of the PPE items that were provided for examination.
>
> The incident involved several fire departments responding to a structural fire in a 10,000 square foot house that originated in a chimney. At the time, first responding unit arrived at the scene, smoke was observed issuing from the eaves of the second floor. Several firefighters entered the house and proceeded to the second floor where they encountered heavy fire and noted the fire had spread throughout the chimney. During this time, the attic space flashed and caused intense of the second floor forcing the firefighter to evacuate immediately, many of whom exited the house through second story windows.
>
> The burn injuries sustained by the individual firefighters were on the upper torso with a significant number of burns to the ears and neck. Three firefighters sustained burns to their shoulders, although for one firefighter, these burns were limited to first degree burns. Three firefighters also received burns to their hands or wrists or both.
>
> We could not find any problem in the manufacture for any of the protective items we examined. With the exception of the helmets, the items were certified to the relevant edition of NFPA 1971. However, two coats were over 10 years old. The helmets were certified as meeting OSHA regulations and had configurations consistent with NFPA-compliant helmets, but were not certified.
>
> Specific findings are provided for the examination of the various personal protective equipment items that were examined. Many of these items displayed damage consistent with an overhead flashover. Nevertheless, there were several signs of clothing and equipment items not being properly worn that can explain some of the burn injuries. In particular, there were several instances of helmet ear covers that were either not or inadequately deployed and the failure to have the protective coat collar in the raised position and properly secured. Of the gloves that were examined, several appeared to have had the cuff folded over compromising the coat to glove interface. It is probably that the incorrect wearing

of some items contributed to the observed burn injuries. It is therefore recommended that the departments involved in this incident instruct their members on the need for proper wearing of all personal protective equipment, which include the use and correct deployment of all components and the proper fastening of all closures.

Recommendations were developed from this analysis that are detailed below:

As the result of this investigation, we recommend that each of the fire departments that participated in the incident consider the following:

1. All PPE provided to members should have a manufacture date that is 10 years or less as indicated on the product label.

2. Each department should endeavor to provide the same elements to all firefighter which practically possible, especially hoods and gloves, which can be the limiting protective portion of the ensemble under some circumstances.

3. Instructions on the need and specific procedures for wearing of all personal protective clothing and equipment should be provided to each member. It is important to emphasize that all components must be deployed and that all elements of the ensemble should be properly closed. If member indicate, problems with any interface that leaves the interface area potentially exposed, corrections to the ensemble or wearing practices should be implemented.

4. The clothing should be retained by the department because of its involvement in a situation where injuries were sustained. Since extensive testing of this clothing was performed, numerous areas of outer shell material were removed for analysis. We recommend that the department retain the clothing and equipment for a period of at least 2 years with an appropriate chain of custody. The clothing should be condemned and destroyed after that period has elapsed.

APPENDIX 2 – Self Contained Breathing Apparatus Review

Prince George's County Fire/EMS Department
APPARATUS MAINTENANCE

EMERGENCY SCBA FLOW TEST/REPAIR REPORT

Date: 7/26/2011

Scott Air Pak Reducer Number: 115s0708000265
Scott Air Pak Last Flow Test Date: 2/11/2011

Scott Air Pak Regulator Number: 115s070003787 unable to read the 7th and 8th digit.
Scott Air Pak Regulator Last Flow Test Date:
Last Name: [Name redacted] **ID#:** **Last Fit Test Date:** **Size:** AV-2000 Large

Company Assignment: 6

Reason for Test: Injury on Fireground

Delivered to AM by:

Preliminary Visual: The SCBA Pak (facepiece, regulator, and backframe) are slightly dirty with debris. The facepeice and regulator were attached to the low pressure hose on the Pak when received, however, there was no cylinder attached with the Pak. There are signs of heat exposure to the back frame and face piece (discoloration to the shoulder straps and waist pad , stickers are slightly melted on the back frame). The face piece has some bubbles and slight crazing due to heat exposure. The straps are worn and have very little elasticity left to them (top and bottom straps). The voice emitter duct on the right side was not completely attached to the nose cone. The HUD Boot (Heads Up Display) is torn on the regulator.

Preliminary Functional: The SCBA Pak (face piece, regulator and Pak) was hooked up to air and functioned normally,no leaks observed. The HUD (Heads Up Display) did not operate. The Pak-Alert did not operate.

Cylinder Condition: No cylinder turned in at this time.

BA Technicians Report: The SCBA was last flow tested by M.E.S. in 2/11. The Pak was flow tested and failed due to the demand lever being out of adjustment. A minor adjustment was made to the demand lever in the regulator and the test was continued and passed all tests (copy attached). The batteries were replaced in the HUD (Heads Up Display) and Pak-Alert. The HUD (Heads Up Display) did not function normally the low battery light remained on and none of the other lights worked. The Pak-Alert operated normally after the batteries were replaced.

Work Performed, Unit Inspected & Tested by: B/A Technician [Name redacted]

Status of Scott Air-Pak: The SCBA Pak is ready to be picked up at Apparatus Maintenance.

Prince George's County Fire/EMS Department
APPARATUS MAINTENANCE

EMERGENCY SCBA FLOW TEST/REPAIR REPORT

Date: 7/26/2011

Scott Air Pak Reducer Number: 115s0708000282
Scott Air Pak Last Flow Test Date: 2/11/2011

Scott Air Pak Regulator Number: 115s0708001672
Scott Air Pak Regulator Last Flow Test Date:
Last Name: [Name redacted] **ID#:** **Last Fit Test Date:** **Size:** AV-2000 Large

Company Assignment: 6

Reason for Test: Injury on Fireground

Delivered to AM by:

Preliminary Visual: The SCBA Pak (face piece, regulator, and backframe) are slightly dirty with debris The face piece and regulator were attached to the low pressure hose on the Pak when received however there was no cylinder attached with the Pak. There are signs of heat exposure to the back frame and face piece (discoloration to the shoulder straps, stickers are slightly melted on the back frame) The face piece has some bubbles and slight crazing due to heat exposure. The HUD Boot (Heads Up Display) is torn on the regulator.

Preliminary Functional: The SCBA Pak (face piece, regulator and Pak) were hooked up to air and functioned normally, no leaks observed. The HUD (Heads Up Display) did not operate. The Pak-Alert did not operate.

Cylinder Condition: The cylinder serial number is IL 409887 and was manufactured in November 2006. There are smoke stains and minor scratches and abrasions on it. There was 0 psi left in the cylinder. The bumper cover is melted.

BA Technicians Report: The SCBA was last flow tested by M.E.S. in February 2011. The Pak was flow tested and passed (copy attached). The batteries were replaced in the HUD (Heads Up Display) and Pak-Alert for testing purposes. The HUD (Heads Up Display) and Pak-Alert operated normally.

Work Performed, Unit Inspected & Tested by: B/A Technician [Name redacted]

Status of Scott Air-Pak: The SCBA Pak is ready to be picked up at Apparatus Maintenance.

Prince George's County Fire/EMS Department
APPARATUS MAINTENANCE

EMERGENCY SCBA FLOW TEST/REPAIR REPORT

Date: 7/15/2011

Scott Air Pak Reducer Number: 115S0708000269
Scott Air Pak Last Flow Test Date: 2/1/2011

Scott Air Pak Regulator Number: 115s0706001676
Scott Air Pak Regulator Last Flow Test Date:
Last Name: [Name redacted] **ID#:** **Last Fit Test Date:** **Size:** AV-3000 Medium

Company Assignment: Huntingtown

Reason for Test: Injury on Fireground

Delivered to AM by:

Preliminary Visual: The complete SCBA Pak (facepiece, regulator, and backframe) are dirty with debris and smoke. The facepeice anrd regulator were attached to the low pressure hose on the Pak when received, however the cylinder was not connected to the high pressure line. The purge valve was in the open position. There are signs of heat damage to all componets (discoloration to straps, torn/melted reflective material on straps, melted cylinder retention latch and melted RIC/UAC {Rapid Intervention Connection/Universal Air Connection} coupling boot) . The face piece has heavy smoke stains and visual signs of heat damage to lens (crazing). The facepiece seal was torn where the neck straps connect to the facepiece seal.

Preliminary Functional: The PAK was re-connected to the cylinder and the cylinder showed 0psi of air. The PAK was then connected to "shore line" for testing. The regulator had a slight leak when connected to the face piece (See test). The reducer failed its initial test, alarms activated at 954psi. The HUD (Heads Up Display) did operate. The Pak-Alert did operate.

Cylinder Condition: Cylinder shows signs of heat exposure (discoloration from heat/smoke, melted rubber bonnet and gauge lens on cylinder vlave) and should be hydro tested before use. Unable to distinguish a current hydro sticker on cylinder. There are several un recognizable stickers on the cylinder.

BA Technicians Report: The regulator failed initial test due to air activation switch to high, and static facepiece pressure to low. (See test results attached). Purge valve body was taken apart, lubed reassembled and function properly (See test results attached). The face piece worn by Volunteer FF [Name redacted] was unable to be tested due to torn facepiece seal. The reducer was retested with regulator and passed all functional tests (see test results attached).

Work Performed, Unit Inspected & Tested by: Fire Technician [Name redacted]

Prince George's County Fire/EMS Department
APPARATUS MAINTENANCE

EMERGENCY SCBA FLOW TEST/REPAIR REPORT

Date: 7/15/2011

Scott Air Pak Reducer Number: 115s0708000869
Scott Air Pak Last Flow Test Date: 2/11/2011

Scott Air Pak Regulator Number: 115s0708001682
Scott Air Pak Regulator Last Flow Test Date:
Last Name: [Name redacted] **ID#:** **Last Fit Test Date:** **Size:** AV-2000 Large

Company Assignment: 6

Reason for Test: Injury on Fireground

Delivered to AM by:

Preliminary Visual: The complete SCBA Pak (face piece, regulator and back frame) are dirty with debris and smoke. The face piece and regulator were attached to the low pressure hose on the Pak when received, however, the cylinder was not connected to the high pressure line or secured to the back frame with the bottle hanger. The purge valve was in the closed position. There are signs of heat damage to all components. The SCBA Pak has discoloration to straps, melted stickers on back frame from high heat exposure. The pig-tail connection on the HUD (Heads Up Display) is charred as well as the purge knob on the regulator. The stickers on the regulator cover are smoke stained and bubbled from heat also. The face piece has heavy smoke stains on the lens and slight crazing from high heat exposure. The straps are worn and have very little elasticity left to them (top and bottom straps). The voice mitter duct on the left side was not completely attached to the nose cone. The material that attaches the head harness to the lens is frayed at all points of attachment. Inside the nose cone area, the hard plastic has become dislodged from the lens. The SCBA Pak has discoloration to the shoulder straps and waist pad, melted stickers on back frame from high heat exposure. The pig-tail connection on the HUD (Heads Up Display) is charred as well as the purge knob. The stickers on the regulator cover are smoke stained and bubbled from heat also.

Preliminary Functional: The SCBA Pak (face piece, regulator and Pak) was hooked up to air and functioned normally, no leaks observed. The HUD (Heads Up Display) did not operate. The Pak-Alert did function normally when hooked to and manually when activated, however, the batteries are low and need to be replaced.

Cylinder Condition: The cylinder number is OK 172141 and was manufactued in May of 2006. There are smoke stains and minor scratches and abrasions on it. There was 0 psi left in the cylinder. The gauge cover and bumper guard are melted. Some of the stickers are melted on the cylinder. Unable to locate any kind of hydro-test sticker on the cylinder, it should have been done in May 2011. The cylinder should be inspected and hydro-tested before being placed back in service.

APPENDIX 3 - HVFD Apparatus

Engine 6-1

1991 Pierce Lance
1250 G.P.M Pump, 1000 Gallon Water Tank
6 Person Cab
2000' 3" Supply Line
3 pre-connected 1 ¾" Attack Lines
1 pre-connected 2 ½" Attack Line
1 pre-connected 1 ¾" Bumper Line
1 Stand Pipe rack, 1 ¾"

Engine 6-2

1996 Pierce Lance
1500 G.P.M. Pump, 750 Gallon Water Tank
Around-the-pump Foam Proportioning System
7 Person Cab
3 pre-connected 1 ¾" Attack Lines
1 pre-connected 2 ½" Attack Line
1 pre-connected 1 ¾" Bumper Line
1 Stand Pipe rack, 1 ¾"
Hurst Equipment
2000' 3" Supply Line

Squad 6

1997 Pierce
Light Tower
Cascade System
Hurst Tools Officer's and Driver's Side
Ladders, pike poles, portable light stands, fans, salvage covers, other misc firefighting hand tools
Rescue Rope
Air Shores,
Low and High Pressure Air Bags
Impact Wrench
Gas and Electric Saws
Confined Space Rescue Equipment
Onboard Generator

Tanker 6

2009 Pierce Dryside Tanker
1000 G.P.M Pump, 3000 Gallon Water Tank
10" Side Dump Valves

12” Rear Dump Valves

Brush 6

2009 GMC Sierra 2500 4 x 4

Jeep 6

1994 Jeep Wrangler 4 x 4

Ambulance 6-8, Ambulance 6-9

Ford E-350

Command 6

2009 GMC Yukon

Utility 6

2007 GMC 2500 4 x 4

Car 6

2005 GMC Yukon

Mobile Cascade Unit 6

2007 Mako Mobile Cascade Unit
(4) 6,000 PSI Air Cylinders
Electric and Diesel Generators
(2) 650 Watt Quartz Lights

APPENDIX 4 – Calvert County Officer Standards

CALVERT COUNTY FIRE-RESCUE-EMS DEPARTMENTS
OFFICER STANDARDS
Effective: 01/01/2012

I. **PURPOSE**
To assure that the following minimum requirements be met by all fire, rescue, emergency medical services and dive team officers, in Calvert County.

II. **CHIEF of the DEPARTMENT****
A. Fire Officer I*
B. Hazardous Materials Operations
C. Maryland EMT-B
D. NIMS – IS100, IS700, IS200, IS300, IS800
E. Must have been a chief officer in a Calvert County Department (not including the Dive Team or EMS Chiefs) for a minimum of one year (twelve consecutive months) in the position of a chief, assistant chief or deputy chief, time as an acting and/or interim chief officer does not meet Calvert County standards for qualification.
F. Must be fully qualified as a driver/operator of respective apparatus which fall under their area of responsibility
G. Must have reached their 25th birthday prior to assuming office

III. **FIRE and/or RESCUE OFFICERS**

Deputy / Assistant Chief
A. Fire Officer I*
B. Hazardous Materials Operations
C. One year (twelve consecutive months) as an operational officer in a Calvert County Department
D. Maryland EMT-B
E. NIMS – IS100, IS700, IS200, IS300, IS800
F. Must be fully qualified as a driver/operator of respective apparatus which fall under their area of responsibility

Safety Officer
A. Fire Officer I*
B. Conducting Safe Live Fire Training Evolutions***
C. Hazardous Materials Operations
D. NIMS – IS100, IS700, IS200, IS300, IS800
E. Five (5) years of fire ground experience

Captain
F. Fire Officer I*
G. Hazardous Materials Operations
H. NIMS – IS100, IS700, IS200

1 of 4

* If not MFRI, must provice course outline showing course follows NFPA 1021
** Officers of combination fire/rescue/EMS departments must meet both fire/rescue and EMS standards.
*** If not MFRI, must provide course outline showing course follows NFPA 1403

CALVERT COUNTY FIRE-RESCUE-EMS DEPARTMENTS
OFFICER STANDARDS
Effective: 01/01/2012

FIRE and/or RESCUE OFFICERS (continued)

Lieutenant

A. Fire Fighter II*
B. Hazardous Materials Awareness (CFR 29: 1910.120)
C. NIMS – IS100, IS700, IS200

IV. EMS CHIEF of the DEPARTMENT

A. EMS Officer I or Fire Officer I*
B. Hazardous Materials Awareness (CFR 29: 1910.120)
C. Maryland EMT-B (BLS Departments)
   Maryland CRT-I or EMT-P (Medic Unit Only)
D. NIMS – IS100, IS700, IS200, IS300, IS800
E. Must have been a chief officer in a Calvert County Department (not including the Dive Team) for a minimum of one year (twelve consecutive months) in the position of a chief, assistant chief or deputy chief, time as an acting and/or interim chief officer does not meet Calvert County standards for qualification.
F. Must be fully qualified as a driver/operator of respective apparatus which fall under their area of responsibility
G. Must have reached their 25th birthday prior to assuming office

V. EMS OFFICERS

EMS Assistant Chief / EMS Deputy Chief

A. EMS Officer I or Fire Officer I*
B. Hazardous Materials Awareness (CFR 29: 1910.120)
C. One year (twelve consecutive months) as an operational officer in a Calvert County Department
D. Maryland EMT-B (BLS Departments)
   Maryland EMT-I or EMT-P (Medic Unit Only)
E. NIMS – IS100, IS700, IS200, IS300, IS800
F. Must be fully qualified as a driver/operator of respective apparatus which fall under their area of responsibility

EMS Safety Officer

A. EMS Officer I or Fire Officer I*
B. Hazardous Materials Awareness (CFR 29: 1910.120)
C. Maryland EMT-B
D. NIMS – IS100, IS700, IS200, IS300, IS800
E. Five (5) years of EMS or fire ground experience

* If not MFRI, must provide course outline showing course follows NFPA 1021
** Officers of combination fire/rescue/EMS departments must meet both fire/rescue and EMS standards.
*** If not MFRI, must provide course outline showing course follows NFPA 1403

EMS OFFICERS (continued)

EMS Captain

A. EMS Officer I or Fire Officer I*
B. Hazardous Materials Awareness (CFR 29: 1910.120)
C. Maryland EMT-B
D. NIMS – IS100, IS700, IS200

EMS Lieutenant

A. Hazardous Materials Awareness (CFR 29: 1910.120)
B. Maryland EMT-B
C. NIMS – IS100, IS700, IS200

VI. **CHIEF of the DIVE TEAM**

A. EMS Officer I or Fire Officer I*
B. Dive Rescue Specialist or Public Safety Diver Certified
C. Hazardous Materials Awareness (CFR 29: 1910.120)
D. Must have been a chief officer in a Calvert County Department for a minimum of one year (twelve consecutive months) in the position of a chief, assistant chief or deputy chief, time as an acting and/or interim chief officer does not meet Calvert County standards for qualification.
E. NIMS – IS100, IS700, IS200, IS300, IS800
F. Must be fully qualified as a driver/operator of respective apparatus which fall under their area of responsibility
G. Must have reached their 25th birthday prior to assuming office

VI. **DIVE TEAM OFFICERS**

Assistant/Deputy Chief of the Dive Team

A. EMS Officer I or Fire Officer I*
B. Dive Rescue Specialist or Public Safety Diver Certified
C. Hazardous Materials Awareness (CFR 29: 1910.120)
D. NIMS – IS100, IS700, IS200, IS300, IS800
E. Must be fully qualified as a driver/operator of respective apparatus which fall under their area of responsibility

Dive Team Safety Officer

A. EMS Officer I or Fire Officer I*
B. Dive Rescue Specialist or Public Safety Diver Certified
C. Hazardous Materials Awareness (CFR 29: 1910.120)
D. NIMS – IS100, IS700, IS200, IS300, IS800
E. Five (5) years of Dive/Rescue experience

* If not MFRI, must provide course outline showing course follows NFPA 1021
** Officers of combination fire/rescue/EMS departments must meet both fire/rescue and EMS standards.
*** If not MFRI, must provide course outline showing course follows NFPA 1403

CALVERT COUNTY FIRE-RESCUE-EMS DEPARTMENTS
OFFICER STANDARDS
Effective: 01/01/2012

APPROVALS:

Jon Riffe, Chair
Calvert County Chief's Council — 05/09/2011 Date

J. William Freesland III, President
Calvert County Fire and Rescue Association — 06/13/2011 Date

Gary Crampton, Chair
Calvert County Fire and Rescue Commission — 07/26/2011 Date

* If not MFRI, must provide course outline showing course follows NFPA 1021
** Officers of combination fire/rescue/EMS departments must meet both fire/rescue and EMS standards.
*** If not MFRI, must provide course outline showing course follows NFPA 1403

APPENDIX 5 – Chief Officer Structural Response

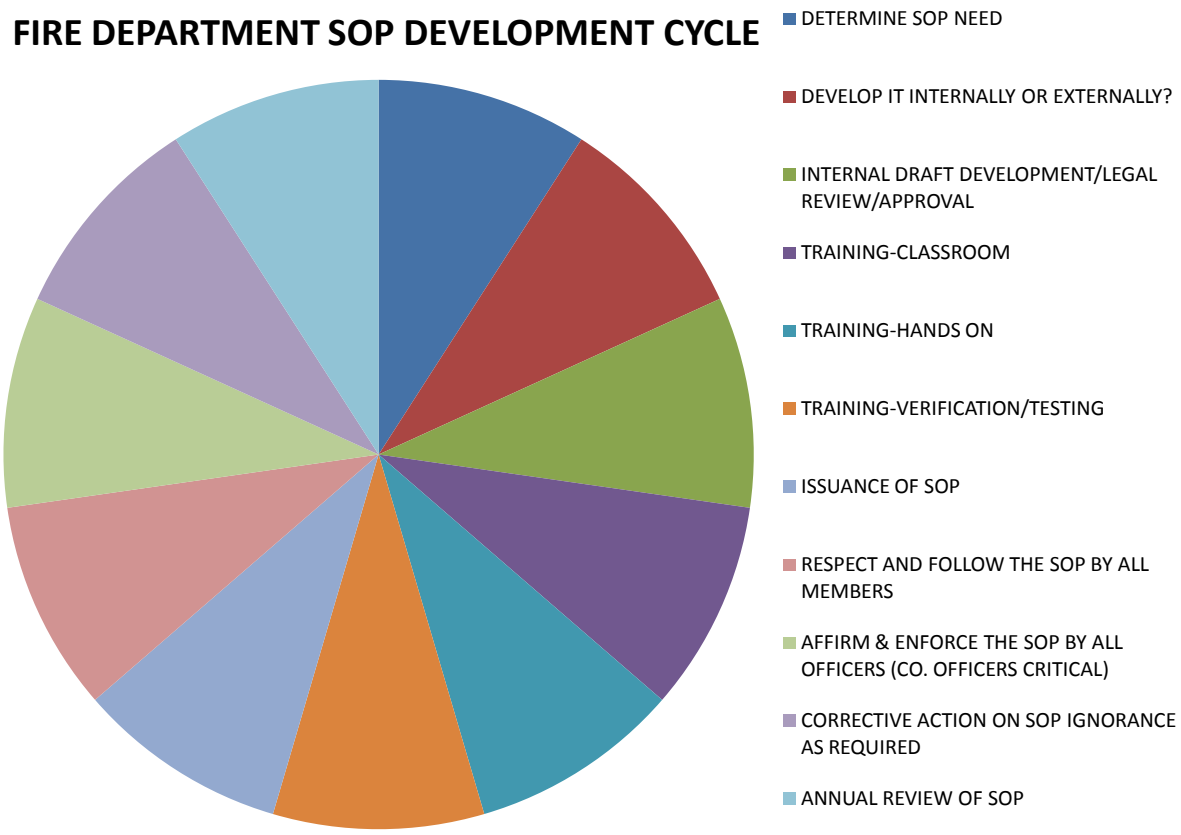
Structural Response/Arrival Assignments for Chief Fire Officers

(Normally based upon arrival, 1st arriving, 2nd arriving etc)

1. Incident Commander
2. Accountability Officer
3. "Alpha" Division (Usually also handles "Operations" as needed)
4. "Charlie Division" (Rear of Building)
5. Rescue Officer (RIT or Civilian Rescue Coordination)
6. Incident Safety Officer
7. Others in "staging" or assigned as the incident dictates.

Courtesy of www.FireFighterCloseCalls.com

APPENDIX 6 – SOP Development Cycle



Developed By Chief Billy Goldfeder, 1998

APPENDIX 7 – Recommendations

Recommendation 1: Conduct a comprehensive review and assessment of Calvert County dispatch algorithms for all emergency incidents. Determine if the priority of dispatch for Tankers, Trucks and Squads should be revised. Determine if requesting more than two resources from a single station is feasible. Additionally, consider adding a third tanker on an initial alarm in non-hydrant areas. Consider "over" dispatching tankers for credible reports of fire incidents.

Recommendation 2: Develop street maps that identify properties with complex or long hose lay requirements.

Recommendation 3: Reiterate and train on the importance of visualizing the entire structure as soon as possible or designating a separate unit or officer to complete a full 360 degree size up with a radio report prior to conducting interior, offensive, operations.

Recommendation 4: Calvert County should research and determine the suitability of establishing a "working fire" dispatch. Conduct a review and assessment of Calvert County dispatch protocols for first and second alarm resource complements. Ensure that successive alarms are equal in terms of resources to the previous alarm.

Recommendation 5: Revise Huntingtown VFD response SOG to reflect the priority of response with Tanker 6 second out after Engine 6 – 1 for Area Boxes (structure fires) in non-hydrant areas. Develop a county-wide response plan for Area Boxes in non-hydrant areas that reflects the priority of establishing a uninterrupted, expandable and consistent water supply.

Recommendation 6: Develop and implement a County-wide specific dispatch of a water supply Task Force or Strike Team. Develop and deliver periodic rural water supply shuttle drills involving multiple companies to maintain proficiency.

Recommendation 7: Develop a County-wide program of identifying and disseminating information on structures of significant size or complexity. Whether through pre-incident plans or notations on street maps, this information should be readily available to all responding units.

Recommendation 8: Reiterate the importance of establishing Command by the first arriving officer and communicating strategy to responding or on scene units.

Recommendation 9: Calvert County should consider developing or enhancing a Safety Officer program to ensure consistent and reliable response of a trained and qualified Incident Safety Officer to all significant incidents.

Recommendation 10: Consider purchasing and installing mobile data computers County-wide in command and front line response units. Equip all command vehicles County-wide with standardized command boards or similar resources.

Recommendation 11: Consider reviewing the pre-connected hose complement on all Huntingtown VFD suppression apparatus to determine adequacy for potential fire flow requirements. Consider adding a 2", pre-connected attack line to the hose complement.

Recommendation 12: Consider revising dispatch protocols to include ALS resources on initial dispatch of credible reports of fire or possibility of trapped victims. Subsequent alarms should also include ALS resources to account for and support the potential needs of the additional personnel. Consider County-wide training on firefighter rehab that involves all levels of EMS providers.

Recommendation 13: Develop a training program for all Department firefighters that emphasizes skill development in using a thermal imager for victim location, search, zero-visibility navigation as well as locating fire and gauging its progress and severity.

Recommendation 14: Whether through training or adoption of procedure, emphasize the importance of size up, IAP development, formulating strategy and direction of operations by the first unit or chief officer on scene as the Incident Commander. Additionally, develop skills and abilities of Unit Officers to assume the role of Division or Group Supervisors.

Recommendation 15: Consider revising County-wide tactical guidelines that establish roles and responsibilities for units on various incident types. For Non-Hydrant Structure Operations, establish when and who the Water Supply Supervisor will be on fires in non-hydrant areas.

Recommendation 16: Reinforce the need for Division or Group Supervisors to relay condition reports to the Incident Commander on a regular basis. Emphasize the need for Incident Commanders to appoint monitors early in the incident to observe any areas of the Incident Scene that they cannot directly visualize.

Recommendation 17: Consider revising the Calvert County Duty Chief standard to eliminate the term “Duty Chief” during radio transmissions. Consider using company number designations and rank letters using the International Phonetic Alphabet.

Recommendation 18: Consider revising the Calvert County Accountability Standard and evaluate its suitability for current fireground scenarios. Consider requiring one type of PAT for all firefighters in Calvert County. Incorporate Accountability Standard in to any available opportunity.

Recommendation 19: Enhance and improve the depth of information provided in initial, on-going and advanced firefighter training on light weight, wood frame building construction, particularly in custom homes with many gable ends that create void spaces.

Recommendation 20: Calvert County should consider capturing best practices for member recruitment and retention from individual Departments. These practices can then be used to enhance member recruitment efforts County-wide.

Recommendation 21: Calvert County should consider establishing a County-wide standard for minimum staffing for all apparatus.

Recommendation 22: All Calvert County departments should consider developing a Company officer development program to increase the number of available Company officers. Additionally, all department should consider developing a mentorship program to augment Company officer competencies. The most critical position on the apparatus is the “officer” or “right front seat” position. Training, experience and qualifications are critical as this position is the leader of that crew while responding, arriving, sizing up, operating and returning.

Recommendation 23: Calvert County should consider developing standard of pre-established roles for arriving Chief officers. These roles should reflect the criticality of strategies common to significant incidents such as: Incident Command, Accountability of Firefighters, Charlie Division, Firefighter(RIT)/Civilian Rescue Coordination and Incident Safety Officer.

Recommendation 24: Consider improvements to the rural water supply capability in Calvert County including: seek out an SME on rural water supply to analyze and train Calvert County firefighters in rural water supply, upgrade apparatus supply hose to LDH, develop additional rural water supply sites and develop a document to communicate rural water supply sites to all Calvert County departments.

Recommendation 25: Calvert County should consider developing training to emphasize the integration of EMS resources in to the Incident Command System structure. Such training should incorporate practical drills that focus on incident organization and response to firefighter injuries and emergencies.

Recommendation 26: Calvert County should consider defining and typing EMS resources based on NIMS guidelines. Consider organizing defined and typed EMS resources in to Strike Teams and Task Forces.

Recommendation 27: Continue to provide initial and on-going Mayday and firefighter survival training at a County-wide level. Reinforce the importance of recognizing what constitutes a Mayday situation and how and when to relay this information to Incident Commanders. Reinforce and continually practice LUNAR situational reports during County-wide Mayday training. Consider making a County-wide requirement for Mayday training to achieve firefighter certification.

Recommendation 28: Review the Huntingtown VFD “Emergency Identifier” policy and consider developing a County-wide standard for EI activation. Emphasize, through training, the necessity of activating the EI as part of Mayday procedures. Consider adding the “hot mike” feature to existing radios.

Recommendation 29: Establish a County-wide standard addressing emergency evacuation orders, expected behavior by firefighters, sounding of tones over the radio system and the sounding of apparatus air horns.

Recommendation 30: Consider the suitability of revising the Calvert County RIT policy or standard to specify that RIT shall consist of at least three personnel from an earlier arriving unit; one of the team shall be a tactical officer. For large scale incidents consider revising the policy to require expanding the RIT to more than one Engine under the supervision of a RIT Group Supervisor

Recommendation 31: Review and emphasize County-wide the importance of radio communication concepts such as using plain English and repeating assignments to ensure clear and effective communications.

Recommendation 32: Consider revising the existing Calvert County standard on Personnel Accountability to emphasize assigning an Accountability Officer early on expanding and/or complex incidents. Consider revising the PAR check interval to 15 minutes. Consider revising the standard to reflect Calvert County Communications maintaining the “time clock” and prompting Incident Command at 15 minute intervals.

Recommendation 33: Emphasize through training the necessity for Incident Commander to seek assistance at the Command Post with incident communications to include splitting incident communications to multiple channels, each with its own designated monitor.

Recommendation 34: Calvert County should conduct a review of the technical aspects of the radio system with the goal of providing reliable, consistent and clear radio communications. Additionally, new technology should be leveraged to provide data transmission and capture to aid identification of units transmitting over the radio system.

Recommendation 35: Develop a County-wide policy of requiring a portable radio for every riding position or SCBA so that every firefighter operating in the IDLH environment has a portable radio.

Recommendation 36: All Calvert County departments should consider utilizing the existing Records Management System to capture and retain all members training and certification records.

Recommendation 37: Revise the Huntingtown VFD procedure on apparatus inspections to include a basic, daily functional check of all front line fire suppression apparatus. Develop a program to record the results of daily and weekly checks that incorporates the existing thorough record on annual testing.

Recommendation 38: Calvert County should consider revising the County-wide Respiratory Protection Program to provide all firefighters who may enter an IDLH with modern, technologically superior respiratory protection equipment and includes annual fit testing, regulator flow testing, daily functional checks and record keeping.

Recommendation 39: Revise the Huntingtown VFD policy on uniforms to reflect a minimum required uniform of long, natural fiber pants and a natural fiber T-shirt. Prohibit any Department member from wearing synthetic garments as part of their uniform ensemble.

Recommendation 40: Calvert County should consider a PPE replacement program that ensures all PPE provided to firefighters is 10 years old or less and is consistent so that every firefighter has the same ensemble elements where practically possible. Review and emphasize the proper procedures for wearing PPE ensemble elements. Develop a program of routine checks and record keeping of PPE ensemble elements for any deficiencies.

Recommendation 41: Calvert County should consider conducting an awareness and outreach program that provides information on available acute and long-term mental health resources to all Calvert County firefighters and emergency responders. Consider providing tools and training for Incident Commanders and Department leaders to assist them in recognizing the need for care as well as encouraging firefighters to seek help.

Recommendation 42: The three Calvert County governing Fire Rescue Agencies (Chiefs Association, Association and Commission) should consider developing County-wide administrative and operational policies, procedures and guidelines. Additionally, a plan should be developed to communicate new policies, procedures and guidelines to all County firefighters. Consider utilizing the SOP development cycle to guide development of policies, procedures and guidelines.

Recommendation 43: All Calvert County Departments should consider utilizing the existing Records Management System to capture, organize and store information and data, including training records, equipment test, performance and service records and incident data.

APPENDIX 8 – Radio Transcript

Alias	Elapsed Time	Transcript
E21	0:02	E21 on 1
Calvert	0:03	OK E21
TW2	0:10	TW2
Calvert	0:11	OK TW2
E62	0:16	E62 on 1
Calvert	0:17	OK E62 - caller advised flames from top of chimney…he was attempting to put out himself
E62	0:27	numbers only please, Calvert
Calvert	0:29	6 - 2, its 3-3-8-0, 3380 Soper Road
E62	0:34	copy
Chief 6C	0:37	Chief 6C on 1
Calvert	0:41	6C…3380 Soper Road….caller advised he had flames coming from his chimney, he was attempting to put the fire out himself……we told him to evacuate the residence
Chief 6C	0:55	OK
Chief 2	1:03	Chief 2
Calvert	1:06	OK Chief 2
Calvert	1:08	Units responding Soper Road go almost all the way to the end of the driveway, it's going to be a long gravel driveway lined by trees on your left hand side and the house sits a very far…very far distance off the road
Chief 6C	1:24	Calvert he said it's all the way at the end?
Calvert	1:27	All the way at the end of Soper Road…correction on that…Go all the way to the end just prior before it turns into the gravel road. It's the last road on the left on Soper. You'll see the fields, driveway lined by trees. It's the driveway that goes past that. Follow that about mid way back and you'll break to the left and follow that straight on back
Chief 6A	1:54	Chief 6A's on Tac 1
Calvert	1:56	OK 6A…Caller advised he has flames coming from his chimney he was going to attempt to put the fire out himself….last driveway on your left on Soper…go all the way back mid way up the driveway, veer left
Chief 6A	2:13	Okay
Rescue Squad 6	2:16	Rescue Squad 6 on 1
Calvert	2:18	Okay Squad 6
TN 7	2:24	TN 7 to Calvert
Calvert	2:27	TN 7
TN 7	2:29	The address that you…that the chimney fire is on…that is on Lowery Road, correct?
Calvert	2:35	Soper Road…3-3-8-0 Soper Road
Calvert	2:38	Chief 6A we've got the caller back on the line now, we're getting' further
Chief 6A	2:45	OK
Calvert	2:48	Chief 6 I believe he's advising the fire's now spread to his attic
Chief 6A	2:53	Chief 6A is OK. 6C should be there in just a few minutes…he's in front of me a little bit
Chief 6C	3:00	I'm turnin on Soper now
Chief 6A	3:06	Alright…it's supposed to, uh, possible getting into his cockloft, okay?

Chief 6C	3:12	Yeah, I was direct. Uh, 62 just hold up at the, uh, hold up on the road until I get back there since it's such a long lay. I'll give you layout instructions.
E62	3:25	Copy chief
Calvert	3:28	6A they still have not evactuated the residence, he's still attempting to put the fire out
Chief 6A	3:35	OK. 6C did you copy that?
Chief 6C	3:38	Yeah, I'll get 'em out
Calvert	3:42	Now being advised they're now out of the residence….He's given up his attempt
Chief 6 C or A	3:49	Thank you sir
Chief 5B	3:55	5B to Calvert has the North End Duty Chief checked up yet?
Calvert	4:01	Negative
Chief 5B	4:02	Alright, if it's OK with 6A I'll go ahead and take the North End Duty Chief
Chief 6A	4:11	Come on
E62	4:18	E62 to 6C I'm about halfway down Soper, you still want me to hold off on the layout?
Chief 6C	4:23	Yeah…I'm still tryin' to find it, hold on.
E62	4:27	Copy
Calvert	4:30	Chief 6A no response from Eng 1, 5. Would you like to replace them?
Chief 6A	4:37	That's correct
?	4:39	……We'll be on the air real quick….
Chief 6A	4:41	Alright
Chief 6C	4:42	All units standby…..Alright, 6C is on the scene, Side Alpha, 2 Story, large, single-family I got heavy smoke from the attic area. Working fire dispatch Calvert.
Calvert	5:08	OK Chief
Chief 6A	5:10	6C is this one of those mega mansions at the end on the river?
Chief 6C	5:14	That's correct
Chief 6A	5:17	Forget that…uh…working fire dispatch Calvert and put a second alarm dispatch on this…copy
Calvert	5:22	Calvert's direct
Chief 6A	5:26	In addition to that add an additional tanker
Chief 6C?	5:31	6…..62 (individual in background advising fire around back , fire in the chimney)…layout from the gravel portion….layout from the gravel portion. Next engine in complete the layout to…errr….excuse me…to Soper. Mike go ahead and take command when you get here I'm going inside
Chief 6A	5:45	Yeah I got you.
SO6	5:52	Safety Officer 6 on 1
Calvert	5:55	OK Safety 6
Chief 6A	5:57	Go get the tanker
SO6	6:01	direct
E62	6:05	E62 laying out at the end of the driveway, gravel portion
Chief 6C	6:13	I do not have an all clear, I'm goin' in.
Chief 6A	6:18	I copy
?	6:22	6A you copy 52 and the tanker are on the air just for your information…just makin' sure you know since Calvert said they didn't make it out
Chief 6A	6:27	Yeah I copy 52 and yourself and the tanker

SO6	6:32	Chief I'm drivin' the tanker so count me out….Squad 6 also attempting to make radio transmission at this time
Chief 6C	6:38	garbled….hooks inside ASAP
E62 D/O	6:43	garbled….chief...tell us when you're ready for water
E12	6:51	Engine 12's on TAC
Calvert	6:54	Engine 12
Calvert	6:59	52 what's your manning?
E52	7:05	covered by siren - we have 6
Calvert	7:09	OK 52
Chief 6C	7:14	Alright, everybody's out of the house Mike….we're runnin' the 400 right now
Chief 6A	7:20	Alright you're reportin' an all clear and you're runnin' the 400
Chief 6C	7:24	Yeah that's right…we're going to have heavy fire in the attic
Chief 6A	7:28	OK
Chief 6A	7:30	Chief 6A to Calvert
Calvert	7:32	6A
Chief 6A	7:34	Did you give me a 2nd Alarm or a Working Fire Dispatch?
Calvert	7:38	She gave the 2nd Alarm
Chief 6A	7:41	Okay, once I get there and get straight I want to get the original box alarm from you and the 2nd Alarm from you, OK?
Calvert	7:48	OK Chief
Chief 6C	7:54	Operations to Command
Chief 6A	7:56	Go ahead Chief
Chief 6C	8:00	I'm doin' my 360 right now….I've got heavy fire on Side Charlie
Chief 6A	8:08	Alright, get inside with them guys, don't worry about anything else..I'll be there in about 30 seconds…get that place opened up. Squad 6 long hooks when you get in there, copy, long hooks
Chief 6C	8:18	Bravo/Charlie corner, Bravo/Charlie corner's is where I need everybody
Chief 6A	8:24	Alright, Bravo/Charlie Corner….c'mon Wade get that thing up the driveway
?	8:32	Units from two are approaching
E71	8:37	71's on TAC
Calvert	8:42	71
RS6	8:44	Rescue Squad is on the scene
Calvert	8:47	Squad 6
Chief 6A	8:48	Chief 6A to Calvert I'm on the scene got a 2-1/2 story mega-mansion got heavy fire showing from the B/C quadrant. Chief 6A establishing Hungtingtown Command. Chief 6C will have the operations sector. Let me have, uh, a run, uh a list of my chief officers
Chief 2	9:06	Chief 2's on Soper
Calvert	9:09	Chief 2
Calvert	9:09	Chief 2, Chief 5 as Duty Chief, Chief 6C is on the scene and yourself
Chief 6A	9:14	Chief 2 on Division 1 and the Duty Chief I want him on Division 2 immediately
Duty Chief	9:26	Duty Chief's responding Calvert
Chief 5B	9:36	5B to 1A you gonna cover Duty Chief then
1A	9:40	Yeah
E21	9:40	21 to (Covered by Chief 1) did you lay out next to all these trees
?	9:49	There's a layout at the end of the driveway you can't have any problems seeing it
E21	9:54	I'm trying to find out if it's the driveway with all the trees running it

?	9:58	You will see the layout at the end of the roadway to your left it's the yellow fire hose
E21	10:05	21 to Tower 2
?	10:11	21 it's up further, 21 it's up further
Chief 6C	10:18	Duty Chief come in please
Duty Chief	10:21	Duty Chief
Chief 6C	10:24	unit covered …. You in front of him or behind him
Duty Chief	10:29	Come back with that
Chief 6C	10:31	Are you in front of him or behind him, I need to know your location, I need to know your ETA
Duty Chief	10:36	I got about 2 minutes, I just turned onto Lowery
Chief 6C	10:39	Alright, take water supply when you get here
Duty Chief	10:43	Alright
E21	10:48	21 is on the scene with 6's line
Chief 6A	10:53	Alright 21
TN 6	10:57	Tanker 6
Calvert	11:00	OK Tanker 6
Tower 2	11:01	Tower 2 on the scene
Calvert	11:03	OK Tower 2
Chief 2	11:04	And Chief 2
Calvert	11:06	Ok Chief 2
Chief 6A	11:12	Chief 2 you here yet
Chief 2	11:15	Right behind the tower
Chief 6A	11:17	Division 1 right away
Chief 2	11:20	I'm comin
Chief 6A	11:24	What's my next closest chief
Calvert	11:32	It's probably going to be the Duty Chief from 1
Chief 6A	11:35	Alright. Chief 2 scratch that get to the 2nd floor, get to the Number 2 floor OK
Chief 2	11:41	Division 2 Copy
?	11:44	6A you've got fire showing outside
Chief 6A	11:47	I got, I know I've got fire showing
Chief 6A	11:56	Duty Chief you're gonna have Division 1, Duty Chief, Division 1 copy
Duty Chief	12:00	I copy, about a minute out
?	12:02	Squelch break, unreadable
Chief 6A	12:04	Alright I want that tower ladder to get up in here in case I got to use it, get in tight, get it tight up in here I want the guys in here with long hooks, probably got 16, 18 foot ceilings. Copy
?	12:16	You ready for water
Chief 6A	12:24	Command to Calvert
Calvert	12:28	Command
Chief 6A	12:30	Give me that rundown on the orignal box alarm
Calvert	12:33	Orignal box you had 4 engines, squad, 2 tankers and a tower
Chief 6A	12:41	The Company numbers please, Engine 6 and then on
Calvert	12:45	You have Engine 62 with 5, Engine 12 with 5, Engine 21 with 5
Calvert		Engine 52 with 6, Squad 6 with 6, Tanker 7 with 3, Tanker 5 with 5….correction with 2, Tower 2 with 4,
Chief 6A	13:03	Alright, give me the 2nd Alarm real quick
Calvert	13:05	2nd Alarm you got Engine 833, Tower 1, no response as of yet The medic, E71 and your tanker

Chief 6C	13:16	Mike…let me know what you got back there, I don't know, what the status looks like
Chief 6A	13:23	Can't hear you, try it again
Chief 6C	13:26	What do we got showing outside now?
Chief 6A	13:30	Heavy smoke pushin out of Side 1, correction Side A Alpha
Chief 6C	13:38	Alright, whatever people you got out there with long hooks….we got catherdral ceilings up here
Chief 6A	13:45	Alright, I've told everyone on the fireground and the smoke appears to be pushing more so out the the D side, D
Chief 6C	13:54	OK, let's ….(unit stepped on E2 to 6 are you ready for water)…
Chief 6A	14:04	All units on the fireground in Huntingtown, all units come in with long hooks
?	14:12	52…..(stepped on, possibly E2)……
Chief 6A	14:21	He's saying no on water yet and the fire's breaking through Chief, you gotta get ahead of it.
Chief 6C Others	14:27	Multiple units on top of each other…..COMMAND….I need water
?	14:36	Roof to Command
Chief 6A	14:38	The unit calling command
?	14:43	Unreadable
Chief 6A	14:47	Whoever is calling command you have to try it again I can not copy you
?	14:52	Roof Division I have fire through the roof
Chief 6A	14:55	I know that...I know you have fire showing….let's get some water on it
Chief 6C	15:01	Chief what side?
Chief 6A	15:04	Dead in the middle it looks like from where I'm at
Chief 6A	15:12	Heavy fire on the Charlie Side as well
Chief 6A	15:21	Alright, who's on the roof at this time?
?	15:28	Unreadable to Command
Chief 6A	15:30	Get off that roof, now.
Chief 6A	15:38	Tower 2 rig for the tower. Get that tower up and stand by
Chief 6A	15:46	Water supply
E62	15:59	62 to Engine 2 go ahead and send me water
Chief 6A	16:03	Tower 2 driver come in
Calvert	16:09	Calvert to Tower 2
Chief 6A	16:13	Tower 2's driver come in
Tower 2 D/O	16:23	Go ahead Chief
Chief 6A	16:25	Get the tower ladder up and ready
Tower 2 D/O	16:29	It's soft, it's too soft to put it up. I need the hard surface where 6 is
TN 6	16:42	Tanker 6 is on location
Chief 6C	16:46	Charge the 2nd handline
Chief 6A	16:51	North Duty Chief are you here yet?
Duty Chief	16:54	I'm going in right now
Chief 6A	16:57	Alright, let me know what's going on inside, I haven't had an update lately
Chief 6A	17:01	1B you here yet?
Chief 6C	17:07	6C to command
Chief 6A	17:09	Go ahead Chief
Chief 6C	17:13	We're on Division 2, we're doing the best we can opening this thing up in the ceiling alright, we can't find any attic access

Chief 6A	17:21	Alright, listen to me it looks like it's in the center section coming towards the Alpha side…alright. There's heavy black smoke pushing out. Get somebody over on Division 2 toward the D and center section of the residence. D/Center section, OK.
Chief 6C	17:39	That's where I'm at right now
Chief 6A	17:41	Alright you gotta get 'em in there…take them in there and get this place opened up it's pushing heavy black smoke and I've got heavy fire showing
Calvert	17:50	Calvert to command no response from Tower 1 you want it replaced
Chief 6A	17:54	That's right
Calvert	17:56	Copy that
Chief 6C	17:57	(Vibralert sounding) I need someone to meet me with lights at the front door
Chief 6A	18:02	I'm doing the best I can do for you
Calvert	18:06	Chief you need a tower or will a squad be adequate
?	18:14	Back down your pressure Jimmy, back down your pressure
SO6	18:23	Safety Officer 6 on the scene Calvert
Calvert	18:25	Safety 6
E22	18:28	Engine 22 as well
?	18:29	Multiple units on top of each other…..back this unit down
Chief 6A	18:36	Has anybody else laid out coming down that driveway yet
?	18:43	Chief I gotta get you get you some room if you need more line you gotta give me a minute
Chief 6A	18:47	I want someone to lay dual lines from out there and and bring them back here and park right beside Tower 2 - Copy
E52	18:57	52 to Chief we've laid a secondary line in I'll pull a line over to Tower 2 at this time
Chief 6A	19:04	Alright he's telling me he get the tower up here it's too soft but I still want the water supply back there
Chief 6A	19:09	6C I need an update right away it's not looking good about two more minutes and I'm pulling them out
???	19:14	Units covering each other
TN7	19:18	Tanker 7's on location
Calvert	19:20	OK
?	19:26	I've got a load of tanker water coming up before we can move anything out of the way and get you other lines in here you copy that
?	19:34	(Covered possibly E21's) officer to command I need a line to Side Alpha
Chief 6C	19:42	6C to command
Chief 6A	19:44	Evacuate the building, evacuate the building, evacuate the building Calvert sound the evacuation tone immediately All units…(covered by evacuation tones)….
Calvert	19:54	All units evacuate the building…evacuate…..(evacuation tones)….evacuate now, evacuate
?	20:06	Mike, Mike
?	20:11	Open radio…EMS unit, EMS units
Chief 6A	20:19	Resound the evacuation tone Calvert, resound it
Calvet	20:22	(Evacuation tones)….all units evacuate…covered by other unit
Chief 6A	20:30	EMS units to the front right away Calvert, give me about 3 more ambulances, EMS to the front
Medic 102	20:35	multiple men down start me two helicopters Priority 1 Category Alpha I'll advise
Chief 6A	20:42	I need the accountability in a minute, accountability in one minute

?	20:47	I've got a Priority 2 with one in front of the building
Chief 6A	20:52	Alright let's get them moving those handlines, Safety Officer 6 get them moving those handlines
E71	20:59	E71's on the scene Calvert…Command where do you want me
Chief 6A	21:07	6C come in and I need accountability right away
Chief 6C	21:11	(Vibralert sounding) I am still trying to verify that everyone has come out…unreadable over vibralert… start a few ambulances I know we've got people hurt
Chief 6A	21:22	I can not, can't copy a word you're saying Chief
Chief 6C	21:25	(Vibralert sounding) I am still inside on Division 2 trying to verify that everyone is out….start an ALS unit and a few ambulances Mike I know we've got people hurt
Chief 6A	21:39	…52 covers…Alright the only thing I got is that you got a couple people hurt they're in the front yard. Your mask is going off I can't understand a word you're saying
Chief 6C	21:49	(Vibralert sounding) I'm inside verifying that everyone is out
Chief 6A	21:54	Alright
Calvert	21:58	Command, we copy you need three ambulances and two helicopters
Chief 6A	22:02	I did not request that where did that come from
Calvert	22:11	Command I heard it from interior
Chief	22:14	(Vibralert sounding)…Charge the handline, charge both the handlines
Chief 6A	22:20	Just start me 3 ambulances for now Calvert, I'll get back to you in a minute
Calvert	22:24	OK
Chief 6A	22:28	Please somebody get on the handlines
Chief 6C	22:31	Vibralert sounding…unreadable transmission
Chief 6A	22:36	Safety Officer 6 come in
Chief 6A	22:42	Safety Officer 6 come in
?	22:50	Engine 2 I need water
Chief 6A	22:54	I need to know if we're all clear, I still see people coming out that front door
Duty Chief	22:59	Duty Chief, Chief 2 and Chief 6C we're all here making sure everybody's out
Chief 6A	23:05	Alright now I want one of you to let me know who's hurt, how many guys and the severity of injuries immediately
Duty Chief	23:13	I'll get that to you in one second
Tower2	23:18	Portable Tower 2 to command
Chief 6A	23:20	Tower 2
Tower 2	23:22	Be advised that when I was coming out the homeowner was inside. You need to make sure that homeowner got out
Chief 6A	23:28	Yeah, I think he dove out that window, I think I saw him come out the front
Duty Chief	23:33	Duty Chief to Command
?	23:39	Command I got that second supply line coming back, I'm not going to be able to make it duals with 22 I'm going to have to lay their thousand out and then use their LDH
Chief 6A	23:51	Alright standby with that real quick
Chief 6A	23:54	Calvert my Safety Officer is going to have the EMS Sector on TAC3 OK he's going to take care of that, he does need 2 helicopters
Calvert	24:01	OK
Duty Chief	24:03	Alright Command I've got two injured
E61	24:08	61's still enroute chief
E62	24:12	62 to Engine 5 or Engine 2 I still need water
Chief 6A	24:20	Chief 6C come in

Chief 6C	24:24	Go ahead Mike
Chief 6A	24:26	Alright I need to know if everybody is out of this house immediately
Chief 6C	24:33	I know this. As soon as I can get a line I'm going back to the second floor
Chief 6A	24:41	Uh, I don't think you can make that second floor Chief from where I'm standing. Get me an accountability right now.
Chief 6C	24:51	You're going to have to call the individual officers Mike I don't know who was in charge of 62
Chief 6A	24:58	Okay,Calvert I'm going to have to bug you for one minute. Calvert get me E62's officer
Calvert	25:05	62
E62	25:12	62 to 52 I'm going to need water
?	25:18	Squelch break
Chief 6A	25:26	Calvert? To 62's driver
E62 Driver	25:30	Go ahead
Chief 6A	25:33	I need to know who was on your firetruck OK
E62 Driver	25:39	I couldn't copy you Chief
E52 Driver	25:44	E52 Driver to 62 I'm flowin 400 right now I'm going to have to shut that down to give you my water I don't have a supply as of yet the hose has got no water
?	25:56	Water's coming to you, water's coming to you. Give me one minute
E12	26:06	E12's on location command
?	26:14	(Unreadable, multiple units) to chief
Chief 6A	26:17	Alright I got two people calling me chief, who wants me first
?	26:22	Safety..(Unreadable, multiple units) E12's on the scene command
Chief 6A	26:25	Send your manpower back here and see if you can get on one of these handlines
E12	26:30	Copy
Chief 6A	26:33	6C you still in charge of there or what
Chief 6C	26:36	Yes, go ahead
Chief 6A	26:39	You've got heavy fire running the whole entire D side, the wind's blowing about 30 miles per hour and you've got one man on an inch and a half and it ain't doing much
Chief 6C	26:47	Second line is burned through and we're working on getting it back in service
Chief 6A	26:52	Alright we've got a second alarm out here, if you need more companies tell me
Chief 6C	26:57	I need everyone up here right now. Need 2 more lines off 62, get the duece and a half
Chief 6A	27:05	All units on the second alarm bring you manpower to the fireground
Tower 2	27:11	Tower 2 to 5's wagon let the water go in both lines
E52	27:20	52 to command I got a 400 foot operating off this piece and I'm about out of water
E62	27:32	62 to command I'm out of water
??	27:41	Chief I'm setting up a folding tank right now I'm trying to straighten this out copy that
Chief 6A	27:46	Put water supply on TAC2 Orville's coming out there to help you
E52	27:56	52 to command I'm out of water you need to get that 400 out
Chief 6C?	28:07	I'm still waitin on that two and a half
E52 Driver	28:16	52 to water supply I need more pressure
Chief 6A	28:25	Water supply has been moved to TAC2, OK
LT7	28:35	Lieutenant 7 to the Chief you've got a propane tank going off back here on Side D

?	28:43	22 let me know when you're ready for that water
Chief 6A	28:51	Command to Operations
Chief 6C	28:55	62 charge that line again, charge that handline again. Go ahead Mike
Chief 6A	29:00	Heavy fire Alpha Side, Bravo Side overtop of the garage
Chief 6C	29:08	Handlines are on it right now, we're waiting on water
Chief 6A	29:15	Alright I'm sending you Company 1's crew OK
E52	29:19	E52 to command tell water supply to charge E52's 400 please
Chief 6C	29:26	Have Company 1's crew pull the 2-1/2, Company 1 pull the 2-1/2
Chief 6A	29:33	They pulled our 2-1/2 and it's already around on the other side of the building
Chief 6C	29:39	62's driver charge the handline, charge the handline
Chief 6C	29:49	Command
Chief 6A	29:52	Go ahead Chief
Chief 6C	29:53	Alright I got water to the pond now. Chief 2 will be your Charlie Side Supevisor I got Side Alpha
Chief 6A	30:09	Okay, and I can see the D side, they ain't making no headway they keep shutting the pipes down for some reason I'm not sure what's going on with that. If I can get an officer over there to direct them that would be great
Chief 6C	30:22	I'll move over
Chief 6C	30:28	Operations I'm going to have the A and B quadrant correct
Chief 6A	30:32	OK A and B