Close Call Incident
Final Report
April, 2016

Fauquier County Structure Fire
4214 Pickett Street
July 19, 2015 –0846 Hours
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Foreword

The Fauquier County Fire and Rescue system is comprised of 11 independent volunteer organizations and a career department and together we responded to over 4386 FIRE and 7533 EMS Incidents in 2015.

Fauquier Fire Rescue practices operational unity with administrative separation through an agreement for services between the Volunteer Fire Rescue Association (VFRA) and Fauquier County. The Association oversees the distribution of funds to each department and various committees as well as the development of uniform standard operating procedures followed by all first responders (Career and Volunteer) in Fauquier County.

In 2009, The Fauquier Fire Rescue system adopted several of the Northern Virginia Firefighting and Emergency Operations Manuals, including the Single Family Dwelling and the Rapid Intervention Team (RIT) Command Operations Manual with the explanation that “Fauquier County cannot meet the full complement of apparatus needed for an assignment, but the intent is met and relayed through an SFD Manual Addendum created by the Fauquier County Fire Operations Group.”

Both the manuals and the FOG Addendum are included as appendices to this investigative report.
Executive Summary

On July 19th, 2015, units from Fauquier County Fire-Rescue (Engine Companies 4, 3, 1, Loudoun 3, Prince William 24, Tanker 1, Tanker 3, Tanker 4, Rescue 9, and Station 4) were dispatched to 4214 Pickett Street, The Plains, for a reported structure fire.

The first arriving crew found a single story home with smoke and flames visible at the front door and began an interior attack, joined shortly thereafter by the remainder of the assignment. When the crew experienced a rapid rise in temperature while operating on the second floor they hastily exited the structure and after a quick medical evaluation both firefighters were transported to our local emergency department via ambulance.

While FF 1 was treated and released, FF 2 was later transferred to the Washington Burn Center for specialized care. A third firefighter was later evaluated in the emergency room for very minor burns.

Following the fire, Chief Thomas Billington and VFRA President Tom Marable appointed an investigative team to investigate the circumstances and facts that contributed to these injuries and make recommendations to prevent further occurrences.
Significant Injury Investigative Team

The Significant Injury Investigative Team was directed to investigate the events leading to the firefighter’s injuries, gather information, and validate the facts relevant in determining the direct cause and to make recommendations to prevent a similar occurrence. In addition, the team was given the following tasks:

- Ensure findings are factual, credible and been validated by two means
- Focus on organizational process/policies
- Review all written statements
- Review the transcripts of the incidents communications
- Review all relevant procedures, manual, standing orders and pertinent documents for insight into the need for preventive action and/or procedural changes by the Fauquier Fire Rescue system
- Examine the equipment/gear involved to determine if procedural safeguards were in place and that it was serviceable and functional

Fauquier Fire Rescue would like to thank and recognize the following individuals and organizations that assisted in completing this report.

Chief Richard Mabie  
Chief Ian Brill  
Chief (ret.) James Jeckell  
Assistant Chief Darren Stevens  
Division Chief John Fugman  
Deputy Chief Kurt Kight  
Battalion Chief Micah Kiger  
Battalion Chief Brian Lichty*  
Lieutenant Michael Gilliam  
Lieutenant Butch Flippo*

*Performed SCBA and PPE Inspections
Incident Information

Date: July 19, 2015
Dispatch Time: 08:47:27 Hours
Incident Address: 4214 Pickett Street, the Plains Virginia
Incident Type: Structure Fire
Fire Box Number: #0401

Weather*:
- Temperature: 82 degrees Fahrenheit
- Humidity: 87
- Precipitation: None
- Wind: 1 mph SSW (calm)

Source: Weather Underground, Historical Weather Data- The Plains, VA
The Response

<table>
<thead>
<tr>
<th>Station</th>
<th>Apparatus</th>
<th>Crew</th>
<th>Responding</th>
<th>Arrival</th>
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<tbody>
<tr>
<td>The Plains</td>
<td>Wagon 4</td>
<td>2+1*</td>
<td>8:48:55</td>
<td>8:50:17</td>
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<tr>
<td>The Plains</td>
<td>Tanker 4</td>
<td>1</td>
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<tr>
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<td>Wagon 1</td>
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<td>9:01:14</td>
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<td>8:54:10</td>
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<td>8:57:03</td>
<td>9:14:</td>
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<td>New Baltimore</td>
<td>Chief 10</td>
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<td>8:57</td>
<td>9:07:18</td>
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<td>Eng 524</td>
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<td>9:08: staging</td>
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<td>Batt 501</td>
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<td>9:09</td>
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<td>Eng 524</td>
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<td>9:08: staging</td>
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<td>9:01</td>
<td>9:09</td>
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<td>Prince Will.</td>
<td>Res 504</td>
<td></td>
<td>9:02</td>
<td>UNK</td>
</tr>
</tbody>
</table>

**Injuries Reported**

09:14

*Staffing denoted as +1 means there is another member/firefighter on board that is not certified to operate within an IDLH (Immediately Dangerous to Life or Health) atmosphere. Example: Engine 10 is responding with a crew of 3+1, this means that Engine 10 has 3 certified firefighters (counting the driver/operator) and one non-IDLH rider.*
The Structure:
Event Synopsis

Dispatch:
On July 19th, 2015, units from Fauquier County Fire-Rescue (Engine Companies: 4 The Plains, 3 Marshal Fire, 1 Warrenton Fire, Loudoun County, Prince William County, Tanker 1-Warrenton Fire, Tanker 3 Marshal Fire, Tanker 4 The Plains Fire, Rescue 9 Marshal Rescue) were dispatched to Box 401 for a reported structure fire at 4214 Picket Street in the Plains, Virginia, operations channel of 11-Bravo.

Response:
The Plains Wagon 4 responded immediately with a crew of 2 + 1 and was followed by Tanker 4 driver only.

WAGON-4

<table>
<thead>
<tr>
<th>Member Rank</th>
<th>Seating Position</th>
<th>Identifier</th>
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<tbody>
<tr>
<td>Volunteer Assistant Chief</td>
<td>Driver / Operator</td>
<td>W4-D</td>
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<tr>
<td>Volunteer Firefighter</td>
<td>Engine Officer*</td>
<td>W4-O*</td>
</tr>
<tr>
<td>Non-IDLH Volunteer Firefighter</td>
<td>Rear riding area</td>
<td>W4-Trainee</td>
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</table>

Tanker-4

<table>
<thead>
<tr>
<th>Member Rank</th>
<th>Seating Position</th>
<th>Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volunteer FF</td>
<td>Driver / Operator</td>
<td>T4-D</td>
</tr>
</tbody>
</table>

*Engine Officer was under filled by FF

During response, the 911 center transmitted to W-4 additional information that the homeowner advised the house is on fire and that there was fire coming out the front door, everyone reported out of the house and would be standing by at a neighbor’s house. This information was acknowledged back on the radio by Wagon 4.

Upon arriving on the scene, W-4 reported to the 911 center “I’ve got smoke showing from the eaves and out the front door, we have, we’ll be hand-jacking our own line, I’ll get back to you in a second with a better situation”.

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On-Scene Operations:
After completing a walk-around, Wagon4 (W4-D) gives a situation report that over the radio “nothing showing side Charlie, smoke showing from Bravo and Delta from the eaves, and smoke coming from the front door. I’ll have command on the portable”.
This information was confirmed/repeated by 911 Dispatch.
Wagon 4 (W4-O) deploys a 1-3/4” attack line to the front door and begins trying to clear the doorway to make entry.

The home had numerous items on the front porch which restricted access via side Alpha. The hose line was stretched to the rear where Wagon 4 Officer makes entry through side Charlie by himself. The Officer’s reasoning was to make entry to search for victims since there was a vehicle sitting in front of the house with its window down and no one outside to confirm that the house was empty. Wagon 4 had acknowledged earlier radio traffic indicating that the homeowner was at the neighbor’s house. Upon finding minor smoke conditions on the first floor of the home, Wagon 4 Officer advanced the hose line upstairs where he was met with thick smoke conditions, no visible fire, and high heat. Due to not being able to make any progress because of the heat, coupled with the fact that he was by himself on the hose line, the Officer backed down the stairway and began opening up all of the windows on the first floor. The Wagon 4 Officer later stated that this was completed for ventilation.

After a short delay due to missing street directions, Wagon 3 arrives on the scene and positions on Side Charlie due to limited street access. Wagon3’s crew consisted of five (5) total personnel consisting of two (2) FCFR career staff personnel and three (3) volunteer members.
Two FF’s from Wagon 3 (W3-FF2/W3-FF3) report to command ahead of the rest of their crew, and are given the order to assist Wagon 4’s officer with the hose line on Side Charlie. They reposition the hose through Side Charlie for a more direct approach onto the stairs that ascend the second floor. Wagon3’s crew (still with two personnel) enter through Side Charlie and make their way to the second floor. After making the second floor, the crew encounters thick smoke conditions, limited visibility, moderate heat, and no visible fire. The hose line is directed to the left and opened in an effort to reduce heat, back-up firefighter leaves line to check conditions to the right. Increasing heat conditions, smoke begins to bank down to the floor, dark in color, no visible fire still. Both firefighters operating on the 2nd floor begin to feel “stinging” and “burning” through their PPE. One Firefighter (W3-FF3) dives down the stairs to escape the heat, W3-FF2 is still in place, then begins to back out. Both crew members run into Wagon 1’s crew as they were stretching a back-up line into position on the 2nd floor. Wagon 1’s crew continue fire attack on 2nd floor.

Wagon 3’s crew that was on the 2nd floor exit the structure at different times, make their way to the back yard to receive aid from EMS. Both of Wagon3’s interior firefighters (W3-FF2/W3-FF3 received burn injuries.
Findings, Discussion, and Recommendations

Staffing Levels

Findings

When the Pickett call was dispatched the Wagon from The Plains station responded within 1 minute with a qualified driver, a firefighter and a non-IDLH member, the Wagon was immediately followed by their tanker operated by a qualified driver.

Discussion

Fauquier County Fire Rescue has no established minimum staffing levels to respond, it is accepted practice to assemble the required crew members from multiple units. This practice is often necessary but does not preclude federal mandates, most notably 29 CFR 1910.134 Two in, two out.

In this instance, because they responded understaffed, the unit driver served as the both the incident commander and the unit operator (pumping the apparatus). Similar close call incidents have revealed the task saturation for personnel assuming multiple roles similar to this one. In this instance, the driver/operator was having to function in a strategy/tactical/task role.

Recommendations

Fauquier Fire Rescue should develop a plan and timeline to implement minimum staffing requirements by unit type.

Engine/Wagon: minimum 3 qualified persons

Truck/Rescue: minimum 3 qualified persons

Tanker: minimum 1 qualified persons (operator)

Brush/interface: minimum 2 qualified persons

Ambulance: minimum 2 qualified persons
Because implementation would be incremental (current career staffing model is normally 2 persons per station) the immediate recommendation would be to add a like unit to the call upon the response of any unit responding understaffed. This will ensure that a capable and adequate crew may be assembled in the shortest time possible.
Findings, Discussion, and Recommendations continued...

The Decision to begin interior fire attack before assembling two-in/two out

Findings

The initial responding unit (Wagon 4) received the following supplemental information as they left the station, “Dispatch: Caller just advised the house is on fire, fire is coming out the front door, everyone is out of the house, they are going to be standing by at the neighbor’s house. Wagon 4: Direct”.

Upon arrival Wagon 4 gave the initial size-up, established water supply (hydrant in the side yard), conducted a 360 degree assessment and a single firefighter advanced a hose line into the structure via side Charlie as the operator established command. The original decision to make entry to perform a search was based upon “no on-scene confirmation” that the house was clear of occupants, the 911 caller was later found hiding behind shrubbery behind the house across the street. While this “exemption” is allowed, the decision should be announced on the radio for incoming units, subsequently, crew members from the next arriving engine entered the structure to complete the search and perform fire attack, later joined by the third engine. A few minutes later the fourth engine arrived and was assigned RIT Operations. The actions taken at this scene are within the policy, the inclusion within this report is to end the speculation raised by the radio traffic and to ensure that incident commanders understand the gravity of the decision to invoke the exemption.

Discussion

The requirement of OSHA 29 CFR 1910.134 Two in, two out mandates that no firefighter should enter into an area that is immediately dangerous to health or life (IDLH) alone, such as the interior of a burning structure. The regulation further stipulates that before any firefighter may enter, the incident commander must have assembled at least two qualified firefighters outside that are dedicated to initiate a firefighter rescue if needed. While one firefighter is permitted to
serve in operational roles outside the second may not be assigned any task that is critical to the safety and health of anyone on the incident scene.

The regulation does provide an exception for immediate action, emergency rescue activities can be performed prior to assembling an entire team to save a life.

The Northern Virginia Operations Manual for Single Family Dwellings (adopted by Fauquier Fire Rescue in 2009) dictates that “when it has been confirmed that the occupants of the structure have been accounted for the strategic goal should then focus on firefighter safety and fire extinguishment.”

**Recommendations**

Incident officers must familiarize themselves with this regulation. If they are invoking the exception for immediate action they must be able to quantify their decision through an accepted risk/benefit model and should communicate the action/decision over the radio.

For example, Loudoun County requires that a “two-in, two-out” statement be made over the tactical channel prior to commencement of interior operations. The personnel assigned the “two-out” function must formally acknowledge the assignment over the radio to ensure that the role is covered.

Fauquier County Fire Rescue should develop a “Command Officer” program that would require a combination of education and experience to ensure that “qualified” officers are utilized on all working incidents.
Findings, Discussion, and Recommendations continued...

**Failure to deploy Thermal Imager**

**Findings**

Both of the first arriving engines were equipped with Thermal Imagers but were not utilized on this incident.

**Discussion**

The use of a thermal imager would have greatly enhanced the ability of both crews to quickly locate the seat of the fire on this incident. If the unit was used on the outside it could have guided an external attack to the eave and soffits of the porch area and greatly impacted the amount of fire encountered upon entry.

**Recommendation**

Every firefighter should be familiar with the use and capabilities of thermal imagers. The Fauquier Fire Rescue Training Division should develop an online training program that can be readily distributed to member companies for their use at company drills.
Findings, Discussion, and Recommendations continued...

**Lack of understanding of Fire Behavior – Flow path**

**Findings**

When the single firefighter initially left the structure he opened several windows and doors on the first floor for ventilation.

**Discussion**

While opening windows and doors provides an opportunity to release heated gasses and smoke it also provides an entry point for oxygen filled air which contributes to the fire's spread and intensity.

The introduction of the additional air to ventilate a limited fire will lead to increased heat release and aid in the transition to flashover.

Fire ground operations should see ventilation and fire attack as a coordinated effort and openings into the structure should remain closed until a crew and houseline are in place to begin fire attack.

**Recommendations**

Every firefighter should be familiar with fire dynamics and the concept of flow path and how it affects fires. The Fauquier Fire Rescue Training Division should develop an online training program that can be readily distributed to member companies for their use at company drills.
Findings, Discussion, and Recommendations continued...

Incident Command

Findings

Incident Commander essentially performed two functions: Command and Apparatus Operator.

Discussion

According to federal mandate: 1910.120(q) (3) (i)] the senior emergency response official responding to an emergency shall become the individual in charge of a site-specific Incident Command System (ICS). Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least the hours of training equal to their first responders and in addition have competency in command functions and certifications as outlined in 1910.120(q)(6)(v)]

Because the initial unit was understaffed the Incident Commander essentially performed two functions: Command and Apparatus Operator. The available staffing also necessitated the second engine to essentially fill their role as initial fire attack. This information was not announced to alert incoming units as to their change in assignment (through trickle down) for Search Team and RIT.

Once other qualified commanders arrived neither command or apparatus operation was delegated to other officers and the initial Incident commander continued to operate as the commander and the primary engine operator. At the time of injury there was an Assistant Chief (Warrenton) and three Battalion Chiefs (1- Loudoun. 2-Prince William) that could have filled either role. One PWC BC was quoted as saying “Do you see what is happening” to AC1 on Side Charlie of the structure prior to/during the rapid change in conditions on the 2nd floor. Both were in agreement that no progress was being made on the fire attack. At 0914
Division Charlie reported that Wagon 3’s FF were out of the building and requested EMS. At 09:21 Chief 10 assumed command of the incident and was assisted by BC603 and the PWC BC’s.

**Recommendation**

Fauquier County Fire Rescue should develop a “Command Officer” program that would require a combination of education and experience to ensure that “qualified” officers are utilized on all working incidents.

Training should be a combination of certification programs and locally designed coursework that includes our adopted standard operating guidelines.
Findings, Discussion, and Recommendations continued...

Lack of Consistent Officer/Riding Assignment Standards

Findings

While some organizations have developed standards outlining the duties/assignments by seating positions the Fauquier Fire Rescue system lacks one universal model.

Discussion

The lack of consistent officer standards for people riding the seat in the officer’s position at incidents was prevalent on this fire. The initial engine was hampered by the most experienced firefighter (and station officer) being tasked with having to operate the attack pumper and the second engine’s officer not knowing the clear expectations of his riding position. Wagon 3’s officer did not “look-up” the location in the unit’s map book and that resulted in passing the location and added minutes to their response by traveling to The Plains station and then doubling back.

Upon their arrival both the officer of Wagon 3 and one firefighter were not fully dressed and ready to enter. This prevented them from providing any assistance in the structure.

Every riding position should have assignments/responsibilities and the person(s) in those positions must be familiar with them, this should be part of every stations release program.

Recommendation

The Fauquier Fire Rescue system should develop a standard duties/responsibilities chart for each riding position on all apparatus. When responding understaffed everyone must have a clear understanding that all of the responsibilities must be fulfilled or delegated to another unit to ensure all tasks are being completed.
Findings, Discussion, and Recommendations continued...

The Wagon 3 Crew did not issue a MAYDAY when they became distressed

Findings

The crew from Wagon 3 did not signal a MAYDAY when the rapidly changing fire conditions made exiting critical or when they became separated while operating on the second floor.

Discussion

When the crew from Wagon 3 became distressed on the second floor there was already a secondary crew and line on the stairwell and this made exiting the fire compartment challenging. High heat conditions and heavy smoke made communications challenging and the signaling of a MAYDAY would have alerted everyone on the fire ground that the crew had become separated and needed assistance.

If a MAYDAY had been signaled the crew positioned on the stairwell would have been made aware of the high heat conditions and that the crew had become separated, their proximity could have made it possible to provide rapid assistance in both locating and assisting in their exit.

Recommendations

Training in MAYDAY and RIT operations is part of every basic firefighter course in Fauquier County, Additionally, within the past 5 years the Fauquier Fire Operations Group (FOG) conducted specific training on Rit/Mayday and provided opportunities in each battalion to attend. The program’s power point is on the department’s website and available for company drills. The materials should be reviewed and made available to all member companies for training.
Findings, Discussion, and Recommendations continued...

Findings

**Burn Victim(s) were treated initially at Fauquier Hospital ER**

Discussion

The Initial assessment of the burned firefighters showed very little thermal damage to the skin but shortly after arriving at Fauquier Emergency Department one firefighter began to develop blisters on the affected areas. The firefighter was later transported to the Washington Hospital Burn Center where he was admitted for several days and undergone skin grafts to treat the affected areas.

The EMS crew assigned to his care (Loudoun County) was operating under the treatment protocols adopted by the Loudoun County Fire Rescue system. The protocols stipulate that 2\textsuperscript{nd} and 3\textsuperscript{rd} burns that affect greater than 10% surface area should be transferred to the burn unit. Unfortunately the severity of the burns was not readily apparent on the scene (as documented in photos by FCSO) and blisters began appearing after his arrival at the Emergency Department.

Recommendation

The Fauquier EMS Protocol for burned patients be adequately reviewed and include specific treatment guidelines for firefighters (or others) that are wearing protective clothing that may provide a delayed visible injury when exposed to high heat.
Findings, Discussion, and Recommendations continued...

Findings

**Fauquier Fire Rescue has no consistent policy for volunteers under 18.**

Discussion

Every station in the Fauquier Fire Rescue system has its own guidelines on the activities that may or may not be performed by qualified firefighters under the age of 18. In Virginia, a firefighter that has completed Firefighter 1, properly insured and covered through a local ordinance may participate in firefighter duties without restriction, with parental consent. In this case, Fauquier County had taken all required steps to legally allow this practice.

This incident created some controversy because one of the injured firefighters was under the age of 18. The investigative committee highly valued the contribution that properly qualified “under 18” firefighters make and would not like to see this practice discontinued but feel that there should be some restrictions placed upon them, most notably the clear identification (via helmet markings) and the being paired with another qualified “experienced” firefighter in an IDLH atmosphere versus being part of the minimum requirement of a two man crew.

Recommendations

The Fauquier Fire Rescue system, together with their member companies should develop a set of guidelines regarding the deployment and use of certified firefighters under the age of 18.
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<thead>
<tr>
<th>Findings</th>
<th>Recommendations</th>
<th>Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing Levels</td>
<td>Minimum Staffing Policy</td>
<td>VFRA and DFREM</td>
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<tr>
<td>Two-In Two Out Compliance Review</td>
<td>Command Officer Program</td>
<td>Fauquier Operation Group</td>
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<td>NOVA OPS Manual Review</td>
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<tr>
<td>Thermal Imager</td>
<td>Develop on-line Training</td>
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<td>Flow path/Fire Dynamics</td>
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<td>Under 18 Guidelines</td>
<td>Develop and Implement</td>
<td>VFRA</td>
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Appendix A: Location Map
Appendix B. 911 Radio Transcript


Unit (8:48:55): Wagon 4 2+1

Dispatch: Wagon 4 2+1 we’re gonna go ahead and move this to Charlie, um, caller just advised the house is on fire, fire is coming out the front door, everyone is out of the house, they are going to be standing by at the neighbor’s house.

Wagon 4: Direct.

Unit: Tanker 4, driver only, (inaudible- “...charlie”?). (Marked up on 11B)

Dispatch Tanker 4 driver only, at 8:49.


Dispatch: Medic 9 in route to company 3 at 8:50.

Wagon 4 (8:50:17): Fauquier, Wagon 4 on the scene, I’ve got smoke showing from eaves and out of the front door, we have, we’re gonna be hand jacking on our own line, I’ll get back to you in a second with a better situation.

Dispatch: 10-4 Wagon 4 on the scene, smoke showing eaves and out the front door, hand jacking your line 8:50.

Wagon 4 (8:51:25): Wagon 4 to Fauquier, walk around complete, nothing showing side Charlie, smoke showing on bravo and delta, from the eaves, and smoke coming from the front door, I have command on the portable.

Dispatch: I’m direct. Wagon 4 is advising nothing showing side c, smoking showing sides b and d, from the east. Wagon 4 has command at 8:51.

Unit (8:52:03): Wagon 1 with 4.

Dispatch: Wagon 1 with 4 at 8:52...Battalion 603 in route at 8:52.

Unit (8:52:31): Fauquier Tanker 1 responding with 2.

Dispatch: Tanker 1 responding with 2 at 8:52.

Unit: AC 1 Fauquier responding to structure fire.

Dispatch: AC 1 in route to structure fire at 8:52.

Unit (8:53:22): Wagon 3 with 5 career staff on board.
Dispatch: Wagon 3 with 5 career staff at 8:53.

Dispatch (8:54:10): Engine 603, Tanker 603 at 8:54.

Unit: Tanker 3 responding with 2.

Dispatch: at 8:54.

Unit (8:54:40): (radio keyed, only background noise)

Dispatch: Wagon 3 your radio’s keyed up.

Dispatch (8:55:00): Box 0401 for the structure fire 4214 Pickett Street, Rescue 1 you’ve been added. Box 0401 for the structure fire 4214 Pickett St. cross street of Jackson St. Rescue 1 you’ve been added respond on 11 charlie, time out 8:55.


Dispatch: Engine 10 3+1 at 8:55.

Unit (8:57:05): Fauquier Medic 603’s responding.

Dispatch: Medic 603 responding at 8:57, you can move your traffic to 11 charlie please.

Medic 603: Copy, 11 charlie.

Unit (8:57:22): Medic 603 is on 11 charlie.

Dispatch: I’m direct Medic 603 at 8:57.

Unit: Fauquier Chief 10, I’m responding.

Dispatch: Chief 10 responding 8:57.

Unit (8:59:54): Tanker 3 to command we’re arriving on location do you have instructions.

Command: Tanker 3 we have our own hydrant here so we don’t need your apparatus. Stage it on John Marshall Highway, bring your man power back.

Tanker 3: ‘Kay, copy.

Unit (9:00:55): Engine 524 responding.

Dispatch: Engine 524 responding at 9:01.

Unit (9:01:14): Fauquier Wagon 3 to Wagon “4” (per mic feedback hard to catch, believe it’s 4).

Dispatch: Wagon 3 are you on the scene?

Wagon 3: That is correct, we’re on location (“we’re on location” repeated through mic feedback).

Dispatch: Thank you.
Unit: Fauquier Battalion 501 is responding on charlie.

Dispatch: Battalion 501 responding at 9:01.

Unit: Tanker 3 is on the scene.

Dispatch: Tanker 3 on the scene at 9:01.


Unit: Rescue 504, Fauquier, we’re responding.

Dispatch: Rescue 504 responding at 9:02.

Unit (9:04:10): Engine 603 to command, do you want us back there on Pickett?

Command: Command to 603 that is correct.

Unit: Wagon 1101 to command.

Command: This is command.

Wagon 1: Wagon 1101 do want us to commit back on Jackson?

Command: That is correct, you can come back on Jackson, next unit I want you to bring a back-up line to side Charlie, per mast fire.

Wagon 1: Wagon 1101 do want stretch line back up to the attic?

Command: That’s correct.

Wagon 1: On back-up line to the attic.

Unit (9:05:22): AC 1 to Fauquier I’m on location, Wagon 4 command.

Unit: Engine 603 on location.

Dispatch: Engine 603 and AC 1 on the scene at 9:05.

Unit (9:06:19): Tanker 1 on the scene.

Dispatch: Tanker 1 do you have traffic?

Tanker 1: That is correct Fauquier, we’re on the scene.

Dispatch: 10-4 on the scene at 9:06.

Unit (9:07:18): Chief 10 on the scene reporting to command.

Dispatch: Chief 10 on the scene reporting to command at 9:07.

Unit (9:07:53): Engine 10 to command do you want us to commit to Jackson st?

Command: Command to last unit do you have traffic for me?
Command: Stay on 55 for now.

**Engine 10**: Direct, Fauquier Engine 10 we’re on the scene reporting to command.

**Dispatch**: Engine 10 on scene at 9:08.

**Unit**: Engine 524 staging at Jackson.

**Dispatch**: Engine 524 staging at Jackson at 9:08.

**Unit (9:08:58)**: Command Medic 603 on scene where would you like us?

**Command**: Command to Medic 603 can you stage on 55 please.

**Medic 603**: Copy we’re staging on 55.

**Unit**: 603 you might want to be on this side of the railroad tracks.

**Unit**: Battalion 501 on the scene

**Dispatch**: Battalion 501 at 9:09.

**Unit (9:09:41)**: Engine 524 to command do you want us to report to the command post?

**Command**: Command to Fauquier.

**Dispatch**: Go ahead command.

**Command**: Give me a rundown of what we have coming.

**Dispatch**: Tanker 603, Prince William Squad 4, Wagon 1 in route.

**Command**: Alright I don’t need Tanker 603.

**Command (9:10:28)**: Fauquier you can go ahead and place 603 in service, they have a hydrant here, not needed. We still have working attic fire.

**Dispatch**: I’m direct, working attic fire, Tanker 603 you’ve been placed in service, Fauquier to Tanker 603 they have placed you in service.

**Tanker 603**: Tanker 603 is direct.

**Dispatch**: 9:11.

**Dispatch (9:11:21)**: Tanker 603 in Service returning to Loudoun at 9:11.

**Unit**: division Charlie Command

**Command**: Command go ahead.

**Division Charlie**: Ladder side charlie side bravo, we still have a considerable amount of good smoke pushing from both the uh bravo and david sides.
**Command:** Command’s direct. Command to Wagon 3 fire attack. You have a status update.


**Unit:** This is Charlie I’m trying to reach Wagon 1 interior. (open mic)

**Command:** Command to Fauquier.

**Dispatch:** go ahead command.

**Command:** stand by. (mic cuts out)

**Unit:** Battalion 501, I’ll be reporting to command.

**Dispatch:** 9:14.

**Unit:** Battalion 603 on scene, same thing.

**Dispatch:** 9:14.

**Command (9:14:58):** Division Charlie command I need a medic unit for a firefighter.

**Dispatch:** Medic 603.

**Unit (9:15:20):** Division Charlie command, Wagon 3 is out of the structure, with two they’re par I still need the medic unit to eval one.

**Command:** Command direct. Do we need a crew to...we’ll leave them on that line.

**Division Charlie:** Affirmative.

**Dispatch:** Fauquier to Command.

**Unit:** Wagon 1 to command.

**Dispatch:** Fauquier to Command.

**Command:** Go ahead Fauquier.

**Dispatch:** do you need a second medic unit sent up there or can you handle with Medic 603?

**Command:** Standby Fauquier.

**Command (9:16:23):** Command to Fauquier, go ahead and dispatch a second medic unit.

**Dispatch:** 10-4 Second medic unit.

**Command:** Command to Medic 603.

**Medic 603:** Go ahead for Medic 603.

**Command:** Alright report side alpha.

**Unit (9:17:16):** Wagon 1 to command.
**Command:** Command go ahead.

**Wagon 1:** Ok, I have two personnel on the outside need a medic unit, I think they’re being tended to now, I have two personnel from Wagon 3, two personnel from Wagon 1, we’re making a push to the second floor, we have fire and smoke conditions on the number 2 floor.

**Command:** Command is direct.

**Unit:** Wagon 4 shut down the orange line, its got a hole in it, shut down the orange line.

**Unit (9:18:24):** Rescue 504 driver to officer what’s your location?

**Unit:** Wagon 1 to Command.

**Command:** Wagon 1 go ahead.

**Wagon 1:** Ok I have Engine 10 pulling low, Engine 10, two from Wagon 3 and two from Wagon 1, on the number 2 floor, copy?

**Command:** Command copy.

**Unit:** Division Charlie I’ve got those units tracked, we also need the power secured and any gas or propane that needs to be secured as well. We need more units for that.

**Unit (9:20:01):** Wagon 1 to command. I need that orange line charged, it looks like it’s dying in the stairwell.

**Command:** Command to Wagon 1 the orange line is ruptured, on side alpha that line is shut down now. We’re advancing at 1” and ¾ line to the structure right now.

**Unit (9:21:43):** Chief 10 to Fauquier, I’ll be assuming Jackson St command.

**Dispatch:** Chief 10 assuming Jackson St. command at 9:21.

**Unit (9:23:26):** Division Charlie Wagon 1.

**Unit:** was the traffic for Wagon 1 I couldn’t copy.

**Division Charlie:** that’s affirmative Wagon 1, side bravo’s improved, we’ve still got a moderate amount of smoke pushing, side Delta is the better side, with the lighter smoke and heat pushing out. Do you need any resources interior?

**Wagon 1:** Yeah I was wondering about the second line, the second line is broke. We need another line up here, and uh we’re getting fire structure delta side, and light is improving. I’m pushing to delta side give me a minute.

**Unit:** Division Charlie direct, Charlie to command.

**Command:** Command go ahead.
**Division Charlie:** I have 3 from 524 making entry to secure power, interior is requesting a second hand line, side Charlie for entry to replace the line that’s down.

**Command:** Fine, I’ll work on getting you a line also Rescue 504 are going into the delta section to start opening those walls there. Is that alright?

**Division Charlie:** Ok, are they going to be assigned to Charlie?

**Command:** I didn’t copy.

**Division Charlie:** Just confirming you’re going to assign them to division Charlie.

**Command:** Correct, they’re going to be division Charlie.

**Unit:** Command Medic 603.

**Unit:** Wagon 3 to command, brief side Charlie.

**Medic 603:** Command Medic 603.

**Unit (9:35:21):** Wagon 3 to command do a personnel brief, clear the structure side Charlie.

**Medic 603:** command Medic 603

**Command:** Medic 603

**Medic 603:** We’re leaving the fire, transporting one to Fauquier, recommend you bring in two additional medic units.

**Command:** Copy leaving with one to Fauquier requesting additional two thank you.

**Command:** Command to Fauquier, what medic units have I got coming?

**Dispatch:** Medic 5 is in route to you.

**Command:** Alright, all medic units available, go ahead and start heading that way as well. I have marked on each side need two medic units.

**Dispatch:** I’m direct starting Medic 10 that way at 9:26. Fauquier to Medic 10.

**Division Charlie:** Division Charlie command

**Command:** Division Charlie.

**Division Charlie:** Power secure, three from 524 out, I also have two from Wagon 3 come out they’re reporting to rehab.

**Command:** Power secure, those from 524 coming out, who was the second unit?

**Division Charlie:** two from Wagon 3, they’re out at rehab.

**Command:** two from Wagon 3, thank you.
Command: command to Fauquier, when Medic 5 get here I’ve got one burn patient for them to transport as well, and then when Medic 10 arrives they’ll be my fire rescue.

Unit (9:27:49): Command to Fauquier did you copy that?

Dispatch: Yeah I copy your traffic, you have one burn patient for Medic 5 when they arrive at 9:27.


Command: division Charlie.

Division Charlie: Wagon 1 is out with two for rehab. Rescue 504 crew has replaced them interior with the division.

Command: Rescue 504 is replacing Wagon 1, Wagon 1 is reporting to rehab.

Unit (9:29:12): Rescue 504 from command.

Unit: Rescue 504 to division Charlie.

Unit: Rescue 504 I have you working interior, do you have any other crews with you?

Unit (9:29:31): Rescue 504 to division Charlie.

Division Charlie: Division Charlie.

Rescue 504: Rescue 504 is with 1110 we’re on the second floor, opening up the void spaces on the Charlie delta quadrant at this time.

Division Charlie: Charlie, I copy yourselves, 504 with the crew from 1110, working on opening up void spaces, break, Command are you direct.

Command: Command’s direct Charlie, 504 and 1110 are operating on the second floor opening up void spaces.

Division Charlie: Command I also have Engine 524 in standby on Charlie.

Unit (9:31:24): Medic 5 to command we’re approaching the scene now.

Command: Alright come in the driveway behind Tanker 1, the patient will be on side Charlie.

Medic 5: Medic 5 copy.

Rescue 504 (9:32:06): Rescue 504 to Division Charlie.

Division Charlie: 504 this is Charlie go ahead

Rescue 504: I think it would be best if we got a crew from the outside to remove the siding, the Charlie quadrant second floor, beta side. To get to the fire in the crawlspace that we’re working on now, if they can make attack from the outside.
Division Charlie: ok I’m good on your message, all that space is shingles, there’s no siding

Medic 5: Medic 5 on scene.

Rescue 504: ok

Dispatch: Medic 5 on scene at 9:32.

Unit (9:33:53) Division Charlie from command.

Division Charlie: Charlie go command.

Command: I’ve got some smoke coming from the crawlspace on the delta side, if you could have 524 check the crawlspace for hidden fire.

Division Charlie: confirm command. They probably could get a hand line over here as well, that way they can take care of that also.

Command: Hand line coming back now.

Rescue 504: rescue 504 to division Charlie, 1110 has exited the building.

Division Charlie: Division Charlie I’m direct. The crew with two from 1110 is out of the structure command. If you have another available crew we’ll swap them out for rehab.

Command: Copy 1110 with two out.

Command (9:36:37): Division Charlie from Command.

Division Charlie: Command, Division Charlie go ahead.

Command: I’m sending you 1103 with three personnel to replace 1110.

Division Charlie: command I copy sending three from 1103 to division Charlie.

Rescue 504: Rescue 504 to division Charlie.

Division Charlie: Charlie go 504.

Rescue 504: We’re too big to get to it from the inside, we’re gonna need a crew to hit it from the outside, it’s coming out of the framework. Starting in the first floor delta quadrant you’ve got fire started in the wall joist you’ll need a line on that as well.

Division Charlie: Alright, as soon as 1103 reports to Charlie I’ll send them to pickup that second hand line. We’ll see what we can do to get a crew assigned to the exterior to open that up for ya.

Unit (9:38:00): Charlie to command

Command: Division Charlie.
**Division Charlie**: If we have another crew available, we could assign them to the exterior, see what we can pull along the ridgeline and eaves, to help gain access to both exterior and interior attack for 504 interior.

**Command**: Copy all crews currently in rehab, I’ll see what I can pull.

**Rescue 504**: Rescue 504 to division Charlie.

**Division Charlie**: 504 go.

**Rescue 504**: I have 1 firefighter coming out, running out of air, driver Rescue 504. Crew of 4, will be operating with three interior.

**Division Charlie**: Rescue 504 Charlie, I’ve got your driver out, you still have three interior.

**Rescue 504**: affirmative.

**Medic 10**: Medic 10 on scene.

**Dispatch**: Medic 10 on the scene at 9:39.

**Unit (9:40:10)**: Command to Medic 10

**Medic 10**: go ahead command

**Command**: have you arrived on scene yet.

**Medic 10**: yeah we’re staging at the end of your road.

**Command**: come up the driveway, directly behind Tanker 1, you’ll see my vehicle. Come up beside my vehicle, and bring your stretcher from the outside out.

**Medic 10**: copy.

**Unit (9:40:52)**: Medic 5 to Fauquier.

**Dispatch**: Fauquier go ahead.

**Medic 5**: We’ll be transporting 1 to Fauquier hospital, and notify the SDO that we are transporting one DFREM personnel to the hospital.

**Dispatch**: 10-4 we will.

**Unit (9:42:57)**: Inaudible radio traffic.

**Division Charlie**: Division Charlie to 504 are you trying to reach me?
**Rescue 504**: Affirmative, we’re gonna need a crew, overhaul crew with a hand line in the alpha bravo quadrant as well while we finish in the Charlie delta quadrant, we’re gonna have to come out we’re running out of air in a second.

**Division Charlie**: 504 I’m direct. Break, Charlie to command, we’re gonna need a crew to replace 504 interior, so they can complete continue salvage and overhaul. Command disregard, I’ll reassign 524.

**Command**: Division Charlie from command.

**Division Charlie**: command go ahead.

**Command**: Clear 1103 from rehab, give them a few minutes to do air pack exchange.

**Division Charlie**: Charlie I’m direct. I’ll get 1103 working exterior, they can access. 524 is going to relieve crews from 504 so they can come out for rehab.

**Rescue 504**: Charlie this is 504 we’ll be leaving with three structure side alpha, reporting for rehab.

**Division Charlie**: Charlie I’m direct 504, out with three side alpha for rehab.

**Unit**: 504 out with three.

**Unit (9:45:41)**: Rescue 504 officer to driver, bring a few cylinders back with you.

**Rescue 504 (talking between themselves) (9:49:43)**: Rescue 504 officer to driver, bring a few tanks back with you. – Last traffic Rescue 504 – Bring a few tanks back with you – copy.

**Unit (9:52:49)**: go ahead.

**Division Charlie**: checking your status, are you guys ok, do you need any more resources, I’m waiting on the crew from 1110 to be assigned to a task.

**Engine 524**: I think we’re good up here.

**Division Charlie**: Copy

**Division Charlie (9:53:41)**: division Charlie command. Three from 524 out of the structure, one with a low alarm for air.

**Command**: Did not copy the unit, low air alarm.

**Unit (9:54:25)**: Command to Fauquier.

**Dispatch**: Command go ahead.

**Command**: contact Prince William county, collapse unit, from Company 504 to shore up the structure.

**Dispatch**: 10-4 we will call them for you and advise.

**Command**: That request came through Prince William BC on the scene to go through their ECC to get that done.
Dispatch: 10-4, we’ll advise.

Unit: Command to BC on the scene they’re ok with that.

Unit (9:55:59): Medic 5 at the hospital

Dispatch: Medic 5 at the hospital at 9:56.

Unit: (9:57:14): Division Charlie to command

Command: Division Charlie.

Division Charlie: When available could you send the chief from 1104 back to division Charlie.


Dispatch: command go ahead.

Command: fire’s under control, extensive amount of overhaul. Do you know about the collapse unit, I’ll probably release units shortly. I’ll let you know as soon as I can about what we want to send back.

Dispatch: copy fire’s under control at 9:58.

Unit (9:59:18): Fauquier Tanker 1’s ready.

Dispatch: Tanker 1 ready at 9:59.

Unit (9:59:52): Charlie to command.

Command: go ahead.

Division Charlie: when you send 1110 can you also send them with their meter so we can evaluate the IDLH atmosphere to continue operations interior.

Command: you read my mind, meter’s coming.

Unit (10:00:37): Prince William Engine Collapse 504 responding on 11charlie.

Dispatch: Prince William Engine Collapse 504 responding 1000 hours.

Unit (10:03:46): Medic 10 to command.

Command: If you could have crews set up a rehab area between Wagon 1 and Engine 603 so they can get vital supplies.

Unit (10:05:30): Medic 10

Medic 10: Medic 10.

Unit: if you could move rehab to side alpha of the structure please and we’re gonna need some water.

Unit (10:06:30): Division Charlie command
**Command**: division Charlie.

**Division Charlie**: I have all crews out of the structure and accounted for. I’ve passed the message they are all going between Wagon 1 and 603 to be evaluated before going back to work.

**Command**: Copy all units in rehab.

**Unit (10:10:14)**: Command to Fauquier.

**Dispatch**: go ahead.

**Command**: All units out of the structure, in rehab or in staging. Suspending operation for the FMO, awaiting the collapse unit.

**Dispatch**: Thank you.

**Unit (10:21:29)**: Command to Wagon 1110’s officer.

**Engine 10**: Engine 1110 officer go ahead.

**Command**: Are you inside yet?

**Engine 10**: negative awaiting person from Wagon 4.

**Command**: say again I didn’t copy.

**Engine 10**: negative we have crew member from Wagon 4 entering to meter the structure before we enter.

**Command**: Do I have two crew members from Wagon 1110 upstairs?

**Engine 10**: repeat that command.

**Command (10:22:32)**: Engine 10’s officer come over by command.

**Engine 10**: copy on my way.

**Unit (10:23:13)**: Collapse 504 to command.

**Command**: go ahead.

**Collapse 504**: We’re on the scene where would you like us?

**Command**: Standby I’m gonna send someone out there to show ya.

**Collapse 504**: ok where’s the nearest main and sewer?

**Command**: alright I’m sending a firefighter out to show you get back over close to where we want you.

**Collapse 504**: direct command.

**Unit (10:24:21)**: Collapse 504 I need you to back in.
Unit (10:24:45): Engine 1110 driver to command.

Unit: Collapse 504 I need you to back in.

Unit (10:26:06): Wagon 10’s officer what was your meter reading?

Wagon 10: 25 parts per million.

Command: you said 25 parts, well, till we make sure some people ... we’ll keep them on air until we can a lower number.

Wagon 10: direct.

Unit (10:27:18): Engine 10’s officer to Engine 10’s crew in the inside.

Engine 10: Go ahead.

Engine 10 Officer: can you exit the structure and put on your SCBA for IDLH please.


Engine 10: go ahead.

Command: I need you to go back, make sure you get that corner again, to that piece we were talking about from the inside. I’ve finally got the crews to go up and move the fascia boards but it looks like it’s coming from wall just below that piece.

Engine 10: ok we’re going now.

Command: Command to Wagon 1103, how long till you guys pull that gable?

Wagon 3: we’re working on that now.

Command: Wagon 1110, where yours at that peak, towards the alpha section, come down about 10 feet in your roof line you got it pushing out down there as well.

Wagon 10: ok.

Dispatch: Fauquier to command.

Command: go ahead Fauquier.

Dispatch: Medic 603 has cleared the hospital would you like them to return to the fire ground?

Command: We have Medic 1110 here now so we’re good.

Dispatch: 10-4.

Unit (10:34:03): Command to Fauquier

Dispatch: Fauquier go ahead.

Command: can you have Medic 603 fill in at Station 1104.
FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY MANAGEMENT

Effective Date: 11/2/2009
Subject: Single Family Dwelling Operations Manual
Revision Date: Standard Operating Guideline No: 2.06

APPROVED: FIRE RESCUE CHIEF
FRA PRESIDENT: 

PURPOSE:

To adopt and implement the Northern Virginia Fire/Rescue Department’s Operations Manual dealing with Single Family Dwelling Fires (NOVA SFD Manual).

BACKGROUND:

The Northern Virginia area fire and rescue departments have been utilizing such manuals for over a decade. The information, strategy and tactics, initial incident command objectives, and various other incident management concepts contained in the manuals represent years of planning and development. This has been completed through numerous incident responses, local and regional pre-incident planning and lessons learned throughout the region and county.

By having the area fire and rescue departments operate on incident scenes using the same manual, consistency and overall situational awareness are known and understood by all operating at a single family dwelling fire. Fauquier County is considered part of the NOVA Fire and Rescue Departments, and by implementing the SFD Manual, allow for mutual aid companies (receiving and assisting) consistency as well.

GENERAL:

All personnel shall become aware, understand, and implement the Single Family Dwelling Fire Operations Manual. Fauquier County cannot meet the full complement of apparatus needed for an assignment, but the intent is met and relayed through an SFD Manual Addendum created by the Fauquier County Fire Operations Group.

PROCEDURE:

The Fauquier County Fire and Rescue Association in conjunction with the Chiefs Group and the Fauquier County Department of Fire, Rescue, and Emergency Management, hereby adopt the Northern Virginia Fire/Rescue Department’s Operations Manual: Fires in Single Family Dwellings (SFD Manual) along with attached addendum.
FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY MANAGEMENT

Effective Date: 11/2/2009
Revision Date: Standard Operating Guideline No: 2.06
Subject: Single Family Dwelling Operations Manual

APPROVED: FIRE RESCUE CHIEF

FRA PRESIDENT:

All members in the Fauquier County Fire and Rescue System (career and/or volunteer) shall adhere to the procedures and roles/responsibilities outlined in the SFD Manual.
ADDENDUM TO FIREFIGHTING AND EMERGENCY OPERATIONS VOLUME II-FIRE OPERATIONS BOOK I - FIRES IN SINGLE FAMILY DWELLINGS

The following sections should read as follows:

5.2.1 The minimum resources assigned to incidents of reported fires in these types of structures are:
- 4 Engine Companies
- 1 Truck Company/Rescue Company
- 1 EMS Unit
- 1 Battalion Supervisor or Equivalent

5.2.2 The assigned resources for fires in single-family dwellings in areas without hydrants should be modified to include:
- 3 Tanker
- 1 Tanker Support Engine Company

The following section needs to be inserted:

5.2.3A 5th Engine is to assume fill site unless otherwise directed by the incident commander.

The following section should read as follows:

5.2.7 Units encountering delays in responding should communicate this immediately, along with changes in arrival order that will affect assignments. The dispatcher should notify the responding Battalion Supervisor or equivalent of these changes. The Battalion Supervisor or equivalent should be advised of and acknowledge companies becoming available and being added to the incident.

5.3.1 Typical positions and initial actions are listed below:
- First due engine - pull past the involved structure or stop short, allowing room for the truck to have the front; on-scene report, layout, size-up, situation report, initial attack line, search as the line is advanced.
- Second due engine - water supply, back up line.
- Third due engine - secondary water supply, check for fire extension, visual inspection of side C, and possible exposure line.
- Fourth due engine - R.I.T. (May assist with outside truck duties)
- First due truck/rescue - position in front of the structure (the Rescue shall still position away from the structure leaving room for a truck company); force entry if needed, search, ventilation, ladders.

5.3.3 The truck company shall take a position at the most strategic location that will allow for rapid placement of ladders (front and rear), and entry into the structure while the rescue company should position to allow rapid access to the structure while maintaining access and egress to the incident, for additional resources.

6.3.3 Should interior operations be initiated, the first engine company will begin operations following departmental two-in/two-out guidelines.
PURPOSE:

To adopt and implement the Northern Virginia Fire/Rescue Department’s Operations Manual dealing with Rapid Intervention Team (RIT) Command and Operational Procedures.

BACKGROUND:

The Northern Virginia area fire and rescue departments have been utilizing such manuals for over a decade. The information, strategy and tactics, initial incident command objectives, along with various other incident management concepts contained in the manuals represent years of planning and development. This has been completed through numerous incident responses, local and regional pre-incident planning and lessons learned throughout the region and county.

By having the area fire and rescue departments operate on incident scenes using the same manual, consistency and overall situational awareness are known and understood by all companies operating on a possible Mayday event requiring the use of a RIT. Fauquier County is considered part of the NOVA Fire and Rescue Departments, and by implementing the RIT Manual, allow for mutual aid companies (receiving and assisting) consistency as well.

GENERAL:

All personnel shall become aware, understand, and implement the Rapid Intervention Team Command and Operational Procedures Manual as needed. Fauquier County cannot meet the full complement of apparatus needed for the various assignments as outlined in the RIT manual. Additional apparatus and staffing will have to be requested through mutual aid agreements—which are currently in place and active.

PROCEDURE:

The Fauquier County Fire and Rescue Association in conjunction with the Chiefs Group and the Fauquier County Department of Fire, Rescue, and Emergency Management, hereby adopt the Northern Virginia Fire/Rescue Department’s Operations Manual: Rapid Intervention Team Command and Operational Procedures.
Appendix D: NOVA FD Operation Manual for Single Family Dwellings

FIRE AND RESCUE DEPARTMENTS OF NORTHERN VIRGINIA
FIREFIGHTING AND EMERGENCY OPERATIONS
MANUAL

Single-Family Dwellings
Third Edition

Issued: November 2002
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- Arlington County
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- Metropolitan Washington Airports Authority (MWAA)
- Prince William County
- Stafford County

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PREFACE

More than 2,500 people die each year and over 20,000 are injured as a result of fires in this country. The majority of these deaths occur in residential occupancies. Statistically, the fatalities in single-family dwellings in Northern Virginia seem to mirror the national average.

The purpose of this manual is:

- To describe single-family dwellings, which comprise a large portion of the structures throughout Northern Virginia.
- To point out the construction features of such buildings with regard to protecting life and extinguishing fires.
- To describe the hazards associated with these types of structures and recommend precautions that should be taken.
- To establish standard tactics for fires occurring in such structures.
- To establish tactics for operations for engine, truck, and rescue companies for fires occurring in such structures.
- To reduce the loss of life and property by establishing a standard method of operation for companies combating fires in single-family dwellings.

The following are key changes that are found in this third edition of the *Single-Family Dwelling Manual*:

- Expanded the definition of size up.
- Changed terminology from backup line to second line.
- Added content on soffit and deck attack.
- Added a description of cluster homes.
- Changed some of the tactics for basement fires.
- Added content on wind-driven fires.
- Expanded the section on attic fires.
DESCRIPTION AND CHARACTERISTICS

The phrase single-family dwelling is widely recognized throughout the fire service. In Northern Virginia, a single-family dwelling simply means a detached structure constructed to house one or more families in a single place of residence.

The single-family dwelling may be found in several different settings, but most commonly found as part of a housing development surrounded by similar type dwellings. This type of structure may also be found situated somewhat alone on a property in a rural setting. Access may be simple or complex.

The interior area of the structure may also vary. The construction cost and value dictate the square footage. Expect many extremes throughout a typical first response district. Knowledge of the company’s first response district is the only sure way to be familiar with these types of structures.

These types of dwellings may vary in height from one to three stories. The grading surrounding the dwelling may affect the height.

Single-family dwellings may be serviced by several utilities; water, sewer, gas, electric, and communications systems are most often found within these occupancies. In larger structures firefighters may find commercial utility installations or multiple installations of the same utility.

Construction Styles

There are several common types of single-family dwellings found in the Northern Virginia region: colonial, rambler or ranch, Cape Cod, split foyer, split level, balloon frame, hybrid, McMansions/estate homes, and cluster homes.

Large single-family mansion fires are not common, but require unique tactical considerations.

Colonial Style

This style of home usually has two stories above ground. This home may or may not have a basement. The front door leads into the main entryway and stairwell for the structure. All rooms will typically branch off of this entryway. Living and dining areas are usually on the first level and bedrooms are on the second floor. An example is shown in Figure 1.
Ranch or Rambler

Ranch or rambler style homes are usually one story and may or may not have a basement. The floor plan is typically very open and the presence of large windows should be expected. Additionally, these homes will often have large extended eaves. An example is shown in Figure 2.

Cape Cod

This style home is typically one-and-a-half stories above ground. The front door provides access to the main stairwell leading to the upper bedrooms and basement, if present. The top floor will contain knee walls and dormers. An example is shown in Figure 3.
Split Foyer

A split foyer style home is usually two stories with stairs at the foyer level, which will allow access to both levels of the home. The presence of living quarters could be expected on the basement level. An example is shown in Figure 4.

Split Level

A split level style home is two to three levels. The front entry is on one level between an upper and lower floor, a short set of stairs will be encountered upon entry that will lead upstairs and downstairs. Bedrooms are typically located on the second floor level. An example is shown in Figure 5.
Balloon Frame

This style home is similar to the layout of a colonial house with exception of the wall construction. Balloon frame construction walls are built with long, continuous studs that run from the basement to the attic. The presence of the fire stops between floors is non-existent, leading to rapid fire spread. An example of this type of construction is seen in Figure 6.

Hybrid

Hybrid style houses are a new genre that is becoming more popular. They can be a variation of several different styles. Hybrid homes are typically wood frame and are two separate occupancies separated by a fire wall in a one story portion of the structure. This space can be a storage shed, garage or breezeway. Consideration shall be given to potential for extension to exposure occupancy. An example is shown in Figure 7.
Figure 7: Hybrid single-family dwelling from Side Alpha (left) and Side Charlie (right).

**Mcmansion/Estate Homes**

McMansion is a slang architectural term that describes the recent large-sized homes that have been populating the Northern Virginia region within the past 20 years. These homes can be encountered in subdivisions solely devoted to large homes or in subdivisions with existing homes much smaller than the McMansion. The square footage of these homes typically ranges from 3,000 to well over 6,000 square feet. An example is shown in Figure 8.

Regardless of their geographic location, these homes share common characteristics that affect fire ground operations; these structures are typically wood frame with a large amount of open space in the attic area. Additionally, due to the sheer square footage, they can have HVAC components in the attic area to facilitate the multiple zones necessary to heat/cool the area. This is a dead load that could have adverse effects on the companies operating below if fire involves this area.

The interior layout of the structure is similar to Colonial-style homes, but significantly larger. The first floor typically consists of living and dining areas with bedrooms being located on the upper floors. Most rooms will have large vaulted ceilings that will aid in the fire travel. Additionally, the presence of large open foyer area should be expected.
Figure 8: Single-family dwelling with large square footage, often referred to as an estate home or McMansion.

Due to the large footprint of the house, a lap by the first arriving engine officer may not be possible, but must be completed prior to entry. Consideration shall be given early into the incident for another company to view and report on conditions from all available sides to assist in developing a safe and effective firefighting plan.

Cluster Homes

Cluster homes are a community of single-family detached homes, usually constructed of lightweight building materials that are in a very close proximity to each other, usually ten feet or less. Figure 9. They are generally built using the frame method and typically have vinyl or wood siding, zero clearance chimneys, and narrow travel lanes separating each structure. These homes are spacious and have well-designed, open floor plans which can provide rapid fire spread throughout the structure. A high potential for lateral fire spread exists in cluster home developments because firewalls are nonexistent. There is a higher potential for collapse compared to other residential structures.

Figure 9: Cluster homes.
There are many types of cluster homes styles throughout Northern Virginia. These homes can be one to three stories in height with windows facing the exposures, leading to rapid horizontal fire spread. These homes present many challenges to the first alarm units depending on the involvement of the structure. Exposures are a major problem concern due to their close proximity, Figure 10.

Figure 10: Apparatus positioning is often difficult in cluster home communities.
CONSTRUCTION

Types

Wood Frame construction is one of predominant construction types generally found throughout Northern Virginia. *The Firefighter’s Handbook* describes Type V Wood Frame Construction as that “which the exterior walls, bearing walls, columns, beams, girders, trusses, arches, floors, and roofs are entirely or partially of wood or other approved combustible material smaller than the material required for Type IV construction.”

Platform-frame construction, Figure 11, is the most common type; however, there are many balloon-frame-constructed homes in some areas, Figure 12. *The Firefighter’s Handbook* describes platform-frame construction as, “a style of wood frame construction in which each story is built on a platform, providing fire stopping at each level,” and describes balloon frame as, “a style of wood frame construction in which studs are continuous for the full height of a building.”

The use of lightweight trusses has become commonplace. The truss can be found in several applications in a single-family dwelling.

The most prudent action a company can take is to become familiar with the type of construction used during the building of homes in their response district.

![Platform Frame Construction](image)

*Figure 11: Graphic representation of platform frame construction.*

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2 Ibid.
Figure 12: Graphic representation of balloon frame construction.

Roofs

Roof framing for these structures generally falls into two broad types: conventional and lightweight.

Roof decking will generally be 4’ x 8’ sheathing. Dimensional lumber, typically 1” x 6” or 1” x 8” boards, may be found in older structures.

Roof covering will generally be shingle over paper, or a variation thereof. The vast majority will be either asphalt shingles or cedar shakes.

The most common style of a roof is the peaked or gable roof, or a variation thereof. The pitch on this type of roof may vary.

Attics

Attics are generally of two styles. The attic space found when a roof is constructed of trusses is usually non-finished without a full floor. This space is commonly used for storage. The attic space found when a roof is constructed of rafters can be finished and floored. This space may be used for storage or as an occupied living area, usually a bedroom. In Cape Cod-style homes, the presence of knee walls should be suspected.

Most attics are used for storage only. Access can be gained by one of three ways: a scuttle located in the hallway outside the bedroom or in the master bedroom closet, a pull-down
stairway, or a constructed stairway (found mostly in older homes). Constructed stairways are normally accessed through a doorway and lead to a floored attic. In large homes or in remodeled homes there may be two or more access scuttles to one or more attic areas.

Walls

Dimensional lumber, 2” x 4” in size, is generally used for framing in wall construction. Larger sizes may be found where added insulation is desired. Metal studs may occasionally be encountered.

Exterior sheathing of many types may be used. Insulated material or wood are common types of sheathing.

Exterior coverings may include, but not limited to, wood, brick, vinyl, aluminum, and asbestos.

Interior coverings for walls are generally made of gypsum, which is commonly referred to as drywall. Lightweight paneling may also be found in some areas. Plaster and metal or wood lath wall construction may be encountered in some older homes.

Knee walls will be found in units with lofts and dormers and will contain voids or may serve as a storage area. Knee walls may contain hidden fire and must be opened early to check for fire extension. Figure 13.

![Figure 13: Cross section showing a knee wall.](image)

The insulation material used within exterior walls is generally fiberglass; wood cellulose, rigid plastic foam, or other blown-in material may also be found.
Floors

Floor beams are generally of two types: wood timbers or steel I-beam, with engineered I-beams being the norm since the 2000s. Engineered I-beams exposed to fire fail within five minutes and all attempts need to be made to ensure whether they have been impinged upon. Wood or steel columns, or masonry walls or piers may support them.

Joists are generally of three types: dimensional lumber, truss, and plywood I-beams. Dimensions will range in size depending on the length of the span and the load the truss will carry. The truss is designed to carry a load over the greatest span using the least amount of material. Figure 14.

![Figure 14: Examples of wooden I-beams and floor trusses.](image)

Floor decking is generally of two types: hardwood boards or plywood sheets.

Floor covering may vary greatly depending on the builder’s constraints or the buyer’s preference. Common types are carpet, vinyl, or tile.

Basements

Single-family dwellings will be set on a concrete slab or will have a crawl space or full basement underneath. Basement entry may be from an exterior and/or interior stairway.

Slab and basement floors are commonly poured concrete. Crawlspace floors will usually be dirt or gravel.

Crawlspace and basement walls are generally built of block or poured concrete. If the basement is finished, wood or metal studs covered by drywall or paneling may be found.

Unfinished basements allow the fire to directly attack the structural components and quickly enter void spaces.

Some homes may have in-law apartments or rental apartments in the basement, which may or may not have access from the floor above and only have a separate exterior entrance. The access to the basement from the upper floor may be blocked by a locked door or have an illegally constructed wall at the base of stairway excluding fire department access.
Windows

A common style of window used in single-family dwellings is a double-hung, sliding-sash type. The glazing may be of single, double, or triple thickness. Personnel should be cognizant of the inherent design characteristics associated with triple thickness window construction will lead to elevated heat conditions. Many other styles of windows may be found and should be noted during preplanning and size-up opportunities.

Casement windows create a special hazard. These types of windows are found in construction dating from the late 1940s to the late 1960s. These windows have steel frames set in concrete or masonry. While breaking all the glass in the windows will ventilate the affected area, entrance and exit through the remaining window frame is physically blocked. The window must be opened by lifting a latch and rotating a crank. Removing the frame with force would be very difficult under adverse conditions, and would require the use of heavy forcible entry tools. Firefighters should note these windows in their size-up upon arrival at a structure fire.

Egress Window

Some homes are designed with sleeping quarters in the basement. By code there must be two exits for these bedrooms. The second exit may be a larger than normal size window.2 When making your rap of a structure and egress windows are noted, this may indicate sleeping quarters in the basement. The height of the window installation is also important. The bottom of the window opening should be no more than 44 inches off the floor. Outside, an oversized window well is required. Figure 15. It will need to be at least 36 inches wide and extend 36 inches out from the window. The window well height is also limited to 44 inches, as measured from the well floor. If a deep basement forces a deeper window well, most codes will allow a concrete block on the floor of the well to serve as a step, as long as it doesn’t interfere with the window’s opening.

Figure 15: Egress window.

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2 An article describing basement egress windows can be found online at http://www.popularmechanics.com/home/improvement/12255967?page=2.
With security being a concern to many homeowners, some have installed bars over the window opening. Security bars or grates are an excellent deterrent to intruders but they also may trap occupants and firefighters who need to egress through these openings.

Normally, older style bars and grates were completely set into the exterior wall with no way of opening or removing them. Newer installations should have quick-release devices to allow them to be opened immediately in an emergency. Without compromising security, these devices are operated from inside and allow the bars to be opened for emergency escape. The quick-release devices are designed to be used without a key and are easy to operate. Manufacturers and installers of security bars offer several solutions to residents to protect themselves from crime and yet remain safe during a fire. Some solutions include a handle device or a push button device. Release devices vary by manufacturer, Figure 16.

**Figure 16: Egress window releases.**

**Doors**

Exterior doors are generally of two types: solid wood or insulated metal. Exterior doors are inward opening. Conventional forcible entry will gain access in most cases. The hydraulic door opener is not recommended on single-family dwellings because of its lack of practicality. It is designed for multiple, inward-opening doors. If conventional forcible entry is required, standard entry methods will accomplish the task.
Interior doors are commonly hollow-core wood doors. Inward opening doors are typically bedrooms and bathrooms. Outward opening doors can be closets or the stairs leading to the basement.

There are three standard locks on exterior, single-family dwelling doors. These are mortise, rim, and tubular dead bolt. Mortise locks used to be exclusive on older construction but have become popular once again in newer homes.

**Garages**

Garages may be attached to or detached from a single-family dwelling. Attached garages are a greater concern to operations, as they can expose the entire structure to possible extension from a fire originating in a garage.

Garage floors will be of poured reinforced concrete, and may have a short masonry block wall on some of the sides. The remainder of the garage will be constructed in the same manner as the dwelling to which it is attached. This is most commonly wood frame construction.

The party wall shared by the garage and the living area is not required to be fire-rated, and should not be considered as such. According to the International Residential Code, “Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1(3/4) inches (35 mm) in thickness, solid or honeycomb-core steel doors not less than 1(3/8) inches (35 mm) thick, or 20-minute fire-rated doors, equipped with a self-closing device.”

The attic of the garage may not be floored and/or finished. If there is living space above the garage the ceiling is required to be fire-rated. A vehicle or contents fire in a garage with an unfinished attic will allow for rapid fire extension to other areas of the structure. The presence of a finished living area over the garage presents a serious life hazard.

The overhead entrance door to the garage and its mounting hardware will not be fire-rated. These types of doors are known to collapse when left open and exposed to fire.

Open garage doors have closed without warning due to fire conditions and have trapped firefighters inside. All garage doors should be secured to prevent this problem. A set of vice grips works well for this also this may be accomplished by placing a tool into the track. The most definitive option to securing the door open is to bend the track with a hand tool preventing the door from closing. Personnel may also be able to disable the door by removing power or disengaging the driving motor.

**General Features**

Interior stairways may be open from the lowest living level to the highest. The type varies, but the most common is a straight run, vertically stacked stairway. Larger homes may have multiple

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stairways and may be remote from the front entrance (such as access stairs to upper floors from a kitchen area).

Despite the vast range of total square footage available in single-family dwellings, the degree of compartmentation created by the number of separated rooms (bedrooms, kitchens, etc.) makes the individual compartments relatively small.

Most single-family dwellings have four sides and are rectangular in shape. Two parallel exterior walls are load bearing and the other two are not. There is generally one interior load-bearing wall located centrally between, and parallel to, the exterior bearing walls. Except for unusual circumstances, the long wall will be the load-bearing wall.

Fireplaces and chimneys may be found in these types of dwellings. These may be constructed of masonry or metal, each having particular inherent hazards. The fireplace and/or chimney may be in the center of the structure, or as part of an exterior wall. Many of the newer constructed homes will incorporate zero-clearance chimneys into the home design for cost and aesthetic reasons. Personnel should recognize this construction feature and anticipate extension into void spaces if fire has involved the flue.
HAZARDS

Life Hazards

As stated in the beginning of this manual, most deaths related to structure fires occur in single-family dwellings. This fact dictates the priority of life safety when dealing with this type of occupancy and, thus, the need for information in executing tactics.

The potential for trapped occupants exists at all times (day or night) in a single-family dwelling. During the period when occupants may be sleeping their chance of survival is decreased due to their inability to quickly detect and flee from a fire.

The location of the fire in this type of dwelling affects the life hazard. Most fires in single-family dwellings start in the vicinity of cooking or heating appliances. This situation directly exposes the fire floor and those floors above (basically the entire home) and, more importantly, the bedrooms.

The age, physical, and mental abilities of the occupants affect the life hazard. It is common to find people with varying degrees of mobility within single-family dwellings.

The intended use of a single-family dwelling is for a place of residence. The possibility exists that the occupants may not be using the home as intended, therefore, creating other hazards that affect life safety such as a day care center or a clandestine drug lab.

Fire Hazards

The fact that single-family dwellings are generally constructed of wood adds greatly to the fire hazard.

The use of combustible interior finishes and the type of furnishings found within these structures, contributes to the fire loading. Generally, these types of occupancies are considered to have a relatively low fire loading. Fire flow estimates will be based on a flow rate of 10 GPM per 100 square feet of involved area. Therefore, attack lines should be 1½ inches in size.

The presence of highly-combustible siding can greatly affect the fire hazard. Vinyl and asphalt siding may contribute to vertical and horizontal fire spread, and can create a severe exterior exposure problem. Additionally, the presence of fire involving vinyl siding greatly contributes to fire traveling into upper floors or the attic space via the roof soffit.

The presence of interior void spaces may add to fire spread. Vertical and horizontal openings allow smoke and fire to enter and attack the structure itself. Fire that has entered these voids will necessitate the opening of floors, ceilings, and walls. This is especially crucial in balloon-frame construction.

The presence of cooking, utility, and mechanical areas creates the potential for fire. It should also be recognized that in the residential setting, the potential for ignition exists from many sources that include space heaters, pilot lights and burners, and smoking materials.
The presence of fireplaces and chimneys may create a potential for fire extension to unwanted areas of the structure. Improper installation of degradation due to age may compromise the integrity of the components, allowing fire or heat to escape and ignite surrounding combustible members.

When the fuel oil tank or gas meter is located on the interior of a structure you can find its approximate location from the outside. The fuel oil tank will have a fill pipe and vent located on an outside wall near the tank. The interior gas meter will have a vent and may have a gray gas pipe going through an exterior wall to the interior where the meter is located.

Other Hazards

The potential exists for flashover to occur in these types of structures. The amount and type of combustible materials, rate of heat release of the burning materials, and an adequate supply of oxygen allow a fire to progress rapidly to the flashover stage.

The potential for collapse in single-family dwellings as a result of fire is related to two distinct factors: 1) the presence or absence of lightweight construction materials and 2) whether or not the fire is attacking the structural components or contents only.

The greatest collapse potential exists when fire is in the basement attacking the vital structural supports under the first floor. Since there may be no walls or partitions in the basement, large portions of the first floor can collapse into the basement fire area. This condition is exacerbated if plywood I-beams or other lightweight components are involved.

The presence of overhead electrical service wires to the dwelling should be suspected and their integrity assessed. The hazard of this service dropping into the yard is a common one. Should this occur, the Incident Commander (IC) must be advised and all companies operating made aware.

The McMansion or estate home can be larger than some commercial structures and may require commercial utility meters to accommodate the large square footage. It is not uncommon to find a commercial electrical transformer box supplying power to the structure. You may find more than one water meter supplying these structures, they may be together or one at each end of the home. When given the order to control utilities it may require more than one shut off for the water, gas, and electric.
FIRE OPERATIONS

Life safety is the highest priority at all structure fires. The potential for life loss is most prominent in residential occupancies. This objective should be achieved through interior fire containment and primary search. All operational tactics should be assigned to support this strategic goal.

When it has been confirmed that the occupants of the structure are accounted for (self-evacuated, evacuated with assistance, or rescued) the strategic goal should then focus on firefighter safety and fire extinguishment; this information is generally received by the first unit on the scene. Upon arrival, gather information from the occupants who left the building or neighbors standing outside and communicate this information to all incoming units.

In most cases, fire extinguishment should be achieved through proper tactics. At times, size-up will indicate otherwise; however, personnel should anticipate an offensive interior attack. The conservation of property without undue risk to firefighters should be a strategic goal throughout the entire incident.

The rescue problem should be addressed by a thorough interior primary search for life that focuses on the tenable areas adjacent to the fire area, as well as the bedrooms and means of egress. A hoseline should be assigned to the floor to protect crews conducting the search. Coordinated ventilation in this type of structure is critical in facilitating a primary search. This may be achieved through the removal or opening of selected windows where occupants might be located.

If the EMS unit is staffed with members trained as firefighters and there is no need for the treatment of trapped or injured occupants, this unit may be used as the “outside two,” or assigned to other duties as determined by the IC. If this action is taken, another EMS unit shall be requested to the incident for the treatment of injured firefighters or occupants.

The interior exposure problem should be addressed through rapid containment of the fire. This includes the advancement of an interior attack line to protect any occupants within the structure, focusing on the interior stairway if present or other vertical voids. The interior fire will be of two types: fires involving only the contents or fires that involve the contents as well as structural members. The latter scenario provides the means for fire to extend throughout the structure.

The exterior exposure problem should be addressed through the use of the proper tactics.

The confinement of the fire should be achieved through the use of the proper tactics. If it cannot be ensured that rapid extinguishment will be achieved, then it is imperative that the hoseline(s) is located in such a way as to protect the occupants. Personnel shall remain cognizant that crews operating above the fire will be considered occupants.

The extinguishment of the fire should be achieved through the proper selection, placement, and application of the attack line(s). The compartmentalization generally found within single-family dwellings and the fire loading suggests that the ¾-inch attack line should be effective in
extinguishing most content fires. Fires involving structures of this type of occupancy may require the support of several equally effective and mobile lines.

When large GPMs are required on the exterior it is acceptable to use two 1¼-inch lines side by side. They will deliver more GPMs than one 2½-inch line with less staffing. The use of 2½-inch handlines for single-family dwellings is generally done only on the exterior due to mobility and the staffing. By using the two 1¼-inch lines initially on the exterior, the two lines can then be redeployed easily once the fire is knocked down.

The coordinated ventilation of this type of structure during a fire should generally be achieved through natural horizontal methods. The reason for venting should be identified and communicated to the assigned units.

The need for roof openings typically will only be required when the fire has entered the attic area or has gained access to vertical void spaces. Conventional construction provides the needed support to accomplish rooftop ventilation. Lightweight construction does not provide the support necessary and may result in early collapse. Crews ordered to perform rooftop ventilation in lightweight construction should be independently supported by the use of aerial devices or a roof ladder.

Fire travel within these types of structures will be affected by the method of construction. Balloon-frame and platform-frame construction methods are common, and each presents a different concern.

- Balloon-frame construction requires the checking of all levels within the structure. Fire should be suspected of having entered the exterior walls.
- Platform construction offers some level of fire stopping, but all affected vertical voids must still be checked for the presence of fire with attention given to the plumbing and heating areas.
RESOURCES FOR FIRES IN SINGLE-FAMILY DWELLINGS

The minimum resources assigned to incidents of reported fires in these types of structures are:

- 4 Engine Companies
- 2 Truck Companies
- 1 Rescue Squad
- 1 EMS Unit
- 2 Battalion Chiefs
- 1 EMS Supervisor
- 1 Command Aide

The assigned resources for fires in single-family dwellings in areas without hydrants should be modified to include a Tanker Task Force early into the incident:

- 3 Tankers
- 1 Engine Company
- 1 Battalion Chief

When reports of occupants trapped are received, the assigned resources should be modified to include ALS units, if not already dispatched. When multiple victims are reported additional resources shall be considered.

Utility-fueled fires will require the assistance of the involved utility company and the IC should request these resources as early as possible when the need is determined.

The rehabilitation of companies that have been operating may require additional resources for relief as well as to staff the medical unit that performs rehab.

Units encountering delays in responding should communicate this immediately, along with changes in arrival order that will affect assignments. This should be addressed on the tactical channel so incoming units can be made aware. The dispatcher shall notify the responding chief officer of these changes. The chief officer should be advised of and acknowledge companies becoming available and being added to the incident.

Reserve resources should be available in staging to meet contingencies as they occur until the fire is declared under control.
APPARATUS POSITIONING FOR FIRES IN SINGLE-FAMILY DWELLINGS

Typical positions and initial actions are listed below:

First engine – After viewing as many sides as possible, the first engine company should park in a position to allow for rapid advancement of Hoselines into the structure, leaving priority position for the truck company. The following shall be communicated via radio: on-scene report, layout, size-up, 360° lap, and situation report. Primary actions will be deployment of initial attack line, search as the line is advanced.

Second engine – The second engine should ensure a water supply, ensure first line is operational, and deploy the second line.

Third engine – The third engine shall position to allow the crew rapid access to the structure while maintaining access and egress to the incident for additional resources. The engine should take a position to prepare for providing a secondary water supply and visual inspection of side Charlie and report findings to command, check for fire extension, and possible exposure line.

Fourth engine – The fourth engine shall position out of the way, so as to not block access for incoming trucks and assume the position of RIT. If needed, the driver may be assigned to supply water to the third engine.

First truck – preferred position for the first truck company at fires in single-family dwellings will be the most strategic location – normally in the front of the structure. This will allow for rapid deployment of ground ladders (front and rear) as a primary concern. Other duties will be to force entry, conduct a primary search, and coordinated ventilation.

Second truck – position as close as possible to the scene and assist the first truck with forcing entry, search, coordinated ventilation, and ladders. Perform a visual inspection of side Charlie. Ground ladders and truck operations in the rear will remain a priority.

Rescue squad – The rescue squad should position that affords rapid access to the structure, but does not block other companies. Primary responsibility is search and rescue, however if that task is being accomplished by another unit they may be needed for forcing entry, coordinated ventilation, or ground laddering.

Other units responding on the incident shall keep the front of the structure open for the truck. Units arriving after the truck should be cognizant of the possible need for access to the ground ladders and keep the rear open at least 50 feet for ground ladder deployment.

It is recognized that there are circumstances that will prevent units from positioning as preferred. At times, only one engine will be able to position in close proximity to the structure, as is the case with a home located at the end of a long narrow driveway.
After viewing as many sides as possible, the first engine should park in a position to allow for rapid advancement of hoselines into the structure, leaving priority position for the truck company. The addition of the 50-foot LDH pony sleeve allows for the engine companies to leave the front open for trucks even if the hydrant is directly in front of the structure.

The EMS crew should be assigned to initial EMS duties. The crew should assemble their EMS equipment onto a stretcher and proceed to an area that provides rapid access to potential civilian or uniformed members needing treatment. The crews should also canvas the crowd for injured victims. During a single family structure fire, EMS apparatus should position down the street or on an adjacent street with a clear egress path should transport become necessary.

If the EMS unit is staffed with members trained as firefighters, the crew should have their protective clothing and SCBA with them.

A dedicated EMS unit should be considered for the treatment of responders early in the incident. This unit should be positioned in a manner that will provide access to equipment and emergency egress should transport become necessary.

In some jurisdictions, it may be necessary to use the initial EMS unit personnel for initial firefighting operations. The IC should understand the firefighting capabilities of the personnel on the responding units. As necessary, and if properly trained, these personnel can be used to make a coordinated exterior fire attack while initial crews are preparing for coordinated interior operations. This can include deploying a hand line or master stream device to the fire area for a quick knock down of heavy fire, protection of exposures, etc.

The second chief officer should position the vehicle without blocking firefighting units in a position to support command and report to the incident command post with full PPE including SCBA.

The units staging should operate as outlined in the Command Officer Operations Manual.
ENGINE COMPANY TACTICS

Water Supply

When dispatched for a fire in a single-family dwelling, the first-due engine will lay supply line(s) to establish the water supply for fire attack. The location and method of the hose lay should be communicated to the second-due engine company.

A forward (or straight) hose lay of a supply line(s) shall be used when possible. Modifications to this procedure may be made to ensure sufficient fire flow to extinguish the fire. Personnel shall ensure that sufficient water supply for the volume of fire is established.

In areas where hydrants are not readily available, the procedure for relay or shuttle operations will be followed.

Third- and fourth-due engine officers must be cognizant of the need for a secondary water supply and identify the location of additional hydrants and alternative sources of water.

Size-up

The size-up is a continuous process which contains various benchmarks and decision points where information is obtained during an incident. Size-up info is provided on an ongoing basis and is included in:

1. Pre-incident (know what needs to be on a pre-plan, barriers, layouts, etc.)
2. Pre-arrival
3. On-scene report
4. 360° lap or walk around
5. Situation report
6. Interior size-up
7. Ongoing size-up

Pre-Incident Size-Up

Pre-incident planning is paramount to successful fireground operations. Knowing the building layout, construction type, hydrant locations, specific building features, locations of fire protection systems (standpipes, ventilation points), occupancy type, and building access options will expedite fireground operations.

Pre-Arrival Size-Up

Pre-arrival size-up is somewhat of a natural instinct for fire officers. Pre-arrival size-up considerations include: occupancy type, time of day, class of construction, weather conditions, and water supply access. Much of the pre-arrival size-up information can be known by company officers through pre-incident planning.
On-scene Report

The on-scene report gives the initial arriving company officer the opportunity to gather more detailed information. The on-scene report should paint an image of the building type and conditions upon arrival to other incoming units. The on-scene report should be concise, but provide sufficient information to incoming units to permit for proper apparatus placement and crew deployment. Information provided in the on-scene report should include: position of first-arriving apparatus (side of the building), what is evident upon arrival, occupancy type, and exposure concerns. (Refer to the Command Officer Operations Manual.)

360° Lap

The 360° Lap, or building walk around, will allow the all officer to view all sides of the building (if possible), and further paint a picture of the incident to incoming units. The lap will allow the initial arriving officer to determine the possible location of the fire, the presence of victims, best location for initial line deployment, and any obstacle present that may impede smooth fireground operations. The first-arriving engine officer shall conduct a thorough 360° lap of the structure prior to implementing interior firefighting tactics. If physical barriers make the 360° lap impractical, the lap may be assigned to another unit; however, interior tactics shall not commence until a report from Side Charlie is received.

In situations where a reported life hazard exists, and the initial company officer identifies the need for immediate interior firefighting actions, a radio report shall be transmitted identifying the need to bypass the size-up from Side Charlie.

Situation Report

The initial arriving officer will compile all of the information that was gathered through the pre-incident, pre-arrival, on-scene, and 360° lap. This compilation of information provides the tools to allow the first due fire officer to make the decisions necessary to mitigate the situation that is at hand. All information that is gathered is then relayed to units either on the scene or still responding, and dictates the actions necessary to bring together responding units and design a plan of action.

Interior Size-up

Interior size-up comes from all units that are working inside of the structure. This information can include: location and amount of fire, interior building layout, location of victims, hazards encountered, positioning of hoselines, and prioritization of search areas. With the continued effort of fire suppression activities and changing conditions, ongoing size-up is the next phase of fireground size-up.

Ongoing Size-up

It is incumbent on the officers that are involved in an interior fire attack to keep the IC informed on the outcome of the fire attack. The IC needs to know the progression of fire extinguishment, number of victims and progress of removal, status of the building (holes in flooring, collapse...
potential, etc.), and the need for additional resources to mitigate the incident. Ongoing size-up will continue after the fire is knocked down with the intent of informing the IC of overhaul and salvage operations, CO levels in the structure, and any other pertinent issues that the IC may require.

An easy way to answer or transmit a progress report is the CAN report; CAN stands for Conditions, Actions, and Needs. By using this report model, the person giving the report easily identifies how well the team is doing, the conditions faced, and any support or resource needs.

C – Conditions  
A – Actions  
N – Needs

In order to use these principles, the engine company officer must have a comprehensive understanding of the size-up process and all elements. The elements of a size-up encompass the potential variables the engine company officer must factor into the decision-making process. During size-up, information and intelligence on the following elements should be obtained whenever possible:

- Building  
  - Occupancy type  
  - Residential vs. commercial  
  - Location of points of access and egress  
  - Ventilation access points  
  - Fire protection features

- Construction type  
  - Fire Resistive allowing for limited fire spread  
  - Ordinary Construction, concerns for collapse potential  
  - Lightweight Construction, issue of rapid fire growth and increased collapse potential

- Occupant Interview  
  - Fire location (basement, upstairs, main floor)  
  - Occupant report (rescue potential, location of fire)  
  - Location of utilities

- 360° Lap  
  - Elevation of structure (front vs. rear)  
  - Location and extent of fire (identify the lowest level of smoke and fire)  
  - Ventilation status  
  - Access and egress points  
  - Victim location

The information obtained during size-up will assist the engine company officer to determine, develop, communicate, and implement the initial incident action plan.
Initial Line

The initial attack line for most fires within this type of structure will be the 1¼-inch hose line, allowing for the needed speed, mobility, and fire flow. The first engine crew will usually be responsible for deploying this line. An exception might be when the unit arrives alone, and an obvious need for an immediate rescue is indicated.

The advancement of the initial attack line should be through the appropriate entrance into the structure. In most cases, the hose line will be charged prior to entering. The attack should be made from the unburned portion of the structure toward the seat of the fire. This may dictate entrance from a location other than the front door. The first engine will normally accomplish entry on its own. However, the forcible entry task, when needed, remains the responsibility of the first due truck or rescue.

The purpose of the initial attack line is to protect occupants, the interior stairway, and, if possible, advance to the seat of the fire for confinement and extinguishment.

The conditions found upon arrival and the information gained during the size-up may dictate changes in these tactics.

Second Line

The second line for most fires within these types of structures will be the 1¼-inch handline, allowing for the needed speed, mobility, and fire flow. The line should be of sufficient length to reach the location of the initial attack line or to be advanced to the area above the fire, if required.

The second line will generally be stretched from the first-due engine company apparatus. In most cases, the second-due engine company will accomplish this task.

This line shall be capable of delivering at least the same amount of water as the initial line. In the case of a 1¼-inch line, adjustments will have to be made to produce the higher flow. The need for advancement will be determined by the progress of the initial attack line. If the back-up line is not needed to support the attack line, it may be used as the line above the fire. Command must be informed.

Line Above the Fire

Officers should consider an additional hose line for operations above the fire. There are two purposes of the line above the fire. The first is to protect the company doing the primary search of the floor above and the second is to extinguish vertical extension.

No more than two hoselines shall be stretched through any one entrance into a building. The advancement of additional lines should incorporate alternate means of entry.

The line assigned to the floor above the fire in these types of structures will generally be the 1¼-inch handline, allowing for the needed speed, mobility, and fire flow. This line should be of sufficient length to reach the area above the fire and into the attic, if required. The second or
third—Arriving engine company will be responsible for this task. The unit this line is deployed from will be determined by the unit officer assigned this task.

**Sweeping the Eaves Prior to Entry**

Eaves are a common structural feature of single-family homes that extend the ends of rafters or trusses of a pitched roof over exterior walls. Eaves are often enclosed by nailing a fascia (board) to the ends of rafters or trusses and a soffit to the underside. Enclosed eaves are usually an extension of the attic, making it very vulnerable to auto exposure. Fire burning out of the top-floor windows or up combustible siding is very likely to impinge on and penetrate the soffit, spreading fire into the attic. Fire extension by way of eaves is hastened when they are enclosed with lightweight vinyl or sheet metal soffits. Soffits are commonly penetrated by attic vents to reduce temperatures and prevent condensation between the roof and the top-floor ceiling.

Soffit vents provide a direct path for fire to enter the attic. Smoke pushing from soffit vents of an overhang is an indication that fire may have extended to or exist in the attic. Personnel must be proactive to prevent fire from impinging on the underside of eaves and spreading to the attic. Hoselines should be positioned in anticipation of fire threatening the eaves. It is entirely possible for one firefighter to stretch a 1½-inch hoseline and position it at a corner to protect the soffits on two sides of a building. Wash the underside of the soffit by directing a straight stream close and parallel to the wall. This will provide maximum protection to soffits and prevent the stream from entering the window and striking the firefighters engaged in an interior attack. Directing a stream from this position will also protect soffits from a deck or rear porch fire. Additionally, water striking the underside of the overhang will cascade down the wall to extinguish burning exterior siding.

**Soffit Attack**

Attic fires can be rapidly knocked down from the exterior upon arrival using the soffit attack, Figure 17. To employ this method, the engine company will match their stream with the angle-pitch of the roof and flow under the gutter and through the soffit. A 1½-inch attack line will normally provide the reach necessary to accomplish the soffit attack on most homes. For large, multistory homes or when attacking from the rear, a 2½-inch attack line be necessary to provide effective reach and penetration from the exterior of the structure. It may be necessary to use ground ladders to gain access to the soffit to provide a more effective means of extinguishment.
Figure 17: The Soffit Attack must be employed early into the incident, preferably by the first arriving engine company.

Deck Fire

In the event of a deck fire, the priority should be to get a hoseline on the deck side of the structure to extinguish the deck, the soffit, and eaves. If it is found that the deck is still structurally sound, the first engine may access the fire building through Side Charlie with the handline to check for extinguishment and fire extension investigation. It is okay to go from the burned portion of the structure to the unburned portion in this situation.

Exterior Fires Extending into the Dwelling

Due to recent building construction trends, the use of vinyl siding on lightweight wood construction dwellings has increased tremendously. Vinyl siding has become more prevalent as an exterior covering on homes due to its lower installation and maintenance cost along with the longevity of use. The combination of vinyl siding and lightweight wood construction has shown to have a significant impact on firefighting operations, especially in fires originating on the exterior of the home. These exterior fires quickly ignite the vinyl siding and exterior sheathing then extended up the building and into the dwelling. Fire can enter the structure into the attic space through the soffit or into the home through a window or void space in a truss construction floor.

Many line-of-duty deaths and close calls have been the result of fires originating on the exterior of the dwelling involving the vinyl siding, the combustible sheathing, and/or environmental factors, such as high winds. The potential for rapid fire progression into the structure on multiple floors and the recent history of line of duty deaths and close calls in the United States, mandate that consideration be given to proper size-up, strategy, and tactics. The incident actions must be communicated by the first-arriving officer, and carried out by the subsequent crews, in order to safely and successfully extinguish this type of fire.

Mandatory actions for exterior fires extending into the dwelling:

1. The first hoseline is deployed to the fire location on the exterior of the structure to perform a quick knockdown of the fire in a sweeping fashion. Crews must use caution not to flow water into windows or doors whenever hoselines are operated from the exterior.
This tactic may force fire and the products of combustion into the dwelling toward the occupants.

2. Once the first hoseline is in place and operating effectively, the second line should be deployed to the interior of the dwelling. The crew must inspect the ceiling area and the floor condition at the point of entry. The use of a thermal imaging camera is highly recommended, Figure 18. This line will extinguish any fire within the dwelling and protect the occupants and the companies operating on the interior. In order to be successful more than one handline may be required.

3. Once fire is knocked down on the exterior of the dwelling, the hoseline may be re-deployed to the interior to assist the interior line or progress to upper floors to attack any fire.

4. The coordination of tactics and operations between the first engine and the special service units or additional engine companies must be completed before the special service units can enter the building.

![Image](image)

Figure 18: Use of a thermal imaging camera to check ceiling area.

**Basement Fires**

Basement/below grade fires pose unique hazards and challenges. Two key characteristics make basement fires particularly challenging:

1. Limited access points and
2. The potential exists to have immediate, unimpeded fire impingement on the structural support for the floor above.

This exposure of structural elements is somewhat mitigated in the case of finished basements where drywall or some other barrier has been placed over structural beams or joists.

As with any fire event, size-up at a basement fire is critical. Initial arriving units must determine the location and extent of the fire, building construction, hazards, and points of access to the basement. If the fire is known to be in the basement, the officer must quickly determine if an exterior access to the basement is present. This exterior door most often will be in the rear.
Early determination must be made, if at all possible, whether the basement is unfinished. If so, fire has unimpeded access to the unprotected structural supports of the floor above.

The objective is to prevent the fire from extending vertically through containment and extinguishment. This will require two lines. The need for both lines to be coordinated and rapidly get into position is of utmost importance. Effective and coordinated ventilation of the basement and upper floors is necessary to support the fire attack.

It is incumbent on the first arriving engine company officer to identify where the handline will be deployed in a manner that best addresses the immediate needs of the incident. The location of the initial handline may be:

1. To the rear/exterior basement access to commence fire attack, or
2. To the front door to protect the interior stairs and upper floor(s).

The decision of where to deploy this line must be communicated on the operations channel.

The preferred point of attack for the initial handline is an exterior access point that leads directly into the basement.

A line must be stretched to the front door to contain the fire and protect any occupants and searching firefighters. This line can cover the first floor and protect the interior stairs. Crews should not operate above the basement without the protection of this handline unless there is a confirmed life hazard, Figure 19.

The crew must ensure there is not fire under the floor and determine its stability before proceeding. If the integrity of the first floor is compromised, the line should be positioned in a position of safety close to the entrance door. This change in hoseline and crew position should be communicated to command.

Figure 19: Attacking a basement fire.
The door to the basement should be closed, if feasible. If the basement door cannot be closed, is non-existent, or burned through, use a narrow fog pattern aimed at the ceiling over the stairway to contain the fire. It is imperative that this narrow fog stream is NOT directed downward into the stairwell. The main objective of this line is to stop vertical fire extension.

When advanced fire conditions are encountered and an exterior entrance is not present, the fire should be knocked down from outside the basement. This can be accomplished by:

- Applying a fire stream into the basement through a window opening, Figure 20.
- Removing the band board on the exterior. In most cases, this stream should be a straight or solid stream. The band board area is where the floor joists for the first floor meet the exterior wall. In the case of a well-involved basement, dark smoke may be pushing from this area. Opening this area in buildings of lightweight construction can normally be accomplished with hand tools or a chainsaw.
- Extend a window cut down an additional foot or two, the same band-board access point will be provided. This also creates another access/egress point which may be used later in the fire.
- Deploying a Bresnan Distributor Nozzle (may also be known as a cellar nozzle) from the exterior into the structure, placing the nozzle through a hole over the immediate fire area is preferred and most effective. Personnel must be proficient in the deployment and operation of this nozzle if it is used.

Officers must ensure that no firefighters have entered the basement. The primary purpose of the steam generated through the aforementioned methods is to extinguish the fire. If extinguishment is not possible, the fire must be knocked down so entry can be made from the interior stairs.
Figure 20: Hoseline placement for advanced basement fire conditions in a single-family dwelling basement with no exterior entrance.

If no exterior basement entrance or opening exists, and all other methods have been considered, an attack via the interior basement stairs may be the only option. Again, if the basement is well involved, every effort should be made to knock down the fire. Under these circumstances, the officer will need to determine if it is safe to attempt going down the basement stairs for a direct attack on the fire. The officer must carefully evaluate the structural stability, life hazard, and the fire and heat conditions at the top of the stairs. Good judgment must be exercised in deciding if it is safe to proceed down the stairs. In this case, a second hose line must be in place and ready before fire attack, Figure 21.
Figure 21: Hose line placement for a basement fire in a single-family dwelling basement with no exterior entrance.

Should the fire building be of balloon-frame construction, early attention should be given to checking for vertical extension through the stud bays in the exterior walls. Fire should be expected to extend to all floors and the attic. Early attention should be given to the removal of siding as well as deployment of additional hand lines to upper floors to check for vertical extension.

Garage Fires

Knock down visible fire from the exterior and a coordinated interior attack may be initiated to extinguish the fire and any extension. Water streams do not push fire through a building, a misconception that has been disproven by national scientific studies.

The need for quick assessment of extension into the living area and attic is imperative. The attached garage fire is known for its ability to extend to upper floors and the attic. The need for companies to check these areas and have charged lines to support them is crucial.

The garage may be located under a living area. This area must be quickly checked for smoke and fire spread. Companies operating in this area should be cautious as the fire below them has direct access to the floor members supporting them.

The fact that a garage may have two means of access offers two alternatives that may be used to proceed to the seat of the fire.
When the initial line is advanced through the overhead door, the status of the door leading to the living area must be known. The door from the garage to the living area must be closed and protected to prevent the spread of fire and/or smoke to the interior of the house. A hoseline must also be advanced through the house to the garage door to prevent extension. The fire attack must use a straight or solid stream. Firefighters should make sure the overhead door is chocked open.

If the decision was made to advance the initial line through the living area of the structure for the attack, the engine company must be ready to operate the line when the door is opened. If this door was left open at the time of the fire, the advancing engine company should anticipate encountering fire in the living area near that door. A second line should be advanced to back up the first or to proceed to the upper floors.

Many times the fire will have originated in a vehicle parked within the garage. Standard precautions associated with all vehicle fires, such as exploding bumper cylinders or ruptured fuel tanks, should be observed. An option may be to breach an exterior wall to accomplish initial knockdown. When flammable liquids are involved, they may be easily extinguished by using dry chemical extinguishers in conjunction with the hoselines. The use of foam may be employed.

Breaching the overhead door in the center about three quarters of the way up from the bottom, can, at times, provide access to the overhead door manual release. If the manual pull cord is still intact, it may be within reach of the opening made in the door. Pull the cord to disengage the door from the motor, allowing the door to then be raised.

**Attic Fires**

Attics are considered the space under the gabled roof. Cocklofts are considered the space under a flat roof. In both instances the size of the area will vary. Company officers should evaluate the area of involvement and gauge their tactics accordingly.

When selecting tactics for combating an attic fire, officers must evaluate the location and extent of the fire, the type of construction, and how the fire originated or extended into the space.

The most common scenarios are:

- Fires in the living area or basement that have extended into the structural components and entered the attic via void spaces (balloon-fame construction).
- Interior fire that has vented through a window and exposes the vented soffit area.
- Fire that has originated on the exterior of the dwelling and has involved the siding and exposed the soffit area.
- Electrical fires that originate from ceiling fans, exhaust fans, and recessed lighting.
- Fire that has originated in the attic itself by natural occurrences, such as lightning strikes.
- Current or prior work done by roofers, plumbers, and/or painters.

To assist in containing the fire and slow the lateral spread, early roof ventilation should be considered. The location and extent of fire, along with construction type, must be considered. Truck positioning and the ability to vent from the aerial device or tower bucket are also factors for consideration, especially in lightweight wood frame construction.
Deployment of resources is going to be dictated by the type of construction and the degree of fire involvement. Several methods have proven successful:

1. Gaining access and placing a hose line at the level of the fire into the attic, Figure 22. This option is usually the most effective. An attic ladder needs to get to the top floor early when the officer has suspicion that fire has entered the attic space. When time is critical, consideration should be given to using available means/options of access to the attic until a ladder is available (use of a kitchen counter, dresser, bed, etc.)

2. Hooking the ceiling and directing the stream from below into the attic area. This method is not as efficient as the previous method of placing the hose stream at the level of the fire.

3. Placing a wide fog stream into an access hole is an effective method when the fire has not self-vented and the roof does not have a ridge vent. (Mass steam production.)

4. Access to the attic area by cutting an access through the gable end.

5. Distributor/cellar nozzle deployed through a hole cut in the roof while member is independently supported on a ladder or tower.

Figure 22: Gaining access to an attic fire.

In each case there must be an ongoing risk benefit analysis of maintaining an interior attack by both the IC and unit officers as to the progress of the fire and the structural integrity of the roof assembly. The interior officer should request a report from the command officer on the exterior to convey their observations as attack progresses. For example, a report of heavy steam production would indicate that the stream is effective.

In some situations, fire exposes the soffit area under the eaves, which is vented into the attic. This can be caused from fire emitting out windows, a doorway below, or from a fire that originated on the exterior of the structure. In these cases, the first task is to conduct a quick sweep of the soffit and eave line with a hose stream. This quick sweep is intended to knock down fire extending into the attic through the soffit vents. The steam conversion drawn into the attic
area can help deter fire advancement to this area before an attack on the seat of the fire is commenced.

Attacking the fire through an exterior gable vent should be considered when access to the attic area from the interior would be too time consuming due to the presence of flooring in the attic. Breaching the siding for nozzle access is also an option when interior access is not possible. A piercing nozzle, which typically flows over 100 GPM, is also an option, but the reach of its stream is very limited.

In Figure 23, several truss or joist bays have been exposed in the diagram to provide the firefighter area to project the hose stream into the attic. Projecting straight up into the space is not effective. The hose stream should be placed ahead of the fire to cut off the advance. This line is typically static, the stream is placed toward the fire but the line is not normally advanced. The stream angle is often hampered by the 24 inches or less spacing of the roof joist.

Figure 23: Projecting a hose stream into an attic.

Attic fires can be very fast moving. It is important to get a hose line ahead of the fire and into the attic as quickly as possible. Opening the ceiling and attacking the fire at the level of the fire must be accomplished in short order.

If there is active fire in the attic, multiple lines are preferred. Multiple companies will be needed to gain access to the attic area. The location of the access to the attic area must be appropriate to the situation regarding the percentage of fire involvement and structural integrity of the roof.

Company officers need to communicate the conditions in the attic to command. Command needs to keep companies on the top floor advised of changing exterior conditions. Fires in this particular area have a tendency to show differently, meaning that conditions on the interior do not “match” the exterior, and vice versa.

Pull-down attic stairs should not be used where fire has been present. These stairs are typically rated to only 250 pounds. Their integrity due to exposure to fire is questionable. An attic ladder may be needed, however in most situations the nozzle can be advanced through the opening in the 8-foot ceiling without ladders.
The IC must have an understanding of the “big picture” so the correct tactics can be employed or maintained. If the fire has overwhelmed companies operating lines on the top floor, or structural stability is questionable, crews should transition to an exterior attack. Consideration should be given to using heavy streams (preferably from a tower).

The standard gable roof has been the stage for many spectacular fires. In general, if not quickly extinguished, this roof design tends to “burn away.” It represents a relatively low catastrophic collapse hazard. Companies should consider operating in areas of the structure without large dead loads above such as hallways, bathrooms, and bedrooms because the interior walls will give some protection of falling ceiling materials. Units should avoid working under open areas such as foyers due to the long, unsupported spand of the truss. Keep in mind that with platform construction, the roof itself adds structural support to the top floor walls. If the roof has burned away the walls will be inherently weakened.

Members should be aware of the presence of furnaces and water heaters along with heavy storage in the unfinished attic areas. This is prevalent in larger homes with multi-zone HVAC systems. Check for multiple attics under one roof and any voids that may conceal a fire.

Wind-Driven Fires

In addition to the possibility of backdraft or flashover conditions, there is potential for wind-driven fires in residential structures, especially when windows are compromised. These fires pose a serious threat to firefighter safety. The intensity at which these fires can burn may quickly penetrate or destroy fire barriers. Numerous injuries and fatalities, both civilian and firefighter, are attributed to this type of fire. These hazardous conditions can exist with exterior winds as low as 10-20 mph. The use of mechanical or positive pressure ventilation (PPV) prior to extinguishment of the fire can also cause the same conditions of a naturally occurring wind-driven fire.

Five conditions must exist for a wind-driven fire to occur:

1. Fire in the structure.
2. Failed or open window to the outside in the fire area.
4. Failed or open door to living area.
5. An unobstructed path to an outlet for the fire to vent. Example: Fire in the rear of structure venting through the front structure or fire originating outside the structure and traveling via siding into the attic space or compromised windows.

Recognition of a wind-driven fire from the street level along with proper tactical deployment of resources is critical for personnel safety. To aid in size-up of a wind-driven fire, personnel should be aware of the following:

- Presence and direction of the wind from street level
- Failure of windows to the area of the fire.
- Lack of smoke and flames and/or intermittent smoke or flames pushing from the failed window (depending on wind/gusts).
Presence of a large volume of fire within the fire area.

Once personnel arrive and conduct a 360° lap, they must ensure that they communicate the fire conditions to all units responding and operating on the fireground along with first due command officer. The situation report should include the volume of fire, intensity of heat felt, and temperatures observed through the use of a thermal imager, if possible. If personnel believe the fire is wind-driven, they must clearly communicate this to all units responding and operating on the fireground and the first due command officer.

If the officer or command determines an interior attack is warranted, personnel should consider doing so with the wind at their backs. This may require entering through the rear or side of the structure instead of the front door.

The National Institute of Standards and Technology (NIST) demonstrated several alternative tactics that showed positive results when personnel cannot make entry. They involve using an exterior attack:

1. Using elevated master streams through the fire window.
2. Via portable ladders.
3. With a large caliber stream and the wind at the back of the crew.

If any of these tactics are employed, communication is paramount and must be coordinated between interior and exterior companies. The exterior personnel preparing for attack must ensure that no fire department personnel are present in the structure prior to flowing water.

Coordinated ventilation is also critical to the suppression of a wind-driven fire given the intensity and behavior of these fires. If wind-driven fire conditions are present, no horizontal ventilation should be performed until directed by Command.

**Tactics in Large Estate Homes/McMansions**

There is a huge difference in tactics from a 1200-square-foot ranch house compared to a 10,000-square-foot mansion house, Figure 24. There are two types of large homes that we may encounter. One is a smaller house remodeled with a large addition, Figure 25. The other type is the new construction on a vacant lot or a tear down and replacement.

![Figure 24: Tactics may change for single-family dwellings with large square footage.](image-url)
Figure 25: Renovations can change the configuration and square footage of single-family dwellings drastically.

The larger the structure the greater the amount of contents that will be found. The building components themselves tend to be more ornate and elaborate using combustibles such as finished wood. A quick way of getting two handlines in service on the fire floor is by the use of the leader-line. Stretching the 200 feet of 2½-inch and gated wye to the fire floor landing and connecting the 1½-inch standpipe pack hose to the gated wye will allow two handlines with minimal effort. Due to the size of these structures when using the stand-pipe pack, the distance from the wye to the fire room may require an extra section of 1½-inch hose. An additional option is to stretch 3-inch hose and a gated wye to the fire floor landing. Companies that use a small pony sleeve on their crosslay can easily remove that crosslay and connect to a gated wye.

The larger homes can have large open foyers that can facilitate the rapid spread of smoke and fire from the lower floors to upper floors. Figure 26.

Figure 26: Open area created by high ceiling/open foyer.
Horizontal ventilation may not produce desired results due to the large open areas. Vertical ventilation from the roof may be your only option to vent the structure. The roofs and attics of these structures most often are lightweight. All lightweight roof operations must be done with members supported from the aerial.

Along with the open foyers and high ceilings it is almost impossible from below to gain access with pike poles to the attic. The region’s longest pike poles either can’t reach the ceiling or won’t penetrate it.

Another consideration is ceiling collapse. If the fire has accessed the attic there is a good chance of ceiling collapse. With heavy HVAC units, hot water heaters in the attic, and large chandeliers, the probability of serious injuries from collapse is a major concern. If the fire has accessed the attic, stay away from the foyer area. The other areas of the structure without large dead loads above may have minor collapses because the interior walls will give some protection of falling ceiling material. Options to access the fire are to advance lines into windows over ground ladders or to use the utility rope and stretch a hoseline from the exterior. A firefighter can drop a rope from upper floors and hoist the hose up to the floor below the fire or adjacent rooms of the involved floor. If either of these tactics is used, pull plenty of hose into the room and tie it off so when the line is charged it doesn’t slide out the window.

Note that these houses may have more than one kitchen. The newer homes may have a kitchen on the main level and an in-law suite in the basement. The remodeled home may have been enlarged to accommodate several families and two full-size kitchens may have been constructed to provide for numerous occupants.

Firefighters may find only two people living in these large homes or you may find several families occupying the structure. A good indication of numerous occupants is the tendency to pave the entire front lawn to contain the amount of parked vehicles.

Larger homes may have multiple stairways and may be remote from the front entrance (such as access stairs to upper floors from kitchen area). Some stairways may not lead to all floors and might not access the area of fire involvement. The size of the structure may require multiple fire divisions on each floor. A bottom to top foyer may lead you to divide the floor, for example, a second-floor Baker Division and a second-floor David Division.

Other considerations/concerns in McMansions:

- Presence of indoor pool and/or spas
- Limited access
- Home theaters
- Multiple car garages
- Height of structure, in particular the upper floors out of reach of ground ladders
- Large buried propane tanks
Tactics/Considerations for Cluster Homes

These homes can offer a difficult challenge to the first alarm assignment depending on the involvement of the structure. Exposures are a major problem due to the close proximity of multiple Type 5 structures. Large diameter attack lines should be deployed as well as the use of fixed master streams. These streams can be used to darken down the fire and protect exposures. Water supplies should be preplanned. Multiple hydrants may be required to move a large volume of water in a very short period.

These neighborhoods must be preplanned with the companies that would be on the first alarm. They have very narrow alleys that can limit the access of large aerial devices. Issues can be worked out through training and an effective game plan.

Street frontage is often limited in these neighborhoods with very little access on the Charlie side. These narrow streets can provide little room for deployment of outriggers, which will make placement of the aerial device challenging. Apparatus positioning is important and room should be left for an aerial apparatus positioned on Side A of the fire building. Fire conditions may make it impossible to accomplish this without risking damage to the apparatus.
TRUCK AND RESCUE COMPANY TACTICS

NOTE: The rescue and truck company’s functional duties on a single-family dwelling fire closely parallel one another. Tasks assigned, such as a search for victims and location of the fire, forcible entry, ventilation, and control of utilities, may be carried out by either of these units. Assignments specific to the truck would normally involve laddering. Success in preserving life and property hinges on the proficiency of the members performing these duties.

Initial Actions

The initial actions of the first arriving truck or rescue will be determined by the plan of action developed from the size-up. After ensuring entry, these initial actions will generally be tactics focusing simultaneously on primary search and ventilation. Ventilation must be done to support the search as well as the advance of the attack.

Should the rescue company arrive at the same time as the truck, the rescue company will generally be assigned the task of entry and primary search and the truck is responsible for laddering, outside ventilation, and secondary search.

First Truck

The first due truck may be responsible for forcing entry into the structure. This may require only the front door or several entrances to assure efficient operations to mitigate the situation. They shall also coordinate ventilation for fire attack with the engine company.

This is usually accomplished by horizontal removing of window glass. If venting a first or second floor window, breaking windows is most efficiently accomplished by use of a pike pole. A pike pole is easy to handle and does a better job of removing all obstructions (drapes, blinds, screens, etc.). This is the preferred method when a series of windows must be taken out. Personnel shall ensure that the entire window assembly is removed and does not prove to be a hindrance to personnel attempting to vacate the structure.

Placement of ground ladders is also the responsibility of the outside crew. At times, a ladder will be used to knock out a window where the ladder is to be placed. A fire on the third floor may require the use of ground or aerial ladders and hooks. On the second and third floors, the most efficient means of accomplishing horizontal ventilation may be done by placing a ladder against the building and climbing with a pike pole that will reach two or more windows. It is acceptable to use the ladder to break the windows but remember all obstructions should be removed for maximum effect.

It should be noted that if there is a delay in the arrival of the rescue company that primary search and rescue shall be the first truck assignment. This crew shall also assist with finding the location of the fire.

Second Truck

The second arriving truck shall assist the first truck with accomplishing their assigned tasks. They will also perform salvage, utility control, checking for extension, and overhaul. They
should make a visual inspection of side Charlie of the structure and relay conditions to command. They may also assist with search and rescue.

**Rescue Squad**

The main objective of the rescue company will be the task of search and rescue. The primary search is often conducted before the fire is under control. This search is conducted quickly and thoroughly in areas of imminent danger. The search will normally begin in the area where the fire is located (fire floor) or the area directly above the fire, or sleeping areas.

If the rescue company is delayed, the search and rescue assignment may be assigned to one of the truck companies. When this happens, the rescue squad will be assigned other truck duties as appropriate.

Upon arrival of the other units, this officer is responsible for ensuring ladderizing and outside ventilation is accomplished.

**Forcible Entry**

The purpose of entry will be to initiate a primary search and allow access for the advancing engine company.

The task of gaining entry into single-family dwellings will generally be easily achieved using basic conventional methods.

The access point for the engine company should be at the appropriate location to initiate operations. In situations where the front door is not the primary access point, the front door should be forced but remain closed.

**Rescue and Primary Search**

The area close to the fire on the fire floor and the area directly above the fire, are considered to be the two most dangerous areas. Means of egress and sleeping areas are generally considered to be the most critical areas to search. The objective in a primary search will be to check these areas first. Various means may be used to arrive at these locations. Support for the primary search should include ladders to upper-story bedroom windows and hoselines engaged on the fire.

The task of executing the primary search should be accomplished quickly due to relatively small areas within most single-family dwellings. As the area to be searched increases in relation to size of the structure, there must be an equal increase in the resources to accomplish the task. This need must be identified early, and requested immediately.

When accessing the fire floor, crews should begin the search as they make their way to the fire area. Crews going to the floor above the fire must also begin searching immediately, but with the objective of quickly getting to the area over the fire first, and then searching outward from that point.
Should the tactic of vent, enter and search (VES) be used to search the bedrooms, the incident commander must be notified to avoid duplication of effort and possible injury.

The outcome of the primary search must be reported to the incident commander because this is the primary strategic focus of the operation.

Crews should also check for security barred windows. If found these should be opened either from the interior quick release or communicate to outside crews and have them removed or opened from the exterior.

*Priority should be given to the sleeping areas and consideration for VES must be given if fire has possession of the stairs or the first floor is untenable.*

**Ventilation**

Ventilation on the fireground can be one of the most dangerous and most important tasks performed by firefighters. The technique of horizontal ventilation involves the opening or removal of windows in the structure and accomplishes several objectives aiding in the extinguishment of the fire. It permits rapid advance of the attack hoseline to the fire area while reducing the danger of heat or fire passing over or around the nozzle team by allowing heat and smoke to escape through the newly-created openings.

It is critical that all horizontal ventilation be coordinated between the ventilation team (inside or outside) and the advancing hose team. Uncoordinated, poorly located or ill-timed horizontal ventilation can cause the fire to spread rapidly, subjecting personnel inside to extreme heat and flashover conditions. The introduction of ANY additional ventilation into the structure will increase fire intensity and fire spread. We must maintain a vigilance regarding the ventilation status of the fire. Failure to recognize changes in the ventilation status can result in personnel being caught in a rapid fire propagation or flashover event.

Before any ventilation takes place, the ventilation team must answer the following questions:

- What is the location of the fire?
- What is the current ventilation status?
- Will adding additional ventilation openings affect fire conditions?
- Where is the hoseline?

Vertical, rooftop ventilation should be accomplished through common methods, when ordered by command. The discovery of a lightweight trussed roof should be made known and reacted to appropriately. Members MUST be independently supported when operating on lightweight construction. A viable and safer option is to vent the ends of a gable roof.

Mechanical and positive pressure ventilation (PPV) works well for smoke removal in these types of structures after extinguishment. PPV shall NOT be used in balloon-frame construction.
Appendix E: Fauquier County EMS Treatment Protocols-Burns

Injury – Burns

Assess Burn / Concomitant Injury Severity

- Minor Burn
  - < 4% TBSA 2nd/3rd Degree Burn
  - No Inhalation injury, not intubated
  - Neurologically Normal or GCS 14 or greater

  | Remove rings, bracelets, constrictive items |
  | Cool burn with Normal Saline |
  | Refer to Airway (Protocol 11) If indicated |
  | IV Procedure If indicated |
  | Normal Saline 0.25 mL/kg (x % TBSA) per hour for up to the first 8 hours |
  | Pain Control (Protocol 7) If indicated |

- Serious Burn
  - 5-15% TBSA 2nd/3rd Degree Burn
  - Suspected inhalation injury or requiring intubation for airway stabilization
  - Hypotension or GCS 13 or less
  - (when reasonably accessible, transport to a Burn Center)

  | Remove rings, bracelets, constrictive items |
  | Cool burn with Normal Saline |
  | Dry clean sheet or dressing |
  | Refer to Airway (Protocol 11) If indicated |
  | IV Procedure Consider 2 IV sites If greater than 15% TBSA |
  | 0.25 mL/kg (x % TBSA) per hour for up to the first 8 hours |
  | If signs of smoke inhalation are present and patient is experiencing difficulty breathing, consider |
  | Epinephrine 1:1,000 Neutralized |
  | 2 mL in 3 mL of NS |
  | Pain Control (Protocol 7) If indicated |

- Critical Burn
  - > 15% TBSA 2nd/3rd Degree Burn
  - Burns with multiple trauma
  - Burns with definitive airway compromise (when reasonably accessible, transport to a Burn Center)

  | Remove rings, bracelets, constrictive items |
  | Cool burn with Normal Saline |
  | Notify receiving destination and/or contact Medical Control if possible |

Injury Protocol 22

2014
Injury – Burns

PEARLS

> Survival of a burn patient is dependent on management of the burn itself, burns of the face, hands, perineum, or feet, or any burn requiring hospitalization - REQUIRE direct transport to a burn center;

> Burns of the face, hands, perineum, or feet require hospitalization - REQUIRE direct transport to a burn center;

> Early intubation is required when the patient experiences significant Inhalation injuries;

> Circumferential burns to extremities are dangerous due to potential vascular compromise, secondary to soft tissue swelling;

> Burn patients are prone to hypothermia - never apply ice or cool the burn; maintain normal body temperature;

> Evaluate the possibility of child abuse with children and burn injuries;

> NEVER administer IM pain injections to a burn patient;

> Do NOT contact the patient until the source of electric shock has been discontinued;

> Attempt to locate contact points; (entry wound - where AC source contacted patient – exit wound at ground point). Both sites will generally be full thickness.

> Cardiac monitor. Anticipate Ventricular Fibrillation - atrial rhythms.

> Attempt to identify the chemical and flush with water if appropriate agent or other material.

> Consider any chemical exposure a Hazardous Material until proven otherwise;

> Ensure proper decontamination of all patients, providers and equipment AND contact receiving facility as soon as possible.

BURN CENTER VERIFICATION

Verification of burn centers is a joint project of the American Burn Association (ABA) and the American College of Surgeons (ACS). It is a rigorous review program designed to verify a burn center's resources that are required for the provision of optimal care to burn patients from the time of injury through rehabilitation. Elements of this voluntary program include an application, pre-review questionnaire, an in-depth on-site review by members of the ABA Verification Committee, as well as senior members of the ABA. A written report of the site visit team is reviewed by the ABA Verification Committee and the Committee on Trauma of the ACS.

Burn Center verification provides a true mark of distinction for a burn center. It is an indicator to government, third-party payers, patients and their families, and accreditation organizations that the center provides high quality patient care and meets the demanding standards for organizational structure, personnel qualifications, facilities resources, and medical care services set out in the ABA chapter on Guidelines for the Operation of Burn Centers in the ACS publication on Resources For Optimal Care Of The Injured Patient 2008.

Verified Burn Centers in Virginia and Surrounding States*

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<thead>
<tr>
<th>Burn Center</th>
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<th>Verification dates:</th>
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<tr>
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<td>Richmond, VA</td>
<td>04/1/14 to 04/11/17</td>
</tr>
<tr>
<td>North Carolina Jaycee Medical Center (Adult &amp; Peds)</td>
<td>Chapel Hill, NC</td>
<td>07/14/12 to 07/14/15</td>
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<tr>
<td>Wake Forest University Baptist Medical Center (Adult &amp; Peds)</td>
<td>Winston-Salem, NC</td>
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<td>Washington Hospital Center (Adult)</td>
<td>Washington, DC</td>
<td>03/18/10 to 03/19/15</td>
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*As of 21 May 2014. For the most current information, please refer to [http://www.amerburn.org/verification verifica](http://www.amerburn.org/verification)
Appendix F: PPE Inspection Report for W3-FF2

FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY
ADVANCE INSPECTION-BOOTS

Serial #: NA                                      Inspected by: B. Lichty
Date of MFG: Unknown                             Date of Inspection: 7/20/2015
Assigned to: DELETED (Co. 3 Marshall VFD)        Time of Inspection: 1225hrs

*Note this gear is not DFREM gear and was inspection upon request only

Additional Comments: All additional 2 "bailout" kits were discovered in gear, 1 consisting of 1 carabiner and webbing, 1 consisting of 1 carabiner and rope (believe this is the county kit issued to each member of VFRA). One flashlight found on coat, Survivor light (working). All gear was extremely wet and could have contributed to any heat injuries. This inspection was completed upon the request of Assistant Chief Darren Stevens of Fauquier County Department of Fire Rescue and Emergency Management. To the best of my knowledge this gear is owned by the Marshall Volunteer Fire Department. Unknown of any inspection or cleaning records maintained for this gear.
### FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY MANAGEMENT GEAR INSPECTION FORM

**ADVANCE INSPECTION-PANTS**

**Serial #:** 03360289 - Globe Extreme  
**Inspected by:** B. Lichty

<table>
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<tr>
<th>Cleanliness</th>
<th>Pant Shell</th>
<th>Pant Liner</th>
<th>Picture Log</th>
<th>Comments</th>
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<tbody>
<tr>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
<td>454-471</td>
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- Gear appeared clean but very wet

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<tr>
<th>Rips, Tears, Cuts, Etc</th>
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<tr>
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- Worn fabric found on thermal liner, holes found on outer shell, none bigger than dime sized

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<tr>
<th>Damaged or Missing Hardware</th>
<th>Pant Shell</th>
<th>Pant Liner</th>
<th>Picture Log</th>
<th>Comments</th>
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<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
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- No damage found to hardware

<table>
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<tr>
<th>Flame/Heat Damage</th>
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<tr>
<td>X Pass</td>
<td>Fail</td>
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- Some discoloration found but could be due to moisture

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<th>Stitching/seam Integrity</th>
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<td>X Pass</td>
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- All stitching found intact

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<tr>
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- All stitching found intact

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- Some damage to thermal liner fabric

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- No damage found

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<tr>
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- No damage found

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- No damage found

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- No damage found, working properly

<table>
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- No damage found, working properly

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- No damage found

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Appendix F: PPE Inspection Report for W3-FF2

## FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY
### ADVANCE INSPECTION-COAT

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<th>Serial #</th>
<th>03360269 - Globe Extreme</th>
<th>Inspected by</th>
<th>B. Lichy</th>
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<td>Date of MFG</td>
<td>03/07</td>
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<td>Assigned to</td>
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*Note this gear is not DFREM gear and was inspection upon request only*

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<td>Fail</td>
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<tr>
<td>Stitching/seam Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Quilt Stitching Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Fabric Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Reflective Trim Damage</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Reflective Trim</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Reflectivity</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Label Integrity/legibility</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Wristlets Functionality</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Liner Attachment Systems</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Closure System Functionality</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Accessory Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Correct Assembly and Size of Shell, Liner, DRD</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Cleanliness of DRD</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>DRD Integrity/Damage</td>
<td>X Pass</td>
<td>Fail</td>
<td>X Pass</td>
<td>Fail</td>
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</table>
## FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY
### ADVANCE INSPECTION-GLOVES

<table>
<thead>
<tr>
<th>Serial #</th>
<th>Inspected by:</th>
<th>Date of MFG</th>
<th>Date of Inspection</th>
<th>Assigned to</th>
<th>Time of Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>None Found</td>
<td>B. Lichty</td>
<td>None Found - Dragon Fire</td>
<td>7/20/2015</td>
<td>DELETED (Co. 3 Marshall VFD)</td>
<td>1205hrs</td>
</tr>
</tbody>
</table>

*Note this gear is not DFRM gear and was inspection upon request only

<table>
<thead>
<tr>
<th></th>
<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanliness</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>Clean but very wet</td>
</tr>
<tr>
<td>Rips, Tears, Cuts, Etc</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>No damage found</td>
</tr>
<tr>
<td>Inverted Liner</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>No damage found - attached correctly</td>
</tr>
<tr>
<td>Shrinkage</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>None found</td>
</tr>
<tr>
<td>Loss of elasticity and flexibility</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>None found</td>
</tr>
<tr>
<td>Quilt Stitching Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>No damage found</td>
</tr>
<tr>
<td>Fabric Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>No damage found</td>
</tr>
<tr>
<td>Reflective Trim Damage</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>None found</td>
</tr>
<tr>
<td>Reflective Trim</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>None found</td>
</tr>
<tr>
<td>Reflectivity</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>None found</td>
</tr>
<tr>
<td>Label</td>
<td>X Pass</td>
<td>Fail</td>
<td>528-529</td>
<td>Unable to identify MFG date or size</td>
</tr>
<tr>
<td>Correct Assembly and Size</td>
<td>X Pass</td>
<td>Fail</td>
<td>UNK</td>
<td>Unknown</td>
</tr>
<tr>
<td>Liner Attachment Systems</td>
<td>X Pass</td>
<td>Fail</td>
<td>527-530</td>
<td>No damage found</td>
</tr>
</tbody>
</table>
Appendix F: PPE Inspection Report for W3-FF2

<table>
<thead>
<tr>
<th>Fabric Makeup</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Pass</td>
<td>507-509</td>
<td>NA</td>
</tr>
<tr>
<td>X Pass</td>
<td>507-509</td>
<td>Slightly dirty, very wet</td>
</tr>
<tr>
<td>X Pass</td>
<td>507-509</td>
<td>No damage found</td>
</tr>
<tr>
<td>X Pass</td>
<td>507-509</td>
<td>No damage found</td>
</tr>
<tr>
<td>X Pass</td>
<td>507-509</td>
<td>No damage found</td>
</tr>
</tbody>
</table>
Appendix F: PPE Inspection Report for W3-FF2

<table>
<thead>
<tr>
<th>Cleanliness</th>
<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanliness</td>
<td>X Pass</td>
<td>Fail</td>
<td>502-506</td>
<td>Some dirt, very wet</td>
</tr>
<tr>
<td>Rips, Tears, Cuts, Ect</td>
<td>X Pass</td>
<td>Fail</td>
<td>502-506</td>
<td>No damage found</td>
</tr>
<tr>
<td>Loss of water resistance</td>
<td>X Pass</td>
<td>Fail</td>
<td>502-506</td>
<td>No excessive moisture found inside boot</td>
</tr>
<tr>
<td>Closure system damage</td>
<td>X Pass</td>
<td>Fail</td>
<td>502-506</td>
<td>NA</td>
</tr>
<tr>
<td>Damage or deformed steel toe, mid-sole and shank</td>
<td>X Pass</td>
<td>Fail</td>
<td>502-506</td>
<td>No damage found</td>
</tr>
<tr>
<td>Seam integrity and condition of liner</td>
<td>X Pass</td>
<td>Fail</td>
<td>502-506</td>
<td>No damage found</td>
</tr>
<tr>
<td>Heel and excessive tread wear</td>
<td>X Pass</td>
<td>Fail</td>
<td>502-506</td>
<td>No damage found</td>
</tr>
<tr>
<td>Correct Assembly and Size of Shell, Liner</td>
<td>X Pass</td>
<td>Fail</td>
<td>502-506</td>
<td>No damage found</td>
</tr>
<tr>
<td>Label readable/Legible</td>
<td>X Pass</td>
<td>Fail</td>
<td>505</td>
<td>unable to identify MFG, Serial #</td>
</tr>
</tbody>
</table>
Appendix F: PPE Inspection Report for W3-FF2

<table>
<thead>
<tr>
<th>Serial #</th>
<th>Inspected by</th>
<th>Date of MFG</th>
<th>Date of Inspection</th>
<th>Assigned to</th>
<th>Time of Inspection</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td>B. Lichty</td>
<td>Unknown</td>
<td>7/20/2015</td>
<td>Deleted (Co. 3 Marshall VFD)</td>
<td>12:25hrs</td>
</tr>
</tbody>
</table>

*Note this gear is not DREM gear and was inspection upon request only*

<table>
<thead>
<tr>
<th>Category</th>
<th>Evaluation of Fit</th>
<th>Cleanliness</th>
<th>Damage to shell: cracks, dents and abrasions</th>
<th>Damage to liner: rips, tears, or thermal damage</th>
<th>Suspension system</th>
<th>Damage or missing reflective trim</th>
<th>Damage to impact cap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outer Shell</td>
<td>--</td>
<td>Pass</td>
<td>Pass</td>
<td>X</td>
<td>--</td>
<td>Pass</td>
<td>X</td>
</tr>
<tr>
<td>Picture Log</td>
<td></td>
<td></td>
<td>510-526</td>
<td>519-520, 523, 524</td>
<td></td>
<td></td>
<td>519-520, 523, 524</td>
</tr>
<tr>
<td>Comments</td>
<td></td>
<td></td>
<td>Custom Fit, unable to determine cleanness</td>
<td>Extensive damage to helmet rim</td>
<td>No damage to inliner, liner folded in upon inspection</td>
<td>No reflective trim found on helmet</td>
<td>No damage found to impact cap</td>
</tr>
</tbody>
</table>

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Appendix F: PPE Inspection Report for W3-FF2

Wagon 3 FF2 Logistics Review: FCSO Case Number – 2015-003369

I received Adam Glazes FIRE FIGHTING GEAR, SCBA, and RADIO bagged in a black plastic trash bag from the rear yard of the 4214 Pickett St. fire on the day of the fire. The gear was signed over to me by Tech Brett Hamby of Warrenton Vol. Fire Co. The bags were taken to the Catlett logistics shop and secured until opening several days later.

Upon opening, the FF GEAR was examined by Battalion Chief Lichty. The SCBA and RADIOs were examined by Butch Flippo Logistics Lieutenant.

The following is a summary of the findings:  Pictures and respective printouts included in the folder.

- **SCBA/PACK 1103-03** with Cylinder **IL604362** was found to be overall in good shape and working condition. Tests were performed on:
  - PAC-ALERT = working with more than ¾ battery life left.
  - CONSOL = smoke covered, but working within 200 psi of cylinder.
  - REGULATOR = working as designed with appropriate HUD lighting.
  - VIB-ALERT = working as designed.
  - PICTURES and PACK TEST REPORTS Included.

- **CYLINDER** was found to have approximately **1900** PSI air remaining. PICTURES included.

- **MASK** appears to be smoke covered, but in good working condition. PICTURES included.

- **VOICE AMP** NO voice amp found with gear. **VA-09110440** was assigned at fit test time.

- **RADIO W3D** radio FR#1136 was found on channel **11D**, RADIO was **NOT** in working condition. Replaced battery and portable would still not power on. NOT WORKING could be a result of the radio sitting in a moisture environment waiting on inspection. PICTURES included.

- **LAST FIT TEST** was done on 02/04/15 at 13:19hrs. REPORT on request.

Respectfully submitted on 9/10/2015 by Butch Flippo, Lieutenant, Fauquier County, DFREM
Fauquier County Fire Rescue
Close Call Incident

Posi3 USB Test Results  
8/21/2015 11:01:36 AM
Functional Test

<table>
<thead>
<tr>
<th>Auxiliary ID/ Functional Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulator: 115511420097700 Exhalation Pressure: 2.0 *H2O</td>
</tr>
<tr>
<td>Reducer: 11551142006931 Facepiece Leakage: Pass</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>Air Saver Switch Activation: Pass -4.8 *H2O</td>
</tr>
<tr>
<td>Transfer: Pass 1072 PSI</td>
</tr>
<tr>
<td>Secondary Lockup: Pass 166.9 PSI</td>
</tr>
<tr>
<td>Secondary Creep: Pass 0.2 PSI</td>
</tr>
<tr>
<td>High Pressure Leakage: Pass 0 PSI</td>
</tr>
<tr>
<td>Secondary Pr. at High Cylinder: Pass</td>
</tr>
<tr>
<td>Low Pressure Warning: Pass</td>
</tr>
<tr>
<td>Hoses: Pass</td>
</tr>
<tr>
<td>Manifold Volume: 0.116</td>
</tr>
</tbody>
</table>

HP Vibrater: Pass 1072 PSI  
Gauge Accuracy  
HP Numbers: Pass  
1000 PSI Pass 983 2000 PSI Pass 2128 3000 PSI Pass 3077

![Graphs showing breathing resistance](image1)

![Graphs showing breathing resistance](image2)

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
<th>Breathing Results</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Breathing Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.4 *H2O</td>
<td>1.2 *H2O</td>
<td>Pass</td>
<td>0.5 *H2O</td>
<td>2.5 *H2O</td>
<td>Pass</td>
</tr>
</tbody>
</table>

Tested by: Butch Filippo  
Fauquier County Fire  
210 Hospital Dr Warrenton, VA 20186  
Page 1

Version 4.0.8.1718
Appendix F: PPE Inspection Report for W3-FF2
Appendix F: PPE Inspection Report for W3-FF2
Appendix F: SCBA Inspection Report for W3-FF3

W3-FF2 Logistics Review: FCSO Case Number – 2015-003369

I received W3-FF2 FIRE FIGHTING GEAR, SCBA, and RADIO bagged in a black plastic trash bag from the rear yard of the 4214 Pickett St. fire on the day of the fire. The gear was signed over to me by Tech Brett Hamby of Warrenton Vol. Fire Co. The bags were taken to the Catlett logistics shop and secured until opening several days later.

Upon opening, the FF GEAR was examined by Battalion Chief Lichty. The SCBA and RADIOs were examined by Butch Flippo Logistics Lieutenant.

The following is a summary of the findings: 

- **SCBA/PACK 1103-03** with Cylinder **IL604362** was found to be overall in good shape and working condition. Tests were performed on:
  - PAC-ALERT = working with more than ¾ battery life left.
  - CONSOL = smoke covered, but working within 200 psi of cylinder.
  - REGULATOR = working as designed with appropriate HUD lighting.
  - VIB-ALERT = working as designed.
  - PICTURES and PACK TEST REPORTS Included.

- **CYLINDER** was found to have approximately **1900** PSI air remaining. **PICTURES included.**

- **MASK** appears to be smoke covered, but in good working condition. **PICTURES included.**

- **VOICE AMP** NO voice amp found with gear. **VA-09110440** was assigned at fit test time.

- **RADIO W3D** radio FR#1136 was found on channel **11D**, RADIO was **NOT** in working condition. Replaced battery and portable would still not power on. **NOT WORKING** could be a result of the radio sitting in a moisture environment waiting on inspection. **PICTURES included.**

- **LAST FIT TEST** was done on 02/04/15 at 13:19hrs. **REPORT on request.**

Respectfully submitted on 9/10/2015 by Butch Flippo, Lieutenant, Fauquier County, DFREM
Fauquier County Fire Rescue

Close Call Incident

Posi3 USB Test Results 8/21/2015 11:30:43 AM

Functional Test

Scott
Air-Pak 75 4500
Unit ID: 1103-03
Posi3 USB serial # L01972 - Calibration was up to date when the test was performed

<table>
<thead>
<tr>
<th>Auxiliary IDs</th>
<th>Functional Tests</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulator</td>
<td>Exhalation Pressure Pass 2.1 *H2O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reducer</td>
<td>Facepiece Leakage Pass 0.3 *H2O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Positive Pressure Pass 0.9 *H2O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Primary Lookup Pass 86.7 PSI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Primary Creep Pass -1.4 PSI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Air Saver Switch Activation Pass -4.4 *H2O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Transfer Pass 1074 PSI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Secondary Lookup Pass 154.5 PSI</td>
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<td></td>
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<tr>
<td>-</td>
<td>Secondary Creep Pass -0.1 PSI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>High Pressure Leakage Pass -2 PSI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Secondary Pr. at High Cylinder Pass</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>Purge Pass 140 Lit/min</td>
<td></td>
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<tr>
<td>Manifold Volume: 0.115</td>
<td>Alarm Activation Pressure</td>
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<tr>
<td>HP Vitralert</td>
<td>Pass 1074 PSI</td>
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</table>

Gauge Accuracy

<table>
<thead>
<tr>
<th>HP Numbers</th>
<th>Pass 978</th>
<th>Pass 2148</th>
<th>Pass 3093</th>
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<tbody>
<tr>
<td>1000 PSI</td>
<td></td>
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</tr>
<tr>
<td>2000 PSI</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3000 PSI</td>
<td></td>
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<td></td>
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</tbody>
</table>

Breathing Resistance

<table>
<thead>
<tr>
<th>Minimum</th>
<th>Maximum</th>
<th>Breathing Results</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3 *H2O</td>
<td>2.4 *H2O</td>
<td>Pass</td>
<td>0.5 *H2O</td>
<td>2.7 *H2O</td>
</tr>
</tbody>
</table>

Tested by: Butch Floppo
Fauquier County Fire
210 Hospital Dr Warrenton, VA 20186
## Appendix G: PPE Inspection Report for W3-FF3

### FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY MANAGEMENT GEAR INSPECTION FORM

**ADVANCE INSPECTION-PANTS**

<table>
<thead>
<tr>
<th>Serial #: 1012005189</th>
<th>Inspected by: B. Lichty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of MFG: 1/12/2011</td>
<td>Date of Inspection: 6/20/2015</td>
</tr>
<tr>
<td>Assigned to: DELETED</td>
<td>Time of Inspection: 1235hrs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cleanliness</th>
<th>Pant Shell</th>
<th>Pant Liner</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
<td>580-609</td>
</tr>
<tr>
<td>Rips, Teers, Cuts, Ect</td>
<td>Pass</td>
<td>X Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Damaged or Missing Hardware</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Flame/Heat Damage</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Stitching/Seam Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Quilt Stitching Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Fabric Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Reflective Trim Damage</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Reflective Trim Reflectivity</td>
<td>X Pass</td>
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<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Label Integrity/legibility</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Hook and Loop Functionality</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Liner Attachment Systems</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Closure System Functionality</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Accessory Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
<tr>
<td>Correct Assembly and Size of Shell, Liner</td>
<td>X Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Fail</td>
</tr>
</tbody>
</table>
Appendix G: PPE Inspection Report for W3-FF3

<table>
<thead>
<tr>
<th>FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY</th>
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<tbody>
<tr>
<td>ADVANCE INSPECTION-COAT</td>
</tr>
<tr>
<td>Serial #: 1012005186</td>
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<tr>
<td>Inspected by: B. Lichty</td>
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<tr>
<td>Date of MFG: 1/12/2011</td>
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<td>Date of Inspection: 6/20/2015</td>
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<table>
<thead>
<tr>
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<tr>
<td>Cleanliness</td>
<td>X</td>
<td>Fail</td>
<td>Pass</td>
<td>530-565</td>
</tr>
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<td></td>
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</tr>
<tr>
<td>Rips, Teers, Cuts, Ect</td>
<td>X</td>
<td>Fail</td>
<td>Pass</td>
<td>530-565</td>
</tr>
<tr>
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</tr>
<tr>
<td>Damaged or Missing</td>
<td>X</td>
<td>Fail</td>
<td>Fail</td>
<td>530-565</td>
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<td>Hardware</td>
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<td>Flame/Heat Damage</td>
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<tr>
<td>Stitching/Seam Integrity</td>
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<td>Fail</td>
<td>530-565</td>
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</tr>
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<td>Quilt Stitching Integrity</td>
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<td>Fail</td>
<td>530-565</td>
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<tr>
<td>Fabric Integrity</td>
<td>X</td>
<td>Fail</td>
<td>Fail</td>
<td>530-565</td>
</tr>
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<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Reflective Trim Damage</td>
<td>X</td>
<td>Fail</td>
<td>Fail</td>
<td>530-565</td>
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</tr>
<tr>
<td>Reflectivity</td>
<td>X</td>
<td>Fail</td>
<td>Fail</td>
<td>530-565</td>
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<td>Fail</td>
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<tr>
<td>Liner Attachment Systems</td>
<td>X</td>
<td>Fail</td>
<td>Fail</td>
<td>530-565</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No damage found</td>
</tr>
<tr>
<td>Closure System</td>
<td>X</td>
<td>Fail</td>
<td>Fail</td>
<td>549-551</td>
</tr>
<tr>
<td>Functionality</td>
<td></td>
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<td>Accessory Integrity</td>
<td>X</td>
<td>Fail</td>
<td>Fail</td>
<td>530-565</td>
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<tr>
<td>Correct Assembly and Size of Shell, Liner, DRD</td>
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<td>Fail</td>
<td>Fail</td>
<td>530-565</td>
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<td></td>
<td></td>
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<td>X</td>
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<td>Fail</td>
<td>546-547,553-554,559-561</td>
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# Appendix G: PPE Inspection Report for W3-FF3

<table>
<thead>
<tr>
<th>FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY</th>
<th>ADVANCE INSPECTION-GLOVES</th>
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<tr>
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<td>Date of Inspection: 6/20/2015</td>
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<td>Time of Inspection: 1235hrs</td>
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<table>
<thead>
<tr>
<th></th>
<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td>Cleanliness</td>
<td>X Pass</td>
<td>Fail</td>
<td>619-621</td>
<td>Slightly dirty</td>
</tr>
<tr>
<td>Rips, Teers, Cuts, Ect</td>
<td>X Pass</td>
<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
</tr>
<tr>
<td>Inverted Liner</td>
<td>X Pass</td>
<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
</tr>
<tr>
<td>Shrinkage</td>
<td>X Pass</td>
<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
</tr>
<tr>
<td>Loss of elasticity and flexibility</td>
<td>X Pass</td>
<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
</tr>
<tr>
<td>Quilt Stiching Integrity</td>
<td>X Pass</td>
<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
</tr>
<tr>
<td>Fabric Integrity</td>
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<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
</tr>
<tr>
<td>Reflective Trim Damage</td>
<td>X Pass</td>
<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
</tr>
<tr>
<td>Reflective Trim</td>
<td>X Pass</td>
<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
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<tr>
<td>Label Integrity/legibility</td>
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<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
</tr>
<tr>
<td>Correct Assembly and Size</td>
<td>X Pass</td>
<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
</tr>
<tr>
<td>Liner Attachment Systems</td>
<td>X Pass</td>
<td>Fail</td>
<td>619-621</td>
<td>No damage found</td>
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</table>
### FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY

#### ADVANCE INSPECTION-NOMEX HOOD

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<thead>
<tr>
<th>Serial #</th>
<th>Unknown</th>
<th>Inspected by</th>
<th>B. Lichty</th>
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<td>12:35hrs</td>
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<table>
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<tr>
<td>Evaluation of Fit</td>
<td>X</td>
<td>615-617</td>
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<tr>
<td>Cleaniness</td>
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<td>615-617</td>
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<tr>
<td>Rips, Tears, Cuts, Etc</td>
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<td>615-617</td>
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<tr>
<td>Loss of elasticity and flexibility: face opening</td>
<td>X</td>
<td>615-617</td>
</tr>
<tr>
<td>Seam Integrity</td>
<td>X</td>
<td>615-617</td>
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</table>
Appendix G: PPE Inspection Report for W3-FF3

<table>
<thead>
<tr>
<th></th>
<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Cleanliness</td>
<td>X Pass</td>
<td>Fail</td>
<td></td>
<td>Slightly dirty</td>
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<td>Rips, Tears, Cuts, Ect</td>
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<td>Fail</td>
<td></td>
<td>No damage found</td>
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<tr>
<td>Loss of water resistance</td>
<td>X Pass</td>
<td>Fail</td>
<td></td>
<td>No evidence of water damage</td>
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<tr>
<td>Closure system damage</td>
<td>X Pass</td>
<td>Pass</td>
<td>Fail</td>
<td>No damage found</td>
</tr>
<tr>
<td>Damage or deformed</td>
<td>X Pass</td>
<td>Fail</td>
<td></td>
<td>No damage found</td>
</tr>
<tr>
<td>steel toe, mid-sole and</td>
<td>X Pass</td>
<td>Pass</td>
<td></td>
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</tr>
<tr>
<td>shank</td>
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<tr>
<td>Seam integrity and</td>
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<td>Fail</td>
<td></td>
<td>No damage found</td>
</tr>
<tr>
<td>condition of liner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heel and excessive tread</td>
<td>X Pass</td>
<td>Fail</td>
<td></td>
<td>No damage found</td>
</tr>
<tr>
<td>wear</td>
<td></td>
<td></td>
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<td></td>
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<td>Fail</td>
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<tr>
<td>Size of Shell, Liner</td>
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<td>Label readable/legible</td>
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<td>Fail</td>
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FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY
ADVANCE INSPECTION-BOOTS

Serial #: HP310774848
Date of MFG: 10/10
Date of Inspection: 6/20/2015
Assigned to: DELETED
Time of Inspection: 12:35hrs

Inspected by: B. Lichty
Appendix G: PPE Inspection Report for W3-FF3

<table>
<thead>
<tr>
<th>FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY</th>
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<tbody>
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<td>Date of MFG: 10/10</td>
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<tr>
<td>Date of Inspection: 6/30/2015</td>
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<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>610-614</td>
<td>Slightly dirty</td>
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<tr>
<th>Rips, Teers, Cuts, Etc</th>
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<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>610-614</td>
<td>No damage found</td>
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<thead>
<tr>
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<th>Picture Log</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>X</td>
<td>Fail</td>
<td>Fail</td>
<td>610-614</td>
<td>No evidence of water damage</td>
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</table>

<table>
<thead>
<tr>
<th>Closure system damage</th>
<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td>Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>610-614</td>
<td>No damage found</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Damage or deformed steel toe, mid-sole and Shank</th>
<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>610-614</td>
<td>No damage found</td>
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</table>

<table>
<thead>
<tr>
<th>Seam Integrity and condition of liner</th>
<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>610-614</td>
<td>No damage found</td>
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</table>

<table>
<thead>
<tr>
<th>Heel and excessive tread wear</th>
<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>610-614</td>
<td>No damage found</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Correct Assembly and Size of Shell, Liner</th>
<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
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<tbody>
<tr>
<td>Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>610-614</td>
<td>No damage found</td>
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</table>

<table>
<thead>
<tr>
<th>Label readable/Legible</th>
<th>Outer Shell</th>
<th>Inner-Liner</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td>Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>610-614</td>
<td>No damage found</td>
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# Appendix G: PPE Inspection Report for W3-F3

## FAUQUIER COUNTY FIRE RESCUE AND EMERGENCY

**ADVANCE INSPECTION-BOOTS**

<table>
<thead>
<tr>
<th>Serial #</th>
<th>NA</th>
<th>Inspected by:</th>
<th>B. Lichty</th>
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<tbody>
<tr>
<td>Date of MFG</td>
<td>12/14/2007 (not department issued)</td>
<td>Date of Inspection</td>
<td>6/20/2015</td>
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<td>Assigned to</td>
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### Outer Shell

<table>
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<tr>
<th>Evaluation of Fit</th>
<th>Pass</th>
<th>Fail</th>
<th>Picture Log</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanliness</td>
<td>X</td>
<td>Pass</td>
<td>Fail</td>
<td>566-579</td>
</tr>
<tr>
<td>Damage to shell: cracks, dents and abrasions</td>
<td>X</td>
<td>Pass</td>
<td>Fail</td>
<td>566-579</td>
</tr>
<tr>
<td>Damage to liner: rips, tears, or thermal damage</td>
<td>X</td>
<td>Pass</td>
<td>Fail</td>
<td>572</td>
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<tr>
<td>Suspension system</td>
<td>X</td>
<td>Pass</td>
<td>Fail</td>
<td>566-579</td>
</tr>
<tr>
<td>Damage or missing reflective trim</td>
<td>X</td>
<td>Pass</td>
<td>Fail</td>
<td>566-579</td>
</tr>
<tr>
<td>Damage to impact cap</td>
<td>X</td>
<td>Pass</td>
<td>Fail</td>
<td>566-579</td>
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</table>
Appendix G: PPE Inspection Report for W3-FF3

<table>
<thead>
<tr>
<th>Bolted</th>
<th>Boots</th>
<th>Gloves</th>
<th>Hood</th>
<th>Helmet</th>
<th>Additional Comments</th>
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<tr>
<td></td>
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FAQUINER COUNTY FIRE RESCUE AND EMERGENCY

ADVANCE INSPECTION-BOOTS

Serial #: NA

Date of MFG: NA

Assigned to: DELETED

Inspected by: B. Lichty

Date of Inspection: 6/20/2015

Time of Inspection: 1235hrs

Additional Comments: Several small holes found in the pants from leg area below knee and around reflective trim. Also found tear in pants on left leg. None of the holes or tears found on pants made any markings or damage beyond the outer shell. A carabiner and webbing found in bag. Additional in right side of coat found a carabiner attached to side of gear. In left pocket of gear found ear plugs, safety glasses, utility gloves and 1-utility glove. The Helmet and the fire gloves were non-department issued. According to inventory records the last time the coat was cleaned was in June of 2012. Unknown of employees self inspection or washing.
Appendix G: PPE Inspection Report for W3-FF3

W3-FF3 Logistics Review: FCSO Case Number – 2015-003369

I received W3-FF3 FIRE FIGHTING GEAR, SCBA, and RADIO bagged in a black plastic trash bag from the rear yard of the 4214 Pickett St. fire on the day of the fire. The gear was signed over to me by Tech Brett Hamby of Warrenton Vol. Fire Co. The bags were taken to the Catlett logistics shop and secured until opening several days later.

Upon opening, the FF GEAR was examined by Battalion Chief Lichty. The SCBA and RADIOs were examined by Butch Flippo Logistics Lieutenant.

The following is a summary of the findings: Pictures and respective printouts included in the folder.

- **SCBA/PACK 1103-06** with Cylinder **IL604420** was found to be overall in good shape and working condition. Tests were performed on:
  - PAC-ALERT = working with more than ¾ battery life left.
  - CONSOL = smoke covered, but working within 200 psi of cylinder.
  - REGULATOR = working as designed with appropriate HUD lighting.
  - VIB-ALERT = working as designed.
  - PICTURES and PACK TEST REPORTS Included.

- **CYLINDER** was found to have approximately **2500** PSI air remaining. PICTURES included.

- **MASK** appears to be smoke covered, but in good working condition. PICTURES included.

- **VOICE AMP 09110539** was in working condition. PICTURES included.

- **RADIO W3L1** radio FR#1064 was found on channel **11B**, RADIO was found in working condition and tested OK. PICTURES included.

- **LAST FIT TEST** was done on 10/15/14 at 19:14hrs. REPORT on request.

Respectfully submitted on 9/10/2015 by Butch Flippo, Lieutenant, Fauquier County, DFREM
Appendix G: PPE Inspection Report for W3-F3

Posi3 USB Test Results  8/21/2015 11:30:43 AM
Functional Test

Scott
Air-Pak 75 4500
Unit ID: 1103-03
Posi3 USB serial # LD1972 - Calibration was up to date when the test was performed

<table>
<thead>
<tr>
<th>Auxiliary IDs</th>
<th>Functional Tests</th>
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<tr>
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<td>Reducer</td>
<td>Facepiece Leakage</td>
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<td>L/min</td>
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<td>Purge</td>
<td>Pass</td>
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<td>Manifold Volume</td>
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Alarm Activation Pressure
HP Vibralert | 1074 | PSI

Gauge Accuracy
HP Numbers | Pass
1000 PSI  | 2000 PSI  | 3000 PSI  | 3093
Pass  | 976  | 2145  | Pass  | 3093

Breathing Resistance Standard Rate
Air-Pak 75 4500  1103-03  8/21/2015 11:30:43 AM

Minimum  | Maximum  | Breathing Resistance
0.3  | H2O  | 1.4  | H2O  | Pass  | Facemask Pressure
0.5  | H2O  | 2.7  | H2O  | Pass  |
Appendix G: PPE Inspection Report for W3-F3
Appendix G: PPE Inspection Report for W3-F3
Appendix G: PPE Inspection Report for W3-FF3
Appendix F: Scene Photos