MONTGOMERY COUNTY FIRE AND RESCUE SERVICE

SAFETY SECTION INJURY INVESTIGATION REPORT

8609 Second Avenue
Silver Spring, MD

Incident #F10-0137565
Box 01-02

December 9, 2010

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Executive Summary

At 1925 hours on Thursday, December 9, 2010, units from the 1st Battalion were pre-alerted for a reported building fire at 8609 Second Avenue, Suite 304-B in Silver Spring. The initial dispatch at 1926 hours informed units of a reported electrical issue with smoke in the suite.

E701 arrived on the scene at 1927 hours. Upon arrival E701's Driver and E701's Officer were discussing water supply because the unit passed the hydrant at Second Avenue and Fenwick Lane. E701's Officer believed there was a hydrant in front of the address and upon arrival there was not one. The initial water supply plan was to drop the crew with the standpipe packs and E701 would proceed to the hydrant at Spring Street and Second Avenue and lay back to the address and charge the standpipe. This plan was not communicated to E701's crew or other responding units.

E701's Driver waited for the crew to disembark and retrieve the standpipe packs when E701's Officer was met by the calling party who briefed E701's Officer of the situation. During this time period, E701 Left and E701 Right met at the rear of the unit and decided to pull the #2 cross lay. E701 Left started advancing the line to the building with E701 Right clearing the skid load.

E701 was queried by E719 for their water supply instructions. E701 Driver replied they were laying out from the hydrant at Second Avenue and Spring Street and E719 was to pick-up their line. When E701's Officer exited the cab and shut the door, E701 headed toward the designated hydrant. E701's Officer is then heard shouting on 7-Charlie "STOP, STOP." As E701 went down the street the attack line was pulled with it. E701 Right became entangled in the line and was dragged 45 feet from the front of the building to a point in the middle of Second Avenue.

E701 Officer transmitted on 7-Charlie that they needed to be replaced on the assignment, they had a firefighter down, and that they needed a medic unit. At 1929 hours on 7-Alpha, AT719 established command on side alpha and reported a 4 story commercial occupancy with nothing evident in the investigative mode. AT719 made another radio request for a medic unit for the injured firefighter. AT719 thereafter transmitted the same message on 7-Charlie, the correct talkgroup. The medic from E719, the crew from A701 and E701's Officer begin treating E701 Right. At 1930 hours M701 was dispatched to assist with the injured firefighter.

C742-Charlie assumed command from AT719 and assigned BC701 to coordinate the treatment of the injured firefighter. Command reported a defective light ballast and that E719, E702, AT719 and T716 would be held to handle the original incident.

E701 Right was transported to Med Star at the Washington Hospital Center with orthopedic injuries via M701.

Injury Investigation and Team Members

On 12/09/2010 Safety 700B, Captain Neal Trevey, responded to the scene to start the initial injury investigation. Captain Trevey documented the scene and impounded all of E701 Right's PPE. Shortly after arriving, Captain Trevey notified Safety Chief 700 of the situation. After consultation with Safety 700, Safety Chief 700 reported to Fire Station 1 to assist in the initial investigation.

BC701B, DC700B, BC702 and Safety700B had units with direct knowledge or involvement in the firefighter injury report to Fire Station 1 for the purpose of gathering witness statements, CISM debriefing, and initial interviews. BC701B escorted E701's driver to FROMS for post-collision drug/alcohol testing.

The Injury Investigation Team consisted of:

Assistant Chief Michael Nelson, MCFRS Safety Chief – Lead
Battalion Chief Kevin Frazier, MCFRS Safety BC/Fire Investigations – Asst. Lead
Captain M. Allen Keyser, IAFF Joint Health & Safety – Team Member
Captain Neal Trevey, MCFRS Safety Section – Team Member
Mr. Fred Enos, MCG Risk Management – Team Member

BC Gary Cooper, BC701B – Logistical Support
BC Peter Friedman, BC704B – Family Liaison

METHODOLOGY

The Human Factors Analysis and Classification System (HFACS) was used as the template for this report. HFACS is a validated accident investigation tool used by the United States Navy. HFACS was selected for the Second Avenue Investigation after the Injury Investigation Team determined that human error and behaviors were the major contributing factors to the incident.

Information about HFAC's can be found at:

http://www.firefighternearmiss.com/Resources/HFACS/Active_Resources/Applying_HFACS_to_Aviation_Accidents_Wiegmann_&_Shappell.pdf

Definitions

Human Factors Analysis and Classification System (HFACS) – A validated accident investigation technique and reporting system developed and used by the United States Navy. The HFACS format was selected for this report since it was determined the bulk of what happened on Second Avenue was due to error. Application of the model starts at the point of an "accident" and retraces the path to the accident by looking at four components: Unsafe Acts, Pre-conditions to Unsafe Acts, Unsafe Supervision, and Organizational Influences. *The term "unsafe" should not be construed to mean actions that contributed to the accident were necessarily deliberate. Since injuries occurred, the model reasons that something "unsafe" took place that contributed to the accident. It **does not** mean that an individual or team deliberately violated policy.*

Unsafe Act(s) – The initial point that typically triggers an HFACS investigation. There are two types of unsafe acts: errors (unintentional actions) and violations (deliberate deviation from policy or practice).

Preconditions to Unsafe Acts – Preconditions assesses two categories: the substandard conditions and substandard practices of the personnel involved. Substandard conditions include adverse mental states like being focused or distracted, adverse physiological states such as fatigue or illness, and physical or mental limitations meaning the personnel were unfit for the job. Substandard conditions assess crew use and personal readiness.

Unsafe Supervision – This category of HFACS looks to the actions of the supervisor and the role those actions played on the incident.

Organizational Influences – Looks at what role the organization played in the incident. Organizational factors evaluated include: resources and training provided, organizational culture, etc.

Incident Description

At 1925 hours on Thursday, December 9, 2010, units from the 1st Battalion were pre-alerted to respond on 7-Charlie for a reported building fire at 8609 Second Avenue, Suite 304-B with the cross street of Fenwick Lane in Box Area 1-2. At 1926 hours ECC dispatched Box 1-2 for reported electrical odor with smoke in the suite sending Engines 701, 719, 702, 754 and 716; Tower 719 and Truck 716; Rescue Squad 742B; Ambulance 701; the Silver Spring and Takoma Park Duty Officers; as well as Battalion Chiefs 701 and 702.

Prior to the dispatch, E701 was pulling into Station 1 from another call when personnel in the station advised that a 1 box was about to be dispatched after receiving a call from ECC. E701's enroute status was at 19:25:45 and their arrival status was at 19:27:58. E701's Officer knew there was a hydrant in front of 1400 Fenwick Lane and one at the corner of Spring Street and Second Avenue. E701 Officer told E701's Driver that there was a hydrant in front of the dispatched address and had only opened the map book as E701 arrived on the scene.

Upon arrival E701's Driver and E701's Officer were discussing water supply on the unit's intercom system because the unit had passed the hydrant at Second Avenue and Fenwick Lane and there was no hydrant in front of the address. The initial water supply plan developed by E701's Officer and Driver was to drop the crew with the standpipe packs and E701 would proceed to the hydrant at Spring Street and Second Avenue, lay a supply line back to the building and charge the standpipe. The crew from E701 exited the unit upon arrival and the plan was never communicated by E701's Officer to the crew.

E701's Driver waited for E701's Officer to exit the unit and the crew to retrieve the standpipe packs. E701 Officer's SCBA facepiece became entangled in the headset as he exited the front of the engine. At the same time E701's Officer was met by the calling party who briefed the officer of the situation. During this time period, E701 Left and Right had exited the unit and met at the rear of the unit and decided to pull the number 2 cross lay. E701 Left starting advancing the line to the building and E701 Right cleared the skid load.

E701 was queried by E719 for their water supply instructions. E701's Driver replied they were laying out from the hydrant at Second and Spring Street and E719 was to pick-up their line. E719 had traveled south on Georgia Avenue and made a right turn on Fenwick Lane, anticipating E701 would have used the hydrant at Second Avenue and Spring Street for their water supply.

When E701's Officer shut the front door, E701 proceeded toward the designated hydrant. E701's Officer is then heard shouting on 7-Charlie "STOP, STOP." With this transmission on the radio many units reported they stopped. As E701 drove down the street, AT719 approached from the opposite direction and arrived on the scene (19:29:02 hours). While E701 was moving to the hydrant, the attack line was pulled with it. E701 Right became entangled in the line and was pulled off the front landing of the building, hit a tree, shrubbery and a sign post.

AT719's Driver reported that E701 Right was spinning on his feet like a top. E701 Right was dragged 45 feet, finally coming to a rest in the middle of Second Avenue.

E701's Officer transmitted on 7-Charlie that they needed to be replaced on the assignment and that a firefighter was down and needed a medic unit. At 1929 hours on 7-Alpha, AT719 established command on side alpha reporting a 4 story commercial building with nothing evident in the investigative mode. AT719 made another request for a medic unit as well. AT719 then transmitted the same message on 7-Charlie, the assigned incident talkgroup. The medic from E719, the crew from A701, and E701's Officer began treating E701 Right. At 1930 hours M701 was dispatched to assist with the injured firefighter.

E702 coordinated the water supply issues with the remaining engine companies after E701 advised they needed to be replaced. C742-Charlie assumed Command from AT719 at 1933 hours and assigned BC701 to coordinate the treatment of the injured firefighter. Command reported a defective light ballast and that E719, E702, AT719 and T716 would be used to handle the original incident.

BC701 arrived at 1933 hours and coordinated the treatment of E701 Right. E701 Right was transported by M701 to Med Star at the Washington Hospital Center with orthopedic injuries.

E701 Staffing and Experience Level

Position	**Rank**	**Years Experience**
E701 Driver	Firefighter 3	8 years career
E701 Officer	Captain	33 years career
E701 Right	Firefighter 3	8 years career
E701 Left	Firefighter/Paramedic 3	5 years career

E701 crew was normally assigned to Fire Station 1

Weather

The National Weather Service reported the weather for Silver Spring, MD for December 9, 2011, at 19:00 hours to be 30 degrees F, clear, with calm winds.

INCIDENT TIMELINE

19:22	911 Call received from occupant reporting smoke in the office at 8609 Second Ave, Suite 304B. Occupant reports smells something electrical and sees smoke
19:25	Pre-Alert on 7 Alpha – Units to respond on 7 Charlie, 8609 Second Avenue, Suite 304B, cross street of Fenwick Lane for the Building Fire, Box Area 1-2
19:26	Dispatch on 7 Alpha - Units to respond on 7 Charlie, 8609 Second Avenue, Suite 304B, cross street of Fenwick Lane for electrical odor and smoke in room – Engines 701, 719, 702, 754, & 716; Tower 719 and Truck 716; Rescue Squad 742B; Ambulance 701; Sliver Spring and Takoma Park Duty Officers; Battalion Chiefs 701 and 702
19:27:58	E701 arrives on scene based on MDC status
19:28:26	E701 Officer transmits “Stop, Stop” on 7 Charlie
19:28:40	E701 advises they need to be replaced on the call, that they have an injured firefighter, and requested a medic unit
19:29:02	AT719 arrives on scene, establishes Command and reports injured firefighter on 7 Alpha
19:30:56	M701 dispatched
19:33:00	C742C arrives on scene and assumes Command
19:47	Command is terminated

TRANSCRIPT OF RADIO COMMUNICATION on 7 Charlie

Time starts at 00:00 (min:sec) on CD
Critical incident/clock times are in red (hour: minute: seconds)

00:03	Tower 719 response check
00:05	Battalion 702 response check
00:09	E719 to E701 did you call a plug yet?
00:11	E701 going to be laying out at Spring and Second Avenue; you can pick it up at the corner by E701 Driver
00:19	Stop, Stop by E701 Officer (19:28:26 actual time)
00:20	E719 laying out at Fenwick and Second Avenue, E701 pick it up now
00:33	E701 Montgomery, have E701 replaced, we have a firefighter down, we are going to need a medic unit (19:28:40 actual time)
00:55	E754 to E702 where are you laying out from?
00:56	Tower 719 on scene 4 story commercial, nothing evident, have command in the investigative mode, need a medic unit we have an injured firefighter
01:08	Montgomery announces Tower 719 with Command and getting medic unit

01:18	E702 to E754 pick up 19's line and I will remain 3rd due, I will lay out from Spring and Second Avenue, E716 do you copy
01:38	E716 copies
01:42	Command have units not on scene slow to routine, odor of a light ballast
01:50	Battalion 701 to Command, exact location of firefighter and nature of injuries
01:59	In the street on side alpha, has at least 1 broken leg
02:13	M701 on scene
02:17	T716 3 story in rear; 3 stories above the garage in rear
02:31	E754 calls Command about taking 3rd due or 4th due
02:34	Command replies take assigned position
02:56	E702 to E754 pick up 19's line, E702 laying out at Cameron and Spring, 16 pick it up
03:06	E754 with 19's line
03:12	Chief 742 Charlie on-scene; Battalion 701 I can take Command if you want, C742/Charlie with Command, BC701 with injured firefighter
03:30	Command assigns E719 Division 3
04:11	Montgomery advises Command Safety 700 enroute
04:28	Division 3 Command, let's hold it with 2 and 2 for now
04:44	Second Avenue holding E719, E702, AT719 and T716; T716 to Division 3
04:59	Command to Division 3 for update
05:16	C742/C give Command back to E719
05:30	Command to Montgomery, turn Command to E719 switch to Bravo
05:39	Montgomery acknowledges Command and announces units operating on Box 1-2 holding E719, E702, AT719 and T716; further requests switch to 7 Bravo, all units may go in service on 7 Bravo, Command has been terminated
06:03	Command Terminated 19:47 actual time announced on 7 Charlie
06:04	Montgomery to E719 do you require an operator?

RECOMMENDATIONS

General

- Distribute copies of this report to all work sites.
- Post report on MCFRS Quick links.
- Schedule a series of presentations to units/ personnel involved to answer questions that arise from distribution of the report.

Procedural

- Require personnel not to exit apparatus until instructed by the unit officer.
- Personnel ***must*** not pull lines or initiate other actions without orders or direction from the unit officer.
- Unit Officers ***must*** ensure all personnel are aware of the initial action plan.
- Unit Officers ***must not*** allow personnel to take action that contradict the action plan.
- Unit Officers on Engine Companies ***must*** give water supply instructions, initial on-scene reports, and situational reports as outlined in MCFRS Policy and Procedure 24-07AMII, *SOP for Safe Structural Firefighting Operations,* Section IV.
- Drivers ***must*** check mirrors prior to moving apparatus.
- Unit Officers ***must*** be aware of their crew's actions and maintain situational awareness of their surroundings.
- Clear concise communications ***must*** be used in an attempt to stop units. i.e.: "E701 Stop"
- Unit Officers should not allow their unit to move with out knowing where they are going and finding the map(s) of the dispatched location.
- Station Officers should frequently conduct building and area familiarization drills for personnel to become familiar with their response areas.
- Develop a situational awareness program for all levels of the Department.
- Personnel need to constantly train on SOP's and discuss areas in their first due where other water supply measures must be implemented or what to do when a hydrant is missed.
- Update The Injury Investigation Team Policy to reflect changes in the Department's structure (i.e. enhanced Safety Section presence, activation procedure, assignment).
- Injury investigation reports should be completed within 120 days of the team convening if possible.

Safety/PPE

- Reinforce that the PPE provided/approved, when worn properly, reduces the impact of injury.

FINDINGS

The Findings Section contains four components for each contributing action identified by the team: The HFACS Level and action, a Background statement that provides a narrative of the action, an impact statement that describes what influence the action had on the incident and Corrective Measure(s), and recommendations to prevent the action from happening again.

The report also contains four additional sections; Injuries, Care and Treatment, Apparatus Impoundment and Inspection, and ECC Call QA and PPE. These sections describe the injuries sustained by the member, care given, apparatus impoundment and subsequent inspection of E701 by the Safety and Fleet Sections, quality assurance of the ECC call taker and incident type, and a discussion regarding how the PPE performed.

Unsafe Acts

The investigative team determined that a combination of active and latent actions contributed to the injury.

1. Unsafe Act – E701's Officer fails to use the map book to check for the hydrant location.

- **Background:** Based on an interview with E701's Officer and E701's Driver, E701's Officer thought there was a hydrant in front or close to the dispatched location and did not use the map book to check for the location of the hydrant.

- **Impact:** Failure to use the map book to check for hydrant location started the chain of events that led to the injury. There is no hydrant in front of the address. This causes E701's Officer to develop an alternative plan for water supply with E701's Driver.

- **Corrective Measure(s):** Engine company officers **must** consult the map book for confirmation and establishing water supply as outlined in MCFRS Policy and Procedure 24-07AMII, *SOP for Safe Structural Firefighting Operations,* Section IV, Water Supply Instructions.

2. Unsafe Act – E701's Officer believes there is a hydrant in front of the structure and has the E701's Driver drive past the known hydrant.

- **Background:** Based on E701 Officer's belief that there is a hydrant in front of the structure, E701's Officer instructs E701's Driver to pass the known hydrant at Second Avenue and Fenton Street.

- **Impact:** Based on this action, E701 does not lay a supply line and upon arrival at the dispatched location E701's Officer and E701's Driver find it is too far to hand-lay a line back to the hydrant at Second Avenue and Fenwick Lane or to the hydrant at Second Avenue and Spring Street. E701's Officer fails to give water supply instructions to E719.

- **Corrective Measure(s):** Unit Officers on Engine Companies **must** give water supply instructions as outlined in MCFRS Policy and Procedure 24-07AMII, *SOP for Safe Structural Firefighting Operations,* Section IV(a), Size-up and Initial Communications.

3. Unsafe Act – E701 Officer fails to provide initial on-scene reports.

- **Background:** Upon arrival, E701's Officer did not provide the initial on-scene communications and size-up. E719 prompted E701 for water supply instructions. The initial on-scene reports are given by AT719 upon arrival and after the firefighter injury has taken place.

- **Impact:** Failure to provide the initial on-scene communications reports does not allow for the initial action plan implementation.

- **Corrective Measure(s):** First arriving unit officers **must** give size-up and initial communications to include water supply instructions, initial on-scene reports and situational reports as outlined in MCFRS Policy and Procedure 24-07AMII, *SOP for Safe Structural Firefighting Operations,* Section IV a-d.

4. Unsafe Act – E701's Officer and Driver develop an initial action plan including a water supply plan, but E701's Officer fails to inform the remainder of the crew.

- **Background:** When E701 arrives at the dispatched address and does not find a hydrant, E701's Officer and Driver develop an action plan to include initial water supply and fire attack. The action plan developed for water supply was for E701 to drop the crew with the standpipe pack and to proceed to the hydrant at Second Avenue and Spring Street, lay a line back to the building and charge the standpipe. This plan was never relayed to E701 Right and Left who exited the engine when the unit stopped.

- **Impact:** Failure to inform E701 Right and Left of the action plan leads the crew to exit the engine with no information of E701 Officer's decision and in turn they pull the number 2 cross-lay.

- **Corrective Measure(s):** Unit Officers **must** ensure that all personnel on their unit are aware of the action plan.

5. Unsafe Act – E701 Left and Right exit the engine upon arrival unaware of the incident action plan and pull the #2 cross-lay.

- **Background:** E701 Right and Left exit the unit without knowledge of the action plan and start stretching the number 2 cross-lay to the reported suite on the 3rd floor. According to interviews, there is a

standing practice at Fire Station 1 on this shift for the crew to pull an attack line without orders from the Officer.

- **Impact:** The crew's action of pulling the attack line from the officer's side of the engine into the structure is not known to E701's Driver. E701's Driver was waiting for E701's Officer to exit the unit in order to proceed to the hydrant and lay a supply line back to the building.

- **Corrective Measure(s):** Personnel **must not** exit the unit without knowing the action plan. Personnel **must not** exit the unit and initiate actions without orders from the unit officer.

6. Unsafe Act – E701's Officer fails to recognize actions of E701 Left and Right.

    - **Background:** Upon arrival at the scene, E701 Right and Left exit the engine and move to the rear of the unit. E701 Left then initiated the pulling of the number 2 cross-lay shoulder load with E701 Right pulling the skid load. E701 Officer's facepiece gets caught up in the head set while he is exiting the unit. E701's Officer is met by the calling party who informs E701's Officer of the situation.

    - **Impact:** E701's Officer is unaware of the attack line deployment.

    - **Corrective Measure(s):** Unit Officers **must** be aware of their crew's actions, keep crew integrity, and maintain situational awareness of their surroundings.

7. Unsafe Act – E701's Driver moves the unit with a cross-lay deployed.

    - **Background:** After E701's Officer exits the unit, E701's Officer moves toward the steps of the building where E701 Left and Right had advanced the number 2 cross-lay. When E701 moved toward the hydrant at Second Avenue and Spring Street, E701's Officer sees the line becoming taught and shouts "STOP, STOP" over the radio in an attempt to have E701 stop. During this time E701 Left lets the line go and E701 Right becomes entangled in the line and is dragged from the landing in front of the building through the bushes and comes to rest in the middle of Second Avenue.

    - **Impact:** Failure by E701's Officer to stop the movement of the unit leads to the injury of E701 Right.

    - **Corrective Measure(s):** Clear concise communications must be used in an attempt to stop units. i.e.: "E701 Stop."

8. Unsafe Act – E701's Driver moves the engine without checking mirrors.

- **Background:** E701's Driver is waiting for E701's Officer and E701's crew to exit the unit and obtain the standpipe packs prior to moving to the hydrant at Second Avenue and Spring Street. During this period E719 inquires about water supply instructions and E701's Driver relays the water supply instructions. When E701's Officer closes the cab door, E701 accelerates towards the hydrant without checking the mirrors.

- **Impact:** The failure to check the mirrors leads to E701's Driver to not see that a cross-lay had been deployed off the side of the engine. Upon movement of E701, the attack line was dragged with it.

- **Corrective Measure(s):** Drivers **must** check all mirrors prior to moving apparatus.

Preconditions to Unsafe Acts

Preconditions to unsafe acts look at the condition of personnel and injured persons as it affects performance. The investigative team determined substandard conditions of the affected personnel to include channelized attention, distraction, and loss of situational awareness contributed to the event. Substandard practices, including the lack of Crew Resource Management, contributed as well.

Substandard Conditions of Affected Individual(s)

Adverse Mental State

1. Channelized Attention

- **Background:** There were ample indications that E701's entire crew channelized their attention to specific tasks that they perceived as priorities.

    1. **E701 Officer:** E701 Officer's attention became focused on developing an action plan to include water supply after finding no hydrant in front of the structure and after allowing the unit to pass a known hydrant.

    2. **E701 Driver:** E701 Driver's attention is channelized toward correcting the water supply issue and implementing the action plan that was developed with E701's Officer.

3. **E701 Right and Left:** E701 Right and Left channelized their attention towards advancing an attack line to the reported location.

- **Impact:** The channelized attention by all of E701's personnel allows for multiple action plans to be developed and implemented without all members of the crew knowing the plans.

- **Corrective Measure(s):** All personnel **must** know the action plan prior to taking any action. The Officer in charge must develop the action plan.

2. Distraction

- **Background:** E701 crew's distraction begins when the officer fails to consult the map book for water supply locations. As a result, an inappropriate plan for water supply is developed based on an incorrect conclusion that a hydrant is located in front of the dispatched address. Upon arrival, and after not locating the hydrant, E701's Officer and Driver are further distracted by having to re-develop an action plan including water supply.

- **Impact:** The initial distracters that started en-route to the incident started the chain of events that led to the firefighter injury.

- **Corrective Measure(s):** Unit officers must not allow their unit to move without knowing where they are going and finding the map(s) of the dispatched location. Water supply locations must be identified before the unit commits to the scene.

3. Loss of Situational Awareness

- **Background:** Upon E701's arrival at the dispatched location, E701's Officer lost situational awareness of the crew.

- **Impact:** The loss of situational awareness by E701 Officer allows the attack line to be pulled by E701 Left and Right, despite the fact that E701 was going to drop the crew and move to the hydrant at Spring Street and Second Avenue.

- **Corrective Measure(s):** The Department needs to develop remediation for the individuals involved. The remediation should focus on maintaining situational awareness.

Substandard Practices of Individual(s)

Crew Resource Management (CRM)

Department personnel have been trained in CRM. CRM issues discussed here reinforce the continued use of CRM. The investigation identified several elements of the incident that good use of CRM could have affected and possibly changed the outcome.

1. Failed to Communicate
    - **Background:** Communications are a key element in the mitigation of any event. Failure to provide the necessary information to the crew and other responding units causes confusion and leads to unknown actions. CRM also stresses good two-way communications to allow the sender to consider items they may have missed.

    - **Impact:** E701's Officer failed to communicate the initial water supply instructions in a timely manner and failed to communicate an initial on-scene report. E701's Officer failed to communicate the initial action plan to the crew of E701. E701's crew failed to communicate to E701's Officer that they had pulled the number 2 cross lay. E701's Driver was not told that an attack line was pulled.

    - **Corrective Measure(s):** Unit officers must control and direct the actions of the unit and its crew and **must** communicate actions to the crew and other units responding as appropriate.

2. Failed to Lead and Follow
    - **Background:** During the interview process, the personnel at Fire Station 1 advised there is a standing practice on the shift for personnel to initiate actions like exiting the unit and pulling lines without orders or direction from the unit officer.

    - **Impact:** Actions self-initiated by the crew of E701 led to the deployment of the cross-lay without the Officer's knowledge.

    - **Corrective Measure(s):** Personnel must not initiate actions without direction or approval of the unit officer.

Unsafe Supervision

The role of any supervisor is to provide the opportunity to succeed. To do this, the supervisor, no matter what level of operation, must provide guidance, training opportunities, leadership, motivation, as well as the proper role model to be emulated (Reason, 1990).

Inadequate Supervision

1. Failed to Provide Guidance

- **Background**: As stated earlier, the personnel at Fire Station 1 advised there is a standing practice on the shift for personnel to initiate actions like exiting the unit and pulling lines without orders or direction from the unit officer. The crew from E701 pulled a cross-lay off the engine when the action plan developed was to use standpipe packs.

- **Impact:** Actions self-initiated by the crew of E701 led to the deployment of the cross-lay without the Officer's knowledge.

- **Corrective Measure(s):** Personnel must not initiate actions without direction or approval of the unit officer.

Permitted Inappropriate Operations

1. Permitted Unnecessary Hazard:

- **Background:** E701's Officer allowed the crew to pull lines without orders or direction

- **Impact:** E701 Right became entangled in the hose line and was dragged 45 feet when the engine moved to the hydrant.

- **Corrective Measure(s):** Unit officers **must not** allow personnel to take actions that contradict the action plan.

Failed to Correct Known Problem

1. Failed to correct inappropriate/unsafe behaviors (freelancing)

- **Background:** Personnel assigned to E701 routinely make operational decisions without input from an Officer.

- **Impact:** By allowing personnel assigned to E701 make critical decisions without input or direction from an officer, freelancing occurs on a regular basis.

- **Corrective Measure(s):** Officers **must** provide direction and leadership.

Organizational Influences

Organizational influences looks at what MCFRS did, or didn't do at the organizational level and how these influences contribute to the incident. Organizational contributions include: resources and training provided, organizational culture, etc.

Organizational Climate

Culture/Norms/Rules

- **Background:** The *SOP for Safe Structural Firefighting Operations* states that the first due engine should initiate water supply by laying a supply line from the closest hydrant, initiating a split lay, or by initiating a reverse lay. When E701 arrived on scene and did not have a hydrant in the front of the structure, a reverse lay, performed by the second due engine, should have been considered.

- **Impact:** Personnel perceive that SOP's must be followed to the letter. Personnel forget that there are other permissible options to obtain water supply other than the forward lay.

- **Corrective Action(s):** Personnel **must** constantly train on SOP's and discuss recovery from mistakes and discuss areas in their first due where alternative water supply measures must be implemented.

INJURIES, CARE and TREATMENT

E701 Right was treated at the scene by the crew of E701, A701, E719's paramedic and M701. E701Right was transported by M701 to the Med Star trauma unit at the Washington Hospital Center.

E701 Right sustained orthopedic injuries to his right leg.

The Safety Section requested the EMS Quality Assurance Officer to review patient care for compliance with medical protocols. This review revealed that all care provided to Engine 701 Right by MCFRS personnel was appropriate and complete according to the Maryland Medical Protocols for Emergency Medical Service Providers.

See appendix attachment page 31

ECC CALL QUALITY ASSURANCE

The Safety Section requested that the Training and QA Captain at ECC review the initial call taker's processing of the call. The conclusion of the Training and QA Captain was that the call taker followed proper procedures.

See appendix attachment page 32

APPARATUS IMPOUNDMENT & INSPECTION

The Safety Section impounded E701 as part of the injury investigation. The purpose of the impoundment was to check the unit for damage and to rule out any mechanical issues that may have contributed to the injury.

E701's Driver did not indicate any mechanical issues with the unit affecting its operation prior to the incident.

Safety 700B, Safety Chief 700 and Safety 700D conducted a preliminary inspection at Fire Station 1 to determine any damage to E701 and to determine what safety systems were functional. The initial inspection revealed that the number 2, 200 foot, 1 ¾ inch cross lay had been over-stretched and destroyed after being dragged and coming in contact with multiple objects. The officer's side, number 2 discharge, Stortz adapter lock was bent. The initial inspection also found that the seat belt alarm speakers, under the center maintenance panel in the cab, were filled with paper.

E701 was then taken to the MCFRS Fleet Section for a Safety and Mechanical Inspection by the Central Maintenance Facility (CMF) staff. The inspection noted 9 items with 2 being caused by the incident. CMF checked the unit and repaired items noted. They noted no other damage or mechanical issues with E701.

See appendix attachment page 33

PPE and EQUIPMENT

The PPE worn by E701 Right was photographed and documented on the scene by Safety 700. The PPE and SCBA worn by E701 was impounded by Safety 700 and transferred to the custody of the Fire and Explosive Investigative Section until the Investigative Team could inspect and do further documentation. The SCBA was then transferred to the SCBA Shop for inspection and documentation.

At the time of the injury E701 Right was wearing complete MCFRS issued PPE including SCBA. The SCBA cylinder sustained damage from being dragged and E701 Right's PPE trouser and right boot were destroyed as a result of EMS personnel cutting them off to gain access to his injuries.

E701 Right's PPE and SCBA did not contribute to the injury. It is likely that E701 Right's injuries were mitigated because he was wearing full PPE, including helmet with chin strap in place,

CONCLUSIONS

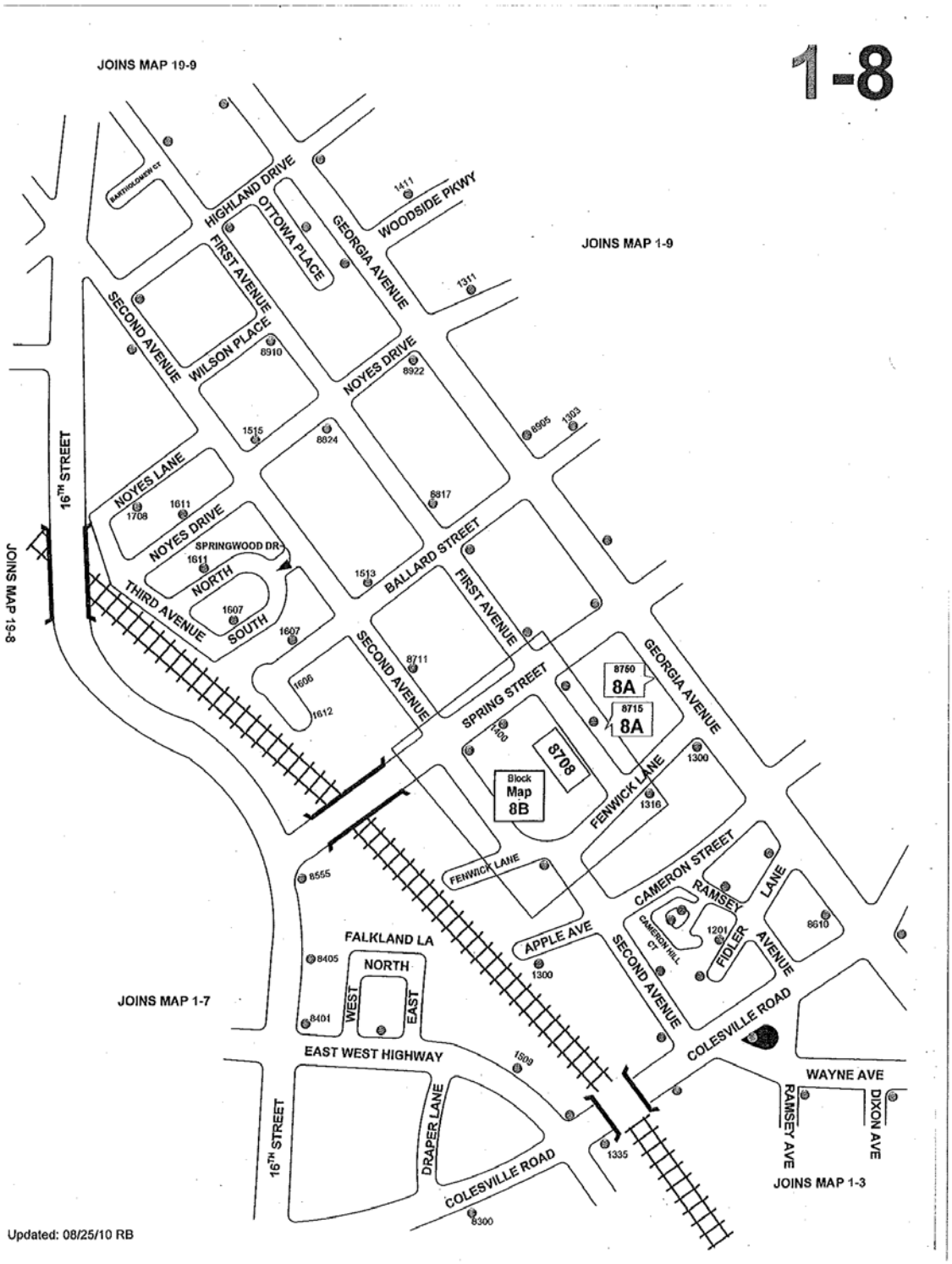
The incident that occurred at 8609 Second Avenue was preventable. Human factors played a significant role in the cause of the firefighter injury.

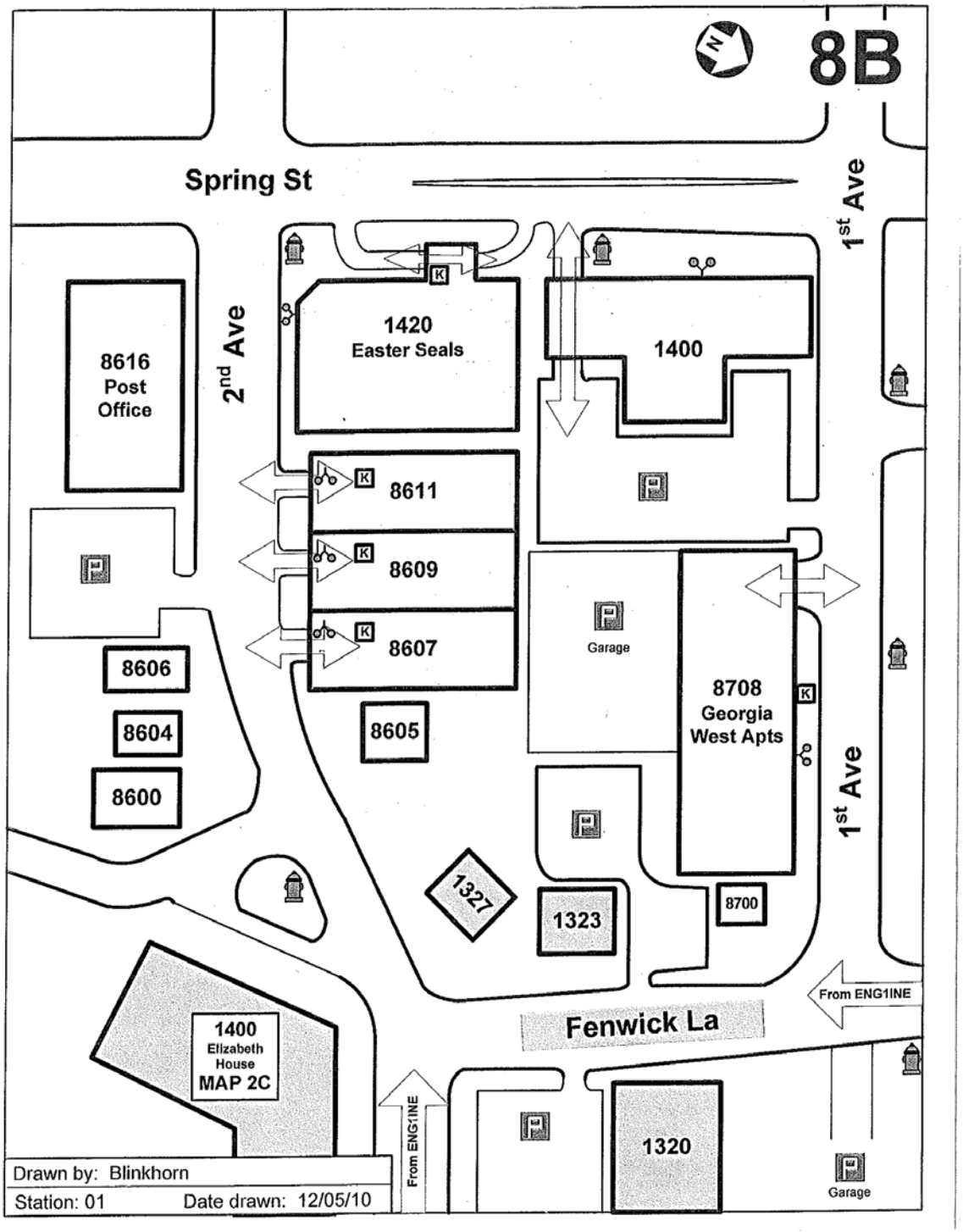
The factors that created the chain-of-events resulting in the firefighter injury are directly related to the officer on E701 not performing supervisory functions and following Standard Operating Procedures. The driver of E701 was unaware that the crosslay had been deployed but, should have checked the mirrors prior to moving the unit.

The Department must continue to train its personnel to manage risk and must attempt to reduce human error through training and performance management.

APPENDIX

SITE MAPS


1-8
JOINS MAP 19-9
JOINS MAP 1-9
JOINS MAP 19-8
JOINS MAP 1-7
JOINS MAP 1-3
HIGHLAND DRIVE
OTTOWA PLACE
GEORGIA AVENUE
WOODSIDE PKWY
FIRST AVENUE
SECOND AVENUE
WILSON PLACE
NOYES DRIVE
16TH STREET
NOYES LANE
SPRINGWOOD DR.
NORTH
SOUTH
THIRD AVENUE
BALLARD STREET
SPRING STREET
FENWICK LANE
CAMERON STREET
RAMSEY
LANE
CAMERON HILL CT
FIDLER
AVENUE
APPLE AVE
FALKLAND LA
WEST
EAST
EAST WEST HIGHWAY
DRAPER LANE
COLESVILLE ROAD
WAYNE AVE
RAMSEY AVE
DIXON AVE
8760
8A
8715
8A
8708
Block
Map
8B
Updated: 08/25/10 RB


8B
Spring St
1st Ave
2nd Ave
1420
Easter Seals
1400
8616
Post
Office
8611
8609
8607
8606
8604
8600
8605
Garage
8708
Georgia
West Apts
1st Ave
1327
1323
8700
From ENG1INE
Fenwick La
1400
Elizabeth
House
MAP 2C
From ENG1INE
1320
Garage
Drawn by: Blinkhorn
Station: 01
Date drawn: 12/05/10

PHOTOS

8609 2nd Avenue Side A

Stairwell to Right of Door was location of E701 Right prior to the Injury

Close up of Side A at 8609 2nd Avenue

View from landing toward 2nd Ave

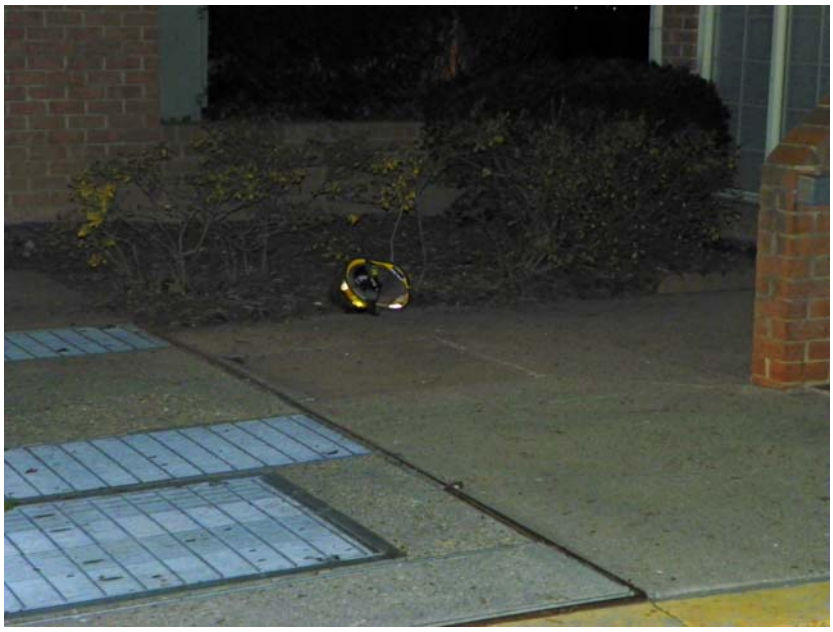
Damage to tree from hose

View from 2nd Ave looking toward Spring St.
Area where E701 Right came to rest

View from 2nd Ave looking toward Fenwick Lane
E701's #2 crosslay

E701 Right's PPE and SCBA

E701 Right's Turnout Pants



E701 Right's Helmet Located to left of stairwell on Side A

MONTGOMERY COUNTY FIRE AND RESCUE SERVICE

Isiah Leggett
County Executive

Richard R. Bowers
Fire Chief

MEMORANDUM

DATE: December 10, 2010

TO: Assistant Chief Mike Nelson
MCFRS Safety Chief

FROM: Captain Robert Landry
EMS Quality Assurance Officer

SUBJECT: Injured firefighter care review [10-0137565]

I have reviewed the patient care report that was submitted documenting the care provided to [*Engine 701-Right*] after sustaining injuries while operating on incident 10-0137565.

This review revealed that all care provided to [*Engine 701-Right*] by MCFRS personnel was appropriate and complete as directed according to the Maryland Medical Protocols for Emergency Medical Services Providers.

Please contact me if you require any further assistance in this matter.

cc: Chief Diane Zuspan

MONTGOMERY COUNTY FIRE AND RESCUE SERVICE

Isaiah Leggett
County Executive

Richard Bowers
Fire Chief

Memorandum
December 17th 2010

TO: Assistant Chief Michael Nelson Safety Chief

VIA: Assistant Chief Frank Rothenhoefer Fire ECC Section Chief

FROM: Captain Bruce Gibbs Training/QA Officer Fire ECC

RE: Incident #F10-0137565

I have reviewed the 911 call taken by the PSCT on December 9th and found that the PSCT processed the call properly. The call was received by the fire department ECC at 19:22 and lasted 1miniute and 13 seconds. During the call the caller stated that he smelled something in his room that smelled electrical. He stated that he was unsure of where it was coming from. When the caller went downstairs to investigate and still smelled the electrical odor and saw visible smoke in the suite. The caller stated no less than 3 times that he saw visible smoke and was asked directly by the PSCT if he saw smoke and the callers' response was yes. At that time the PSCT process the call as a BOX and advised the caller to exit the building if safe to do so. During this call the PSCT followed the guidelines in which he was trained and properly processed the call type. Please feel free to contact me directly if you have any other further questions regarding this matter.

MONTGOMERY COUNTY FIRE AND RESCUE SERVICE

Isiah Leggett
County Executive

Richard Bowers
Fire Chief

MEMORANDUM

December 15, 2010

TO: Assistant Chief M. Nelson
MCFRS Safety Section

FROM: Assistant Chief R. Holzman
MCFRS Fleet Section

SUBJECT: Engine 701 1-08-7623 Inspection December 10, 2010

On the above referenced item, the MCFRS Fleet Section performed a safety review of the vehicle post an incident on December 9, 2010 at your request. The following findings were present on this unit on inspection:

1. Drivers seat belt alarm found unhooked (not working) - We cannot determine if this was deliberate or if it occurred based on something being placed on it. The connection has been corrected. There was no defect in our system for this item.
2. Officers door alarm not working - The door switch for this item was defective and was replaced. This item was not reported as defective.
3. Driver's side pump panel step alarm tied up not working – The switch was damaged and has been replaced. This was reported in the defect system.
4. Rear pull out step alarm not working. This was repaired and was not reported in the defect system.
5. Found seat belt alarm (under center maintenance panel) filled with paper to lower volume. The paper was removed the alarm was audible even with the paper in place.
6. Found wheel chock handle broken (not oos still useable) this item will need to be repaired by SSVFD.
7. Officer's side # 2 discharge Stortz adapter lock bent. This was repaired damaged by the event.
8. Officer's side cross-lay light bezel bent downward due to damage from the event.

Montgomery County Fire & Rescue Fleet Section
14935 B Southlawn Lane, Rockville, Maryland 20850
240-777-2485 (O) 240-777-2499(F)
www.montgomerycountymd.gov

9. Measured door open to see when light/alarm activates ,measured at 4 “ away from striker

The remainder of the vehicle was checked and no other damage or items were noted. The unit per your direction was released back to Station 1 that night. Unless otherwise noted above all other audible and visual warning devices were working.