Montgomery County Fire and Rescue Service

POST INCIDENT ANALYSIS

3rd Alarm Retail Clothing Store Fire
6822 New Hampshire Avenue
Takoma Park, MD

Incident Date: December 5, 2009

Submitted by
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On December 31, 2009

Incident Overview

Note: This post incident analysis is based upon the review of the incident audio tape, interviews with crews who operated at the fire scene and the completion and review of PIA Unit Fact Sheets. As of December 25, 2009, Unit Fact Sheets have not been received from BC801, BC804, or SA801– therefore the PIA may not accurately reflect the actions taken by those personnel.

On December 5, 2009, at 0233 hours, MCFRS units (E702, E701, and T701) were dispatched mutual aid to Prince George's County for a report of a building fire at 6733 New Hampshire Avenue. Weather conditions at the time of incident were clear and cold with a slight wind.

Units arrived on the scene at 6822 New Hampshire Avenue to find a large, clothing apparel store with heavy fire conditions showing from the entire front of the structure. The only exposure, a furniture store on the Delta Side of the fire building, was not immediately being threatened but was located less than 8-feet away. A large caliber, defensive fire attack was mounted for several hours and the fire was contained and extinguished using a 3rd alarm complement of apparatus and approximately 170 personnel.

Battalion Chief 701 responded on the incident and ended up being the first-arriving command officer. He established command and retained such for the duration of the incident. About an hour into the incident it was determined that the 6822 address was a Montgomery County address – radio operations continued on PGFD channels – but follow-up activities (relief, code enforcement, fire investigations, etc) transitioned to a MCFRS function.

During the course of fire fighting operations, one fire fighter suffered a knee injury while handling a LDH supply line. The injured fire fighter was treated and transported to Washington Adventist Hospital. The injury did result in a "loss-time" injury status for the fire fighter and he remains off-duty as of this writing.

Due to extensive structural damage done to the building, an origin and cause examination has yet to be conducted by MCFRS Fire and Explosive Investigations. The fire remains listed as under investigation – this includes estimates on damage.

Structure/Site Layout

- The structure at 6822 New Hampshire Avenue was built in 1950 as a 946-seat movie theater. It was closed in 1990 and converted into a retail store.

- During the conversion of the structure into a retail store, a level floor was built overtop of the sloping auditorium - thus creating a complex void space that was reportedly used for the storage of sales goods.
- At the time of the fire, the building was operating as Gussini Clothing & Shoes, a discount clothing and shoe merchant.

- The building was basically a Type II – Non-Combustible construction building with exterior walls made of brick and concrete block and a skeleton frame constructed of unprotected structural steel.
- The roof assembly was an arched, auditorium style roof with metal I-beam girders and truss assemblies.

- There were no fixed-fire suppression systems present in the building; they were not required by code when the building was constructed.
- The theatre/store was part of a small shopping complex that also housed a furniture store, a pawn shop, and several other smaller retail occupancies.
- The furniture store (Exposure Delta) was the most severely threatened structure due to its extremely close proximity to the fire building. This exposure was about 20% smaller in size than the fire building and was of similar construction type – with the exception of its flat roof.

Fire Code History

- The property was last inspected in February 2009. The inspection noted some typical violations: exit lights, fire extinguishers, address numbers, Knox Box installation, locked exit doors, fire alarm test compliance, and an open electrical box near the front counter. None of the violations noted are unusual for a retail business.
- However, it should be noted that had the structure been protected by an automatic sprinkler system, the fire most likely would have been confined to the area of origin and quite possibly extinguished prior to the arrival of MCFRS personnel.

Communications

- The incident was dispatched as a Prince Georges County 44 Box for 6733 New Hampshire Avenue – which is a residential high rise structure, the scene of several working fires over the previous decade.
- E702 was dispatched as the 1st Due engine since E844 is no longer in-service in the PGFD. E701 was dispatched as the 4th Due engine, and T701 as the 3rd Due special service.
- BC701 self-dispatched due to the number of MCFRS units due on the initial assignment.
- All units responded on PGFD Channel 10. BC701 arrived on scene as the first command officer and served as the incident commander for the duration of the incident. Due to the number of MCFRS units operating on the incident, Command requested the MCFRS ECC to complete "the patch" for the fire ground channel (PG Channel 10). The patch was completed.
- As more resources were needed, additional alarms were struck and PG Channel 8 was used to manage the Staging function.
- Once the incident was determined to be a Montgomery County incident, the Incident Commander chose to continue operating on the PGFD radio channels so as not to create a breakdown in communications during the peak of fire attack operations.
- After the fire was placed under control at 0531 hrs, relief crews began to arrive on the scene and most PGFD units were returned to service. The incident was then "moved" to MCFRS 7C for the duration of the operation.
- A review of the data collected from the Unit Officers during the preparation of this Post Incident Analysis document revealed two important issues relating to radio communications at this incident – the lack of PGFD mobile radios in the MCFRS apparatus and poor quality of radio transmissions over the "patch."
    - Five MCFRS engines from Battalion 1 responded to this fire. None of them had a PGFD mobile radio in them – including E702 which was the first arriving engine company at the fire. The Unit Officers had to listen to PGFD portable radios while responding to the scene which meant they had to either turn down or turn off their MCFRS mobile radios in order to hear the PGFD radio traffic so as not to intermingle messages.
    - Almost every Unit Officer who used the "patch" reported problems with the first part of each message being cut off. Unit Officers reported a delay in transmissions with the patch and some had to use two portable radios – a PGFD one to receive and an MCFRS one to transmit.
- VRS was not needed, nor was it engaged.

Pre-Emergency Planning

- There were no pre-fire plans for the structure other than a “complex” map drawn by Station 2 personnel.
- The operations at this fire did not require any special pre-fire plans.

On Scene Operations

- Because the incident was dispatched as a PGFD Box Alarm – four engines and three ladder trucks were dispatched and MCFRS responded expecting to follow the PGFD Box Alarm SOP.
- Crews from PGFD and MCFRS arrived on the scene to find heavy fire conditions showing from the entire front of the store.
- E702’s crew initiated a large caliber attack using their pre-piped deck gun which darkened much of the fire emanating from the store front.
- Crews then began to mount a large caliber handline attack in an attempt to transition to an offensive mode of attack – however, progress was poor and the 2-1/2-inch handline attack was stopped and operations returned to a defensive mode.
- Command was not established until the arrival of BC701. The PGFD SOP permits the passing of command. T801 gave the first on-scene report and passed command. However, no one assumed the command until the arrival of BC701.
- The incident command post (ICP) was BC701’s vehicle which was parked across the street from the structure in the northbound lanes of New Hampshire Avenue. The ICP was identified using a roof-mounted, green strobe light.
- A command team was eventually formed using BC701, BC806 and D800. The team operated without incident. Units arriving on the fire scene reported to the ICP for instructions or were directed to an assignment via radio.
- Upon the arrival of BC701, companies had darkened the fire in the front of the store but heavy fire was visible in the center core of the structure.
- The initial command size-up determined a well-advanced fire that was spreading throughout a large, commercial occupancy with a severe exposure hazard on the Delta Side (Less than 8 feet of separation between the two buildings).
- Fortunately, there were no other exposures because the other three sides of the structure where bounded by either the street or a parking lot.
- The initial command objectives/strategies were focused on moving to a defensive fire attack operation and on protecting the Delta Exposure (furniture store) from fire spread.
- All initial efforts were directed at containing the fire in #6822 while supporting an assessment of conditions in the furniture store.

- A 2nd Alarm was requested by the Incident Commander (IC) when it was clear that help was needed to deploy and supply master stream devices. The goal was to operate at least two, master stream devices on the Alpha and Charlie sides of the structure, one on the Bravo Side, and one in the gap between the fire building and the Delta Exposure.
- An additional MCFRS command officer was requested by the IC to assist in the management of the operation.
- Two elevated master streams were operated on Side A (AT719, T712), two, ground-based master streams were operated on Side Alpha, two elevated master streams were operated on Side Charlie (T701, T834), a Blitzfire was operated on Side Bravo (E716), and a 2-inch handline was stretched into the Delta Exposure – but was never placed into operation.
- Reports came in to the ICP from companies operating master streams that they were experiencing water supply "issues" – namely pressure problems – in that pressure at the master stream device was inadequate and the engine pumping the device was unable to improve that pressure.
- A 3rd Alarm was struck by the IC so that water supply operations could be improved. Additional engine companies were directed specifically to locate hydrants and support the master stream operation via dual, 4-inch supply lines or through relay pumping operations.
- Water Supply 825 (2,000 gpm) was "special-called" by the IC to support the water supply operations for companies operating on Side A of the fire building. They were able to locate a 20-inch water main on New Hampshire Avenue and supplied an LDH manifold on Side A of the fire building.
- Early in the incident, the IC was alerted by several units that the fire building was a converted movie theatre, that it had a large, false floor, and that it also had a bow-string truss roof.
- With the heavy fire conditions present and fire streams proving to be ineffective, building collapse became a primary concern for everyone involved.
- After about 15 minutes into the incident, a partial, structural collapse occurred inside the front entrance way of the fire building – most likely it involved the HVAC units that were mounted on the roof over that area.
- Command immediately directed the creation of collapse zones on all four sides of the structure and the Safety Officers worked to establish and enforce said zones.
- As the fire progressed, additional collapses occurred bringing in the roof, a large portion of the Side B exterior wall, and a small portion of the Side D exterior wall. Fortunately, all collapses resulted in materials and building components falling into the structure – as opposed to away from the structure.

- After about 2-1/2 hours, the fire was brought under control using the master stream devices listed previously in this report.
- Fire never extended into Exposure Delta.
- The PGFD and MCFRS SOPs did not really apply because no interior fire attack was mounted. Companies were instead directed by the IC to complete tasks as needed. This proved to work well.
- Apparatus access was somewhat limited on Side C due to some construction fencing but companies were able to work through the challenges that were presented.
- In terms of attack line selection for fire control, companies led off with large caliber lines and master stream devices – an appropriate choice for the volume of fire present. It was reported to the IC that Class A foam solution was tried but proved ineffective due to the volume of fire and the inadequate flow rate of the Blitzfire device.
- The fire had self-vented on Side Alpha prior to the arrival of units and with the heavy fire conditions present and the report of a bow string truss roof, no vertical ventilation operations were initiated.

Side A – heavy fire noted in the center core area.

Crews operate a deluge gun and Blitzfire on Side A.

A look at Side B from the rear – fire through the center of the roof.

A look from the rear of Exposure D with partial collapse.

Staging

- The 2nd and 3rd Alarm units were staged at Poplar and New Hampshire Avenues which was about one block south of the incident.
- Chief 807A served as the Staging Manager and staging operations were managed on PGFD Channel 8.
- BC806, who was assigned to the ICP, served as the primary contact between the ICP and the Staging manager.
- Units reported to the ICP for assignment or were given orders directly via radio.

Incident Command

- The incident was broken into the following groups/divisions: Division A (BC804), Division B (E716), Division C (C812), Exposure Delta (BC801), EMS Group (EMS801), Rapid Intervention Group [RIG] (BC704), and Staging. All divisions and groups interacted and communicated effectively.

Water Supply

- Water supply problems were reported by companies attempting to pump elevated master stream devices. The most common problem reported was inadequate pressure at the master stream device with little residual pressure at the pumping engine on the hydrant.
- A total of six, WSSC fire hydrants were used to provide water for fire fighting operations. Each hydrant had a pumper connected directly to it. One hydrant, north of Ethan Allen Avenue on New Hampshire Avenue was used by Water Supply 825 (2,000 gpm) to supply water back to the fire via approximately 1,500 ft of 5-inch LDH.
- At the peak of the fire attack there were at least four elevated master streams and two, ground-based master streams flowing - representing an approximate fire flow of 5,000 gpm.
- With the exception of Water Supply 825, all other engine companies used either 4-inch LDH or 3-inch supply hose.

Support Functions

- At the peak of operation, approximately 170 personnel were working on the fireground.
- Rehab was established to the rear of the ICP and was handled by the EMS Group headed by EMS801
- Personnel were provided with food and drinks by Canteen 705 and a canteen unit from PGFD.

- Crews were relieved by fresh crews or by crews leaving Rehab. Because the incident extended past the 0700 hrs shift change (career personnel) – crews were relieved unit for unit on scene as relief personnel arrived.
- Because of extended pumping time by eight engine companies, refueling became a concern. A request was made through MCFRS ECC for a fuel truck – however, it was not used.
- There were no equipment or apparatus failures.
- Functions with outside agencies were properly coordinated (i.e. Police, Gas and Power Company,)

Safety Group

- Per the PGFD SOP, the 3rd Due Special Service (T701) was assigned by the IC to assemble a RIG on Side A of the structure.
- The PGFD Working Fire Dispatch does not provide more fire apparatus, only another command officer, a safety officer, and an EMS unit.
- Due to the size of the fire and the known construction hazards, the IC chose to assign E807 and E719 to the RIG function under the direction of BC704.
- Two safety officers were used due to the size and scope of the incident. Alpha Safety was SA801 and Charlie Safety was SA700. Both safety officers established and monitored the collapse zones as well as maintaining an awareness of additional hazards.
- One fire fighter was injured; he suffered a knee injury when an automobile ran over a section of supply hose that he was handling. The fire fighter was treated and transported to Washington Adventist Hospital and placed off-duty.

Accountability

- Accountability tags were never collected and the accountability board was never set-up.
- Accountability was somewhat kept in the ICP by the command team using the PGFD method of counting staffing on the apparatus.
- However, at no time did the ICP have a record of who was operating as part of what crew – other than the division and group supervisors.
- PGFD Communications provided incident duration reminders throughout the incident and several PAR checks were conducted – each successful.
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Investigations

- The origin and cause of the fire has yet to be determined.

- Heavy fire damage to the building along with significant structural collapse has prevented MCFRS fire investigators from entering the property.
- At last report, MCFRS fire investigators are awaiting demolition crews to begin work so that the structure can be safely entered.

Lessons Learned

- The first arriving companies engaged heavy fire conditions using large fire streams and communicated their tactics to other arriving units.
- The new MCFRS CAFS engines do not have a base for their deck gun – thus it cannot be deployed on the ground. This left only the 500 gpm Blitzfire devices which were not effective for the given volume of fire. It would have been nice to have been able to deploy a 1,250 gpm ground based master stream. One was used from a PGFD pumper with some success.
- A tower (AT719) was special requested for operation in the front of the structure in hopes of getting a low profile, high volume stream into operation. However, positioning and overhead wires inhibited that operation. The tower was useful in providing a protective stream between the fire building and the exposure building.
- While a formal preplan did not exist for the structure, several unit officers on the scene recognized the structure and the dangers that it presented. They communicated those hazards to others – including the IC who was not familiar with the building.
- Command was not immediately established but was passed. While this process is permissible in the PGFD SOP, the problem was that no other company officer assumed the role. It was not until the arrival of BC701 that command was officially established. However, the absence of initial command does not appear to have been detrimental to the operation.
- The incident and its radio communications proved to be problematic in that it was on the border of two jurisdictions which have different SOPs for operations. Companies and command staff worked together rather well even with all of the difficulties in communications.
- Keeping the incident on the PGFD radio channel once it was learned that the fire was in Montgomery County turned out to be a positive decision since it did not force a changeover in radios which could have resulted in greater communications issues.
- The MCFRS/PGFD radio patch just did not work well. Many transmissions received over the MCFRS portable radios were delayed, or broken up, or had missing pieces of information.
- Division and group supervisors seemed to have good control over the companies under their command.

- The MCFRS accountability system was not used and the function was not carried out. The MCFRS just does not seem to work well and the PGFD system was non-existent.
- Different types of control zone tape were used on the scene from the two jurisdictions. This caused some confusion in what was a collapse zone versus a civilian control area. The red and white striped tape used by the PGFD safety officer proved to be more visible and useful.
- Water supply was a bit problematic at times most likely due to a combination of trying to flow too much water for 4-inch LDH to handle and the total fire flow demand on the system.
- WSSC water main maps were not available in the BC701 car. When Water Supply 825 arrived, they were directed by the IC to "find a large main somewhere" and supply water back to the fire. The crew on WS825 used their WSSC maps to locate a 20-inch water main about 1,500-ft away. They dropped their LDH manifold, laid 5-inch hose to the hydrant, and put their 2,000 gpm pumper to work.

Units on the Incident

1st Alarm

E702 E801 E855 E701
T834 T801 T701
BC804, BC701

WFD

A702
M844
EMS801
SA801
BC806

2nd Alarm

E807 E716 E712 E719
T812 T712 AT719
MAU716

3rd Alarm

E812 E813 E809 E811
T809 T814 RS814

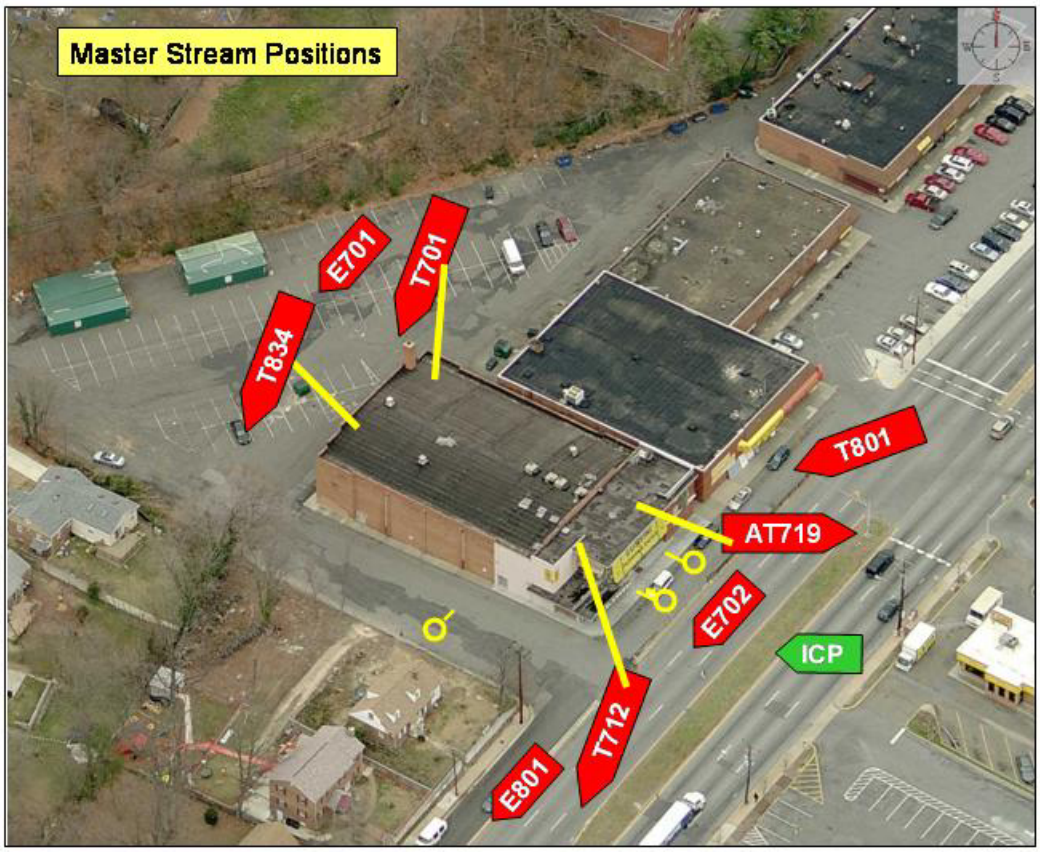
Special Alarm

E835 E848
WS825

Other

Canteen 705
PGFD Canteen
BC801
D800

Apparatus Positioning



After Incident Photos

Corner of Sides A and B.

Collapse damage on Side B.

The arched roof outline can be seen on the rear wall.

The Side B/C corner.

A view of Side C.

Corner of Sides C and D with some collapse.

Not much space between Side D and Exposure D..

Corner of Sides A and D..

Conclusion

The stage for the success of this incident was set early when first arriving crews identified the need to lead off with large caliber fire streams. It was followed by crews readily recognizing the building construction issues and communicating those issues to the IC. It was solidified by all parties involved in the incident command process working together to ensure that all personnel operated in a safe and effective manner.