Montgomery County Fire and Rescue Service

POST INCIDENT ANALYSIS

Inhalation Emergency
14200 Wolf Creek Place
Silver Spring, MD

Incident Date: November 18, 2011

Submitted by
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On February 1, 2012

Incident Overview

Note: This post incident analysis is based upon the review of the incident audio tape, interviews with crews who operated at the emergency scene and the completion and review of PIA Unit Fact Sheets. As of February 1, 2012, Unit Fact Sheets have not been received from the Unit Officers of M704, M705, and A740 – therefore, the PIA may not accurately reflect the actions taken by those units.

On November 18, 2011, at 1919 hours, MCFRS units responded to 14200 Wolf Creek Place, Silver Spring, Maryland for a report of an inhalation emergency. Weather conditions at the time of incident were calm and clear with a temperature hovering around 32^0F. Darkness had already set in and some residents in the apartment community were arriving home from work, while others were heading out for the evening.

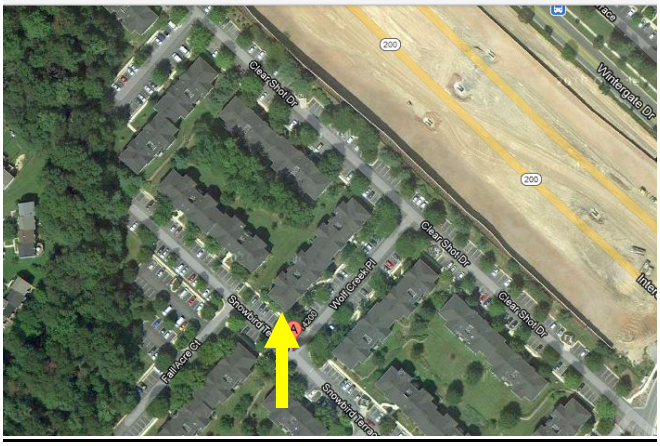
Company 25 units arrived on the scene to find nothing evident from a 3-story garden-style apartment structure. Units quickly learned of two unconscious persons in a ground floor apartment and crews went into the rescue mode of operation. Three occupants were rescued from Apartment #2 (a ground floor unit) and it was determined that they were all suffering from various levels of carbon monoxide poisoning The patients were triaged, treated, and transported to definitive care facilities for acute carbon monoxide poisoning.

Emergency response personnel located the source of the carbon monoxide gas in Apartment #2: it was a defective, natural gas powered heating unit. Personnel isolated the power and gas to the heating unit and began ventilation operations.

With the structure being a multiple-family occupancy, crews searched the remaining apartments in the 3-story building where they found high levels of carbon monoxide but no other patients. The structure was ventilated until carbon monoxide levels fell to safe levels (< 5 ppm). Being unable to remedy the defective heating unit, the building was posted as unsafe to occupy and residents were relocated using family and Red Cross resources.

Structure/Site Layout

- The structure at 14200 Wolf Creek Place is part of a much larger garden apartment-style complex which includes multiple units and addresses.
- All of the structures in the complex are Type 5 construction with a single, open stairwell in the center of the building for accessing the individual apartments.
- The structure involved was 3-stories in height and had 12 apartment units
- Each apartment has its own natural gas fired heating unit.



Aerial view of complex.

Side Alpha of #14200 – center stairwell.

Side Alpha – showing the large size of the apartments.

Side Charlie – same open stairwell.

Side Bravo

Fire Code History

- A review of the past and current fire code requirements for the structure revealed no code compliance issues.

Communications

- The incident was dispatched on 7-Alpha and assigned to the 7-Golf talk group. All companies were able to switch and operate on 7-Golf without incident.
- Once Battalion 704 arrived on the scene and an Incident Command Post (ICP) was established, 7-Hotel was used to manage EMS operations and 7-India was used to manage the helicopter landing zone.

- 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 25 personnel.
- The operations at this incident did not require any special pre-fire plans.

On Scene Operations

- Truck 725 was the first unit to arrive on the scene and reported nothing evident from a 3-story garden apartment.
- Command was passed to BC704 who arrived on the scene behind Truck 725.
- The Incident Command Post (ICP) was BC704's vehicle which was parked on Side Alpha of #14200 in a parking space across the parking lot. The ICP was identified using a roof-mounted, green strobe light.
- The crew from Truck 725 was informed by a woman in the stairwell of two unconscious people in Apartment #2. The crew donned their SCBA and made entry and found an adult female lying in the hallway, eyes open but unable to speak or move. E725 assisted in the removal of that patient.
- Truck 725's crew continued the search and found a second adult female also in the hallway. She was unconscious and was removed with the assistance of E725's crew as well.
- Paramedic Engine 721 handled the initial EMS Group Supervisor role until such time that EMS700 arrived on the scene.
- During the search and rescue operation in Apartment #2, Company 25 units found carbon monoxide readings of over 500 ppm on their iTX meters.
- No further patients were found and efforts turned to searching other apartments and locating the source of the carbon monoxide.
- A command team was built using BC704, BC702 (Hazmat Duty Officer), DC700, and EMS700. The team operated without incident. Units arriving on the emergency scene reported to the ICP for instructions or were directed to an assignment via radio.
- The two adult female patients (ages 44 and 65) who were removed by Company 25 units were treated and transported by land to the University of Maryland Medical Systems Shock Trauma Center in Baltimore, Maryland. Medic 725 and Medic 705 transported the two adult females as Priority 2 patients to UMMS for possible hyperbaric treatment.
- A third, adult female (the woman reporting the two unconscious persons) was also treated and transported for possible carbon

monoxide poisoning – however, she was transported Priority 3 to Montgomery General Hospital by Ambulance 725.

- Engine 725's crew located the source of the carbon monoxide – a malfunctioning furnace unit in Apartment #2. The crew isolated the power and natural gas to the unit and began ventilation operations.
- Rescue Squad 704 and Truck 725 forced entry to and searched the remaining 11 apartments where they found varying levels of carbon monoxide from 20 ppm to 375 ppm.
- The natural gas and power were isolated to the furnaces in each of the remaining eleven apartments.
- Ventilation operations commenced until carbon monoxide levels were reduced to below 5 ppm.
- Engine 740 evaluated Exposure B (#14202 Wolf Creek Place) where they found no presence of carbon monoxide.
- The incident was divided into the following groups/divisions: Liaison Officer (BC702), Information Officer (D700), EMS Group, Hazard Control Group, and Search Group. All divisions and groups interacted and communicated effectively.
- Apparatus access was not an issue.

Staging

- Two additional EMS units were requested and those units staged at the entrance of the complex.

Support Functions

- There was a significant issue with the number of occupants evacuated from #14200 and the fact that all natural gas had been shut-off to the furnaces complicated the matters regarding re-occupancy.
- BC702 and EMS700 played key roles in dealing with the property management and the displaced occupants.
- Because the furnaces could not be returned to service without a full evaluation by a service company, the decision was made to not re-occupy the structure until the property management could verify that the furnaces were safe to use once again. This decision was made in consult with the property management and the structure was posted by MCFRS Fire Code Enforcement.
- The American Red Cross was used to provide shelter to those occupants who were unable to locate other housing.
- There were no equipment or apparatus failures.
- Functions with outside agencies were properly coordinated (i.e. Police, Washington Gas Light, etc,)

Safety Group

- The carbon monoxide levels in the structure never reached the IDLH (1,200 ppm per the CDC) therefore a Standby Team was not required. However, A725 was assigned as the Standby Team just in case but were relieved of that responsibility when they had to engage in patient care.
- Besides the IDLH not being reached, with units operating in the "rescue" mode, the Standby Team requirement was released.
- Safety 700 arrived on the scene after the victims had been removed. With the incident de-escalating, SA700 was not assigned to a safety function.
- One fire fighter injury occurred; a member of Rescue Squad 704's crew injured his ankle while forcing open an apartment door. The injury was reported at the station-level after the incident was over.

Accountability

- There were no issues with accountability other than some early confusion about whether Ambulance 740 was responding on the incident or not. That issue was sorted out without incident.

Investigations/Fire Marshals

- Fire Code Enforcement was requested to assist with determining the re-occupancy status of the building.
- FM 23 posted the entire building as "unsafe to occupy."

Patient Follow-up

- The 44 yo female had a CO level of 28% on scene according to the RAD57 readout. Her CO level was down to 10% upon arrival at Shock Trauma Center after receiving 100% oxygen via non-re-breather mask during transport. Her venous CO was 16.2% in the Trauma Recovery Unit. She received a neuro consult for hyperbarics but was not dived. She was released after 23 hours of observation.

- The 65 yo female had a CO level of 33% on scene according to the RAD57 readout. Her CO level was down to 15% upon arrival at Shock Trauma Center after receiving 100% oxygen via non-re-breather mask during transport. Her venous CO was 13.3% in the Trauma Recovery Unit. She did not receive a neuro consult because she was below the 16% threshold. She was released after 23 hours of observation.

Lessons Learned

- The first arriving unit officers did a nice job of assessing the situation and taking action to quickly locate and remove the two victims.
- The ALS providers on the AFRA engines made a difference in having the ability to implement Advanced Life Support care early in the incident.
- Radio traffic at times was heavy – but most messages were able to get through. The ICP was using/monitoring 7G, 7H, 7I, and 7O.
- The command team was not built out until the arrival of BC702 from Bethesda. Therefore, the Incident Commander was kept challenged in managing the operations on different talk groups. A battalion aide would have proven very helpful.
- One unit officer had an issue with his portable radio microphone while communicating while using his SCBA. The officer later identified that he had been holding the microphone in front of his face piece and that he should have moved the microphone to the side of the face piece.
- The structure was a large building with many void spaces – all with varying levels of carbon monoxide buildup. Ventilation time was extended because of all the "trapped" carbon monoxide.
- There was some confusion about the location of a landing zone for helicopters. The confusion occurred when a command officer not yet on the scene gave direction to the engine assigned to landing zone operations. The situation got rectified but command officers should refrain from providing direction to companies operating when the command officers are not yet on location.
- Command should have requested Ride-On buses much sooner in the incident. It was quite cold outside and displaced occupants had to be sheltered in EMS units until alternative housing could be arranged. Although this did not take long, the process did tie up EMS units that could have been released for service.
- Aviation was started early based upon the perceived need for hyperbaric treatment. The patients were eventually downgraded on scene to a Priority 2 status and were transported by land. However, when in doubt, it is better to request medevac support and turn them around as opposed to suddenly needing it and then having to request it.
- The assignment of a "Hazard Control Group" sounded too much like "Hazmat Group" to a couple of the units – command should have used a different identifier for the group assigned to mitigate the carbon monoxide leak.
- One of the EMS providers reported having a difficult time evaluating one of the patients because the patient was mentally handicapped and he could not keep the RAD57 probe or a non-re-breather mask

in place. He didn't know if her mental status was normal or if the carbon monoxide poisoning had created the status.

Units on Incident

Initial Dispatch

PE725, E740, PE721
T725
RS704
M725, M705, A725
HM728
BC704

Additional Units

PE718
A724, M742
MAB726
EMS700
BC702
DC700
SA700

Conclusion

The stage for the success of this incident was set early with the arrival of the first due engine and ladder truck. Both units worked well together to make a quick rescue of victims. The EMS units did an effective job of triage, treatment, and transport. While a bit chaotic at first, the incident was stabilized within a short period of time and the end result was a positive outcome for all involved.