

**Montgomery County Fire and Rescue Service
Post Incident Analysis
3rd Alarm Garden Apartment Fire
2815 Terrace Drive
Chevy Chase, MD
Incident Date: May 1, 2012**



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POST INCIDENT ANALYSIS STRUCTURAL FIRE

I. Introduction

a. Provide a general overview of the incident including an area diagram of the building, exposures, water supply, time of day, weather conditions, etc.

On Tuesday, May 1, 2012 at 2:15 p.m. MCFRS units and personnel responded to a fire at 2815 Terrace Drive in Chevy Chase. The fire was initially located in the top floor of a three-story, garden-style apartment building. The fire apartment was located at the angle of an "L"-shaped complex of two garden apartments, joined by a common roof across a breezeway. The fire ultimately spread through the attic of the adjoining building and damaged or destroyed 34 units and displaced more than 100 people. The fire caused in excess \$1,000,000 damage to the structure and contents. Approximately 125 fire and rescue personnel responded and were on the scene for more than 4 hours.

No civilians were injured. Two firefighters suffered injuries; one firefighter was transported to a local trauma center with non-life threatening injuries related to heat and the other was transported to a local hospital with minor orthopedic injuries. Both firefighters were treated and released on the afternoon of the fire. Fire and Explosives Investigators determined that this was an incendiary fire and have arrested an adult occupant of the original fire building.

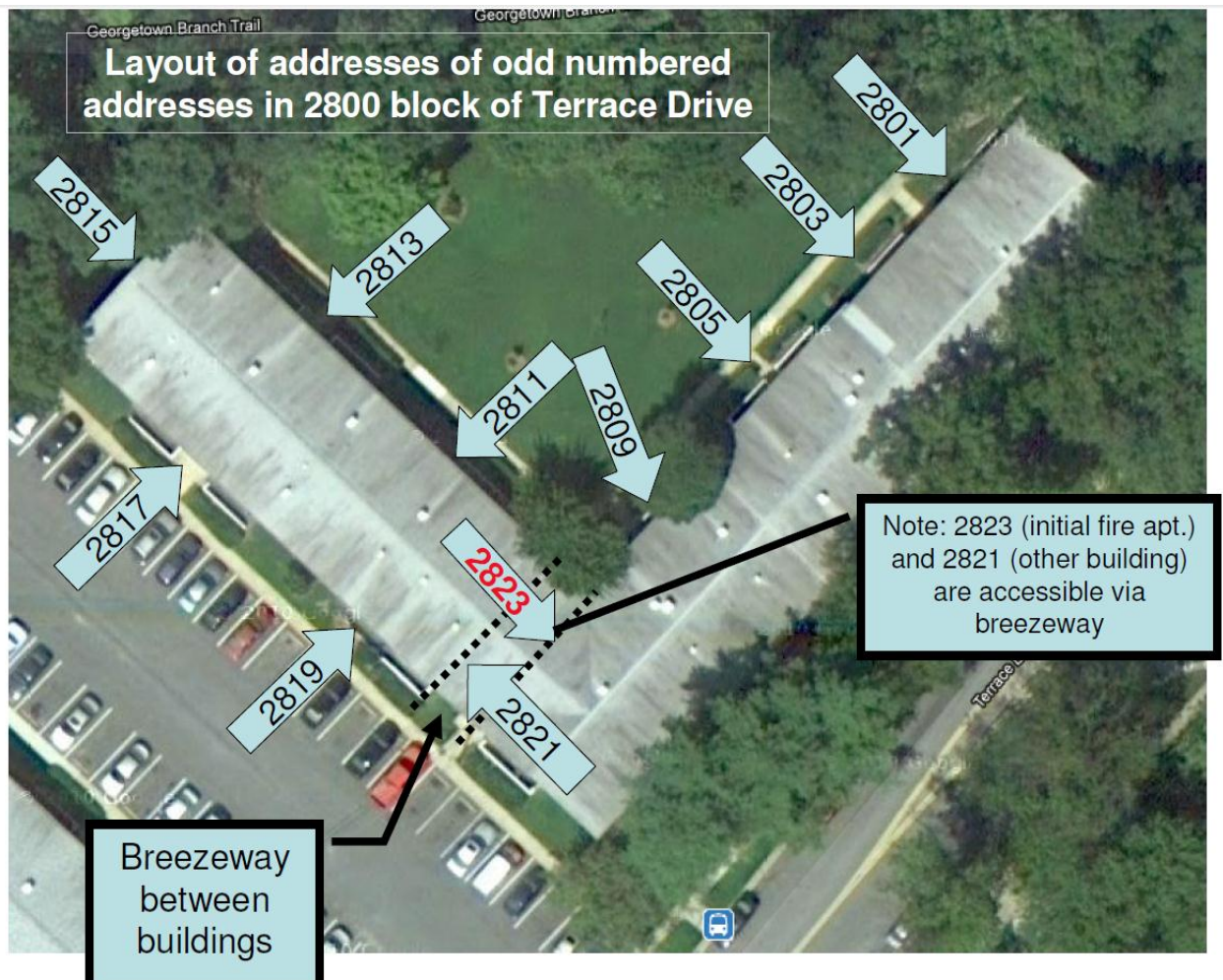
This Post-Incident Analysis is being written in compliance with MCFRS Policy and Procedure 20-02 *Incident Command System*, and is written for the purpose of determining strengths, weaknesses, and lessons learned about incident operations.

Every effort has been made for this post incident analysis to be fact-based and not to include unsubstantiated statements.

b. Indicate unique circumstances/problems, etc. Units arrived to find a well-developed fire in the bedroom of a top floor apartment. The fire was free burning and had broken out of multiple windows before the initial attack lines were in place. The fire extended into the attic space of not only the original fire building but also the attached building. By the time crews were able to get in position on the roofs of both buildings the fire had extended into the unprotected, open attic and ran the length of the exposure building.

II Building Structure/Site Layout

- a. **Review type of structure** – The complex is a lightweight constructed building, built in 1963. The building layouts are rather unusual, with a mixture of ground-level (terrace) apartments (e.g. 2815 or 2817 Terrace Drive) , single floor apartments on the second and third floor of some addresses of each building (e.g. 2813 Terrace Drive), and two-story apartments in other parts of the building (2811 Terrace Drive). From the exterior, there are only very subtle clues as to which addresses have which of the three layouts.



b. What construction or design features contributed to the fire spread, or prevented fire spread, i.e. sprinklers, fire doors, etc.? The building was a Type III constructed building with masonry firewalls, a wooden floor assembly, a wooden truss roof assembly, and was built with a wood frame with a brick veneer. The fire most likely entered the roof by vertical extension through either a soffit or a gable end vent above the fire apartment. Given the age of the structure it is possible that there were multiple layers of roofing material that might have concealed fire from crews operating both inside the fire apartment and on the roof.



c. Did the topography and/or type of fuel affect fire control efforts? No. There was sufficient access to all sides of the buildings. The area that is referred to as Side C was not accessible by apparatus, but there was access by foot to that entire side of the complex.

d. Did fire alarm and/or suppression devices work properly? There were no fire suppression devices present. In addition, the buildings were not equipped with any kind of fire alarm system which became problematic as the fire was rapidly spreading and there was an urgent need to evacuate the buildings of all occupants. Ultimately, RIG units on Side C made several ladder rescues of residents from balconies.

e. Did personnel or apparatus encounter any problems in gaining access? Yes. The orientation of the buildings and the unusual address configuration lead to confusion regarding reports from Fire/Rescue crews operating on both the interior and on Side C.

f. What is needed to correct these problems? Two steps are needed; (1) up-to-date, comprehensive preplans that are loaded onto MDCs and (2) increased building familiarization by walk-throughs during preplans, inspections, Safety in Our Neighborhood or other activities.

III Fire Code History

a. Review relevant Fire Code requirements and history. At the time of the fire, there were no fire protection systems and no fire alarm systems in the building. There is no history of fire code violations for the property.

IV Communications

a. Did dispatcher verbally provide all information available at the time of dispatch? Yes. The initial 911 caller reported that there was heavy of smoke in the area of 2815 Terrace Drive. The actual fire unit was at the opposite end of the building, but this can be explained by a sign, located very close to the fire apartment that had the address range of the adjacent building (2815-2823). Although this 911 caller did not correctly identify the fire apartment, the call was processed as and dispatched as “In the vicinity of 2815 Terrace Drive” and first-arriving units had no problem identifying which unit was on fire.

b. Was the fire ground channel adequate? Yes and No. See (f) below.

c. Were proper communications procedures followed? No. Several units used significant air time bidding on the call, and BC702 contributed to this by reassigning a running order that was different from the dispatch. This lead to some confusion with regards to picking up water supply, etc.

d. Were there problems communicating with Mutual Aid companies? No

e. Was the communication network controlled to reduce confusion? Yes

f. Did units, divisions/groups/branches and Montgomery communicate effectively? Yes and no. As assignments were made to Group or Division Supervisors, communications were handled well through those routes. However there were several single resources that were not placed into groups and this lead to a lot of competition for air time. There were also a number of priority messages that had to wait for air time.

g. Was radio discipline effective? See answer above for IV f

h. Did Incident Commander provide timely updates to Communications? Yes. Updates were provided with all PAR checks and periodically after the IDRs were discontinued.

V Pre-emergency Planning

a. Were pre-fire or other plans needed on the scene? Yes. Pre-fire plans would have been very beneficial in understanding the layout of the buildings.

1. Were they available? No

2. Should they be updated? Yes. Station 7 has been assigned this task.

VI On Scene Operations

a. What was the structural integrity of the building based on fire conditions on arrival, at 10 minutes, 20 minutes, 30 minutes, etc.? Structural integrity was a significant concern of all units operating on this fire, and the source of concern evolved as the incident progressed. Upon the arrival of PE719, the OIC reported heavy fire “blowing out of the Side A window”. While this report provided an accurate description of the volume of fire that was evident, the reference to “Side A” became problematic for other units to identify the other sides of the structure and the complex. Fire in that apartment was fully developed and was actively venting, but there was no apparent concern with the structural integrity of the building at that time. At 10 minutes into the incident there were three engines and one truck putting an effective knock on the fire with multiple handlines. From the exterior, the ICP could observe conversion of smoke from heavy, dark, thick smoke to lighter smoke and the absence of visible fire. At 20 minutes into the incident there is no apparent fire and only a small amount of residual smoke in the apartment that had been completely ventilated (horizontal ventilation). Crews on the interior of the original fire apartment are reported that they had opened walls and ceilings (up to the roof line) with no smoke or fire evident. Just after the 20 minute mark, a small amount of smoke was noted by command as coming from the ridge vent of the exposure building. At approximately the 25 minute mark there was rapid fire growth along the roof line of the exposure building. Crews operating on the roof of that building were rushed in their egress to leave the roof and due to insufficient ladders the crews contemplated dropping off the roof onto third floor balconies for emergency egress. Finally, ground ladders are placed by RS741B and PE707. The roof structure became fully involved in fire and an elevated master stream was put in service by AT719 and T710 only after a PAR was conducted and all personnel were accounted for and a defensive attack was declared. It took over 20 minutes for the roof fire to be extinguished by elevated mater streams. Then, before crews could enter the building for salvage and overhaul there was concern about structural integrity due to the weight of the water that had been used for extinguishing the fire. Crews that were assigned salvage and overhaul were not allowed to enter the structure until SA700 had evaluated the structure and declared it safe for those operations.



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b. Was Command identified and maintained throughout the incident? Yes

c. Was a Command Post established and readily identifiable? Flag, Green Light, or other? Yes. Initially, C701 established the Incident Command Post at his vehicle and announced the location and utilized a green strobe light. The ICP was then moved to the BC702 vehicle and the updated location was announced and again, the green strobe light on the top of BC702 vehicle was employed. The location of the ICP was announced multiple times throughout the incident ("to the rear of AT719")



d. Size up decisions by command. The common adage in the MCFRS is that you need a third alarm for a working garden apartment fire. The third alarm was requested and utilized, but an earlier request and quicker application of those resources might have provided a quicker knockdown.

e. Was additional apparatus requested in a timely manner? Yes and no. The Second Alarm was requested immediately after arrival by the OIC of PE719. The third alarm should have been requested earlier. Resource depletion was briefly an issue prior to the arrival of those units.

f. Objectives + Strategy + Tactics + Action Plan: Initially, the objective was to contain the fire to the apartment of origin. Through execution of the Safe Structural Firefighting SOP, this was understood to be the initial objective. As the fire developed, the Strategy, Tactics and Actions Plans were changed to a defensive fire attack with the use of large streams, in order to extinguish a rapidly developing roof fire but only after a complete evacuation of both buildings and a PAR were conducted with all parties accounted for. This change was communicated to all units operating on the scene.

g. Did personnel, units, and teams execute tactics effectively? Initially, the tactics were executed effectively with rapid deployment of a sufficient number of adequately sized handlines, an effective primary and secondary search, and other key incident objectives being met. However there was a failure to open all void spaces and concealed spaces and extinguish all hidden fire in the roof and attic. This led to the

point that command was preparing to declare the fire under control when suddenly the roof began to burn rapidly and the mode of operations was changed from Offensive to Defensive.

T710 and PE706 were ordered to the roof of the building to check for vertical extension. Command's expectation was that the truck crew would provide openings to inspect for fire spread and that the engine would bring a hose line to manage any fire that was discovered. PE706 climbed AT719's aerial and went to the roof without a hose line and instead made a few inspection holes. When fire was discovered in the attic, PE706's crew went to the bucket of AT719 to retrieve a hose line but discovered that there was no water supply to AT719's waterway. These factors lead to a close call where PE706's crew had to scramble to get off the roof by means of a ladder that was hastily raised by RIG units. See the "Recommended Improvements" section for more on this.

h. Were any training needs identified? Provide examples. All personnel should review this PIA and take the many lessons learned.

i. Were Standard Operating Procedures used? Were they adequate? Do they need to be updated? If not used, why? SOPs were used for the most part, but deviations and failure to fully follow all SOPs and FCGOs lead to command and control issues. A number of units did not take positions as dispatched, and several units tried to "bid up" on the call leading to BC702 making some decisions about running order that proved confusing and that resulted in water supply and ladder positioning difficulties.

j. What offensive/defensive decisions were made by command? Initial command by PE719 announced that they would be making entry through Side A with a 1-3/4" line, and this common terminology meant that there would be an offensive attack. When the roof began burning rapidly, Command announced that the operations were going to be defensive as soon as it could be confirmed that all personnel had been evacuated from the structure. Finally, Command announced to all units when the structure had been declared safe for re-entry prior to salvage and overhaul operations.

k. How was risk analysis applied to the incident? Risk analysis was ongoing and resulted in modified objectives, strategies and tactics as the incident evolved.

l. Were the divisions/groups used appropriate to the incident's type and complexity? No. In large measure, this stems from Command not having a clear picture of the scope and extent of the operations. While this shortcoming is also addressed later in this PIA it is worth noting at this point that no one in the ICP did a circle check until late into the incident. This, combined with the unusual layout of both the building and the addresses lead to much confusion within the ICP and stymied the effective establishment of divisions or groups.

m. Was apparatus properly positioned? If not, why? Overall, apparatus was not positioned effectively. Based upon conditions when they arrived, E719 and AT719 positioned well to initiate a fire attack and begin search and rescue operations in an offensive posture. However, when the incident developed into a large, rapidly developing fire and a defensive strategy and tactics had to be employed, Co. 19 units were blocking out most of the parking lot along Side A of the building. AT719 was not as effective in the elevated master stream as they could have been due to their position at the entrance of the parking lot. Those units and others also blocked out several other incoming units that might have been used to more quickly and effectively stop the rapidly growing fire. On Side D, T710 (from the RID) had to be repositioned in order to utilize the aerial so that crews could access the roof of the original fire building. Second due T706 was blocked out by supply lines and several engines making that piece ineffective.

n. Attack line selection and positioning: PE719 and PE707 began an effective offensive attack with 1-3/4" and 2" handlines. Additional handlines were also stretched by E705 and E710. Water supply seemed adequate for these operations. As the fire eventually developed, crews had to make several adjustments to get adequate water supply to AT719 and T710 for their elevated master streams. On the 3rd Alarm, consideration should be given to directing engine companies to establish a third water supply source from as large a main as possible.

o. Ventilation operations: T710 and PE706 were assigned to evaluate the roof and open up and inspect as needed. Both of these units used power saws and hooks to accomplish this task, and their efforts lead to hidden fire being discovered.

p. Salvage operations: Upon declaring the fire was out and after the re-entry to the buildings were cleared by SA700, crews conducted extensive salvage and overhaul operations. In addition to checking for hidden fire, crews also worked extensively to try to save as much personal property as possible.

q. Night time and interior lighting operations – N/A

r. Were Mutual Aid companies effective in operation? Mutual Aid companies on this fire included Montgomery County Co. 54, 50, and 51 and Prince Georges County Co. 31. All units operated seamlessly within fireground operations.

s. Was water supply adequate? Water supply was adequate for initial, offensive operations, but when the fire rapidly spread into the adjoining building there was a lack of sufficient water volume until water supply was directed to the aerial waterways of both T710 and AT719.

VII Staging

a. Location/adequacy Staging was not formally established. Second alarm units were never given specific direction to stage and came to the scene and reported to the ICP for direction. Third alarm units were directed to respond on 7C and report to the ICP. Command was advised as units were rotated through Rehab and became available for re-deployment.

b. Site Access The fire occurred at the end of a neighborhood that is accessible from two sides. Units that responded were divided about evenly between those units that came to the scene from Grubb Road and those that came from Meadowbrook Drive. In

terms of the fire buildings, there was adequate vehicular access to the outer sides of the buildings (Sides A, B and D) and clear access by foot to Side C.

VIII Support Functions

a. Was a Rehab group established? Yes. Initially M701 set up Rehab in a shaded area near Side D. This area was expanded as the incident grew, and eventually six EMS units, two Canteens, a Ride On bus and EMS700 were added. The PMIC on M701 did an outstanding job of coordinating the evaluation of all operational personnel.

b. Were fire/rescue personnel provided with food and drinks? Yes, by CT705 and CT704. Several hundred drinks were provided to public safety personnel along with residents, Red Cross, and other support agencies. Other nourishment was also provided.

c. Was adequate shelter provided for fire/rescue personnel? Yes. The fire occurred on a very warm, sunny day and a shaded area was utilized.

d. Were crews relieved by fresh crews regularly and frequently? Yes

e. Were there any equipment or apparatus failures? Did these failures have a detrimental effect on the incident outcome? N/A

f. Were functions with outside agencies properly coordinated? (i.e. Red Cross, Power company, Gas Company) Yes. Special mention should be given to OFCE and FEI for their outstanding efforts to work through the resident needs as this incident displaced approximately 100 people. Significant coordination was done with the property management company, the American Red Cross, and all utilities.

IX Safety Group

a. Was a standby team established? if not, why? Yes, A701 was assigned as the initial 2-out company and they acknowledged that assignment.

b. Were any fire/rescue personnel injured? Yes. One firefighter from PE707 suffered a lost-time, over-exertion, elbow injury while advancing the backup handline during initial operations. Another firefighter from RS741B experienced lost-time, heat-related over-exertion. Both were transported from the scene to local hospitals and both were evaluated, treated and released within a few hours.

c. Were all safety SOPs and regulations enforced? Yes. SA700 was on the scene and engaged throughout the incident and reported no significant safety violations with regards to use of SCBA, PPE, etc.

d. If there was a Rapid Intervention Dispatch, were they used for Safety, Accountability or RIG? If not, why? E754 was assigned as the initial Rapid Intervention Company and positioned on Side C after a size up of the building. A RID was dispatched and utilized, but they were without a truck company. T710 was dispatched as the Truck on the RID, but they were directed by Command to employ their aerial and get on the roof to check for extension. As a result, Command failed to ensure that a Truck was in place with the RIG. This could have been disastrous, as there wound up being an urgent need to evacuate PE706 off the roof. RS741B and other units quickly deployed ground ladders to Side C and a potential emergency was averted.

e. What actions are necessary to change or update current safety and health programs to improve the welfare of members? None

X Accountability

a. Were actions taken to ensure accurate personnel accountability? Command employed the standard MCFRS Incident Command Worksheets and kept them updated as the incident progressed. Utilizing the information from the worksheets, PARS were conducted and accountability was maintained.

b. Was the status of units, Divisions/Groups/Branches and support personnel maintained? Yes, as described above.

c. Did personnel provide adequate feedback? Yes

d. Was the incident continuously controlled and monitored? Yes

XI Investigations

a. Was the fire's origin and cause determined? Yes. FEI determined that the fire was intentionally started in a pile of clothes in one of the bedrooms of the fire apartment. The occupant of that apartment confessed to starting the fire and is facing multiple charges.

b. What factors contributed to the fire's spread? The initial fire was started by an individual while there were no other occupants in the apartment. The presence of and smoke detectors and whether they worked is unknown, so a delay in recognition of the fire is the first contributing factor. Failure to adequately expose all areas of hidden fire in a timely fashion allowed for unchecked fire spread.

XII Lessons Learned

a. Were specific training needs identified? MCFRS must continue with training on building construction and design and strategy and tactics for dealing with garden apartments. This type of occupancy is spread throughout the County and both the frequency and severity of significant fires in these buildings demands that we continue these training efforts.

b. Recommended improvements. As identified in Section IV – v, a near miss occurred when PE706 opened the roof without the protection of a charged handline. The officer and crew have received reinforcement of the vital nature of this mistake, but this begs a larger issue. Command made an assumption that the Engine assigned to the roof would take a charged handline with them. Unit officers must ensure that they bring the proper tools and equipment for the job that they are assigned. Group or Division supervisors must ensure that the crews under their direction are properly equipped.

-Good? Bad? Why? This incident contained many shortcomings and problems that require on-going work. While there were many positives (initial hose line deployment, initial fire attack, establishment of rehab), the problems that were exposed were significant and must be improved upon. These problems are enumerated below:

- Discipline: Some units tried to out-bid each other and units took assignments that were out of order. This led to some confusion by command. The answer to this is ©2012 MCFRS Post Incident Analysis – 2815 Terrace Drive – 5/1/12

basic: Respond as dispatched. Take your assigned position and correctly cover your assigned duties and tasks. Take the correct tools and equipment to complete the assigned tasks. Report back to command with your progress.

- Command and Control: for a period of time command struggled to get their arms around the exact location of events that were occurring on the fireground. As stated earlier, a primary cause of this was the lack of a clear “picture” of the layout of the buildings and the unusual address configuration. While there were multiple other contributing factors that caused this, the fact remains that incident command team must get a 360 degree view of the incident scene as early as possible. In addition, when it comes to Incident Command, it is imperative that all orders given that do not jeopardize life and limb are followed. C701 had established Command and BC702 refused an assignment from Command. This cannot be accepted. Finally, Support in the ICP really helps, but in the early moments of an incident one individual (and by Montgomery County policy the first arriving command officer) must set the tone, determine the objectives, set the strategies and direct tactical deployment.
- Situational Awareness: To a person, nearly every member of the fire service expressed surprise with the extension of the fire into the roof of the exposure building. Seemingly everything from building construction to wind direction to obvious signs of fire spread seemed to point to the likely fire spread in the original fire building only. In recent years, much emphasis has been placed on the importance of situational awareness as it relates to Crew Resource Management and firefighter safety. The lesson learned (and reinforced) in this fire is that all personnel have a unique and important perspective of what is going on, and the crews that had the best vantage point to see the rapid fire spread must be given the opportunity to share this information with command and all others operating on the fireground.
- Weather: Warm weather contributed to firefighter fatigue and a steady 5-9 mph wind likely contributed to the spread and rapid development of the fire. All personnel must consider the effect of even mild winds and less-than-extreme weather conditions on the fire, the crews, and the structure. Furthermore, May 1 was the first very warm day of the year and since crews had not been sensitized to the relatively high temperature (mid-80’s), intensive rehab (rest, shade, fluids) was necessary for personnel safety.
- Bidding for Calls: Stop all bidding! Any additional available units should be part of the RID or multiple alarms. Again bidding on this call resulted in excessive radio traffic.

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