Montgomery County Fire and Rescue Service
Montgomery County, Maryland

Mayday/Near Miss Report

Issued by: Fire Chief Tom Carr

Box 17-12
20720 Goshen Road
Incident Date: November 12, 2006

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Executive Summary

On November 12, 2006, Montgomery County Fire and Rescue Service units were dispatched on Box 17-12 for a reported greenhouse fire attached to a single-family home at 20720 Goshen Road in Laytonsville, Maryland. While responding, units were alerted by the Emergency Communications Center that there was a second house on fire at 9001 Warfield Road, adjacent to the dispatched address.

Upon arrival at 20720 Goshen Road, the officer on Engine-Tanker 17 found a large greenhouse fully involved. The officers of the first two units on the scene incorrectly radioed that the fire was in an out-building and not attached to the house. Initial fire attack began with the application of master streams to the greenhouse. Several minutes into the fire attack, a firefighter from Engine-Tanker 17 split from his crew and entered the exposed attached garage. He failed to notify his officer or the two crews working in the garage that he was entering the area. While the firefighter was working in zero visibility, he fell, began to crawl, and encountered a large file cabinet. He tried to move it but he pulled it over on top of himself. The firefighter was unable to get to his radio to call for help or activate his emergency broadcast button. Verbal calls for help were not heard, so he remained still to allow his Integrated Personal Alert Safety System device on his Self Contained Breathing Apparatus to activate. He was quickly discovered by the two crews working in the garage and was freed from under the cabinet. While being removed from the garage, a Mayday was declared and the firefighter was successfully extricated from the garage by the two interior crews and transported to Suburban Hospital with non-life threatening injuries. As a result of his injuries, the injured employee will be off work for an extended period of time.

The chain-of-events were in place on this incident for a potentially disastrous outcome to occur. A thorough review of this Mayday/Near Miss Report was initiated and contained in the contents of this document.

Report Group

Chairman:

Battalion Chief Kenneth Korenblatt
Battalion 1, A Shift

Members:

Assistant Chief Michael Prete
Duty Operations Chief, C Shift

Battalion Chief Scott Goldstein
Executive Officer, Division of Operations

Battalion Chief William Kang
Communications Officer

Captain Alan Keyser
Safety Officer, A Shift

Captain Gary Rebsch
Local 1664

Incident Information

Date:	November 12, 2006
Time:	1949 hours
Incident Number:	F060110085
Address:	20720 Goshen Road
Box Area:	17-12

Weather Conditions:

Time	1852 hours
Temperature	46 degrees F
Precipitation	Rain – heavy at times
Wind	20 mph, NNW, gusting to 30 MPH
Sky	Overcast
Humidity	100%

Incident Dispatch

First Alarm Dispatch: 7-Charlie

EW17	W17
E81	W31
E281	W4
E291	A179 FTR
E351	BC5
T8	BC3
AT29	D17
RS17	D8

Additional Units Added:
C17
BC3-1
BC 117C
C17-1
C82
EMS3
Safety 1
UT17

Water Supply Task Force: 7-Delta
W9
HC44
FC254

Rapid Intervention Dispatch: 7-Charlie
AT35
RS291
M89

Incident Events

On November 12, 2006, Montgomery County Fire and Rescue Service (MCFRS) units were dispatched on Box 17-12 for a reported greenhouse on fire attached to a two-story colonial house at 20720 Goshen Road in Laytonsville. A Rapid Intervention Dispatch (RID) and a Water Supply Task Force were dispatched. ECC also advised responding units that they had received calls for a house fire at 9001 Warfield Road which was adjacent to 20720 Goshen Road. Battalion 5 directed E291 to investigate that incident.

Upon arrival at 20720 Goshen Road, the officer on Engine-Tanker 17 (EW17) found a 35' x 16' greenhouse fully involved, and radioed that the structure was an "exterior building" totally involved. Battalion Chief 5 (BC5) arrived on the scene shortly thereafter and radioed that he had an "out-building" on the ground and established command. Initial on-scene reports were not accurate because the greenhouse was attached to the garage.

The initial strategy was to initiate defensive operations exterior attack to the greenhouse using a master stream nozzle (Blitz-Fire) supplied by Engine Wagon 17 (EW17) to the greenhouse. Command diverted the Rapid Intervention Company (RIC), the fourth due engine, Engine 291 (E291) to check 9001 Warfield Road (second potential house fire). Engine 81 (E81) assisted EW17 with the Blitz-Fire nozzle.

Minutes into the fire attack, Command requested that EW17's officer conduct a circle check of the scene. The officer left his firefighter with E81's crew manning the Blitz-Fire nozzle and began to circle the house from the alpha-bravo corner via side delta to the charlie-delta corner. Upon arrival at side charlie, EW17's officer reported that the fire was on the exterior but was starting to impinge on the garage. When he returned to side alpha, but was not able to locate his firefighter, he asked E81's crew that was operating the Blitz-Fire nozzle, if they knew the location of his firefighter. The crew reported to the officer they did not know the firefighter's location. The officer then walked to EW17 looking for his firefighter but was unable to locate him. During his search, he queried other firefighters about the missing firefighter without success in determining his location. The officer did not attempt to locate the missing firefighter by radio.

While EW17's officer was on his circle check, Command instructed Engine 281 (E281) to enter exposure Delta to check for extension. E281, assisted by Truck 8 (T8), entered the side alpha door to the breezeway between the main house and the two-car garage. It was at this point that the firefighter from EW17 entered the garage to assist E281 with attack line advancement. Unknown to either E281 or T8, the firefighter from EW17 entered the involved garage to assist them. E281 found

fire at the ceiling level with zero visibility and smoke banked down to the floor. E281's officer did not notify command of the conditions in the garage with a situational report. The garage door leading from the garage to the greenhouse was open. After working in the garage alone for a few minutes, the firefighter from EW17 proceeded alone further into the garage in zero visibility to look for a window to open for ventilation. While looking for the window, the firefighter tripped over some debris and was forced to crawl. The firefighter was crawling when he bumped head first into a large file cabinet and while trying to push it out of the way, he pulled it onto himself, which pinned and injured him. Due to the size and weight of the full cabinet on top of him, the firefighter was unable to get to his radio to call for help or activate his emergency broadcast (EB) button, so he remained still to allow his integrated Personal Alert Safety System (PASS) device on his Self Contained Breathing Apparatus (SCBA) to activate. T8's crew was operating close by in the area and heard the PASS device. The crew of two from T8 quickly discovered the pinned firefighter and moved the cabinet to free him. While being pulled from the garage, E281's crew teamed up with T8's crew and dragged the firefighter out of the garage and into the laundry room. At that time, the firefighters from T8 and E281 became exhausted and noticed that the firefighter seemed disoriented and was unable to help himself. Subsequently, a Mayday was declared by E281's officer. Before other crews could assemble for RIC operations, the firefighter was successfully removed from the garage by T8 and E281's crews within 16 seconds of declaring the Mayday. The injured firefighter was treated and transported to Suburban Hospital with non-life threatening injuries.

Engine-Tanker 17

EW17 was first on the scene and deployed a four-inch supply line with a clappered siamese at the end of the driveway consistent with structural firefighting in areas without municipal water (Executive Regulation 24-07, SOP for Safe Structural Firefighting) and positioned on side alpha. They found heavy fire conditions in the greenhouse and reported that it appeared to be an exterior building totally involved and announced that they were going to position the Blitz-Fire master stream nozzle to knock the fire down. While setting up the Blitz-Fire nozzle, Command asked EW17's officer to check exposures on the bravo side. EW17's OIC advised his firefighter that he was going to complete a circle check. He left his firefighter with E81's crew to staff the Blitz-Fire nozzle. EW17's officer attempted to circle the house on side bravo but because there were pine trees and a fence on fire, it required him to circle the house from the alpha-bravo corner around the delta side to check the charlie-bravo corner. He reported the fire to be on the exterior with impingement to the garage. While EW17's officer was on side charlie, EW17's firefighter noticed that E281's crew was struggling to advance a pre-connected handline into the garage to check for extension. The firefighter left E81's crew with the Blitz-Fire nozzle and assisted E281 with advancing the pre-connected handline into the breezeway, into the laundry room,

and then into the garage from the side charlie door. The firefighter then entered the garage and engaged in firefighting activities near E281 and T8's crews who were working in the 20' x 24' garage. Inside the garage, units found fire running across the ceiling and smoke banked down to the floor. After working for approximately five minutes, the firefighter from EW17 decided to set out further into the garage to open a window. Approximately ten feet into the garage, the firefighter tripped over some storage and was forced to crawl and then bumped into a large item that did not move. While trying to move the item, he pulled the heavy file cabinet onto himself. Pinned by the cabinet, the firefighter was unable to extricate himself, get to his radio to call for help, or activate his EB button on his portable radio. The firefighter verbally called out for help but was not heard. He remained still to allow his integrated PASS device to activate and go into alarm. His PASS device activated and he was quickly discovered by T8's crew and he was extricated from under the cabinet. While being dragged from the garage with the assistance of E281's crew, a Mayday was declared and the firefighter was successfully removed by the initial two crews and transported to Suburban Hospital with non-life threatening injuries.

E281

E281 arrived on the scene immediately after EW17. At Command's request, E281 advanced a 1 3/4 inch preconnected handline into exposure delta to check for extension. Entering on side alpha into the breezeway, the crew advanced the handline the length of the breezeway to the laundry room, and entered side charlie door into the garage. Finding fire running across the ceiling and smoke banked down to the floor, the crew began fire extinguishment. Approximately five minutes into their fire attack, the crew heard a PASS device activate, *but initially assumed it was because of the crew's immobility while flowing water*. E281's crew heard firefighters from T8 calling out that they had a firefighter down. T8's crew removed an object that was on top of the firefighter and T8 and E281's crews dragged him out of the garage to the laundry room area. After placing him down and realizing that the firefighter did not appear to be responding or able to assist in his removal, E281's officer called a Mayday. E281 and T8's crews were able to remove the firefighter to side alpha within 16 seconds of the mayday.

Truck 8

T8 arrived on the scene shortly after EW17. T8's crew paired up with E281's crew and entered the garage by way of the side alpha door to the breezeway and to the rear laundry room and entered the garage from the side charlie door with E281's crew. Working in the garage, T8's crew heard a PASS device activated and was able to quickly locate EW17's firefighter trapped under the cabinet. They removed the cabinet from the firefighter and were able to drag him with

assistance from E281's crew from the garage to the laundry room. They then dragged the firefighter through the breezeway out to side alpha.

Findings/Discussion:

Finding

1. Effective on-scene size up reports did not take place.

Discussion

Upon arrival, EW17's officer reported an "exterior building" involved and BC5 reported that the fire involved an "out-building". These reports were incorrect and contrary to the dispatch information which reported a greenhouse on fire attached to the house. In addition, responding units were told by ECC that fire was extending to the house. It was not until later into the incident that there was a report of extension into the garage with an atmosphere Immediately Dangerous to Life and Health (IDLH). The incident commander did not have a good view of the structure from the command post location and believed that the fire involved an out-building; the inability to accurately size up the incident set in motion a chain of events which could have resulted in the loss of a firefighter.

Finding

2. Minimum staffing requirements were not met by all responding units.

Discussion

Rescue Squad 17 (RS17) responded understaffed and failed to notify ECC. RS17's combination crew consisted of a volunteer Deputy Chief driver, a career Firefighter/Rescuer II officer, a volunteer EMS Candidate I, and a career Firefighter/Rescuer I. The crew was tasked with conducting a primary search of the main house.

In addition, EW17 responded with the primary driver riding in the third position. An overtime driver unfamiliar with EW17 drove the unit. This situation occurred because additional firefighters that arrived at Station 17 at the time of the alarm were not yet assigned riding assignments. This caused the firefighters to assemble at the time of the alarm and the riding assignments changed due to the additional staffing not checking in with the OIC, prior to the dispatch of the incident

Finding

3. Standard Operating Procedures for Safe Structural Firefighting Operations were not followed on this incident.

Discussion

Rapid Intervention Company:
Command diverted the fourth due RIC engine to check the 9001 Warfield Road address because ECC reported receiving a call about an additional house fire at that address. 9001 Warfield Road was next door to the original dispatch. While pulling an engine from the initial dispatch to check the house on Warfield Road would be considered a good tactical decision, choosing the fourth due engine caused a major delay in getting even a stand-by crew in place. There was a significant delay in assembling and equipping a RIC. No Rapid Intervention Group (RIG) ever assembled or equipped on this incident.

Two-Out:
E281 and T8 operated in an IDLH for a period of time without the required two-out in place. The crews never reported the fire and smoke conditions they encountered in the garage. Command had to prompt E281's officer about the conditions in the garage learned there was an IDLH. When Command became aware there was an IDLH in the garage, he immediately assigned E291's crew as Rapid Intervention. The crew of E291 was just returning on foot from checking the house at 9001 Warfield Road. This was approximately twenty minutes into the incident. E291's crew arrived on side alpha of the garage a few seconds prior to the mayday. E281 and T8 should not have entered the IDLH garage without a stand-by crew in place.

Crew Integrity:
EW17's firefighter split from his crew and entered the garage by himself to engage in firefighting operations.

Incident Scene Safety Officer:
No safety officer was assigned by Command. The on-duty Safety Officer arrived on the scene 20 minutes into the incident from Station 7.

Divisions/Exposures:
Because it was not completely clear if the greenhouse was attached, there was confusion as to what exposure delta was.

Finding:

4. Effective communications did not always occur in this incident.

Discussion:

At least one unit switched their radio to seven-foxtrot instead of seven-echo when units were switched during the mayday. Seven-foxtrox is the announce channel where all talk groups in an incident cluster (seven-charlie, delta, echo, and foxtrot in this incident) and will receive transmissions made on this talkgroup. However, this was only applicable to portable and mobile radios not at ECC. This also created a situation where ECC lost contact with the unit(s) while these units inadvertently operated on the announce talk group.

ECC can hear and transmit on the announce talk groups (TG), they just don't have the same functionality as the subscribers in terms of how things work. When a user in the field transmits on an announce group ECC only hears the transmission on the actual announce group (7F), not the TG affiliated with the announce group (7C, 7D, 7E) while field subscribers hear the message on the talk group affiliated with the announce group. The reason for this discrepancy is that the subscriber radios (mobiles and portables) have a simulated scanning feature built into their programming. This scanning feature allows the user to monitor (scan) multiple frequencies within a talk group series. ECC does not have this feature, and as such, unless specifically listening to the talk group selected (7F), will not hear a unit calling on that frequency.

Consoles and subscribers treat the announce groups in fundamentally different ways. When subscribers select a talk group on there radio, they are essentially placing their radio into a scan mode. Although the subscriber has selected 7C, they are essentially listening to 7C and scanning 7F, listening for whatever frequency becomes active first. When the announce TG becomes active, the subscriber radio automatically switches from listening to the selected TG (7C) to listening to the announce TG (7F with the switch being ruthless by choice); this is why they hear the transmission on the announce group.

Consoles at ECC do not scan frequencies and they cannot be made to scan. This is a feature issue in the design of the system. The consoles at ECC can access the announce TG directly by specifically selecting that TG, but cannot scan that TG while monitoring other TG's. However, when ECC transmits on the announce group, the affiliated TG hear them (because the subscribers are scanning).

This feature is actually a change from the original design. In 2005 there was a request for a greater alarm that was accidentally made on an announce group, the IT staff and Radio Shop reconfigured the ECC consoles to route the audio for all the announce groups out to speaker #4. It was the concept that the volume on these speakers could be kept up on at all times and it would grab the operator's attention. However, due to the multiple frequencies being monitored by the ECC operators at any one time, even if the speaker volume remains turned up, there is no absolute assurance that the operator will hear traffic from that specific frequency.

During this incident, units were instructed to switch to seven-echo and they inadvertently switched to seven-foxtrot by means of turning the frequency selector knob on the portable radio, one too many selections, landing on 7F instead of 7E. This is a common error that can easily occur with gloved hands. Training with gloves in obscure environments will help personnel become more familiar with this technique.

Finding:

5. Mayday procedures were not followed during this incident.

Discussion:

A request for ECC to sound the pre-alert tone and switch all units except the Mayday personnel, the Incident Commander, and the Rapid Intervention Group was never requested.

After all units were switched to the alternate talk group, seven-echo, an effective PAR was not conducted.

No one confirmed the location of or checked the welfare of the missing firefighter's crew after the mayday by radio.

Finding:

6. The Personnel Accountability Report (PAR) procedure was not followed on this incident.

Discussion:

There were several failures in PAR requirements at this incident.

-- ECC failed to alert the incident commander 20 minutes into the incident.

-- The Incident Commander failed to conduct a PAR 20 minutes into the incident.

-- An effective PAR of units after the mayday was not completed.

Note: The mayday occurred a few minutes after the 20 minute mark which affected compliance with this requirement.

Recommendations:

1. *Crew Integrity Policy & Training*

All personnel should take part in "Crew Integrity" training by the Division of Wellness, Safety and Training:

- An in-station training program should be developed by the Division of Wellness, Safety and Training for delivery by station officers to personnel on the critical importance of crew integrity.
- Actual examples of firefighter deaths from National Incident Management Reports, National Institute for Occupational Safety and Health, National Fire Fighter Near-Miss Reporting System or other actual case studies should be used to emphasize the importance of crew integrity.
- Integrated PASS device usage including manual activation should be reinforced in the department standard for crew integrity training.
- The Department should define "Crew Integrity. It is currently an undefined term in policy. The individual responsibilities of the officer and the firefighters in the area of crew integrity need to be defined.

2. *On-Scene Reports*

- The Montgomery County Fire and Rescue Training Academy should continue to emphasize "on scene" and size-up reporting into future "in-service" training programs. Emphasis should be placed on assumption of command, proper structural size-up, water supply information, situational reports and entry crew advisory. In addition, identification of the "two out" crew must be included when an IDLH exists. Also, the training should emphasize the requirement for a "side C" report by the appropriate unit.
- MCFRS personnel should continuously train on the Safe Structural Firefighting SOPs, especially the three components of the on-scene report; Water Supply, Initial On-Scene Report, and Situation Reports.
- Incident commanders should announce standard geographical terms when necessary. When arriving at an unusually shaped, or large building, or at other times when the correct standard nomenclature of the incident may be questionable, (sides, divisions, branches, exposures, etc.) exist, the IC should clearly identify the sides, quadrants, or exposures as necessary.

3. *The department needs to implement the following Safety Officer recommendations*

- Reinstitute the dispatch of the second battalion chief as the Incident Scene Safety Officer (ISSO).
- Issue a Division Directive to reinforce the immediate need for an ISSO on all working incidents.

4. *Staffing*

- Update the Apparatus Staffing Policy, Executive Regulation 25-05, to specifically state that the unit officer may not be the driver of a unit.
- Create a station apparatus staffing policy at combination stations.
- Clarify the Integrated Emergency Command Structure, Executive Regulation #16-05AM, to require that all Chief Officers announce where they are responding from.

5. *Personal Accountability Report and MAYDAY Training*

- All Command Officers must review Mayday procedures.
- ECC must review all policies relating to the role of communications personnel during fire incidents. This should include the role of ECC in time keeping for the 20 minute notifications, the use of alert tones for Maydays, the application of the IDAT, and the role of the talk group operator.
- All personnel must review PAR requirements.

6. *Rapid Intervention Company*

Review of the SOP for Safe Structural Fire Fighting Operations #24-07AMII regarding assignments on RIC and RID dispatch responsibilities.

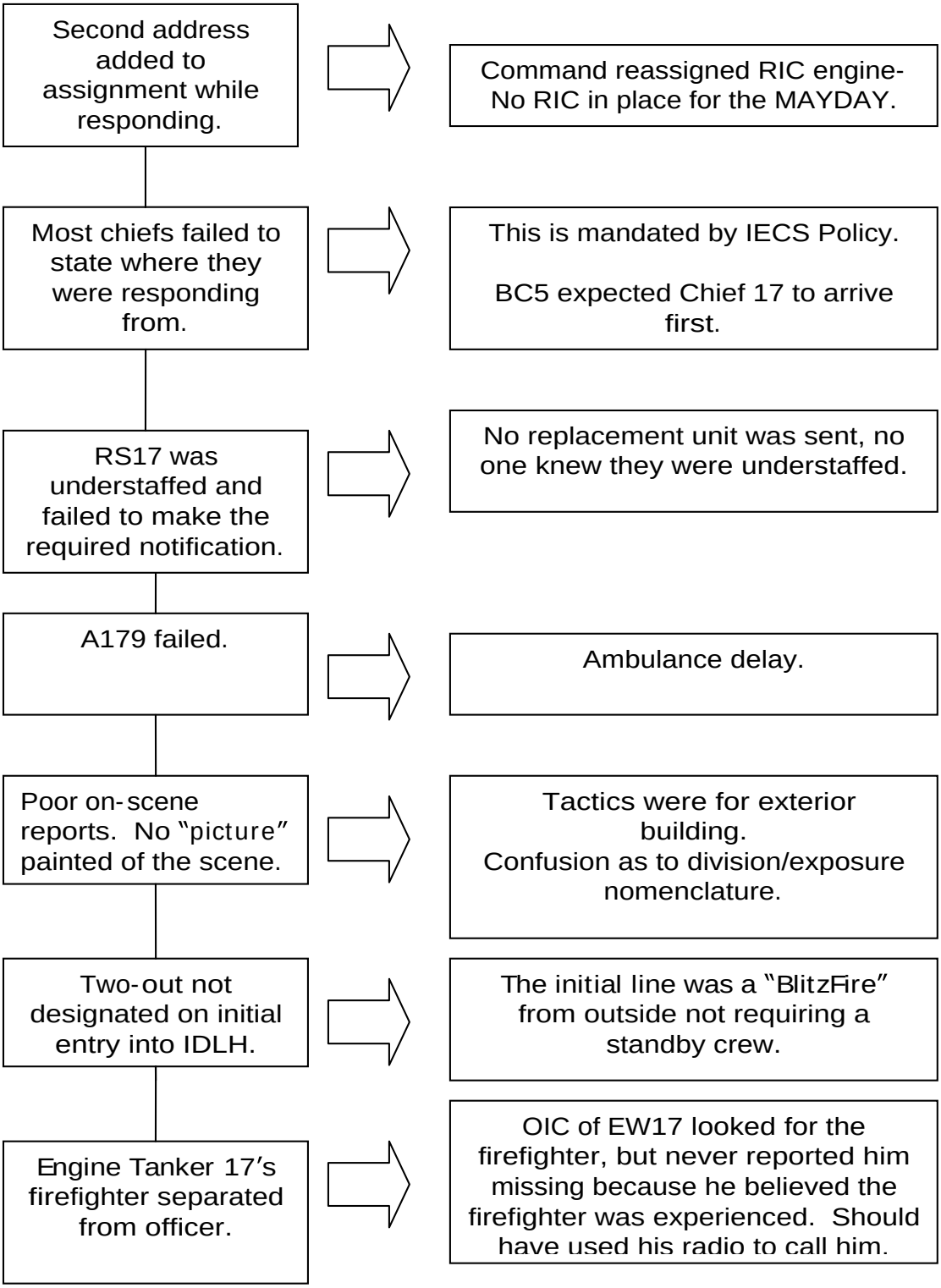
- Compliance with these procedures must be enforced.

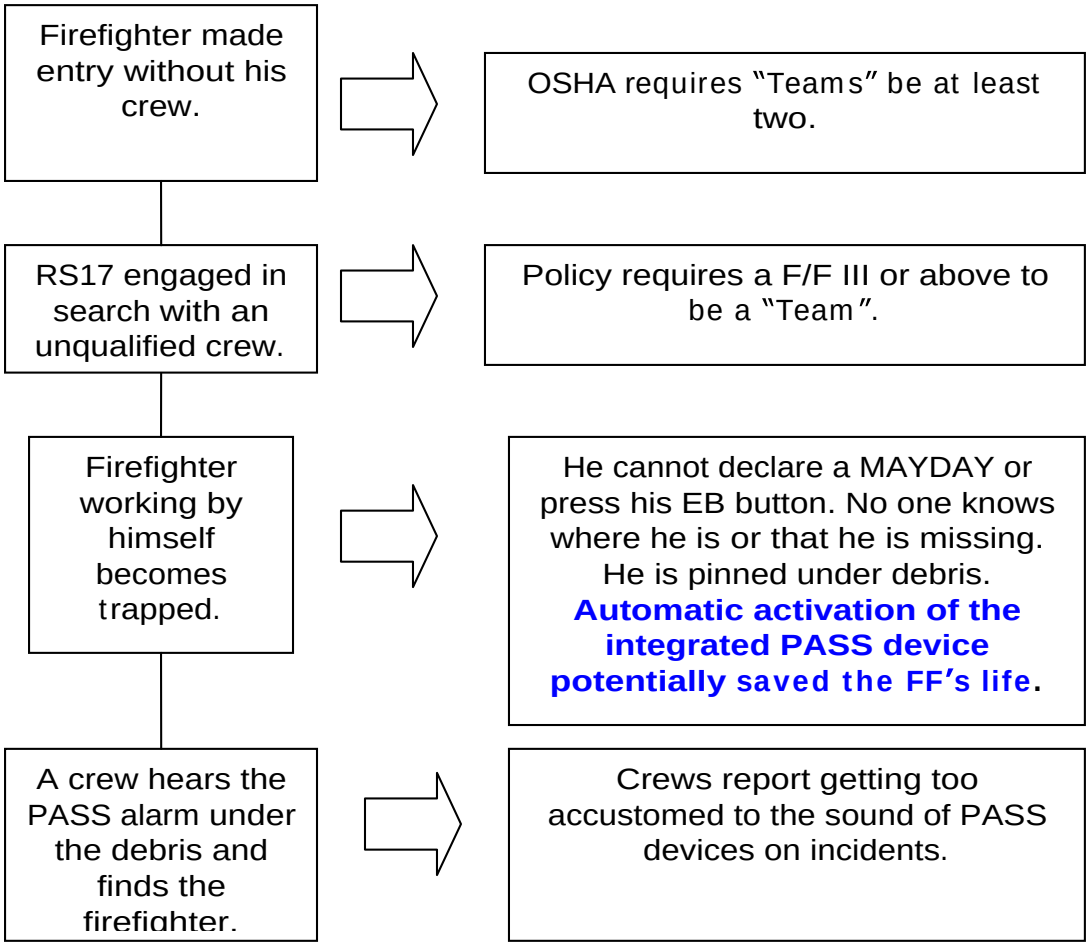
7. *Battalion Chief's Aides*

Battalion Chief's Aides are a critical part of the incident management team and the findings of this group clearly show how an incident commander working alone is challenging in managing a Mayday and incident operations.

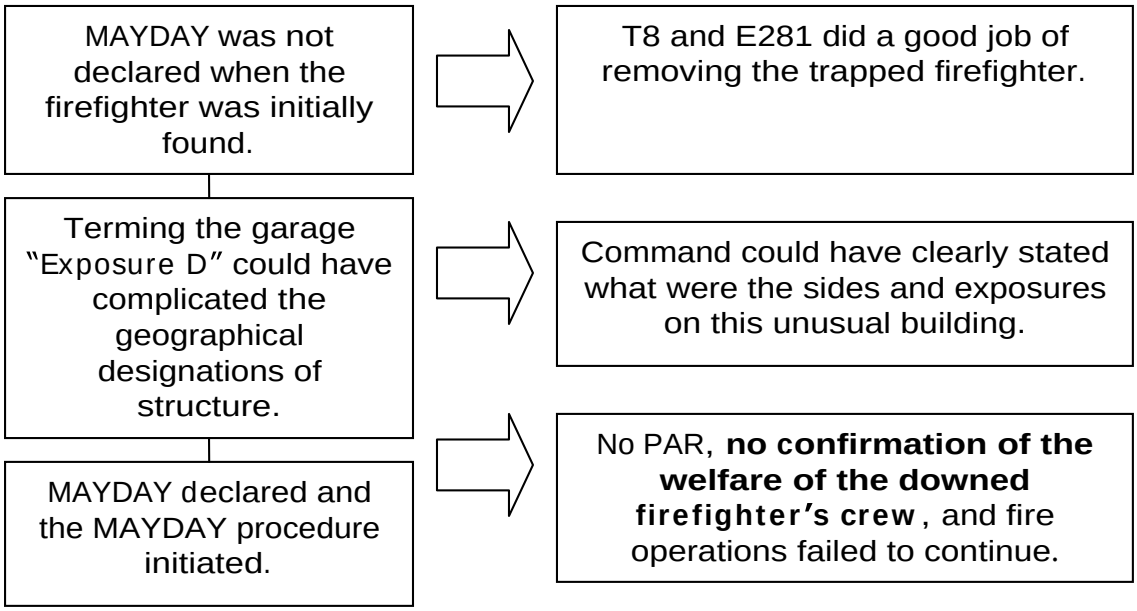
- The incident commander has a number of critical tasks that must be accomplished simultaneously at emergency scenes. The incident commander must conduct an initial size-up, assign arriving units, build an effective command structure, maintain incident documentation, and monitor multiple radio command team channels. Considering that size-up alone involves not only making observations, but face-to-face conversations with building occupants, by-standers and perhaps members of first-arriving units; checking pre-fire data and reference information; and re-evaluating conditions as new information emerges. Additionally, command officers at the rank of Battalion Chief and above are often assigned to work alone as a division or group leader which is not consistent with entry team philosophies in IDLH atmospheres.

Chain of Events

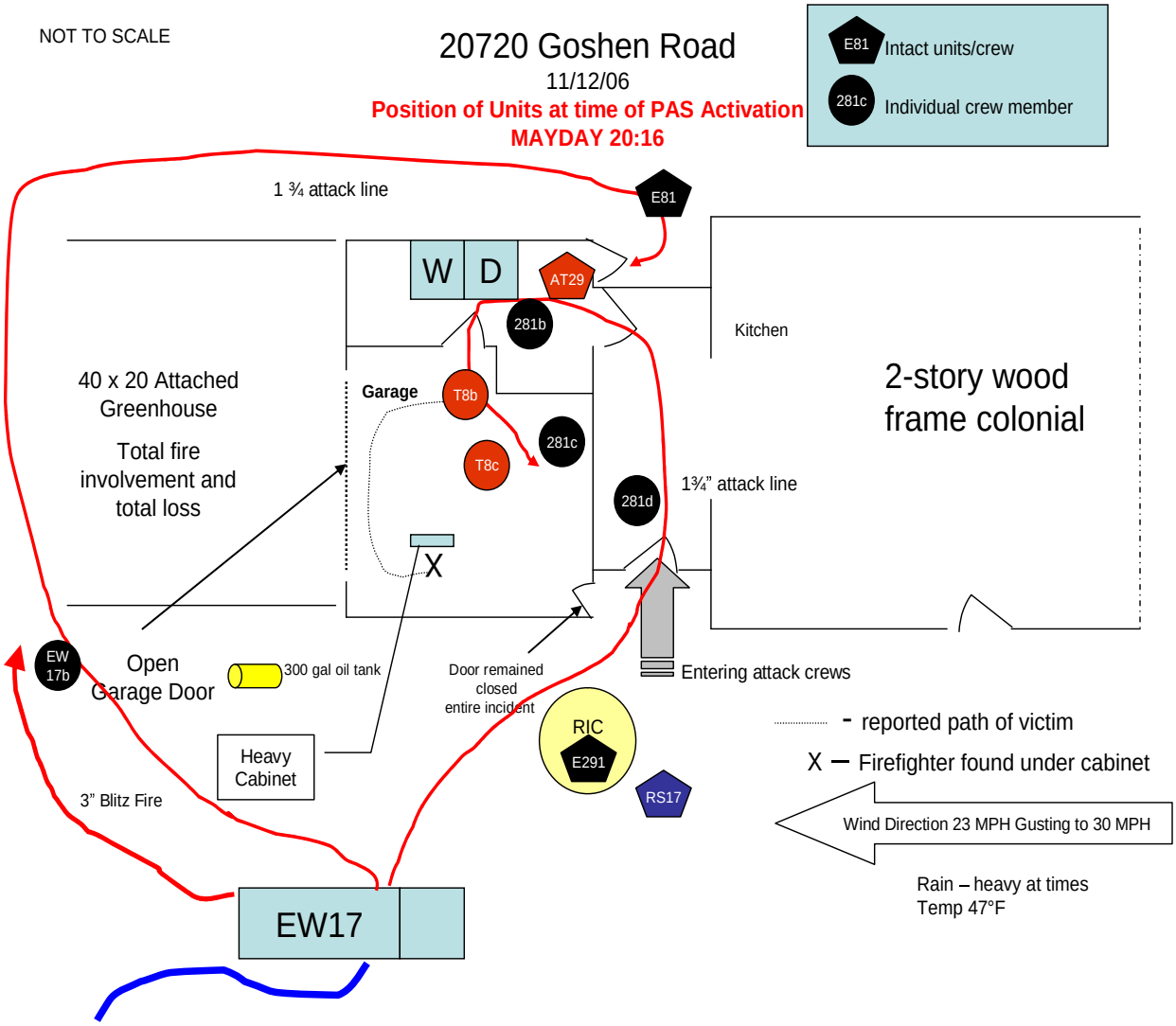


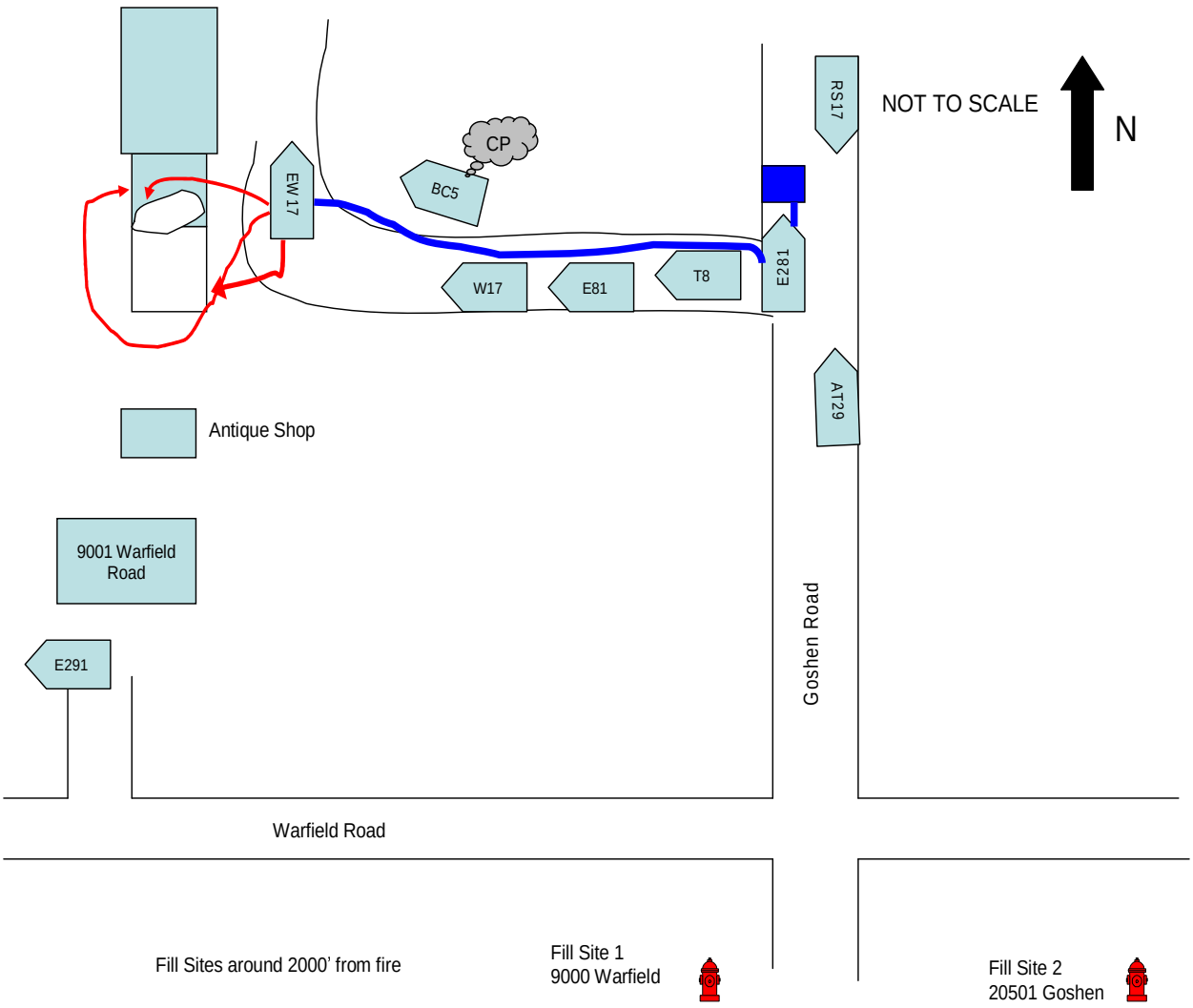


THE CHAIN OF EVENTS IS BROKEN BY THE AUTOMATIC ACTIVATION OF HIS PASS DEVICE AND A NEARBY CREW HEARING HIS ALARM.


MAYDAY was not declared when the firefighter was initially found.
T8 and E281 did a good job of removing the trapped firefighter.
Terming the garage "Exposure D" could have complicated the geographical designations of structure.
Command could have clearly stated what were the sides and exposures on this unusual building.
MAYDAY declared and the MAYDAY procedure initiated.
No PAR, **no confirmation of the welfare of the downed firefighter's crew**, and fire operations failed to continue.

Appendix


NOT TO SCALE
20720 Goshen Road
11/12/06
Position of Units at time of PAS Activation
MAYDAY 20:16
E81 Intact units/crew
281c Individual crew member
1 ¾ attack line
E81
W
D
AT29
281b
Kitchen
40 x 20 Attached Greenhouse
Total fire involvement and total loss
Garage
T8b
T8c
281c
281d
1¾" attack line
2-story wood frame colonial
X
EW 17b
Open Garage Door
300 gal oil tank
Door remained closed entire incident
Entering attack crews
RIC
E291
RS17
Heavy Cabinet
3" Blitz Fire
- reported path of victim
X – Firefighter found under cabinet
Wind Direction 23 MPH Gusting to 30 MPH
Rain – heavy at times
Temp 47°F
EW17


RS17
NOT TO SCALE
N
CP
BC5
EW 17
W17
E81
T8
E281
AT29
Antique Shop
9001 Warfield Road
E291
Goshen Road
Warfield Road
Fill Sites around 2000' from fire
Fill Site 1
9000 Warfield
Fill Site 2
20501 Goshen

20720 Goshen Road
Prior to November 12, 2006

Immediately after fire knock down

File cabinet pulled from firefighter

Greenhouse looking into garage

Door entered by firefighters leading into the garage from the laundry room

Aerial view of the aftermath