

Natural Gas Explosion Montgomery Village Center 19211 Watkins Mill Road June 16, 1993 Box 8-4

7 Firefighters and 2 WGL Employees Injured

The pages that follow along with accompanying video and photos are the core of an after action report following a natural gas explosion at Montgomery Village Center on June 15/16, 1993.

The documentation herein is not all inclusive. Investigative documents that support finding and recommendations were equivalent to two three-inch binders. We did find that some unit reports were missing. Some of what you find is a sample. For example, you may only see one page each of the SCBA inspection, gear inspection, and station safety inspection.

Many firefighters were injured. The details of their injuries are not disclosed – nor will you find EMS reports in this document. The entire paper report has been archived with the Operations Division.

Through technology, we were able to capture still photos, convert a VHS tape to digital format, and scan original documents to pdf for easy distribution. As you browse through this information, you should easily be able to recognize current practices in our system that came from the recommendations.

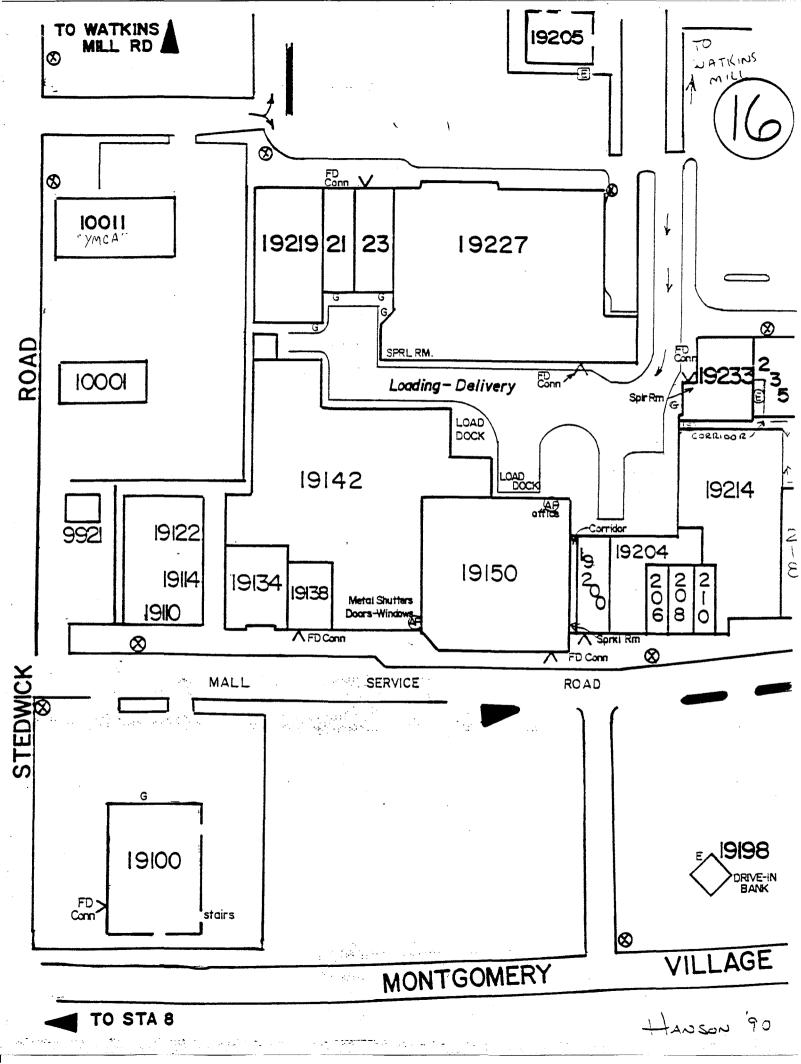
Special thanks to Firefighter Elizabeth Marshall who discovered the box left by Roger Strock in a closet at Station 8. She organized and cataloged the information. I also want to thank Master Firefighter Dave Galt (Digital Guru) who converted the video and still photographs to digital format.

Read and Learn

Battalion Chief Barry C. Reid May 18, 2007

Call Type	BOX BOX ALA		H P T	DIS	FLAY CA	LL		Incide	nt No 9	3034046
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	C29	DFRS	FM51	082	CM8	0291	E172	E311	E31	
	E231	E131	T31	T3	M89	AR 1	D17	D8	EMS	
	MULT	A289	A299	A319	C200	FM50	FM10	D03	FM3	
	U3	FC1	K85	C205	T26	FMI	U33	U29	FM5Z	
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FUH E81 06	1593									
FUH M89										2
FIH 34046	014731									

CLEAR FORWARD SCREEN PRINT RETRIEVE SCREEN MESSAGE



BOX 8-4 GIANT FOOD 19211 WATKINS MILL ROAD

JUNE 15, 1993

2311	E81, 281, & T8 were dispatched for an odor of gas in the Giant Food Store, upon arrival found heavy odor of gas in the store. When checking the exterior of the store found a fire at the gas meter on side 4 quadrant C, Sgt. Owens requested the Box assignment.
2335	Box 8-4 dispatched adding E291, 171, 172, T29, RS9, A88, D8 & Chief 29
2340	Command 8 established by Duty 8 on side 1.
2355	S9 checking EXP on side 4 - clear.
0001	E291 & 172 checking inside 19211 - heavy odor.
0010	T29 to roof, 19211 opening roof.
0015	T29/S9 placed PPU fans sides 1 & 3 of 19211.
0025	T29/S9 pulling ceiling tiles in 19211.
0037	Gas shut off.
0038	EXPLOSION!!
0040	2ND Alarm E311, E31, E131, E231, T31, T3, A299, A319, Duty 3 A289, M89, Duty 17
0050	E311, 31 to side 3.
	 removed injured to aid area at YMCA treated and transported moved all personnel back in the parking lot 200 feet moved apparatus back 200 feet
0140	E231 reported some roof areas falling and requested area be roped off, also assigned with T3 to check Peoples (19142) and Evans (19150) stores - clear at 0200
0145	E131, 172 assigned to check 711 store, reported clear at 0200
0153	T31 and crew to assist E231 & T3's crew at Peoples and Evans stores.

0215	E231, T3 & 31 reported 19138, 19200 MUA clear.
0220	Rehab 291, 171, 172, T8, T29.
0225	Rehab T3.
0235	Reviewed the release of units.
0300	Canteen 3 on scene.
0300	U30 talking to Rodbell, Ohler, Cooley, & Bindl at Station 8.
0305	Hold [81-281-T8] 171-311-31-T31&29-S9-M89, 289 Air 1
	Clear 231-291-172-131, T3 - A299-319
0305	T31 return to side 1 of Giant to light up side 1
0310	Gas Company reported Peoples & Evans were still clear.
0321	E171 relieved E311 on side 3.

Department of Fire and Rescue Services Bureau of Operations District II

June 21, 1993

To:

A/C William D. McLaughlin

District II

From:

Capt. Roger W. Strock

Senior Career Officer

Subject: 19211 Watkins Mill Road

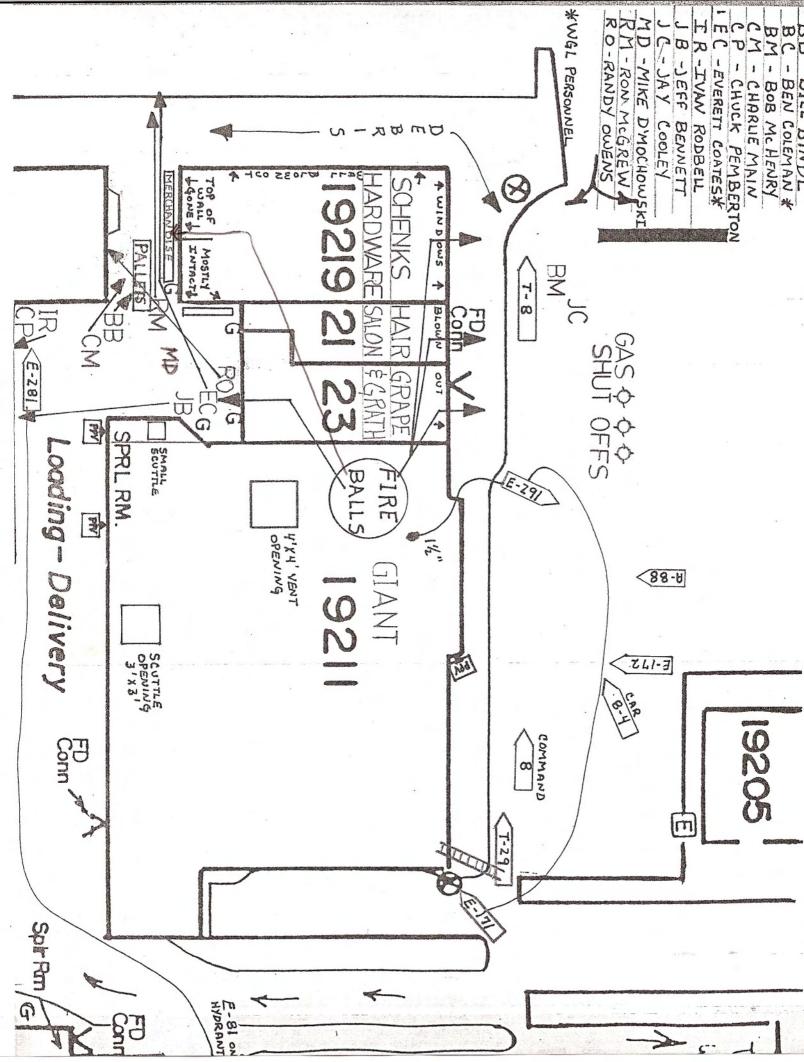
As you have requested, the following are the notes I prepared on the morning of June 16, 1993, following the explosion at 19211 Watkins Mill Road.

- At 2311 on June 15, 1993, E81, E281 and T8 were dispatched for an odor of gas in the Giant Store at 19211 Watkins Mill Road. They searched the building for the source, and discovered a gas fed fire on the exterior of this building on side 4.
- Apparently one of the officers requested the box, a fire marshall and utility companies.
 - 3. Box 8-4 was dispatched at 2335.
- I responded as Duty 8, and when I arrived established Command 8 on side 1 at approximately 2340.
 - a. Giant was evacuated, and the other stores were closed.
 - b. Requested and received an alternate channel. Channel 3 was originally given to this incident.
 - c. D/C Dmuchowski arrived and was assigned Sector 3.
 - d. Chief May arrived and started setting up a command post out of the rear of the Germantown duty vehicle. Instead of using Car 8-4 as the command post, I left it out in the parking lot and moved in to use the Germantown vehicle when I noticed the chief's actions.
 - e. A88 set up an aid station near the command post. f. I was advised by one of the on scene officers that they had a gas fed fire on side 4, and that they were letting it burn while protecting a wooden decorative siding which was above the brick wall where the fire was burning.
 - g. T29 was ordered to open the roof scuttles. positioned at the corner of sides 1 and 2, laddered

the building, and opened a 3' \times 3' scuttle and a 4' \times 4' vent.

- h. E291 was ordered to lay a line from the hydrant at the corner of sides 1 and 2, and advance a line into the Giant to check for extension. The unit did not lay out, but did proceed to the area in front of the corner of Sides 1 and 4. They happened to position so that the front of the vehicle was aimed away from the structure. They were using E134 with a front mount pump. I believe they extended a 1 1/2" line into the Giant. No extension found. After their investigation, crew came out. Later E171 layed a supply line for E291 to the hydrant at the corner of side 1 and 2.
- i. FF A. Coleman, off A88, was directed to open the beer and wine store, exposure 4-1, and check for gas or extension, none was observed.
- * The beer store was checked with a gas trac and then frequently checked by firefighters using the store to go from side 3 to the front of the complex.
- 5. Gas company was again requested, and I was given a 20 minute ETA.
 - 6. Gas company arrived around 0001 hours.
- 7. Around 0015, T29 placed PPV fans in the front doors of the Giant that were closest to the corner of side 1 and 2. Later PPV fans were placed on the two exit doors of the Giant on side 3.
- 8. Gas company apparently had difficulty finding street cut off valves.
- 9. Rehab area was established on the parking lot side of Squad 9.
- 10. Around 0025, T29 and Squad 9 entered Giant in full protective gear to displace ceiling tiles in an effort to clear the area above the suspended ceiling.
- 11. Continually checked with Sector 3 to ascertain fire conditions. No changes were reported.
- 12. At 0037, gas company apparently started to shut off the correct valve. Sector 3 reported the fire was going out.
- *Crews in the rear later stated that they heard some popping and rumbling sounds. They started running and the explosion occurred.

- 13. As soon as realized the severity, requested a second alarm to stage in the parking lot.
 - a. Evacuation signal was sounded.
 - b. Had difficulty getting a quick accounting of crews. Fortunately, the number of personnel in each crew was recorded on the incident control board.
 - c. Channel 3 was unreadable from Sector 3, after repeated tries at establishing the extent of injuries in the rear, ECC moved our incident to Channel 1.
 - d. When couldn't get a readable report from Sector
 - 3, immediately sent T29's crew around to side 3 to evaluate and report on situation.
 - e. Requested three BLS and one ALS unit. A88 relocated to the newly established EMS sector on side 4 in the YMCA parking lot and started rendering aid. Squad 9 was ordered to the EMS sector to light up the area and provide treatment.
 - f. When report wasn't received as soon as I thought appropriate at the time, Chief May remained at the command post and I went to the rear to assess needs. g. Sgt. Crittenden was assigned as EMS sector officer, and coordinated the treatment and transport of the injured to Suburban and Shady Grove Hospitals.
- 14. Moved crews, and later apparatus, farther from the front of the Giant.
- 15. Stores in main mall, and strip of stores distant to side 2 (7-11, etc.) were checked and found to be clear.
- 16. Command bus arrived. A rehab was set up adjacent to the command bus, and FFIII Garland was assigned to manage this function.
 - a. Porta-potties were ordered by the command bus staff.
 - b. FM's office had requested ATF assistance some time during the incident.
- 17. Through the rest of the night, stores were periodically checked by fire department and gas company crews. No other gas problems were detected. All buildings were checked again just before owners and tenants were allowed to enter.

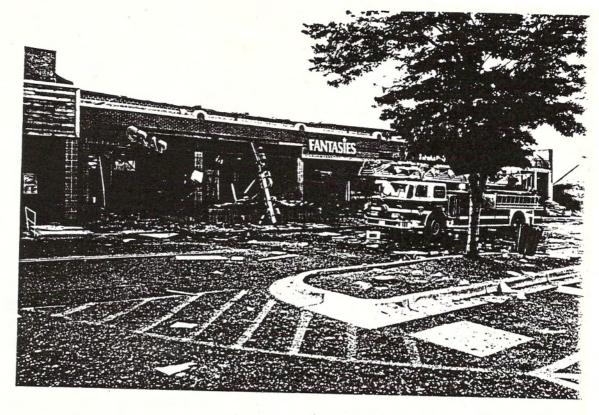




TRUCK 8 - PARKED ON SIDE ONE IN FRONT OF STORES WHERE EXPLOSION BLEW GLASS AND DEBRIS APPROX.200 FEET INTO PARKING LOT. TWO PERSONNEL WERE BEHIND THE TRUCK WHEN THE EXPLOSION HAPPENDED.



SIDE ONE OF GRAPE & GRAIN STORE - 19223 WATKINS MILL ROAD





OVERVIEW OF SIDE ONE OF STORES AFFECTED BY EXPLOSION. NOTE AMOUNT OF DEBRIS THAT FORCEFULLY BLEW OUR FRONT OF STORES.



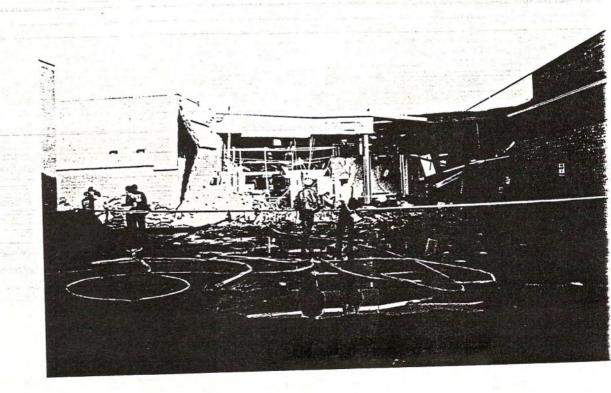
OVERHEAD VIEW FROM TOP OF GIANT FOOD SHOWING SIDE 3 - NOTE WALLS AT REAR OF HARDWARE STORE - 19219 WATKINS MILL ROAD - WALLS POSED SIGNIFICANT POST EXPLOSION COLLAPSE HAZARD.



OVERHEAD ROOF SHOT FROM GIANT SHOWING DAMAGE TO ROOF STRUCTURE OF THE THREE STORES INVOLVED. NOTE MEMBRANE ROOFING WHICH MOVED DUE TO STRESS OF EXPLOSION.

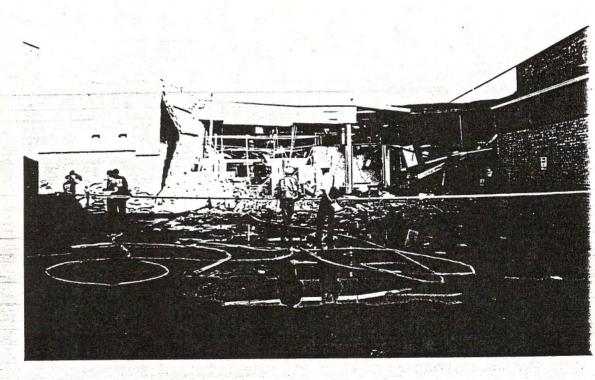


AREA TO RIGHT OF CENTER IS REAR OF GRAPE & GRAIN - 19223 WATKINS MILL ROAD - GAS LEAK & FIRE IN CORNER TO REAR OF THAT STORE - NOTE HANDLINE UNDER DEBRIS.

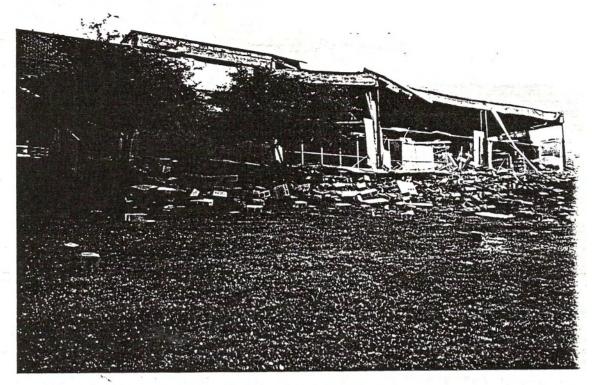


SIDE 1 - 19223 WATKINS MILL RD. GRAPE & GRAIN STORE

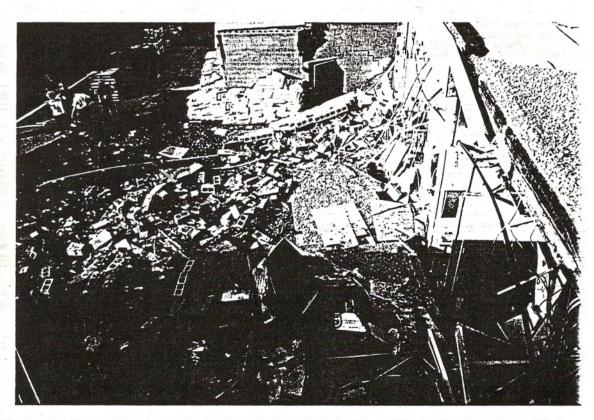




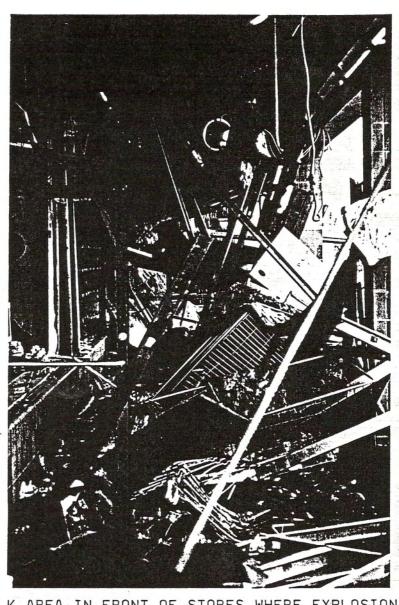
SIDE #3 - 19219, 21 & 23 WATKINS MILL ROAD - GIANT FOOD STORE ON RIGHT - INJURED FIREFIGHTERS/GAS LEAK & FIRE FOUND IN CORNER NEXT TO GIANT - NOTE E281'S HAND LINE UNDER DEBRIS.



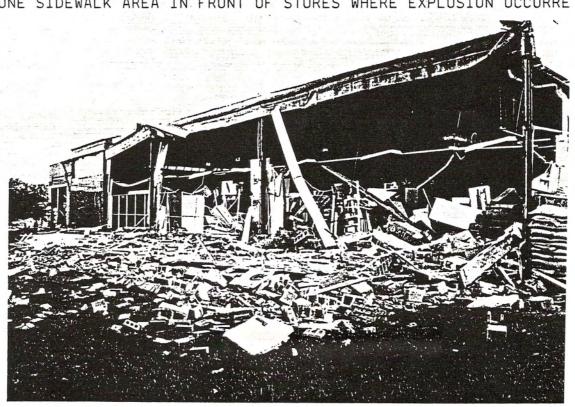
SIDE 4 OF THREE STORES INVOLVED IN EXPLOSION.



OVERHEAD VIEW OF AREA WHERE SOME FIREFIGHTERS AND ONE WASHINGTON GAS EMPLOYEE WERE OPERATING AT TIME OF EXPLOSION. E281'S HANDLINE WAS UNDER THE DEBRIS.



SIDE ONE SIDEWALK AREA IN FRONT OF STORES WHERE



SIDE FOUR - HARDWARE STORE WALL -

MONTGOMERY COUNTY, MD. DEPARTMENT OF FIRE AND RESCUE SERVICES BUREAU OF OPERATIONS

June 21, 1993

TO:

Assistant Chief Dennis McLaughlin

IIT Team Leader

FROM:

Assistant Chief Monte L. Fitch

District 5

SUBJECT: Protective Clothing / SCBA Survey

PROTECTIVE CLOTHING

Firefighter III Richard Hoye (1664) and I have surveyed the protective clothing and SCBA worn by Department firefighters injured and sent to the hospital from injuries sustained during the fire/gas explosion incident Tuesday June 15, 1993 0038 hours, 19211 Watkins Mill Road.

The completed survey forms are attached to this memorandum, documenting protective clothing worn by each firefighter and condition of gear when surveyed.

Firefighter's protective clothing plays a significant role in their protection during an emergency incident. After careful survey of the protective clothing being worn by firefighters during this incident, we have not found any damage to the gear being worn, that can be attributed to the explosion.

One disturbing fact, some firefighters on side three were NOT wearing the total protective envelope during the time hose lines were in operation in the area of the gas leak/fire.

The Personnel Injury Data sheet indicates some firefighter sustained injuries such as various cuts, bruises, abrasions, these may have been eliminated or less serious if full protection had been worn.

Page 2 Survey

SCBA

Two SCBA units were surveyed, there was <u>not</u> any damage that can be attributed to the explosion.

One injury may have been attributed to the pack (harness) when he fell, possibly causing rib fractures. Personnel were located outside at the time of the explosion, had a fireball been lower or if firefighters had been inside the building, the use of SCBA (breathing air) would have offered the necessary respiratory protection.

RECOMMENDATION: ANYTIME PERSONNEL ARE WORKING WITHIN THE CONFINES OF A BUILDING WITH A GAS LEAK, OR IN ANY AREA OUTSIDE THAT HAS A HAZARDOUS LEVEL READING ON THE GAS DETECTOR, ALL PERSONNEL SHOULD BE IN FULL PROTECTIVE CLOTHING AND BREATHING AIR FROM THEIR SCBA.

attachments:

- personnel injury data sheet
- 2. protective clothing survey
- scba survey
- 4. 8 & 28 station inspection forms
- 5. Globe spec

PROTECTIVE CLOTHING SURVEYED FROM INCIDENT #93034046

- *Sgt. R. Owens 28C All protective clothing seen

 **Sgt. W. Bendl 8C " " " " "

 *MFR C. Main 28C " " " " "

 *MFR R. McGrew 28C " " " " " except helmet & boots
- *F/F J. Bennett 28C " " " except helmet, gloves, hood
- F/F K Plunkett 9C Gear sent to 25 for review, but he was not injured.

Unknown firefighter's helmet and gloves sent to 25 for review, we were unable to determine who this equipment was assigned to .

1 extra large blue DFRS T-shirt (cut in half by EMS personnel) also with gear to be reviewed.

^{*} injured and sent to the hospital

^{**} injured

SCBA SURVEY

19211 WATKINS MILL ROAD 6/15/93 INC.93034046

NAME	STATIONSHIFT
CONDITION	OF:
FACE PI	ECE: E-281 part #803923-02 Large W/out nose cup
	normal appearance, neck strap attached.
REGULAT	OR: Serial # 8821373
	normal in appearance attached to face piece functions when air turned on and alarm sounded when tested
PRESSUR	E REDUCER: Serial # 8821216
BOTTLE:	60 MIN30 XX Serial # SC51956
	BOTTLE PRESSURE slightly above 4000#
रूप ७	Hydro test 10/91 normal wear on bottle Note: Serial # partly obscured by wear abrasions
*** ***	
HARNESS	normal wear, cylinder band is loose about 1'' play
STRAPS:	Kevlar and appearance is normal
PERSONA	AL ALERTING DEVICE:
	ATTACHED TO SCBA? YES XX left strap GWVFD 23995
	FUNCTIONAL? YES XX
midd.	Guard on PAL is broken off Leb Chief M. L. Fitch Chief M. L. Fitch Chief M. L. Fitch Firefighter Richard Hoye
	$\frac{6/16/93}{\text{date}} \qquad \frac{6-/6-93}{\text{date}}$

GEAR SURVEY 19211 WATKINS MILL ROAD 6/15/93 INC.93034046

NAME S	gt. Rand	ly Owens	STATION	28	SHIFT	C
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DEPARTMENT OF FIRE AND RESCUE SERVICES MONTGOMERY COUNTY, MD.

4/93

STATION SAFETY INSPECTION FORM

Refer to Policy and Procedure #813 for applicability and routing.

Directions:

Inspect each area of the Fire/Rescue Station checking each of the listed items. Enter the appropriate notation in the right column based upon the following key: O.K. for acceptable, N.A. for not applicable, V for violation, RV for repeat violation. When V or RV is

indicated, identify in the remarks section for each area, the specific violation and location.

A. Building Facility

Status

1.	Smoke alarms checked and operable	OK
2.	Emergency power checked and operable (under load/emergency lighting)	OK
3.	Hazardous/Flammable material (a) Insure all materials are properly stored	οΚ
	(b) No smoking signs posted around flammable/combustible liquids	oK
	(c) Emergency shut offs to fuel pumps operable and identified	οK
4.	Exits - doors operable, properly marked, clear egress, stairs clear	ax
5.	Fire alarm (for evacuation) tested and operable	OK
6.	Fire extinguishers - mounted, inspection dates, maintenance	R.V.
7.	Fire sprinkler system - secured in open position; proper pressure settings; heads free from obstructions	OΚ
8.	Address numbers - 6"	OK
9.	MOSH Act and posters in work place	R.V.

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FS-100 (REV. 3/91)

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FIRE INCIDENT REPORT

Montgomery County - Fire/Rescue Services

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FIRE INCIDENT REPORT

Montgomery County - Fire/Rescue Services

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FIRE INCIDENT REPORT

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FIRE INCIDENT REPORT

Montgomery County - Fire/Rescue Services

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Montgomery County - Fire/Rescue Services

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Department of Fire and Rescue Services Bureau of Operations District II

July 9, 1993

To: Chief James Magruder

Gaithersburg-Washington Grove Fire Department

From: Capt.

Capt. Roger W. Strock Senior Career Officer

Subject: Post Incident Analysis

As required by Fire and Rescue Commission regulation number 58-89, this is the post incident analysis of the fire and explosion which occurred on the morning of June 16, 1993 at 19211 Watkins Mill Road. A chronological outline of this incident is contained in the attached memorandum of June 21, 1993 to A/C McLaughlin which was developed from my notes of June 16, 1993.

The following text will cover the areas required in the Commission regulation.

When the explosion occurred at 0038 hours on June 16th, seven firefighters received minor injuries ranging from a minor laceration to the neck, that required no treatment, to a fractured rib. Actions that can be taken to avoid injuries in this type of situation will be covered in the recommendation section. Appropriate SOPs and safety regulations were being followed, but some actions did occur that will need to be corrected in future gas incidents. They will be covered later in this report.

Welfare of the fire/rescue personnel was handled by the following actions. Before the explosion, a rehab area was established on side 1 in the parking lot. The crew from A88, which had established an aid station on side 1, had prepared a water cooler full of squencher, and was about to lay out a salvage cover for personnel to rest on. After the explosion, a canteen was requested at 0108 hours. Unfortunately, Canteen 3 was the first one available to respond, and arrived at approximately 0300 hours. The weather was clear and cool, so shelter was not needed. A rehab area was established near the command bus, and A289 handled this area. Port-a-potties were requested and arrived before daybreak. The crews were rotated on a regular basis, and fatigue did not become a factor.

The major construction design problem was the fact that an underground utility trench connected the Giant Food Store to the Grape and Grain Store which was the closest exposure on side 4. It has been reported to me that this trench was approximately 3' x 3', and contained gas, water, and electrical pipes and conduits. This trench was from the rear storage area of the Giant's maintenance room and opened up into the rear closet of the Grape and Grain. Gas was apparently traveling through this trench, entering the closet of the Grape and Grain, and then following the pipes and conduit into the cockloft through the unprotected ceiling. This underground trench was not shown on the site plan, there was no preplan on this structure, and unfortunately no crews discovered it while repeatedly checking the Giant or Grape and Grain stores.

There were no access problems that hampered incident activities to any extent. The Giant was open when the adapted response arrived, and was quickly evacuated. Other stores in the immediate area were closed. There were reportedly many teenagers on the scene when the operation started, but they were kept out of the danger area and no civilians, except the two gas company employees, were injured.

Water supply was not a problem. Sufficient hydrants were available, and each attack engine was supplied by a pumper on a hydrant. Very little water was needed before the explosion, and only a very small area of fire was visible after the explosion. This was extinguished by the sprinkler system in the Grape and Grain, which opened during the explosion, before fire department action was needed.

It is my belief that fire department personnel were used effectively on this incident. However, there is always room to improve, and I'll make recommendations later in the report.

Support for fire department operations, and the investigation, were requested and received. The gas company and Pepco were called and did respond. The Fire Marshall's office requested the ATF National Response Team which quickly responded. At the writing of this report, this incident is considered an arson and still actively being investigated.

DFRS personnel also responded to assist. A/C McLaughlin (Chief 200), A/C Fitch, Capt. Mulhall, Lt. Rooney, and the two Division Schedulers arrived and assisted at the Command Post, and immediately initiated the Injury Investigation Team. The command bus was requested and arrived with police support and a crew from Station 26 which handled administrative and communication functions in the bus.

Chaplain Cummins responded and assisted with the injured and provided needed support to personnel from the first alarm companies. Capt. Bickham responded and started the Critical Incident Debriefing process. He later provided a defusing session at Station 8 on June 18, 1993 for C shift, and set up a critical incident debriefing for those involved on the evening of June 21st. D/C Adams responded to the scene and represented the Department.

The officers on the adapted response did request and receive additional apparatus when it became clear what they were initially facing. The box alarm assignment was dispatched and was believed sufficient for the incident based on the available information at the time. After the explosion, a second alarm was requested and provided enough manpower for all functions.

Communications were a problem on this incident. When an alternate channel was requested we were given channel Channel 1 was assigned to an incident in Rockville. Extensive problems were noted using channel 3. Apparently without repeater capabilities, ECC had problems copying transmissions. A review of the tape showed many instances when units were asked to repeat messages or the transmissions were completely unreadable. ECC notified Command 8 twice during the incident that they were having trouble receiving our transmissions. The second time was just after the explosion when communications were the most critical. Fortunately, ECC was able to switch the incident to Channel 1 at that time, but that caused some confusion as units attempted to switch over at the most inopportune time.

Proper communication procedures were used by all units throughout the incident. ECC and operating units should be commended for the radio discipline and the manner in which they handled the communication difficulties.

As was discussed earlier, there was a site plan of the shopping complex and it was used throughout the incident.

There was no preplan of this structure or the exposures. We will have to review our development of preplans, and possibly change our priorities.

To the best of my knowledge, there is no SOP specifically for gas leaks, but units did follow the box alarm procedure. As units responded they were notified that E81 and E281 had taken rear positions and had laid a supply line. E291 was directed to lay a line on side 1, and this line was supplied by E171 on the hydrant. T29 was directed to take the corner of sides 1 and 2, and laddered the roof to ventilate. Other units dispersed on side 1, which was appropriate but we were too close. I'll expand on that thought in the recommendation section. The basic positioning of units was sound, and the crews did perform the correct functions for each type of company. Free lancing was not observed by Command.

The organization of the fireground followed the intent of the Incident Command System. When the officer on T8 asked for the box, he also requested an alternate channel. As soon as I arrived, Command 8 was established. D/C Michael Dmuuchowski arrived next and was assigned command of sector Chief May arrived next on the scene and set up the command post for me. He remained there and was extremely valuable for the smooth operation of the command post. McHenry arrived a short time later and assisted in many collateral assignments. I wore a vest, and later in the incident the safety officer wore a vest. Other vests were available but not used. Command post operations were transferred into the command bus when it arrived. At that time, in accordance with IECS, I transferred command to Chief May and continued to work with him throughout the night.

The fire ground was organized, and recorded by use of the incident command boards. Chief May kept records on the boards of assigned tasks and numbers of personnel in each company. This information was invaluable as we accounted for crews after the explosion, with this process being completed in under five minutes.

The strategy was to stop the flow of gas and ventilate the buildings as quickly as practical. This was not possible as the leak was before any above ground shut offs. The gas company had difficulty when they arrived as the appropriate shut off was apparently buried in an island in the parking lot of side 1. In retrospect, some would argue that positive pressure ventilation was not the most

appropriate tactic. However, the roof had been safely opened, the fans were placed back from the ground level openings and were not in the gas cloud, ceiling tiles had been displaced in the Giant, and the operation was successful in that store.

In the opinion of this writer, the overall operation on this incident was good, but obviously not perfect. The following is a list of recommendations that I have prepared:

- 1. In complicated operations, sectoring needs to be extensively used. Establish the safety sector as soon as possible, and continue to expand the command staff as required.
- 2. When positioning apparatus on gas leaks consider the following:
 - a. Position on corners as the structure should be more resistant to collapse at that location. b. Position at least 100 feet from blank walls,
 - and 150 feet from glass store fronts, if possible.
 - c. If apparatus must be near the structure, park in front of masonry walls instead of glass.
 - d. Be sure the command post is removed as far as possible from the scene for safety and for quieter conditions.
 - e. Be sure ambulances and rescue squads don't move closer to the scene than necessary.
- 3. Verify that all utility companies are enroute, and continue to check on those that have not reported to the command post. Also, be cognizant of the number of utility workers operating on the scene and their location.
- 4. During gas leak operations, all exposures must be properly checked. This includes all rooms, void spaces, and particularly the cocklofts.
- 5. Accurate personnel accountability is a must. A county wide system must be put into place immediately.
- 6. The number of personnel operating in the danger area must be limited, strictly supervised, and monitored at all times. Others must remain at a safe location.
- 7. All officers must enforce protective clothing requirements at all times.

- 8. Crews that are resting should be removed to a safe and quiet location, where they can remove protective clothing and relax.
- 9. Officers must ensure that all orders are explicitly understood.
- 10. Onlookers need to be contained as far back from the scene as possible by the police.
- 11. On complicated incidents, get a police liaison in the command post as soon as practical.
- 12. A repeater system for channel 3 is probably needed.
- 13. If gas can not be controlled quickly, immediately consider evacuation by all personnel.
- 14. Be sure that someone is recording activity on a incident control board and knows the location of all crews.
- 15. The incident commander should stay off the radio as much as possible and have an aid make the transmissions.
- 16. Refresher training is needed on the Incident Command System. Some of the finer points are forgotten as they are not reviewed on a regular basis. For example, if a staging officer is not assigned, the first primary unit officer to arrive at the staging area will automatically become the staging officer.

This concludes my analysis of this incident. Should you have any questions or concerns, please contact me at your convenience.

CC: D/C Leslie Adams
A/C William McLaughlin
File

MEMORANDUM

DEPARTMENT OF FIRE AND RESCUE SERVICES OPERATIONS BUREAU

AUGUST 26, 1993

TO:

Jon C. Grover, Director

Department of Fire and Rescue Services

VIA:

Deputy Chief Leslie D. Adams

Bureau of Operations

FROM:

Assistant Chief Wm. Dennis Mckaughlin

Bureau of Operations - Distract II

SUBJECT:

Report of Injury Investigation Team

Watkins Mill Road Gas Explosion

Enclosed is the report of the Injury Investigation Team (IIT) on the gas explosion on Watkins Mill Road which injured nine people. The appendices are not included at this time as they are voluminous.

The IIT believes that there are several improvements that can be made to make operations on such incidents safer for all personnel in the future. A list of recommendations is included in the report. Some of them are items which will require follow-up by the Chief's Committee.

The IIT was formed shortly after the explosion by Deputy Chief Adams. It was composed of several DFRS officers, a representative of the union as well as a volunteer officer from the Gaithersburg Fire Department. All members participated actively as a team.

If you desire any further information or elaboration on the items cited in the report, please contact me.

Injury Investigation Team

Report

&

Recommendations

Natural Gas Explosion

Watkins Mill Road Gaithersburg

Wednesday, June 16, 1993

Nine Injured

INJURY INVESTIGATION REPORT

Introduction

On the morning of Wednesday, June 16, 1993 at approximately 0030 hours, a violent explosion of confined natural gas vapors in several stores in the 19200 block of Watkins Mill Road injured nine persons; two volunteer fire and rescue personnel, five employees of the Department of Fire and Rescue Services (DFRS) and two employees of the Washington Gas Company (WG). Three businesses were very heavily damaged by the explosion.

This report is not intended to address the cause of the explosion as it is under investigation by the Montgomery County Division of Fire Investigations and the Federal Bureau of Alcohol, Tobacco and Firearms.

In accordance with Department of Fire and Rescue Services Policy and Procedure # 812, Deputy Chief Leslie Adams initiated actions on the scene to form an Injury Investigation Team to report to the Director on this incident.

The Incident:

At 2311 hours on June 15, 1993 Engines 81, 281 and Truck 8 were dispatched for an odor of gas in the Giant Store located at 19211 Watkins Mill Road in Gaithersburg. Upon arrival, personnel detected a strong odor in the store, ordered an evacuation of civilians from the store and requested a full box alarm at that location. Shortly after arrival, a gas fed fire was discovered on the exterior, Side 4 of the building.

At 2335 hours Box 8-4 was dispatched. the additional units responding were Engines 291 and 171, Truck 29, Rescue Squad 9, ambulance 88, Duty 8, Chief 29, Chief 29-1, FMs 50 & 51 and Chief 8-2.

At approximately 2340 hours, Command 8 was established on Side 1 of the Giant Store (See detailed map showing the affected part of the shopping center). An alternate channel was requested for operations. Channel 3 was assigned.

Chiefs 29 and 29-1 arrived shortly thereafter on Side 1. Chief 29 immediately began to set up a command post to assist Duty 8 (Captain Strock). Chief 29-1 (Deputy Chief Dmuchowski) was assigned Sector 3. Ambulance 88 set up an aid station near the

INJURY INVESTIGATION REPORT

Command Post. The Incident Commander, EMS and Safety Sector Officers were using command vests.

At this point, it was known that there was a strong odor of gas in the Giant Store and that a small, gas fed fire was burning in the rear of the store. Engine 281 had layed a supply line to Side 3 from a hydrant supplied by Engine 81. Engine 281's crew had advanced a 1 1/2" hose line to the area of the fire to protect exposures while awaiting assistance from WG personnel. Truck 29 was ordered to open the roof scuttle holes on the Giant Store. That unit positioned at the corner of sides 1 & 2, laddered the building and opened a 3' X 3' scuttle and a 4' X 4' vent. Engine 291's crew advanced a hose line into the Giant Store – after finding no fire, they went outside. Engine 291 was positioned near the corner of Sides 1 & 4.

Meanwhile, a firefighter was directed to open the beer and wine store - exposure 4 from the Giant - to check for gas or fire extension. No fire or gas odor was detected.

WG personnel had not yet arrived. They were requested again and an ETA of 20 minutes was given. WG personnel arrived at approximately 0001 hours - nearly 50 minutes after the initial dispatch. It was noted by fire/rescue personnel that the WG personnel had difficulty locating street cut off valves for this location due to the fact that the store layout had changed over the years.

A rehab area was initially set up on the parking lot side of Rescue Squad 9 on Side 1 of the Giant store. After the explosion, the rehab area was relocated much further out in the parking lot on Side 1.

At approximately 0025 hours, personnel from Truck 29 and Rescue Squad 9 entered the Giant in full protective gear to displace ceiling tiles in an effort to clear the natural gas from above the suspended ceiling. Sector 3 continued to report that conditions on Side 3 had not changed during this time.

At approximately 0037 hours WG personnel apparently began to shut off the correct valve as Sector 3 reported that the fire was going out. Personnel on Side 3 later reported that as the flames died down, they heard whooshing, popping and rumbling sounds. They started to run as the explosion occurred. The explosion of gas in the areas above the ceilings in 19219, 19221 and 19223 Watkins Mill Road was massive. The walls, doors, windows, etc. were blown out by the explosion. Some witnesses said the roof rose 2-3 feet before settling down. Photos taken afterward seem to verify this.

Realizing the severity of the explosion, the Incident Commander requested a second alarm to stage in the parking lot. All efforts were made to locate, account for, treat and transport personnel directly affected by the explosion. The evacuation signal was sounded to get all personnel out of the immediate danger zone which included the following:

- o 19211 Watkins Mill Road Giant Food
- o 19219 Watkins Mill Road Schenks Hardware Store
- o 19221 Watkins Mill Road Fantasies Hair Salon
- o 19223 Watkins Mill Road Grape & Grain Beer & Wine Store
- o Alley behind all stores -

Upon arrival on the scene, unit officers were requested to report the number of personnel on board each unit. This data was maintained at the Command Post. Using these numbers, attempts were made, with some difficulty, to quickly account for all personnel as quickly as possible. Without this information being gathered initially, the task of accounting for all personnel would have been almost impossible.

Some personnel interviewed stated that turnout gear without clear markings on the exterior inhibited quick identification of all personnel, particularly the injured, by rescue personnel unfamiliar with them by name and face. Officers stated that it is impossible to know the identity of all personnel with all of the new DFRS employees as well as the intermix of volunteer personnel. It was suggested that the name of each person be placed on a panel with reflective letters at the lower, back portion of the turnout coat. Fire and rescue personnel from the Germantown Vol. Fire Department did have reflective name panels on their coats. In addition, other articles of personal protective gear should be more clearly marked to enable identity after the fact. This was a definite problem faced by this IIT.

Communications on Channel 3 were unreadable from Sector 3 immediately after the explosion. After repeated attempts to establish the situation and extent of injuries in that Sector, ECC moved the incident communications to Channel 1. In addition, Command 8 sent Truck 29's crew to side 3 to size-up and report on the situation following the explosion.

During this time, most of the injured were exiting from Side 3 to Side 4 where they were triaged, treated and transported from. Command requested three additional BLS units, one ALS unit and relocated A88 to Side 4 where the EMS Sector was established by the paramedic Sergeant on Medic 89. Rescue Squad 9 was also assigned to the EMS Sector to assist with lighting and treatment. A list of all injured personnel is contained in Appendix B. The five DFRS personnel injured had an average of 20 years experience in field operations. The two volunteer personnel, both chief officers had an average of 18 years experience in field operations. According to one DFRS employee, one of the WG personnel advised those nearby that "It's going to blow" a second or two before the explosion. That did permit all involved to begin to move away.

Shortly after arrival of the 2nd alarm units and fearing another possible explosion in the Giant Store, all units were moved back in the parking lot to a point at least 250 feet from the buildings.

Field Comm 1 arrived and was set up on Side 1 in the parking lot. The command post was moved into Field Comm 1 and, in accordance with the IECS policy, Chief May assumed command. Duty 8 and Chief 29 continued to closely work together to handle the incident. Station 26 personnel with Montgomery County Police personnel (Officers Plitt and Burgess) set up communications for the Command Post.

A Rehab Sector was established near the Field Comm bus. Porta-potties were ordered by the Field Comm staff and placed at the edge of the parking lot. Fire Investigation Division personnel requested assistance from the Bureau of Alcohol, Tobacco and Firearms to assist with the investigation given the severity of the explosion and the amount of damage sustained.

Throughout the remainder of the night, adjoining stores were checked for any sign of gas migration. None was found except in the Giant store. PEPCO, WSSC and Washington Gas personnel assisted in isolating other stores as well as those involved.

Issues:

The IIT recognized several issues as a result of their examination of this incident. For the betterment of the fire and rescue service and in the interest of personnel safety, the identified issues are presented here.

- 1. There currently is no uniform Standard Operating Policy (SOP) for this type of incident. The IIT believes that the command personnel on this incident did an excellent job of command and control using standard ICS procedures. However, the IIT believes that a uniform policy providing a basic framework of operations on this type incident would improve the general level of awareness of all personnel involved in future incidents. In addition, such a policy would greatly improve the safety of all fire and rescue personnel.
- 2. To the extent possible, all departments should check preplans to verify location of utility shut offs. The site plan for this location was very good and greatly assisted the command post staff. It did not contain street valve shut off locations which the WG personnel had difficulty locating themselves. It was noted by some IIT members that some departments do not have even basic site plans or pre-plans of buildings in their areas.
- 3. On-scene communications on Channel 3, for unknown reasons, were very poor at times.
- 4. The IIT found it difficult or impossible to identify whose gear they had in their possession for inspection, post incident, due to poor or non-existent markings in some cases.
- 5. Officers, oftentimes, could not identify personnel in their Sector due to a general lack of clearly identifiable markings on turnout gear. It is recognized that officers may be familiar with those they work with daily but do not know all other DFRS and volunteer personnel. In contrast, the members of the Germantown Volunteer Fire Department have a their names on the lower back panel of their turnout coats in easily seen, reflective lettering. This type of easily identifiable marking would have made personnel accountability, on-scene personnel safety and identification by EMS personnel and officers much easier.
- 6. Gas detection equipment there did not appear to be a lack of reliable detection equipment on the scene. However, the IIT believes that all primary units in the county should be checked to ensure that they are equipped with such equipment.

- 7. Sector officers fulfilled the initial duty as "Safety" for their sectors. Later in the incident, a command level officer from the G-WGVFD was designated the scene safety officer. Due to the size of the area to be covered, other officers were designated as "Safety" for specific areas. Sgt. Dallas Lipp, serving as "Safety" near the collapse zone on Side 3, post explosion, cited several concerns about entry into the danger zone without due regard for the role of the Safety Officer. Those concerns are contained in his report (See Appendix K)
- 8. No standard format of questions to be asked of the injured or involved personnel has been developed to date to provide uniformity of response for use by an IIT.
- 9. The rehab area was originally set up directly in front of the Giant Store (behind RS9). Rehab was moved approximately 250-300 feet back after the explosion. Although this type of explosion is rare, Rehab areas generally should be set up out of any potential danger zone. Vehicles should be kept a safe distance away to prevent exposure to exhaust gasses. In this incident, porta-potties and a canteen unit were brought in and properly placed near the relocated rehab area.
- 10. It was noted by the IIT that not all personnel had full protective gear in place when the explosion occurred. This probably was due to the fact the WG personnel were on the scene and cutting off the gas. In addition, units had been on the scene for over an hour personnel had "relaxed" as they thought they were ready to go back to their stations.
- 11. The Command Post staffed by Chief 29 and Duty 8 did an outstanding job of keeping track of numbers of personnel per unit, location and activity of units, etc. It is very clear that during such incidents sufficient command post staff is necessary to control all necessary functions various sectors, communications, accountability, strategy and tactics, command and control, etc. Consideration should also be given to Command Post security.
- 12. EMS Sector Sergeant Crittenden of Medic 89 assumed the duties of EMS control officer under her guidance, an outstanding job of triage, treatment, disposition, medical communications and patient follow-up was done on this incident.
- 13. Mr. Gene Cummins, Gaithersburg-Washington Grove Fire Department chaplain, reported to the scene and assisted with patient follow-up and reporting back to the IC staff. His role in this incident was very important to the injured personnel as well as those on scene.

Recommendations:

A list of recommendations developed by the IIT is provided to address areas the team believes warrant possible action. It is recognized that the Director may have to pass some of these recommendations on to the Chief's Committee, the Fire and Rescue Commission or others for possible action. It is hoped that in the interest of the fire and rescue service and primarily the safety of all personnel, that the issues and recommendations cited are received, reviewed and acted upon in a positive manner.

- 1. Develop and implement a uniform, countywide SOP for "Gas Leak Emergencies" to include sections on:
 - a. Proper placement of apparatus for safety/operations.
 - b. Proper ventilation techniques to include:
 - 1. Use of smoke ejectors, PPV blowers, natural ventilation.
 - 2. Using natural openings doors, vents, scuttles,
 - 3. Opening voids for ventilation, detection
 - 4. Proper timing of ventilation
 - c. Properties of natural gas, propane, etc.
 - d. Personnel protection turnout gear, SCBA, safe locations, etc.
 - e. Circumstances that warrant consideration of or dictate evacuation
 - f. Checking of exposures, voids such as false ceilings, etc., closets, pipe chases, etc. Presence of fire walls between exposures, etc.
 - g. Determining/evaluating the level of hazard
 - h. General safety precautions
 - i. Personnel accountability, limiting possible exposure
 - j. Proper use of detection equipment (See # 17 below)

- 2. Recommend that all departments check preplans to ensure that they include utility cutoffs, meters, etc. Where preplans do not exist, they should be developed as soon as possible. The IIT recommends that all departments be required to develop accurate, uniform site plans and pre-plans for complex structures and that they should be regularly updated.
- 3. Develop a standard format for inspection of personal protective equipment (PPE) and SCBA to conform with the needs of the IIT as specified in P & P 812. A draft form is contained in this package.
- 4. In such incidents where personnel are critically injured or several fire/rescue personnel are injured, a responsible person, preferably an EMS provider, should be designated to secure all PPE items used by the injured personnel for inspection by the IIT. SCBA bottle pressures of the injured should be noted immediately after the incident If possible, gear should be bagged and tagged.
- 5. Install reflective name panels on the lower, back portion of all turnout coats. To improve accountability, personnel safety and identification of personnel and gear during and after such an event, the IIT very strongly recommends that a program be initiated to install such an ID panel on gear as it is cleaned until all gear is completed. It was interesting to note that some volunteer corporations currently use this type marking which greatly improves the ability of unit and sector officers to easily identify personnel in their immediate area. In this incident, the officers as well as EMS personnel could easily identified those present, injured, etc. at a glance if all personnel both career and volunteer had such PPE markings.
- 6. Recommend that all Station Commanders very carefully verify that all gear is marked as required. Non-specific or non-existent gear markings made it difficult for the IIT to identify some PPE received.
- 7. Recommend that Station Officers have personnel don all protective gear to ensure that it fits properly and that personnel can readily move in their issued gear. Gear that does not fit properly, permitting rapid mobility, should be replaced.

- 8. The Bureau of Field Support Services should evaluate the reliability of Channel 3 communications for emergency incident use. This could be done by noting communications difficulties during field tests or future non-emergency uses of Channel 3. Several officers reported that Channel 3 did not provide a good, reliable communications media during this event. In fact, at one point all communications were moved to Channel 1 because of these difficulties.
- 9. Ensure that all primary units are equipped with gas detection equipment. For ease of operation, training and maintenance, the units in use should be similar in design. Perhaps the Chief's Committee should research this issue.
- 10. Recommend that consideration be given to using the third command officer responding on a box alarm as the Incident Safety Officer. The IIT realizes that only two command officers are dispatched but on most box alarms more than two respond. The third one could be identified as the one to handle "Safety" unless otherwise assigned.
- 11. A standard form with basic questions to be asked of involved personnel should be developed to complement P & P 812.
- 12. Rehab areas should be located in a safe, distant area away from potential hazards, vehicles, etc. A defined policy and procedure should be developed to cover Rehab.
- 13. Command Post staff should be expanded early to control all necessary functions (e.g. command and control, communications, unit and personnel accountability, etc.)
 On such large scale incidents, the IC should consider Command Post security.
- 14. Other involved agencies/companies, etc. should be requested to send a representative to the Command Post or designated location and have them remain until released. A problem occurred where the PEPCO rep showed up upon request (after some delay), turned off the power and then left. Later when it was discovered that his actions also removed power from other uninvolved buildings as well he had to be recalled again a delay. Although the police were present, they did not have a representative at the Command Post until daylight (approx. six hours into the incident). Incident commanders should request that a police liaison officer report to the Command Post to coordinate with fire and rescue.
- 15. All hazard areas should be clearly and distinctly marked using a defined method. Officers and personnel should be cognizant of the methods used and enforce keeping all personnel out of such areas until deemed safe.

- 16. Procedures and criteria are needed for the selection of, use and training of gas leak detection equipment. Strong consideration should be given to the provision and use of standard gas leak instrumentation for primary emergency vehicles in the county.
- 17. Add additional procedures and detail to P & P 812 to cover
 - o Impoundment of PPE
 - o Examination procedures for PPE
 - o Data to be maintained on PPE
 - o Standard format for basis of statements of involved and witnesses.
 - o Consideration should be given to permitting the activation of an IIT periodically to review procedures and techniques of investigation, survey PPE, personnel accountability, etc.
 - o Delineate requirements for notification of Maryland Occupational Safety and Health and/or the county's Risk Management Office after such events.
- 18. Current telephone lists for personnel and family contacts should be maintained on command units for all DFRS and corporation personnel. Note: DFRS has taken action to make this information available on the vehicles used by the schedulers. Corporation command vehicles should carry lists of contact numbers and addresses for all corporation personnel.

Injury Investigation Team

Shortly after the explosion occurred, Deputy Chief Leslie D. Adams appointed an IIT per DFRS Policy and Procedure #812. The Team was composed of:

Assistant Chief Wm. Dennis McLaughlin - Team Leader

Assistant Chief Monte L. Fitch - Co-Leader

Captain Dennis Urban - Gaithersburg-Washington Grove Fire Dept.

Lieutenant John Rooney - EMS Duty Officer

Firefighter/Rescuer Richard Hoye - Local 1664

Deputy Chief L. D. Adams - Operations Bureau Chief (ex-officio)