CHAPTER SEVEN
FIRE AND RESCUE OPERATIONS

This Chapter includes a review of fire and rescue operations, pre-fire planning, the incident command system, mutual aid, and specialty operations services provided in the Township of Lower Merion by the fire companies and their partner service providers.

BACKGROUND

There is no time at the scene of fire emergencies to make decisions by committee. Although some appropriate quick consultation can take place to assure that facts ground the decisions, there is limited time for deliberation. Potentially irreversible decisions made at the emergency scene may lead to disastrous consequences. Errors can lead to further property loss, as well as, injury or death to civilians and firefighters. The fire officer has to make a decision on the basis of information often gathered hastily.

All fire situations occur differently; the differences include:

- Nature and location of fire in a building
- Building type and construction
- Interior contents and furnishings
- Utilization of built-in systems
- Time of day and weather conditions

THE NATIONAL FIRE PROBLEM

Prior to a review of specific workload in Lower Merion and outlining specific response strategies and alternative approaches, the reader may benefit from a number of facts that highlight the fire problem in the United States.

The following facts define the national fire problem:

- Fire causes $3 billion in property loss in residential structures alone.
- 6,000 fire deaths occur annually.
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THE NATIONAL FIRE PROBLEM (continued)

• 85 percent of these deaths occur in residences, apartments, town houses, hotels, motels and single family homes.
• 50 percent of those killed by fire are elderly, handicapped, intoxicated, or children.
• On the average, four children die of fire-related injuries each day.
• Toxic fumes, not burns, cause most fire deaths.
• 80 percent of all fire fatalities occur in the home, with approximately 85 percent of those occurring in single-family homes and duplexes.
• Fires in family dwellings most often start in the kitchen.
• 70 percent of fatal residential fires originate in bedrooms or living rooms.
• Smoking figures as the leading cause of fatal residential fires.
• A significant percentage of firefighter deaths results from residential fires.
• Fires injure more than 250,000 people each year.
• 70 percent of those injuries occur in residential fires.
• A large percentage of those injured are firefighters.
• Annually, fire costs $36 to $45 billion.
• Each year, 125,000 people suffer the psychological trauma of fire.
• More than two million fires are reported each year.
• 500,000 residential structure fires are reported annually.
(Source: the Operation Life Safety Program and the U.S. Fire Administration's Fire Safety & Education web site.)

LOWER MERION INCIDENT WORKLOAD ANALYSIS

This Section includes a review, analysis and summary of incident-related LMFD workload.

Lower Merion Incident-Related Workload Data

Figure 7.1 illustrates the primary (most often occurring) fire services-related calls by type for Calendar Years 2005 and 2006. As indicated, the most predominant type of incident to which the LMFD units respond relates to faulty alarms. In 2006 nearly one-half of all call types run by the LMFD related to false alarms: an extremely high percentage of overall calls. The
Township Primary Incident Types – 2005 and 2006

2005
- False Alarm & False Call: 40%
- Severe Weather & Natural Disaster: 0%
- Good Intent Call: 22%
- Fire: 15%
- Overpressure Rupture, Explosion, Overheat (no fire): 1%
- Rescue & EMS Incident: 9%
- Hazardous Condition (No Fire): 11%

2006
- False Alarm & False Call: 45%
- Severe Weather & Natural Disaster: 0%
- Good Intent Call: 18%
- Fire: 13%
- Overpressure Rupture, Explosion, Overheat (no fire): 1%
- Rescue & EMS Incident: 8%
- Hazardous Condition (no fire): 13%
- Service Call: 2%
FIRE AND RESCUE OPERATIONS

LOWER MERION INCIDENT WORKLOAD ANALYSIS (continued)

second most frequently occurring fire service-related incident that occur in Lower Merion
was good intent calls with actual fire-related calls (building, vehicle and brush, etc.) being
the third most frequent type of call. In the view of the Study Team, the Township and the
LMFD should take aggressive action to reduce the number of false alarm calls. The impact
on volunteerism relating to having to respond to such a high number of false calls,
particularly in the middle of the night, may be negative.

The Study Team was provided with information on the Police and Finance Department’s
handling of burglar and other law enforcement-related alarm installations and faulty/false
alarm activations. The approach seems to be comprehensive and successful, to the extent
possible, in keeping false and faulty alarms to a minimum. It is suggested that the LMFD
review the Police/Finance alarm system installation and activation program/s and, if
appropriate, model a fire/smoke alarm handling program similarly, in order to manage and
reduce the high number of faulty and false fire/smoke alarms that are handled by the LMFD
and its fire companies.

Figure 7.2 illustrates, for Calendar Year 2006, the relative frequency of calls occurring by
time of day. By far the busiest times of the day are 10:00 a.m. and 8:00 p.m. Not surprising,
the least busy time of the day for fire service-related calls was the early hours of the morning
between 2:00 a.m. and 6:00 a.m.

Figure 7.3 shows the relative number of calls responded to by each of the LMFD fire
companies. This graphic indicates that the Merion Fire Company of Ardmore was the busiest
(322 calls) and Bryn Mawr Fire Company was the second busiest (301 calls) in 2006. The
Study Team was advised that more than 40 percent of Bryn Mawr’s calls each year are in
Radnor Township due apparently to the fact that the Bryn Mawr Fire Company has first
response districts in both Lower Merion and Radnor Townships. In 2006 the Penn Wynne
Fire Company ran the least number of total calls (137), likely due to the small size and
location of their first response district.

Figure 7.4 illustrates the number of actual building fires occurring in Lower Merion for the
last 30 years: 1977 through 2006. This graphic shows the long-term trend of continual
LOWER MERION TOWNSHIP FIRE DEPARTMENT
Incident Type Summary by District 2006

Figure 7.3

Distances:
21: Penn Wynne Overbrook Hills Fire Company
22: Belmont Hills Fire Company
23: Bryn Mawr Fire Company
24: Gladwyne Fire Company
25: Merion Fire Company of Ardmore
26: Narberth Fire Company
28: Union Fire Association of Lower Merion

Source: LMTFD
FIRE AND RESCUE OPERATIONS

LOWER MERION INCIDENT WORKLOAD ANALYSIS (continued)

decline in the number building fires occurring. Reportedly 104 building fires occurred in 1977 and, according to the LMFD’s 2006 annual report, only 13 building fires occurred in 2006. This trend seems to be reflective of a similar national trend in the reduction in number of building fires. Generally speaking this trend may be attributed to a number of factors, including:

- Improved fire-related building codes
- Implementation of smoke/fire detection devices
- Increased investigation of fires and arson crime follow-up
- Increasing emphasis on public fire education
- Increased code enforcement activities in municipalities

These are fire-related activities and priorities that need to be pursued aggressively by municipal fire prevention programs. The Fire Prevention Chapter of this Study Report provides an assessment and plan for the future in these important life and property-saving program areas.

Figure 7.5 illustrates the location of all 13 building and vehicle fires that occurred in the Township in 2006. As shown, all but three of the building fires occurred in the Ardmore (five) and Cynwyd (four) areas, with two occurring in Bryn Mawr and two in Gladwyne. Nine of the building fires were residential in nature, two were office buildings, one was an apartment house and one was a school.

Data Availability and Use

Fire and rescue workload data serve as an essential component of management’s ability to assess existing fire department programs and to plan and justify new programs. All fire agencies should place a high priority on fully implementing a computerized fire incident reporting system based on the National and Pennsylvania Fire Incident Reporting System.

The study team was advised that the LMFD utilizes a network system that is a part of the Township’s network. Further, an off-the-shelf software package, Firehouse, is utilized for
2006 Building and Vehicle Fire Incident Locations

- Building Fires
- Vehicle Fires
- Fire Station Locations

Figure 7.5

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FIRE AND RESCUE OPERATIONS

LOWER MERION INCIDENT WORKLOAD ANALYSIS (continued)

a substantial part of the fire records management needs of the LMFD. This software package is a quality product that is state-of-the-art.

In the experience of the Study Team, data entry relating to the use of fire and rescue software packages is a very important, but a time consuming process that requires qualified individuals to perform. The Chief Fire Officer has recognized this essential need and has assigned staff to perform data input on a daily basis. The CFO should be commended for having the foresight to assure that this aspect of the records management process is appropriately handled. This centralized approach to fire data entry assures consistency and reduces the potential for errors. Further, this approach to the LMFD records management is particularly important in an organization that relies heavily on volunteer staffing. Volunteer firefighters and officers need to commit their time and effort to handling calls and typically do not have the time for fire records data entry.

The Study Team was provided with a significant amount of fire incident and training data from the LMFD's records management system. Much of it was very useful and utilized in this Study. It was noted however, that the data in the system may not be used as regularly and completely as might be otherwise possible if the staff was more versed in the manipulation and use of the data, such as response time data. It is suggested that further effort to learn how to use the extensive data available and to provide that data to decision makers for planning and program monitoring purposes.

PRE-FIRE PLANNING

Pre-fire planning serves an important component of the success of firefighting agencies in dealing with fire incidents. For that reason, this section outlines an approach to, and the need for, initiating a comprehensive and consistent pre-fire planning effort by the Lower Merion fire companies with the guidance and assistance of the LMFD office staff.
FIRE AND RESCUE OPERATIONS

PRE-FIRE PLANNING (continued)

Pre-Fire Planning - The Concept

One of the major job responsibilities of firefighting personnel is to conduct pre-fire planning programs for target hazards within their first due response area. Chief William Clark, in his textbook Firefighting Principles and Practices, also discusses pre-fire planning in the following manner:

"When a fire department is acquainted with the potential of a fire before it occurs, that department has an advantage over the fire, provided that it makes preparation in keeping with the need shown by the advanced study. It is of little use to identify and isolate fire fighting problems if nothing is done to offset them. The elements of a pre-fire plan should not only pinpoint needs but provide for meeting them. Target hazards and their peculiar features should be identified. The requirements for combating a fire in any of them should be studied and plans should be prepared."

To ensure preparedness for emergency situations, firefighters should visit the target hazards in their area, tour each facility, prepare drawings and lists of hazards, and develop the tactics and strategy for handling incidents at each particular facility. All stations that may respond to an incident should share the drawings and information. The officer should have information readily available to refer to while en route to the incident. In addition, the officers should conduct regular station refresher drills utilizing this material. In summary, pre-planning is knowing in advance what you are up against.

The essential features of a pre-fire plan suggested for use in Lower Merion should include the following:

1. Special Hazards:

   Structural faults, cracked walls, overloading, hazardous materials, and mantraps (locations, amounts, 704M class, etc.)

2. Entry and Access:

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FIRE AND RESCUE OPERATIONS

PRE-FIRE PLANNING (continued)

Types of doors and windows, recommended entry, how to force entry if necessary, stair location, access to roof, basement, storage, and utilities

3. Special Apparatus Assignment:

Recommended revisions to the standard apparatus assignment based on one or more unique aspects of the structure and/or contents

4. Life Safety:

Need for evacuation, number of people, how to evacuate, special evacuation needs of those disabled, where people are concentrated or potentially trapped, exit travel, and operational restrictions

5. Exposure:

Buildings and/or material in vicinity of, distance from, type of occupancy, type of construction, means of fire spread, and combustibility

6. Confinement:

Possible fire and smoke travel (within or without), firefighting openings, fire walls, compartmentalization, automatic dampers, and fire doors

7. Protection Systems:

Sprinklers, automatic extinguishing systems, standpipe, internal alarm, emergency lighting, and location of valves, controls, etc.
FIRE AND RESCUE OPERATIONS

PRE-FIRE PLANNING (continued)

8. Ventilation:

   Building features, building equipment, location of controls, roof, wall, and basement openings

9. Occupancy and Fuel Load:

   Location, type or class, amount, and concentration of combustibles

10. Water Supply:

    Location of fire company connections, valves, hydrant locations, main sizes, location and quantity of auxiliary sources

11. Salvage:

    High value areas, stock susceptible to sprinkler/water damage, water removal methods, location of drains and sumps

12. Utilities:

    Location of HVAC controls and switches, location of Knox box, location of elevator keys, location of trash room/s. Location of controls and valves for electricity, gas (inside and outside), and water (inside and outside)

13. Construction:

    Building specifications, type of construction, class type, construction of roof, interior walls and floors, false ceilings, and shafts
FIRE AND RESCUE OPERATIONS

PRE-FIRE PLANNING (continued)

14. Personnel Needs:

   Personnel needs required to deliver the estimated fire flow, and their recommended locations around the facility

15. Additional Agencies:

   Any additional agencies in the Township or the state for handling an incident at this facility

Finally, a complete pre-fire plan also addresses the placement of apparatus and what the fire forces will do. In other words, it addresses some of the operational priorities.

Pre-Fire Planning in Lower Merion

Fire company officials advised the Study Team that fire units may be involved in building familiarization, as part of company fire prevention activities. There appears to be a limited amount of pre-fire planning taking place. Apparently, there is no formalized pre-fire planning program utilized by the fire companies. There is no written procedure for such a Township-wide program and the Study Team was provided with limited documentation relating to pre-fire planning accomplished by the fire companies.

The Study Team encourages the LMFD and the fire companies to adopt and initiate a consistent and comprehensive pre-fire planning program to strengthen their ability to handle major fire incidents. The paid firefighters should be an important part of implementing this program.

POST INCIDENT CRITIQUES

Post incident analysis is an important tool used by many fire and ambulance companies interested in continuously learning and improving their ability to handle emergency situations.
FIRE AND RESCUE OPERATIONS

INCIDENT COMMAND SYSTEM (continued)

Due to the opportunity for service providers to benefit and learn from post incident critiques, the LMFD is encouraged to develop and implement a standard operating procedure (SOP) relating to post incident critiques by fire and ambulance companies on all working fire, rescue, EMS, and hazmat incidents.

INCIDENT COMMAND SYSTEM (ICS)

This section reviews the incident command system, the national experience, and its relevance in Lower Merion.

National ICS Experience

The incident command system provides an organized technique for handling various emergencies, including hazardous material incidents, and ensures that the incident commander’s decision-making process can be initiated quickly and efficiently. The establishment of this system is required under the OSHA regulations of the Superfund Authorization and Re-authorization Act (SARA) of 1986 and the National Fire Protection Association Standard 1500, paragraph 6-1.2.

An incident command system was developed in the United States as a consequence of several large fires that consumed portions of southern California in 1970. As a result of those fires, a need was identified to develop a system whereby many different agencies could work together toward a common goal in an effective and efficient manner. The system consists of procedures for controlling personnel, facilities, equipment, and communications.

The incident command system is designed to be in effect from the time an incident occurs until the requirement for management of operations no longer exists. Incident commander serves as a title which can apply equally to the officer of a single fire truck, or to the chief of a large department or company, depending upon the situation. Designers of the system’s structure allowed for the establishment and expansion of the system depending upon the changing conditions of the incident. Qualified personnel from many different emergency response agencies staff this system. Although established originally for use in controlling
FIRE AND RESCUE OPERATIONS

INCIDENT COMMAND SYSTEM (continued)

large brush fires, the system has proved very effective in the typical building fire, and in the control of hazardous material incidents.

The incident command system has a number of components. These components, working together interactively, provide the basis for an effective ICS concept of operations.

1. Common terminology;
2. Modular organization;
3. Integrated communications;
4. Unified command structure;
5. Consolidated action plans;
6. Manageable span of control;
7. Predesignated incident facilities; and,
8. Comprehensive resource management.

The ICS organizational structure develops in a modular fashion based upon the nature of an incident. The staff builds from the top down with responsibility and performance placed initially with the incident commander. Four separate sections can be developed, each with several units. The specific organizational structure established for any given incident will depend upon the management needs of that incident.

If one individual simultaneously manages all the major functional areas, no further organization is required. If one or more of the areas require independent management, an individual assumes responsibility for that area. This plan requires advance designation of the individuals qualified for specific areas of supervision. Then, as the plan escalates, announcements can be made as to the level of response the situation has attained, and those individuals can automatically assume the responsibilities for that particular area.

Obviously, there exists a need for this type of control function; when no command exists, the free enterprise system takes over. Under the free enterprise system, officers respond and work independently of any other supervision. As a result, the common goals and objectives cannot be achieved, individuals may become injured, and the incident cannot be handled.
FIRE AND RESCUE OPERATIONS

INCIDENT COMMAND SYSTEM (continued)

Other problems with the lack of establishment of a command system involve multiple-competitive commands where competing officers establish conflicting orders and different plans. This holds especially true at hazardous material incidents where agencies other than the fire departments or companies respond. Certainly, the incident command post is not the place to determine supervision and control.

Applicable National Standard

Incident command systems are strongly recommended for implementation by all fire departments as a means of managing potentially chaotic incident scenes. A number of incident command systems exist. The applicable standard is NFPA 1561, Fire Department Incident Management System.

ICS in Lower Merion

The LMFD Standard Operating Procedures manual includes an incident command system SOP that was adopted through the appropriate process.

The Lower Merion fire companies seem to be utilizing different approaches to incident command. There seem to be several approaches by the fire companies, including:

1. Following the LMFD ICS SOP;
2. Placing a fire company cover page on the LMFD ICS SOP as a means of implementing the Township-wide SOP within the fire company;
3. Issuing a fire company ICS SOP by adopting the LMFD SOP, with revisions; and,
4. Issuing a fire company ICS SOP, replacing the LMFD ICS SOP with the fire company policy on the subject.

In summary, the result of this apparent mix of approaches that the Lower Merion fire companies seem to have chosen to implement ICS is dysfunctional and appears to establish potentially unsafe fire ground conditions from a command and oversight perspective.
FIRE AND RESCUE OPERATIONS

For purposes of safety as well as successful incident operations, it is essential that there be consistency in the ICS utilized by the LMFD fire companies and other LMFD officials and staff. There needs to be regular and comprehensive training in ICS; ICS must be utilized to the appropriate level on every emergency incident. Further, during joint operations, the Lower Merion Community Ambulance Company needs to utilize the same ICS as the Lower Merion fire companies. Finally, all organizations should participate in joint training exercises involving the use of the consistent ICS.

INTEGRATED EMERGENCY COMMAND STRUCTURE

At the present time, each volunteer fire company has an operational chain of command established in its bylaws or as determined by the fire company chief by operational guideline. Each fire company has a potentially different rank structure, as discussed previously in the Fire Services Organization chapter, that may or may not include the following:

- Fire district chief
- Deputy chief
- Assistant chief
- Captain
- Lieutenant
- Chief engineer
- Engineer

The Fire Services Organization chapter suggests implementing a more consistent rank structure.

There is no Township-wide policy giving operational authority to any officer leaving his/her station’s first due area. In theory, an officer leaving his/her first due area would only have operational authority over the crews and units responding from the home station.

As an example, there appears to be very little in writing, Township-wide or between volunteer organizations, that would give the chief from Gladwyne operational authority when responding into the Bryn Mawr first due district. Reportedly, in practice, that authority is exercised in some cases. However, there may be incidents that take place where the senior
FIRE AND RESCUE OPERATIONS

INTEGRATED EMERGENCY COMMAND STRUCTURE (continued)

Qualified officer present is not the incident commander since the person is not from the volunteer fire company within whose first due zone the incident occurred. Therefore, in theory, even if the Gladwynne fire chief were on the scene of an emergency incident, a Bryn Mawr senior firefighter could be the incident commander.

This lack of an integrated chain of command within the LMFD potentially results in less qualified personnel commanding incidents when more qualified personnel are on the scene. This is a practice that, if changed, could improve the management and command of incidents in Lower Merion. An SOP that establishes an integrated chain of command within the LMFD should be developed and adopted by the Emergency Services Board.

STANDARD OPERATING PROCEDURES

The three previous sections of this Chapter review important subjects for establishment of state-of-the-art standard operating procedures. The Study Team reviewed established LMFD SOPs and copies of fire company standard operating procedures and guidelines for subject coverage and consistency, Township-wide. Further, LMFD and fire company SOPs and SOGs were discussed generally with officers and firefighters.

This SOP/SOG review indicated the following:

1. LMFD SOPs lacked coverage of a number of key topics, e.g., personnel accountability system;
2. Fire company SOPs/SOGs covered the same operational topic as the LMFD SOPs, e.g., ICS;
3. Fire company SOPs/SOGs provided differing direction on the same topic/s as the LMFD SOPs;
4. Fire company SOPs/SOGs differed from other fire company SOPs/SOGs;
5. Lack of training related to LMFD SOPs;
6. Lack of cross/fire company training on operations SOPs/SOGs; and,
7. Lack of compliance and enforcement of LMFD SOPs.
FIRE AND RESCUE OPERATIONS

STANDARD OPERATING PROCEDURES (continued)

In a combination volunteer and career fire department, such as has been established by the Township of Lower Merion since the early 1900s, providing clear and consistent policy direction to all members of the organization is critical to the safe and efficient functioning of the personnel and apparatus on incidents. There should be no duplication, inconsistency and/or lack of direction to volunteer and paid members. Today, the Chiefs and Presidents Board does not seem to be providing this essential direction.

In the experience of the Study Team, all operational policy and procedural direction should come from one source and should be Township-wide. The Emergency Services Board and/or the Board of Commissioners of the Township should establish the Township-wide policies and procedures with comprehensive input and review by all members of the LMFD. The LMFD member fire companies should have the responsibility and authority to, individually or as a group, establish administrative-related company-level policies and procedures. However, the establishment of operations-related SOPs should be done only on a Township-wide basis.

MUTUAL AID

This section discusses fire service mutual aid conceptually and its use in Lower Merion.

The Concept

Mutual aid occurs when one fire department assists another, either upon request on an incident by incident basis, or on an automatic basis from the point of initial dispatch.

It is virtually impossible for any local government to staff and equip its fire service to handle every potential major incident. This holds especially true for municipalities looking for means to provide improved fire and rescue services in a more cost-effective manner. Self-sufficiency incurs prohibitive costs and becomes entirely unrealistic, especially considering fiscal constraints facing local jurisdictions and fire agencies. As a result, fire departments and municipalities commonly implement mutual aid agreements with the surrounding jurisdictions for the dispatch of personnel and equipment on certain types of major incidents.
FIRE AND RESCUE OPERATIONS

MUTUAL AID (continued)

One form of mutual aid involves adjacent fire companies reportedly using mutual aid infrequently and generally only upon “special request” from the officer-in-charge and under a mutual aid plan for agreement.

The special request procedure used for mutual aid is implemented as follows:

A. The emergency call is received and units are dispatched;
B. The senior fire official arrives on the scene and determines that additional assistance through mutual aid is necessary. The needed assistance could be for relocation to cover a vacant Lower Merion station, or for additional units on the scene;
C. The senior fire company officer contacts the dispatcher and requests mutual aid;
D. The mutual aid apparatus responds as requested by County fire dispatch; and,
E. The mutual aid units arrive on the scene and provide the requested service or cover the Lower Merion area from the station to which they were relocated.

This method is time-consuming and delays the mutual aid units’ response until after the initial units arrive on the scene.

Automatic Closest Available Mutual Aid

A second type of mutual aid, utilized more extensively throughout the United States and referred to as “automatic” mutual aid, operates as follows: Mutual aid companies dispatch according to a company’s proximity at the same time as the units dispatched from the affected municipality where the incident is occurring. The result is a significant response time savings. This time savings provides for the essential resources to be very close at hand when needed, as opposed to awaiting the dispatch and response of the mutual aid with the companies upon request.

Many jurisdictions throughout the United States utilize this automatic mutual aid on a mileage basis, always dispatching the closest available units. This assures that the closest
FIRE AND RESCUE OPERATIONS

MUTUAL AID (continued)

units arrive on the scene in the least amount of time—an improvement in the level of service provided.

Some fire companies have verbal mutual aid agreements with a number of adjacent fire companies providing for the use of some resources automatically. These agreements, as reported to the Study Team, seem to be inconsistent in terms of application with adjacent fire resources and may change from time to time as newly elected fire chiefs take office or relationships improve or degrade between chief officers. Further, the closest available units may not always be those that are dispatched to the Township of Lower Merion when following current procedures and agreements.

The Study Team suggests that agreements be initiated/modified to develop mutual aid that would lead to automatic response on the part of surrounding fire companies/departments; this plan would spread the workload out and reduce response times for critically necessary assistance.

The reduced apparatus response times for units responding to emergency incidents would clearly affect a significant improvement in service level.

Benefits of Automatic Mutual Aid

The primary benefits attained from the implementation of automatic mutual aid include:

A. Increased apparatus staffing at the scene;
B. Increased availability of apparatus on incidents;
C. Improved firefighter safety as a result of improved on-scene staffing; and,
D. Decreased apparatus response times.
FIRE AND RESCUE OPERATIONS

MUTUAL AID (continued)

Implementation of Automatic Mutual Aid

The Township could implement full closest available automatic mutual aid with one or more adjacent municipalities or fire companies in other municipalities. The maximum benefit will, of course, occur through implementation with all surrounding fire companies.

The Emergency Services Board could establish a task force to make recommendations on the implementation of automatic mutual aid. Such a task force could include representatives of fire companies, LMFD management and residents. Following an established time schedule, a task force could review the material contained in this Study regarding automatic mutual aid, consider other material, questions and concerns as appropriate, and develop an implementation plan for the Township of Lower Merion.

After the Lower Merion task force has completed its work, an inter-municipal task force could serve as an effective tool to pursue implementation with the adjacent municipalities and fire companies. That task force would need to consider the broader issues of implementation, including the establishment of common operating procedures.

SPECIAL OPERATIONS SERVICES

This section includes an overview of fire department special operations services and the process by which these services are delivered by the Lower Merion Fire Department.

Overview of Special Operations Services

In fire service terms, “special operations” generally refers to those services that a fire department provides other than fire and emergency medical response (EMS). The traditional special operations services include:

1. Hazardous materials (hazmat) response;
2. Vehicle extrication service; and,
3. Technical rescue service.
FIRE AND RESCUE OPERATIONS

SPECIAL OPERATIONS SERVICES (continued)

The delivery models for these special operations services can vary greatly from community to community across the United States. With the exception of vehicle extrication service, the other special operations services are generally not needed much in most communities; however, their availability is very important.

Because special operations services are highly technical in nature and require specialized training and equipment, many communities opt not to deliver the services. Other communities may elect to form a partnership with neighboring communities and share resources through either a mutual aid agreement or a regional response team format.

When a community evaluates the need for special operations services, it is important to remember that when these types of services are needed there cannot be much delay in response. The common dilemma faced by many communities today is "at what cost" does the community wish to support the delivery of fire department special operations services, because the delivery of these services is generally expensive both in terms of the training commitment and equipment.

As a general rule, the decision by a fire department or community to initiate the delivery of any new service must be examined closely in terms of the expected demand for service and the costs of delivering that service. The demand and costs must always be compared to the existing available resources in the department's response region. This comparison is important in order to gather adequate information so that an informed decision on special operations services can be made.

For example, it might be more practical for a fire department to train all of its responders to the "awareness" level of trench collapse emergencies and use a neighboring community's trench rescue team as the primary response agency rather than fund the purchase of expensive trench rescue equipment and train its own trench rescue team.

The regional team approach to the delivery of special operations services continues to be a common approach in suburban communities across the nation. In Pennsylvania, there are several well known regional response teams that deliver such services; the Cumberland
FIRE AND RESCUE OPERATIONS

SPECIAL OPERATIONS SERVICES (continued)

County Technical Rescue Operations Team (TROT) and the Special Hazards Operations Team (SHOT), which provides hazardous materials response services to Cumberland, Franklin, Fulton, and Perry Counties, are both examples of well established regional response teams.

Hazardous Materials Response

Over the last quarter century, international disasters such as those in Bopal, India; Chernobyl, Ukraine; and Valdez, Alaska have focused attention on the potential for catastrophic hazardous materials incidents throughout the world. In the United States, the concern for the prevention of hazardous materials disasters served as impetus for federal legislation to prevent and control the releases of hazardous materials and to protect workers involved in hazardous waste site cleanup and emergency response.

On October 17, 1986, President Ronald Reagan signed into law the Superfund Amendment and Reauthorization Act of 1986 (SARA). This legislation truly transformed the delivery of emergency response services and affected almost every jurisdiction throughout the nation. Although SARA is now 20 years old, its impact still affects how emergency responders handle present day hazardous materials incidents both in terms of response operations and personnel training.

SARA provides for protection of the community under Title III and the protection of the worker under Title I. As a result of the legislation, the federal Environmental Protection Agency (EPA) and the federal Department of Labor, through the Occupational Safety and Health Administration (OSHA), both adopted regulations which had a major impact on a community’s planning and response to hazardous materials incidents. These regulations impacted communities in a number of ways, but most significantly in the areas of planning, information gathering and retrieval, and emergency response capabilities.
FIRE AND RESCUE OPERATIONS

SPECIAL OPERATIONS SERVICES (continued)

In 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response, OSHA provides the following definitions for the various levels of emergency response capabilities:

First Responder - Awareness (FRA) - Individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. Persons trained to the FRA level simply recognize the presence of an emergency involving hazardous materials and take action to notify emergency responders.

First Responder - Operations (FRO) - Individuals who respond to releases or potential releases of hazardous substances as part of the initial response for the purpose of protecting nearby persons, property or the environment from the effects of the release. Persons trained to the FRO level meet the FRA requirements and are trained to take defensive actions to control, or minimize the effects of a hazardous materials release. FROs generally do not take any action that involves touching the hazardous material or its container and they are commonly trained in decontamination operations. The FRO is the "workhorse" of most every fire department in terms of basic response to hazardous materials incidents. More fire department personnel are trained to the FRO level than to any other hazardous materials training level.

Hazardous Materials - Technician (HMT) - Individuals who respond to releases or potential releases of hazardous substances for the purpose of stopping the release and mitigating the incident. Persons trained to the HMT level meet the FRO requirements and are trained to take offensive actions to control the release of a hazardous material from its container. HMTs are basically trained to manage leaks involving a wide variety of hazardous materials containers. The HMT is the workhorse of most every hazmat response team. More hazmat team personnel are trained to the HMT level than to any other hazardous materials training level.

Hazardous Materials Specialist (HMS) - Individuals who respond with, and provide support to hazardous materials technicians at hazardous materials incidents. Typically, persons trained to the HMS level specialize in certain topic areas either
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through specialized knowledge or specialized skill. A local or regional hazmat response team may have several “specialists” available to them through a callout or contact roster. For example, a local agricultural chemist might serve as a hazmat team’s pesticide specialist, but he would not respond to an acid tanker incident.

In the post 9/11 era, most hazmat response teams have been tasked with accepting the new role of weapons of mass destruction (WMD) response in addition to their regular hazmat response duties. When looking to identify who would fill the need best for WMD response, the local hazmat team was the natural choice given their training in chemical protective clothing and decontamination operations and their experience in the management of chemical releases. These additional WMD responsibilities were further reinforced by the anthrax events that followed September 11th when hazmat teams all across the nation found themselves responding to potential biological agent emergencies.

Today, a local hazmat team must be able to deal with a myriad of complex issues. The hazmat response field has grown tremendously over the last two decades from just responding to oil spills along the highways in the 1980s to being prepared for chemical, biological, and nuclear terrorist events in 2007.

Hazardous Materials Response in Pennsylvania

At the state level in Pennsylvania, there are two agencies involved in the hazardous materials arena, the Pennsylvania Emergency Management Council (PEMC) and the Pennsylvania Emergency Management Agency (PEMA); PEMA also serves as the executive agent for the PEMC. Pennsylvania’s Hazardous Materials Emergency Planning and Response Act 1990-165 established a statewide hazardous materials safety program and formalized compliance with the federal Emergency Planning and Community Right-to-Know Act of 1986. Act 1990-165 also granted the powers and authorities to state agencies, the PEMC, county and local governments, and Local Emergency Planning Committee’s (LEPC) to develop and implement hazmat reporting, response, and regulatory programs.
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In December 2000, Act 1990-165 was amended by the governor of Pennsylvania to update the law so that lessons learned over the previous 10-year life of the original act could be incorporated. The amendment renewed the authorization for county governments and the Commonwealth to establish hazmat fee programs in order to help fund the hazardous materials program.

Under Section 209 of Act 1990-165, each of the state’s 67 counties has to select the type of hazardous material emergency response capability which best meets the needs of that county to protect the health and safety of the population and the environment. In addition, all hazmat response teams must be certified by the state and meet established standards for training, equipment, safety, and operations.

The choices for hazmat services delivery are limited to three models; a county may organize and operate their own state-certified team, contract with another state certified team, or participate in a regional state-certified team. In reviewing the list of county hazmat response coverage agencies for the state, it is clear that all three models are used in varying capacities.

When examining hazmat emergency response programs across the United States, the Study Team finds that the Pennsylvania model certainly appears well-organized and executed. Pennsylvania’s funding and certification of hazmat response teams provide a standard of service delivery regardless of the locale. PEMA and the PEMC are to be commended for their efforts in making the certified response team program work.

Hazardous Materials Response in Montgomery County

The Montgomery County Hazardous Materials Response Team (MCHMRT) is a state-certified team comprised of three divisions (901, 911 and 919) which are physically located throughout the county: Division 901 is considered a manpower only division that is comprised of personnel from all over the county who do not have an affiliation with either of the remaining two divisions. Division 901 is based out of the Skippack Fire Company and is supplied with basic response resources.
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Division 911 and Division 919 are the two primary response divisions, with Division 911 operating out of the Lincoln Fire Company in Whitemarsh Township and Division 919 (a.k.a. Eastern Montgomery County Hazmat Task Force) operating out of the Abington area of the County. The MCHMRT provides 24-hour response capability and responds to any incident involving a hazardous materials release, either based upon the initial dispatch information or at the request of the local incident commander through the County’s 911 dispatch center.

MCHMRT is comprised almost entirely of volunteer members; however, there are six full-time Department of Public Safety personnel who rotate through an “on-call” status for the county. Their hazmat responsibilities are a collateral duty and not a primary responsibility of their full-time county position.

Recently, the Department of Public Safety took delivery of two medium-duty response vehicles which have been assigned, one each, to Division 911 and Division 919. The new vehicles were purchased through a federal grant and replaced older response vehicles. Known as Hazmat 911 and Hazmat 919, the vehicles carry a wide assortment of hazmat response equipment and supplies so that either unit can handle a typical MCHMRT callout or together, they can handle a large scale event.

In addition to the new hazmat vehicles, the MCHMRT operates a variety of trailers and light-duty response vehicles that complement the overall response capabilities of the two divisions. For example, stationed at the Montgomery County Fire Academy is an Advanced Containment Systems, Inc. decontamination trailer. This trailer is completely self-contained and can decontaminate up to 60 persons per hour. This type of decontamination service is important when planning for and responding to WMD or large scale, accidental chemical release incidents.

When a hazardous materials incident occurs in the county, the response of the MCHMRT is based upon the nature of the incident and the consideration of the incident commander. Some incidents are minor in nature and only result in the notification of the team that an incident has occurred. The next level of response is the notification and dispatch of an MCHMRT
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officer. At this type of incident, the team officer would respond to the emergency scene and provide consultation services to the incident commander.

The third level of response is the response of one of the Divisions, generally based upon geographic location to the incident. The Division will generally engage in HMT level operations to mitigate the incident. The final level of response would be an "all-call" type of event which would generally be reserved for a major incident and would require the response of all divisions and available personnel.

In 2006 the MCHMRT had a total of 113 hazmat notifications of which about two-thirds resulted in some type of response to the scene. The majority of the responses in 2006 were fuel/petroleum-based incidents that occurred within the transportation system (highways, roads, etc.). Only 18 incidents occurred at SARA Title III facilities. The MCHMRT response to incidents in 2006 took them to 47 different municipalities in the county.

In addition to the traditional hazmat response capabilities, the MCHMRT and the Special Operations Sector of the Department of Public Safety also have WMD and mass decontamination capabilities. These responders are equipped, trained, and ready to respond, 24 hours a day, to not only hazardous materials incidents, but biological, chemical, and radiological events as well.

The MCHMRT appears to provide reliable and effective hazardous materials response services and appears to be sufficient in scope and operation to address the present day concerns and issues associated with hazardous materials emergencies in Montgomery County. The Study Team found diverse opinions and some concerns over MCHMRT's operations and the LMFD fire members that were interviewed spoke positively of the team's capabilities and response operations. Reportedly, the County Public Safety Department leadership is currently reviewing the approach that has been taken and is considering alternatives.
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Hazardous Materials Response in Lower Merion

With the exception of the Penn Wynne Fire Company that has a number of members trained to the Hazmat Technician Level (HMT), the hazardous material response services provided by the Lower Merion Fire Department fire companies are limited to the First Responder Operations (FRO) level. For a community of Lower Merion’s size, population, and land use composition, and given the fact the County must provide hazmat team response services by state law, the Study Team believes that the level of hazmat response service received by the citizens and business owners in the Township of Lower Merion is adequate for the demand that is present.

Calls for Hazmat Service

While there are a number of hazardous materials use and storage sites within the Township of Lower Merion’s borders, the demand for hazmat response service beyond the capabilities of the LMFD has been low. According to the 2006 response data provided to the Study Team by the MCHMRT, there were a total of six incidents in the Township of Lower Merion that required the involvement of the MCHMRT. Two of those incidents required no response by the county team, two of the incidents were handled by the response of a MCHMRT officer only, and the remaining two incidents required the dispatch of the hazmat team. In 2005, there were a total of six incidents that involved the MCHMRT and only one of those incidents required a team response.

Incident response data provided to the Study Team by the LMFD showed that in 2005, the department responded to 93 incidents which the Study Team considered hazmat-related incidents; 65 of those incidents involved natural gas leaks which generally do not require a hazmat team response. Of the 93 incidents in 2005, only six of those incidents (or 6.5 percent) required the use of the MCHMRT. Similarly, incident response data for 2006 showed a total of 106 hazmat-related incidents, 80 of which involved natural gas leaks. Of 2006’s incidents, only six (or 5.7 percent) required the use of the MCHMRT.
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From the analysis of this response data, it is inferred that the majority of the hazmat responses made by the LMFD in 2005 and 2006 resulted in operations-level activities that involved a small release of a product that was easily controlled using defensive control and containment operations, thus negating the need for MCHMRT involvement.

While the storage and use of hazardous materials at fixed facilities certainly impact a community’s risk assessment and response needs, it is always important to evaluate the transportation systems that pass through a community. In the case of the Township of Lower Merion, these transportation systems include a fairly substantial rail network, Interstates 76 and 476, and US Routes 1 and 30. A commodity flow study conducted in 2005 for the county revealed that an estimated 370,000 to 940,000 rail tons and 1,500,000 to 4,300,000 truck tons of hazardous materials pass through the Township on an annual basis.

Based upon this volume of hazardous materials moving through the Township, coupled with the Township’s population density, the Study Team considers the threat of a significant hazmat incident moderate and thereby encourages the LMFD to continue to support and maintain a close relationship with the MCHMRT.

Decontamination Trailers

As mentioned earlier in this section, the Penn Wynne Fire Company has a number of members trained and certified as hazardous materials technicians. The fire company also stores, maintains, and operates Decon 21, a small cargo trailer that carries a variety of specialized decontamination equipment and supplies for large scale decontamination operations. The decon trailer is owned and assigned by the County to the fire company to support decontamination operations at nearby Lankenau Hospital, a large medical facility in Penn Wynne’s response district. The fire company carries additional decontamination supplies and equipment on their heavy rescue unit (Rescue 21) and engine company (Engine 21).

A similar County-owned and assigned trailer (Decon 23) is operated by the Bryn Mawr Fire Company for the purpose of supporting decontamination operations at Bryn Mawr Hospital.
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However, this trailer is stored at the hospital, not at the Bryn Mawr Fire Company. The Bryn Mawr Fire Company only has a small number of members trained to the hazardous materials technician level; they do not routinely provide that level of service.

The Study Team encourages the continued operation of Decon 21 with the Penn Wynne Fire Company, providing that operation under the direction and support of the MCHMRT and the LMFD. The leadership at Penn Wynne appears to have the interest and desire to provide this service and this service benefits everyone in the Township.

The Study Team suggests that the LMFD and MCHMRT conduct a further review of the operation of Decon 23 by the Bryn Mawr Fire Company. While both Decon 21 and 23 appear to have the same purpose and function, the Study Team found a very different organizational sentiment between the two fire companies charged with operating them. The Penn Wynne Fire Company appeared to embrace the additional service and worked to have members trained at a higher level to support that service. The Bryn Mawr Fire Company did not openly support or criticize the additional service; they provided little indication that they have trained personnel to be proficient in the operation of the trailer.

Further, the Study Team was advised that neither the chief fire officer nor the deputy chief fire officers were consulted or involved in the decision as to the placement by the County of the two decon units in Lower Merion Township. The fire companies apparently acted on their own with the County in accepting responsibility for these units.

The Study Team urges the LMFD to work with the MCHMRT to provide continued training in the area of decontamination operations for both the Bryn Mawr Fire Company and the Penn Wynne Fire Company if both companies are going to continue to operate the two trailers.

The Study Team believes that the level of demand for hazmat response services in the Township of Lower Merion is representative of other communities similar in size and composition. The Study Team finds that there is a moderate threat level for the potential occurrence of a hazardous materials incident in the Township; however, there is no current
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or immediate future need for an increase in the level of hazmat response services that are already being provided.

Vehicle Extrication Service

Vehicle extrication service is the most common type of rescue service provided by fire departments today. While advances in passenger vehicle safety features have certainly helped reduce civilian injury and death rates in motor vehicle collisions, there still remains the need for specialized emergency response equipment and specially trained response personnel capable of cutting patients out of mangled cars after a violent collision.

The manner in which vehicle extrication service is delivered generally varies by the locale and the demand for services. Three common service delivery models are the use of a heavy rescue squad platform (a specialized vehicle that carries large quantities of various rescue equipment), the use of a rescue engine platform (an engine company equipped with some rescue equipment in addition to fire fighting equipment) and the use of a ladder truck platform (aerial device that carries extrication equipment). Each model has its own strengths and weaknesses, but the most important component is that trained rescue personnel (technicians) arrive with the tools needed to complete the extrication so that the traumatically injured patient can be taken to a definitive medical care facility for treatment in a timely manner.

Rescue Vehicle Terminology

In the terminology and radio designations used in Montgomery County, the Township of Lower Merion and this report, the term “rescue” refers to a vehicle dedicated solely to transporting responders and equipment for the purpose of delivering heavy rescue squad services. The rescue is equipped with a large selection of rescue-related tools and equipment that can address a wide variety of rescue incidents including vehicle extrications.

The term “squad” refers to a vehicle that has more of a dual purpose. This vehicle normally carries a smaller assortment of rescue tools and equipment and is geared more to providing
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vehicle extrication services rather than broad scope rescue services. Most squads are well
enough equipped to handle most vehicle extrication scenarios without the need for the bigger
rescue unit. A squad is also equipped with a fire pump, hose, and water tank and can
therefore deliver engine company service when needed.

Extrication Service Providers

Extrication services in the Township of Lower Merion are provided by three of the seven
LMFD fire companies; the Belmont Hills Fire Company, the Bryn Mawr Fire Company, and
the Penn Wynne Fire Company, using two different service delivery platforms—the rescue
and the squad.

At the Belmont Hills Fire Company, extrication services are provided on Rescue 22, a heavy
rescue vehicle, and Squad 22, a lighter-duty, dual-function rescue vehicle as defined above.
At the Bryn Mawr Fire Company, extrication services are provided on Squad 23 and at the
Penn Wynne Fire Company, on Rescue 21.

One of the first concerns of the Study Team regarding vehicle extrication services is the
duplication of resources. For a community the size of the Township of Lower Merion both
in land mass and population, there does not appear to be a need for more than one heavy
rescue type vehicle. Presently, both the Belmont Hills Fire Company and the Penn Wynne
Fire Company operate a heavy rescue unit. In addition, Belmont Hills also operates a squad
unit that is extrication capable.

Vehicle Extrication Calls for Service

The Study Team understands the vehicle extrication demands that the incidents occurring on
Interstate 76 place on the fire companies, especially the Belmont Hills Fire Company.
However, the Study Team believes that the present demand for vehicle extrication service
in the Township of Lower Merion is not out of the ordinary.
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According to the 2005 and 2006 incident response data provided to the Study Team, there were a total of 92 motor vehicle collision incidents in 2005 that required extrication response, with only 19 of those incidents requiring actual victim extrication. In 2006, there were a total of 83 motor vehicle collision incidents that required extrication response, with only 17 of those incidents requiring victim extrication. In addition, the majority of 2006’s motor vehicle collision incidents occurred along Interstate 76, giving the Belmont Hills Fire Company the greater number of responses to motor vehicle collision incidents in comparison to the Bryn Mawr and Penn Wynne companies.

An important point to consider is that if the LMFD had only one heavy rescue unit and that unit responded to all motor vehicle collisions with injuries in 2006, then that unit would have responded to only 83 calls, an average of less than two a week. The Study Team believes that the call load in the scenario just described is well within the LMFD’s ability to meet that service demand with just a single heavy rescue unit.

The Study Team believes it is important to note that calls for vehicle extrication service in a community are often driven by traffic congestion and weather (e.g., freezing rain storm, rush hour traffic, etc.) and, therefore, it is not uncommon to have incidents occurring very close together in terms of dispatch times. The Study Team, therefore, does support some redundancy in service–just not duplication of service.

In the case of vehicle extrication services in the Township of Lower Merion, the Study Team suggests that the LMFD transition to a one heavy rescue and two squad service baseline delivery model, with locations of the units being determined by service demand areas and response times. One baseline model that is suggested by the Study Team is to operate a rescue unit at Belmont Hills and one squad each at Bryn Mawr and Penn Wynne. This model seems to provide a good Township-wide extrication service coverage without duplication.

Dual Dispatching of Rescue Units

During the information collection and interview process of this Study, the Study Team received a tremendous amount of input concerning the current practice of “dual-dispatching”
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Rescue 21 and Rescue 22 to all vehicle extrication incidents. The history and explanations of the practice provided to the Study Team varied and it is unclear why this practice continues to exist today, other than it has been a longstanding practice.

The Study Team finds LMFD’s dual-dispatching practice of rescue units to be out of the ordinary by today’s fire service delivery standards and recommends that the practice be stopped. The Study Team further recommends that individual response districts be established for Rescue 21 and Rescue 22; these districts should be response time based (mileage/travel distance) and the dispatch of a second rescue unit should occur only in the following situations:

1. A request is made from the incident commander;
2. The first rescue unit responds understaffed; and/or,
3. The first rescue unit fails to respond.

Vehicle Rescue Training

Other than the dual-dispatch issue described above, the Study Team was not informed of any significant operational issues involving the delivery of vehicle extrication services other than the training of personnel. There are two NFPA standards that address rescue training and incident scene operations: NFPA 1006, Standard for Rescue Technician Professional Qualifications, 2003 Edition, and NFPA 1670, Standard on Operations and Training for Technical Search and Rescue Incidents, 2004 Edition.

In Pennsylvania, the commonly recognized training standard for vehicle rescue is the Basic Vehicle Rescue Technician (BVRT) training and certification program offered through the Pennsylvania Department of Health’s Emergency Medical Services Office and the State Fire Academy. Other courses such as the Basic Vehicle Rescue—Awareness Course and the Basic Vehicle Rescue—Operations Course provide training on vehicle extrication and rescue operations; however, it is the BVRT course that offers the level of training expected by the Study Team for personnel who staff rescue and squad units and who respond to vehicle extrication incidents.
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The Study Team requested verification of training certification from the LMFD fire companies and was provided with training data from the LMFD’s Firehouse Software program. The training data, especially certifications, varied from fire company to fire company and some of those variances were significant. The Study Team believes that all personnel who respond to and command incidents involving vehicle extrication operations should be trained to at least the BVRT level under the state certification system.

Unlike the emergency medical services that have stringent training and certification requirements concerning patient care, the volunteer fire and rescue services in many locales throughout the United States often have few, if any, regulatory agencies that impose such requirements. The same is true in Montgomery County, Pennsylvania. A fire department can operate a heavy rescue squad with basically no training. While not in the best interest of a department in terms of liability, it definitely can be done.

The Study Team found dissimilarities in training requirements and certifications between the seven LMFD fire companies. The Team proposes that the LMFD develop and implement a minimum training standards policy that requires all personnel (officers and members) who wish to help deliver vehicle extrication services to be trained and certified to the applicable NFPA and/or the Pennsylvania state training standards, at a minimum to the Basic Vehicle Rescue Technician level.

The Study Team commends the Penn Wynne Fire Company for their participation in the Pennsylvania Voluntary Fire Service Certification Program and Participating Department Recognition Program. The Penn Wynne Fire Company is the only LMFD fire company that has achieved this recognition and certification. In addition, much of their training and certification work has been in the area of special operations and they are commended for their efforts.

Technical Rescue Services

Technical rescue services normally include confined space rescue, trench collapse rescue, structural collapse rescue, high-angle rescue, and water rescue.
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Confined Space Rescue

In January 1993, OSHA issued a regulation entitled Permit-Required Confined Spaces (29 CFR 1910.146). Historically, confined space work has proven deadly for many workers and potential rescuers. Confined spaces are notorious for their poor atmospheric conditions and for their internal configurations and entanglement hazards. The OSHA regulation was enacted in an attempt to reduce the number of injuries and deaths that occur in confined spaces by requiring only trained entrants and rescuers to be allowed to work in confined space environments.

While the OSHA confined space regulation is focused mostly on the industry and those who work in and around confined spaces, there are important implications for fire department and emergency service personnel. Facilities that have permit-required confined spaces must identify who the potential rescue team will be before workers are allowed to enter a confined space. Large industrial facilities or utility companies often have their own confined-space entry and rescue teams. However, smaller companies will often use the local fire department as the default rescue team, often without the knowledge or consent of the fire department.

The Study Team knows of no federal or state statutes that require a fire department to equip, train, and engage in confined space rescue service delivery. However, should a fire department elect to provide such service, then it is only prudent for them to comply with the nationally accepted training and regulatory practices.

A few facilities in the Township of Lower Merion present the potential for confined space emergencies but that potential is not unusual given the size and make-up of the Township. According to interviews and data collected by the Study Team, only the Belmont Hills and Penn Wynne Fire Companies are involved in confined space rescue.

The Penn Wynne Fire Company carries confined space rescue equipment and has members trained in confined space rescue operations. The Study Team was unable to obtain an accurate accounting of the Belmont Hills Fire Company’s confined space rescue capabilities.
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However, during interviews with the other LMFD companies, Belmont Hills was often named as a company that would provide confined space rescue service.

Mutual Aid Services

During the review of special operations service delivery in the Township, the Study Team learned that there are a number of special operations services available on a mutual aid basis. In the case of specialized rescue situations, the Fairmount Fire Company of Norristown can provide heavy rescue squad and specialized rescue service in the areas of confined space rescue, trench collapse rescue, and basic building collapse rescue. The rescue services provided by the members of the Fairmount Fire Company appear to be well-organized, equipped, and operated. In conducting numerous interviews, the Study Team heard only positive comments concerning the rescue services provided by the Fairmount Fire Company. This resource, located in a nearby community, is an excellent example of how small municipalities can share specialized resources in a mutual aid agreement scenario.

In terms of confined space rescue response, the Study Team suggests three actions be taken by the LMFD. First, all of the known permit-required confined spaces in the Township’s industrial and commercial facilities should be identified and pre-planned. This request could be made through the LEPC or through direct contact with the facility managers or safety directors or through a facility fire/code enforcement inspection.

When the permit-required confined spaces are identified, then the LMFD, in conjunction with the rescue providers, should develop emergency response pre-plans for each confined space. These pre-plans do not need to be extremely detail oriented, but they should provide the basic information about the permit-required confined space so that rescuers can make informed decisions during the rescue phase of an incident.

The second recommendation is to partner with the Fairmount Fire Company of Norristown to provide technical, confined space rescue response throughout the Township. This does not mean that the Belmont Hills or Penn Wynne Fire Companies need to discontinue their training in confined space rescue. However, it does mean that they should be more focused
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On first responder types of service at the operations level, similar to how hazmat responses are handled in the Township.

Finally, the Study Team recommends that all active members of the LMFD complete a basic training program on confined space awareness. This training is important safety training and while the individual fire companies may elect not to deliver confined space rescue response, they all can find themselves at a confined space incident either by chance or by dispatch. Confined space awareness training programs are generally short in duration and may be able to be completed during a drill night, perhaps even via the Internet.

Trench Collapse Rescue

Some fire departments across the United States provide trench collapse rescue service as part of their comprehensive technical rescue service plan. Many of these departments have experienced tremendous growth in their communities and have seen the need for this service. In other areas of the country, trench collapse rescue is provided by a regional response team, possibly one that is search and rescue based. Regardless of the delivery model, trench collapse rescue service is very expensive and often cost-prohibitive to many departments.

There was no discussion with the Study Team by any of the LMFD fire companies concerning a desire to deliver trench collapse rescue service. While a few members throughout the LMFD may have completed trench rescue training, none of the companies are equipped to respond to trench collapse incidents on anything other than a first-responder basis.

As with the confined space rescue response, the Study Team found that the Fairmount Fire Company from Norristown would be the provider of trench rescue service to the Township of Lower Merion. The Study Team recommends the continuation of this mutual aid relationship with the Fairmount Fire Company and does not recommend that the LMFD fire companies get involved in trench rescue service beyond the awareness level. The Study Team also encourages all active members of the LMFD to complete the four-hour trench awareness course offered by the Montgomery County Fire Academy.
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   Structural Collapse Rescue

As with trench rescue, some fire departments across the United States provide structural collapse rescue service as well. The structural collapse rescue service is most often linked to the Urban Search and Rescue (USAR) network created by the Federal Emergency Management Agency. In addition to the USAR network, there are also numerous regional teams and agencies that provide such services on a smaller scale.

There was no discussion with the Study Team by any of the LMFD fire companies concerning a desire to deliver structural collapse rescue services. Currently, this service is provided through the Pennsylvania Task Force 1 USAR team (Harrisburg, PA) and through the use of regional and mutual aid response organizations. The Study Team recommends that the LMFD remain status quo in terms of the delivery of structural collapse rescue services. In interviews with leaders of the Pennsylvania USAR team, the Study Team is confident that adequate resources exist on a mutual aid, regional, and statewide basis to provide the needed structural collapse rescue response to the Township of Lower Merion.

The Study Team suggests that all active members of the LMFD complete some type of structural collapse awareness training. However, when competing with the other training requirements recommended in this study, structural collapse awareness training takes a low priority.

   High-Angle Rescue

High-angle rescue is also often known as rope rescue or rescue from heights. The need for high-angle rescue service is often a function of geography and structural design. Those communities with great variations in elevation or an abundance of high-rise structures are most often the communities that deliver this service. In recent years, high-angle rescue has been absorbed into many USAR teams as the regional task forces continue to expand their service capabilities.
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The demand for high-angle rescue in the suburban environment is generally very low and the Township of Lower Merion’s demand for this service falls in line with that presumption. While there are a number of mid-rise and high-rise structures in the Township, the demand for high-angle rescue services normally diminishes once those structures are built and occupied.

There was little discussion with the Study Team of any serious desire by the LMFD fire companies to deliver specialized, high-angle rescue service. The current level of service delivery varies from company to company in terms of training and equipment. It appears that the LMFD can provide a basic level of high-angle rescue service only, and is not prepared to provide any type of advanced service.

As with the hazmat and confined space rescue response recommendations listed above, the Study Team suggests the LMFD continue its training and preparation for high-angle rescue response, but limit that training to the basic, operational level of service. Should a high-angle rescue incident occur, the Study Team recommends the use of mutual aid service from specialized rescue services such as the Volunteer Medical Service Corps of Lansdale, the City of Philadelphia or the state USAR team.

Water Rescue

Water rescue service is normally divided into swift water rescue service and dive rescue service. Some departments provide both services, while others provide only one. In many communities, dive rescue is a function of the law enforcement agency since they often must dive for evidence recovery. Dive rescue or SCUBA teams rarely make a rescue and are mostly involved in a body recovery operation. Swift water rescue, on the other hand, is most often a function of the fire department and quite often involves dramatic rescues under extremely hazardous conditions.

Delivering swift water rescue service is very dangerous, requiring much attention to training, equipment, and safe operations. The history of swift water rescue in the fire service has been marked with numerous line-of-duty deaths due to the failure of rescuers to follow good
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rescue practices. A department’s decision to deliver swift water rescue service must be carefully evaluated, well planned and fully supported.

With the Schuylkill River serving as the Township’s northern border, the demand for water rescue services must be considered. While the river is not necessarily deep, it can be swift moving at various times throughout the year and possesses a number of natural hazards. Through interviews, the Study Team learned that the section of river passing through the Township of Lower Merion does see a fair amount of recreational water craft use; the public does have some access to the river.

In addition to water rescue on the river, the Study Team was advised that there are several areas throughout the Township that are prone to urban flooding, where streets may flood during periods of heavy rain, either due to overflowing streams or poor storm water drainage. In many cases, this type of water rescue scenario is far more dangerous than the stranded boater scenario that one might encounter on a river. In the history of the fire service, there have been numerous rescuer fatalities which have occurred during water rescue operations involving flash floods.

Water Rescue Call for Service

A review of the incident response data provided to the Study Team showed that in 2005 the LMFD responded to a total of three water rescue-related incidents; in 2006 they responded to 11 such incidents, most of which were urban flooding-related. None of the 2005 or 2006 incidents were reported to the Study Team as being of significance.

In terms of rescue boat service in the Township, the Gladwyne Fire Company operates two rescue boats, an 18-ft. Rivercraft air boat (Marine 24) and an 11-ft. Achilles inflatable boat (Marine 24-1). The formal training requirements to ride or operate the rescue boats were unclear to the Study Team. It seems that members are encouraged to complete a basic water rescue course, but this is not required. It also appears that only a few members are trained in swift water rescue. The Study Team did learn that all members wishing to ride or operate the rescue boats must attend the company’s annual water rescue drill.
FIRE AND RESCUE OPERATIONS

SPECIAL OPERATIONS SERVICES (continued)

Even though the Study Team was told of no concerns related to Gladwyne Fire Company's rescue boat operations, there is a concern about the training certifications of those members operating the rescue boats. The Study Team urges the LMFD to require all rescue boat operators and rescue boat personnel to be certified by the Pennsylvania Fish and Game Commission, the agency that provides boat operations training and certification in Pennsylvania.

Emergency Medical Service - Quick Response Service

The Study Team found during its interview process that there was a concern among some members due to LMFD not being dispatched to medical emergencies when a fire company is closer to the incident than the ambulance company. While there appeared to be little to no interest in delivering full service emergency medical services (EMS) with ambulance transport and paramedic response, there was clearly some interest in providing first responder medical services by several companies, especially the Penn Wynne Fire Company. Apparently, at one time the Penn Wynne Fire Company had attempted to enter into the first responder service but was met with sufficient resistance from outside agencies to discourage that service from being provided.

Currently, the LMFD fire companies are not routinely dispatched as first responders on EMS calls. They may be alerted to assist on certain calls, or to provide manpower assistance to the local ambulance units already on the scene, but they are not part of the overall EMS response plan.

Quick Response Service

The Study Team believes that all LMFD fire companies should participate in EMS first responder services, especially since each station has at least one 24-hour career firefighter assigned and ready to respond to calls. This additional service can be implemented by initiating a quick response service or QRS, as it is commonly called in the Commonwealth of Pennsylvania.
FIRE AND RESCUE OPERATIONS

According to the Pennsylvania Department of Health, "a QRS must respond with at least one individual who possesses the minimum qualifications of a prehospital practitioner" which includes ambulance attendant, first responder, EMT, or paramedic. The vehicle and equipment requirements for a QRS are minimal and a fire engine can fulfill the requirement, assuming it has a trained and equipped provider on board. Currently, there are about 12 QRS units in Montgomery County with all but one based out of a fire company.

The Study Team encourages the LMFD to work with the Volunteer Medical Service Corps of Lower Merion and Narberth to establish QRS at each LMFD fire station. The QRS program should meet the four-minute response time goal for automated external defibrillator (AED)/first responder service delivery as outlined in NFPA 1720.

RADIO SYSTEM

The following sections address the Lower Merion fire and radio system. Service provider feedback regarding the current radio system, public safety radio systems generally, and the current radio system used by both the LMFD and the fire companies as well as solutions for the future are reviewed.

Input from Firefighters and Officers

During the interview/survey process, the Study Team elicited comments from officials, firefighters and officers in the fire companies regarding issues and opportunities for improvement. One of the areas with significant feedback relates to the radio system being provided for use by the LMFD and the member fire companies. As a point of information, the feedback provided regarding the radio system exhibited very strong opinions, all very negative, regarding the current radio system.

A number of the responses provided by the officers of the fire companies are quoted as follows:

1. Either give us back the old radio system or give us a new one;
2. Need to enhance communications systems to better communicate with Lower Merion Police, Narberth Ambulance and surrounding counties and townships;
FIRE AND RESCUE OPERATIONS

RADIO SYSTEM (continued)

3. The ‘new radios’ have to be connected to still hear, ‘can you hear me now’ is getting old and the fact that no one has been hurt is amazing;
4. The seven fire company chiefs requested that we abandon this system as the primary radio system and transition to the County’s 800MHz system;
5. Need better radio system;
6. A radio system which obviously does not work, is not capable of interoperability, is shoved down our throat and the companies are expected to deal with it;
7. Go to the County’s 800MHz radio system;
8. The radio system is terrible and dangerous—need to go to the 800MHz system; and,
9. Radio system—make it work; use the 800MHz.

This feedback came from nine of the fire company officers of various ranks, including chief. To quote feedback from other volunteer and paid staff members would be to just duplicate, in different words, what is stated in the above feedback. The very strong feedback is that the current system is unreliable, does not provide essential coverage and is unsafe.

Fire Radio Systems Generally

A number of radio frequency bands have been made available for public safety agencies by the Federal Communications Commission (FCC). These bands are as follows:

- VHF low band
- VHF high band
- UHF 450 MHZ
- UHF 490 MHZ
- UHF 700 MHZ
- UHF 800 MHZ

Each frequency band has associated advantages and disadvantages. The selection of a particular frequency band by public safety agencies is dependant upon a number of factors,
FIRE AND RESCUE OPERATIONS

RADIO SYSTEM (continued)

including frequency availability, area to be covered, type of geography, size of radio system
designed, and frequency bands used by adjacent public safety agencies.

Radio System Configurations

There are a number of radio system configurations available for public safety use. These
system configurations vary primarily in the number and usage of radio frequencies that
comprise each of the systems. The different system configurations are as follows:

- **Simplex** - Utilizes a single radio frequency for both transmitting and receiving
  all radios for each channel. Only one radio can transmit at any time while all
  other radios receive.

- **Two-frequency half duplex** - Utilizes separate frequencies for transmitting and
  receiving. Only one radio can transmit at any one time; all others receive.

- **Two-frequency full duplex** - Utilizes separate transmit and receive frequencies
  and permits simultaneous conversations in two directions.

- **Two-frequency repeater** - Utilizes a centrally located, high-powered base
  station repeater. The repeater receives a transmission from any radio in the
  system on one radio frequency and instantly retransmits or repeats the message
  on a second frequency that is received by the other radios on the system.
  Repeater systems are two-frequency half duplex systems.

- **Trunking systems** - Utilizes a group of radio frequencies that are controlled by
  a computer at the base station or communications center. When a transmitter
  is keyed, it transmits a unique identity code to the computer. The computer
  instantly selects an available radio frequency and automatically directs the
  transmitting radio to use that frequency for transmission.
FIRE AND RESCUE OPERATIONS

RADIO SYSTEM (continued)

A radio system is generally comprised of the following primary components:

- Base station transmitter and receiver equipment;
- Antennae tower and equipment;
- Mobile radio equipment;
- Portable radio equipment;
- Applicable automation hardware and software; and,
- Communications center control equipment and consoles.

800MHz Trunking System

It is common knowledge that two-way radio communication is an essential tool for effective delivery of a wide range of public services. Police, fire, emergency medical services, disaster response, public works, and transportation agencies cannot function well without access to reliable radio communications. Public safety radio communications is expected to grow by 55 percent over the next 10 years as a result of population and commercial growth. While the need is growing rapidly, the ability of users to upgrade their existing radio systems is limited, because most UHF/VHF frequencies have been licensed to users and are not available to jurisdictions or regions needing to upgrade or expand radio systems.

In recognition of the frequency availability problem, the Federal Communications Commission (FCC) has taken actions to allocate large blocks of 800MHz spectrum radio frequencies to help satisfy the growing communications requirements of government, business, industry, and land transportation. While releasing these frequency blocks, the FCC stipulated that certain communications systems operating in the 800MHz band must employ computer controlled trunking techniques to achieve increased channel utilization and loading.

On the conventional single-channel, two-way radio system, several users have access to only one channel. When that channel is in use, other users in the shared system should not access the channel. Therefore, like telephone users on a “party-line,” they must wait until the channel is free. Another channel may be clear in the area, but conventional system users have no means to access it.
FIRE AND RESCUE OPERATIONS

RADIO SYSTEM (continued)

On a trunking radio system, each user has access to a number of radio channels. When a user places a call (pushes the transmit button), the user is automatically assigned a clear channel for the duration of the message. While that channel is in use, other users can access other channels. At the conclusion of each message, the vacated channel is returned to the common pool where it becomes available to other users in the system.

Several key advantages of utilizing computer controlled trunking 700/800MHz radio systems are as follows:

1. Measurable improvement in frequency utilization;
2. Transmission of messages on identical frequencies at every site in the trunking system simultaneously;
3. Dynamic frequency allocation by tracking users and keying only sites and channels required to reach a particular user group;
4. Enhanced records capability regarding frequency use by units and groups in the system;
5. Improved frequency security;
6. Total ability to exclude unauthorized units from transmitting on the system;
7. Ability to allocate frequency groups “on-the-fly” in response to emergency requirements, such as disaster situations; and,
8. Ability to handle the increasing communications requirements with improved frequency allocation.

For a number of years, the FCC has been encouraging and facilitating communications users, such as police, sheriff, fire, and other local government agencies, to initiate regional planning efforts leading to the implementation of well coordinated and planned 800MHz trunking radio systems. As a result, many such systems have been implemented, or are being planned, across the United States.
FIRE AND RESCUE OPERATIONS

RADIO SYSTEM (continued)

Current Fire Radio System

The current fire radio system is a complex and unique mixture of various frequencies on three different bands involving low, VHF and UHF frequencies all tied together into what seems to be a one-of-a-kind, hybrid radio system. It is the most complex and unique radio system observed by the Study Team, who have been involved in the design, management and operation of radio systems for more than 30 years, and have assessed and made recommendations for the improvement of more than 80 emergency communications and dispatch systems.

To best understand the design of the current Lower Merion fire radio system, the Study Team requested a written system description or explanation. The following is the description provided. This explanation utilizes a typical fire call being dispatched by the County involving Bryn Mawr fire station and apparatus. The reader should understand that the County has dispatched Lower Merion fire, rescue and ambulance units for a number of years. In providing these dispatch services, the County utilizes the Township-provided hybrid radio system for fire and rescue units while Narberth Ambulance units are dispatched on and have been utilizing the County's state-of-the-art 800MHz radio system for a number of years.

The explanation of how the current radio system works is as follows for this Fire Company 23 call:

1. County pushes the PTT button. Their tone signal travels via microwave to Gladwyne where a tone termination panel converts their tone signal to push to talk on a VHF control station and allows audio to pass.

2. The audio travels via frequency 158.865 to a receiver located at Chestnut Hill and outputted on 151.340 to be received by station 23's base. At the same time, a receiver on 158.865 at Roxborough activates the UHF repeater that outputs on 453.600, so anyone with an active UHF radio hears the call at the same time. The transmitters at these sites are programmed to accept the County input as PRIMARY push to talk.
FIRE AND RESCUE OPERATIONS

RADIO SYSTEM (continued)

3. Station 23 responds from their VHF base on 159.135. Their signal is heard by the VHF repeater at Chestnut hill, and re-transmitted to all VHF units. The signal is also heard by a receiver connected to a UHF radio to activate the UHF repeater in Roxborough, so anyone with a UHF radio hears the call. The signal is heard by a third receiver which activates a transmitter on 33.84 (low band). The 33.84 signal is heard by the low band receiver at either Gladwyne or Ardmore (depending on which one is voted). This audio travels the microwave back to County where it is processed by the voter and heard by the dispatcher.

4. Ladder 23 responds using an active truck repeater. His UHF apparatus radio on channel one activates the VHF transmitter on board on 159.135. The signal then travels the route described in #3.

5. Engine 23 responds on UHF channel 16. His signal on 458.600 travels to Roxborough and is repeated on the UHF repeater on 453.600 out to all UHF units. Another receiver activates a VHF transmitter to go to Chestnut Hill and out on the VHF repeater and onward to all VHF units. A third receiver activates a low band (33.84) transmitter to talk to County via the route described in #3.”

Note: Underlining of frequency bands was added by Study Team for emphasis.

Although the Study Team members are not radio system engineers, this description of how the Lower Merion fire radio system functions appears to outline a radio system that is unusually complex, including three radio bands and various configurations, including vehicular repeaters, which add a very user-based error-prone complexity to the system. In short, the complexity of the system seems to make it not user-friendly, difficult to understand, and potentially unreliable.

Currently, the Lower Merion fire radio system is not interoperable with radio systems utilized by most surrounding fire and rescue units. The Study Team was advised that if
FIRE AND RESCUE OPERATIONS

RADIO SYSTEM (continued)

LMFD units travel a number of miles outside of the Township radio communications is largely lost. Likewise, if fire units from surrounding areas come into Lower Merion on a mutual aid call, for example, communications with many of those units may be very difficult, depending on their originating fire company/department. Therefore, today LMFD units do not have full interoperability with all surrounding fire units and public safety radio systems.

Radio Interoperability

Radio system interoperability is the ability of any public-safety, government or military radio user to initiate and receive calls at any time without the assistance of an operator. Radio interoperability allows calls to be made to any other radio, packet-switched IP network, or circuit-switched telephone network connected user, or a combination of these, when the connection is properly authorized by system rules. Simply stated, it is when police officers, deputy sheriffs, state troopers, firefighters, and/or emergency medical responders can go anywhere in the region and state and have immediate radio communications with each other using their own equipment on designated channels.

For Lower Merion, becoming part of the County’s 800MHz radio system means that Lower Merion police, fire, and emergency medical service providers will be able to easily communicate among themselves and service providers from other municipalities and emergency agencies. In the opinion of the Study Team, full radio interoperability is an essential aspect of any radio system to be implemented in the future for Lower Merion.

By achieving radio interoperability, Lower Merion will become compliant with an extremely important communications goal of the U.S. Department of Homeland Security. Further, Lower Merion will have a radio system capability that was a major recommendation resulting from the 9/11 disaster.

County 800MNHz Radio System

The Study Team was advised that all fire and ambulance companies in Montgomery County, except for the LMFD fire and rescue units, operate on the County’s 800MHz radio system.
FIRE AND RESCUE OPERATIONS

RADIO SYSTEM (continued)

The Study Team met with officials of Narberth Ambulance who advised that they have been using the County’s 800MHz radio system in all of their units for a number of years and have had satisfactory emergency communications Countywide, including in the Township. Further, the Study Team has conducted fire and EMS consulting studies for a number of other municipalities in the County, including Upper Merion and Plymouth Townships; during those studies, satisfaction with the use of the County’s 800MHz radio system was indicated.

In its consulting work nationwide, the Study Team has observed the effort on the part of most municipalities to vacate the older low band, VHF and UHF radio systems and move to state-of-the-art, interoperable 700MHz and 800MHz radio systems. In fact, the Federal Communications Commission had been taking actions to encourage this transition by moving public safety agencies from the low band frequencies. Equipment manufacturers have, in many cases, stopped making new low band equipment for public safety applications.

There seems to be agreement among the LMFD fire and rescue service providers that the Township should move to the County’s 800MHz radio system. Finally, the Study Team has met with County radio system officials and technical personnel on a number of occasions and was advised of the County’s desire to add the Lower Merion fire to the 800MHz radio system in order for all Montgomery County fire and rescue units to be on the same radio system.

The Study Team was provided with a LMFD document dated June 18, 2007, summarizing the radio system issue. That document provided a list of the steps that should be pursued subsequent to the completion of recent Township coverage testing. Those steps relating to the Township’s radio system included the following:

1. Provide for Township-wide coverage of voice paging;
2. Provide for solid communications from portable to portable, portable to mobile, portable to base station and portable or mobile to County communications;
3. Continue to identify areas of poor reception and report them to the County for correction;
FIRE AND RESCUE OPERATIONS

RADIO SYSTEM (continued)

4. Provide assurances, on the part of the County, of equal coverage to that which currently exists, in-building and in-street;
5. Include fire, police and EMS, working as a team with the County, to address the needs of the Township regarding the 800MHz County system; and,
6. Include public works in the overall 800MHz spectrum for interoperability.

The Study Team views these as the appropriate next steps in leading the Township's transition to the County's 800MHz radio system. In the meetings with County representatives, the Study Team was advised of the willingness of County officials and staff to work with the Township for the transition of LMFD and fire company units to utilize the County's 800MHz radio system. This transition would include a team effort in conducting appropriate coverage tests leading to appropriate system changes being made to provide necessary coverage.

The County provides two types of paging, one involving a form of voice paging and the other alpha-numeric paging. The Township fire services requirements for voice paging may be more comprehensive than the level provided by the County, at this time. An effort should be undertaken to plan and implement a solution, with the County, that would meet this need.

In conclusion, the Township is encouraged to aggressively pursue a transition to the County's 800MHz radio system and plan and implement an appropriate voice pager solution. Pending this transition, limited resources should be committed to support the current radio system.

FIRE DISTRICT BOUNDARIES

Many years ago, geographic fire district boundaries were established to delineate the various LMFD fire companies. The Study Team was unable to determine when the boundaries were established or the basis for these boundaries. The boundaries are utilized for two important purposes: the determination of the fire company/s to be dispatched to emergency incidents and the geographic area in which each fire company may conduct fund-raising through mailings or other approaches.
FIRE AND RESCUE OPERATIONS

FIRE DISTRICT BOUNDARIES (continued)

From a service delivery perspective, these boundaries are extremely important in that they determine which units will be dispatched. The dispatch of the closest available unit/s is a key to providing the fire/rescue service to the resident or business owner/operator in as short a time as possible. Further, providing fire/rescue service in as short a time as possible is an important factor in the quality of service provided, as discussed in the Fire and Rescue Stations Chapter of this Report. Therefore, the determination of the fire district boundary lines is critical to ensure that fire units arrive on the scene of the emergency as soon as possible. Although there may be more sophisticated response time-based methods used, such fire response areas are typically determined on the basis of mileage.

In reviewing the fire district boundaries and discussing them with fire company service providers, it appears that there are boundary lines that are, from a closest response of apparatus point of view, inappropriately located. A number of fire company members and officers indicated a need to have all boundaries realigned to ensure that the closest fire apparatus are dispatched. It is suggested that fire district boundary lines be reassessed from a mileage point of view, with changes in the locations of these lines being made where determined appropriate.

It is understood that the relocation of boundary lines may be a sensitive issue due to the potential for one or more fire companies to lose fund-raising area. This possibility should not impede the boundary realignment since it will improve the quality of fire service delivery. In situations where the relocation of a boundary line may impact potential fund-raising, it is suggested that a phase-in or other agreement be reached between the fire companies involved.

"BOX" TYPE APPARATUS DISPATCH ASSIGNMENTS

Currently, the LMFD units are dispatched on an antiquated “fire company” deployment basis. This approach involves one or more fire companies being dispatched to fire calls as opposed to the dispatch of the specifically needed units (engine/s, truck/s and/or rescue/s) being dispatched. The fire company dispatch approach to fire unit dispatching is inefficient
FIRE AND RESCUE OPERATIONS

FIRE DISTRICT BOUNDARIES (continued)

in the deployment of fire apparatus and many times results in a number the following negative results, including:

- More units of different types being dispatched than necessary;
- Units not needed responding on fire calls when those units could be needed on other emergency incidents occurring at the same time;
- Increased emergency response of fire apparatus through the Township potentially resulting in increased safety and liability exposure;
- Increased number of Township fire units being committed on calls than would otherwise be required; and,
- Placing an unnecessarily increased heavy workload burden on the volunteer response capability.

The more state-of-the-art “box” approach that makes more efficient, effective and safe utilization of the fire apparatus and staff should be implemented for the LMFD and its member fire companies. The same number and type of apparatus should be dispatched and respond to similar calls in the Township, regardless of the fire district involved. Therefore, standard response assignments by type and magnitude of call should be developed and provided to the Montgomery County fire dispatch center for use in dispatching fire and rescue calls in Lower Merion.

DEPLOYMENT OF APPARATUS WITH PAID STAFF

There are typically two paid firefighters working in each of the LMFD fire company stations, particularly during weekday daytime hours. One of the benefits of paid staffing in a combination volunteer/paid fire station, such as those in Lower Merion, is that they afford the opportunity for the immediate response of fire apparatus. The dispatch of fire apparatus from a fire station with paid staffing allows the immediate response with paid staff and any volunteer personnel in the fire station. This level of response affords the opportunity for a significant reduction in response time when compared to apparatus that may only be deployed when the all-volunteer crew arrives at the fire station.
FIRE AND RESCUE OPERATIONS

DEPLOYMENT OF APPARATUS WITH PAID STAFF (continued)

In Lower Merion, the deployment of these paid firefighters on dispatched apparatus varies significantly, as determined by each of the fire companies.

Some fire company officials advise their paid firefighters to respond immediately on the apparatus with any available volunteers that may be in the fire station. Other fire companies instruct paid staff to await the arrival of volunteers responding to the fire station, a process that may delay the apparatus departure several minutes. In these cases, the apparatus responds with or without the paid staff if sufficient volunteers report to the fire station. Alternatively, after a period of time the paid staff may respond to the emergency call if no volunteers come to the fire station. In either of these alternative situations, the response of the apparatus is delayed several minutes; the delivery of emergency services to those in need is forestalled, potentially arriving after further property damage or injury has occurred.

In the Township of Lower Merion, there should be one apparatus response policy with regard to apparatus deployment from fire stations with paid staffing, particularly during weekday daytime hours when limited volunteers are available to respond on calls. That policy should be that at least one unit responds immediately, with the paid and any volunteer staffing in the station. There are a number of methods by which this policy could be implemented; individually by each fire company, or by two or more fire companies combining their paid staffing during weekday daytime hours to form what some may refer to as a "manpower squad or unit."

Due to the critical importance of implementing the immediate response of fire apparatus in Lower Merion when possible (when paid staff and/or volunteers are in quarters), the Emergency Services Board is encouraged to address the establishment and implementation of this policy as soon as possible, preferably with the cooperation of all fire companies.
FIRE AND RESCUE OPERATIONS

HOUSE SIREN ISSUE

During the course of this Study, the issue of noise from the use of house sirens was brought to the attention of the Study Team, based upon increasing requests from the public and local officials. The question raised is whether, in today's high technology communications environment, is it really necessary for fire companies to continue to utilize house sirens with the stated intent of alerting their members of emergency calls? This is an issue that has been raised to the Study Team during many fire studies, particularly in recent years as advanced communications and alerting systems have become prevalent.

The use of large sirens at fire houses has been a tradition that goes back to the early days of electricity. In the past, house sirens were the means of notifying volunteers and the community of the occurrence of a fire. Today, with the many methods of communications that have become easy to use, smaller and less costly, the use of house sirens has been phased out in most communities similar to Lower Merion.

The Study Team understands that the use of house sirens differs among the fire companies. The Merion Fire Company of Ardmore, for example, reportedly utilizes a smaller, less noisy siren during daytime hours to alert individuals walking or driving in the area of their fire station to be alert for emergency equipment response. Other fire companies only utilize a house siren during certain times of the day while others insist on using their siren 24 hours per day.

In discussing this matter with the members of a number of Lower Merion fire companies, it was apparent that some fire companies understood and respected the feelings of their residents and made adjustments in the use of their house siren. Others seemed to be relatively insensitive to the wishes of their customers, despite the availability and functionality of paging systems being utilized.

In the opinion of the Study Team, who have dealt with this issue as volunteer firefighters, officers, decision makers and consultants, there are a number of much less intrusive means for notifying volunteers of calls being run and the need for a response to the fire house. Typically, the continued use of a house siren, which, in today's air-conditioned house, work and vehicle environments may not be heard, cannot be justified.
FIRE AND RESCUE OPERATIONS

HOUSE SIREN ISSUE (continued)

The Township is encouraged to assure that all active operational volunteer personnel are provided with an appropriate paging device that serves to alert the member of calls. The fire companies are encouraged to consider the desires of their community neighbors, cease the use of the house siren and consider the house siren to be an unused (except for major disasters) piece of fire history.

SUMMARY

Fire ground operational decisions must be made rapidly and consistently and not by committee after consultation. Even though every fire situation differs, the fire officer must make decisions based on hastily gathered available information. The keys to efficient, effective, and safe fire ground operations include comprehensive pre-incident planning, standard operating procedures, safety, and resource preparedness and support.

Fire departments improve their effectiveness and the safety of their firefighters and officers with the initiation of pre-fire planning, incident command systems, policies and procedures and comprehensive firefighter safety programs. Reportedly, the fire companies do not conduct regular pre-fire planning and have not adopted consistent incident command system procedures or important safety-related SOGs in a number of important areas.

In addition to the traditional firefighting services, many fire departments also provide a wide variety of specialized services that are seldom needed, but really make a difference when used. The decision by a fire department to be in the special operations services business must be well thought out and decided upon based on a real need, not a perceived need presented by a few personnel who desire to start a program to satisfy their interests.

When faced with limited resources and expanding calls for service from the community, a fire department should carefully select the services it provides. Oftentimes a joint approach by several neighboring departments is a more efficient use of resources to accomplish the task.
FIRE AND RESCUE OPERATIONS

SUMMARY (continued)

In the case of the Township of Lower Merion, the LMFD and its seven companies need to look closely at all of their special operations services to determine what the demands for service are and how to best prepare the companies to respond to those demands. Establishing program goals and mutual aid partnerships will be important for each type of special operations service provided. In most cases, perhaps the best way to meet the established goals will be to utilize outside, mutual aid or regional resources instead of trying to be the sole-source provider of the service.

RECOMMENDATIONS

7.1 The Township and fire company chiefs should consider implementing a comprehensive pre-fire planning program.

7.2 The LMFD should consider committing further effort at learning how to use the extensive data available in the Firehouse database and at providing that data to decision makers for planning and program monitoring purposes.

7.3 The Emergency Services Board is encouraged to develop and implement an SOP relating to post incident critiques.

7.4 The Emergency Services Board should establish further Township-wide policies and procedures with comprehensive input and review by all members of the LMFD.

7.5 The fire companies are encouraged to adopt SOPs/SOGs that do not duplicate, change or conflict with LMFD SOPs.

7.6 The Emergency Services Board should consider implementing automatic closest available mutual aid with appropriate surrounding municipalities and fire companies/departments.
FIRE AND RESCUE OPERATIONS

RECOMMENDATIONS (continued)

7.7 The LMFD is encouraged to maintain a close relationship with the Montgomery County Hazardous Materials Response Team (MCHMRT) and to provide support to the hazmat team as their operations expand in the future.

7.8 LMFD is encouraged to support the operation of Decon 21 by the Penn Wynne Fire Company by ensuring that skills maintenance training occurs on an adequate basis.

7.9 LMFD, in conjunction with the MCHMRT, should review the Bryn Mawr Fire Company’s operation of Decon 23 to ensure that a sufficient number of members are trained to operate the trailer and that skill maintenance training occurs on a regular basis.

7.10 LMFD is encouraged to transition to a one heavy rescue unit and a two squad unit baseline service delivery model, with locations of the units being determined by service demand areas and response times.

7.11 LMFD should cease the practice of dual-dispatching rescue units for vehicle extrication incidents and implement individual response districts for Rescue 21 and Rescue 22.

7.12 The LMFD must develop and implement a minimum training standards policy that requires all personnel (officers and members) who wish to deliver vehicle extrication services to be trained and certified to the applicable NFPA and/or the Pennsylvania state training standards, at a minimum to the Basic Vehicle Rescue Technician level.

7.13 The LMFD should identify all of the known permit-required confined spaces in the Township and develop emergency response pre-plans for each confined space.

7.14 The LMFD should identify the organization that will serve as its primary provider of confined space rescue services and work with that organization to address training and operational needs.
FIRE AND RESCUE OPERATIONS

RECOMMENDATIONS (continued)

7.15 The LMFD should ensure that the Belmont Hills and Penn Wynne Fire Companies continue their training in confined space rescue at the operations level.

7.16 The LMFD should require all active members of the LMFD to complete a basic training program on confined space awareness.

7.17 The LMFD should use mutual aid response from surrounding jurisdictions to provide technical rescue response to trench collapse, structural collapse, and high-angle rescue incidents.

7.18 The LMFD should require all active members to complete the four-hour trench awareness course offered by the Montgomery County Fire Academy.

7.19 The LMFD should encourage all active members of the LMFD to complete some type of structural collapse awareness training.

7.20 The LMFD should continue to support the Gladwyne Fire Company’s operation of two rescue boats and establish a minimum training standards policy that requires all boat operators and boat attendants to be trained and certified by the Pennsylvania Fish and Game Commission.

7.21 The LMFD should work in conjunction with the Volunteer Medical Service Corps of Lower Merion, Narberth and the Township, to establish a quick EMS response service (QRS) at each LMFD fire company, to meet the four-minute response time goal for AED/first responder service delivery as outlined in NFPA 1720.

7.22 The Township is encouraged to aggressively pursue a transition to the County’s 800MHz radio system, and plan and implement an appropriate voice pager solution.

7.23 The Township is encouraged to assure that all active operational volunteer personnel are provided with an appropriate voice paging device that serves to alert the member of calls.
FIRE AND RESCUE OPERATIONS

RECOMMENDATIONS (continued)

7.24 The fire companies are encouraged to consider the desires of their community neighbors and cease the use of the house sirens.

7.25 The Emergency Services Board is encouraged to ensure that the fire district boundary lines are reassessed and revised, as appropriate, utilizing mileage-based criteria.

7.26 The Emergency Services Board is encouraged to establish the policy of dispatching fire and rescue apparatus on the basis of standard apparatus assignment utilizing the "box" dispatch approach.

7.27 Due to the critical importance of implementing the immediate response of fire apparatus in Lower Merion when possible (when paid staff and/or volunteers are in quarters), the Emergency Services Board is encouraged to address the establishment and implementation of such a policy as soon as possible, with input and support of all of the fire companies.

7.28 The LMFD is encouraged to review the Police/Finance alarm system installation and activation program/s and, if appropriate, model a fire/smoke alarm handling program similarly, in order to manage and reduce the high number of faulty and false fire/smoke alarms that are handled by the LMFD and its fire companies.