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NFPA 1201 Developing Fire Protection Services for the Public 1989 Edition



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The Board of Directors reaffirms that the National Fire Protection Association recognizes that the toxicity of the products of combustion is an important factor in the loss of life from fire. NFPA has dealt with that subject in its technical committee documents for many years.

There is a concern that the growing use of synthetic materials may produce more or additional toxic products of combustion in a fire environment. The Board has, therefore, asked all NFPA technical committees to review the documents for which they are responsible to be sure that the documents respond to this current concern. To assist the committees in meeting this request, the Board has appointed an advisory committee to provide specific guidance to the technical committees on questions relating to assessing the hazards of the products of combustion.

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NFPA 1201
Recommendations for
Developing Fire Protection Services for the Public
1989 Edition

This edition of NFPA 1201, *Recommendations for Developing Fire Protection Services for the Public*, was prepared by the Technical Committee on Public Fire Service Organization and Operation and acted on by the National Fire Protection Association, Inc. at its Annual Meeting held May 15-18, 1989 in Washington, DC. It was issued by the Standards Council on July 14, 1989, with an effective date of August 7, 1989, and supersedes all previous editions.

The 1989 edition of this document has been approved by the American National Standards Institute.

Origin and Development of NFPA 1201

Sections of this document were developed by the committee and adopted by the Association on a tentative basis in the years 1963, 1964, 1965, 1966 and 1967. In 1968, the entire document was adopted as NFPA 4B. The document was revised in 1971 and renumbered NFPA 4. In 1977, the document was completely revised and renumbered NFPA 1201.

The 1984 edition was a complete revision that incorporated new chapters on emergency management and emergency medical services. At the same time the existing 13 chapters were reorganized into 18 chapters.

In 1989, NFPA 1202, *Recommendations for Organization of a Fire Department*, and NFPA 1301, *Guide to Public Fire Prevention Criteria*, were integrated into this document and the document was completely revised. New chapters on governmental responsibility, incident command systems, and hazardous materials were added.

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Information on referenced publications can be found in Chapter 22 and Appendix A.

Chapter 1 Introduction

1-1 Scope. This document contains recommendations on the structure and operation of organizations providing public fire protection services including fire suppression, fire prevention, and public firesafety education.

1-2 Purpose. This recommended practice is intended for the use and guidance of those charged with providing fire protection services to protect lives and property from fire and, in many cases, from other perils. It includes recommendations that are intended to provide effective and efficient protective services, operating on a sound basis to prevent fires and reduce risks to lives and property, to deal with actual incidents, and to be prepared for situations that may be anticipated to occur.

1-3 Governmental Function. Protection of the public from fire is generally regarded, in North America, as a local government function, often within a regulatory framework. While the basic recommendations contained within this document could be adopted by a private organization or by a governmental organization operating under a different structure, the context of this document is intended to relate to a public fire department serving a defined area under the auspices of a local government authority. The basic principles of organization are similar, whether operated by a city, town, county, special district, voluntary organization, or private organization, although administrative practices may vary significantly.

1-4 Relationship to Other Standards. Due to the many governmental and organizational structures that may be involved in the delivery of fire services, the provisions of this document are in the form of recommendations only. However, this document makes reference to several NFPA standards that contain mandatory requirements related to the operation of a fire department and the delivery of fire protection. These standards should be complied with in their entirety where applicable.

1-5 Concept of Risk. There is a fundamental concept of fire risk that is associated with modern society. Public fire service organizations are intended to reduce the risk within the area of their jurisdiction by taking measures to prevent the outbreak of fires, to limit the extent and severity of fires, to provide for the removal or rescue of endangered persons, and to control and extinguish fires that occur

within the jurisdiction. The cumulative effects of preventive efforts, risk reduction and control, and fire suppression capabilities result in a variable level of risk to the jurisdiction and its residents. The level of service provided and the degrees of risk accepted by the jurisdiction are subject to local determination.

The risk remaining after deducting the cumulative effect of the public fire service organization's activities is the responsibility of the individual, whether renter, homeowner, or business person. It should be noted that the fire risk cannot be completely avoided or eliminated.

1-6 Fire Protection Alternatives. Many fire departments have evaluated and redefined their jurisdiction's fire protection needs through the master planning process. This can result in proposing methods other than suppression that contribute to an acceptable level of fire protection. An example of this would be securing legislation requiring automatic sprinkler systems in buildings, thus providing a protection trade-off that reduces the level of risk and demands on the fire service. In addition, requiring smoke detectors and/or sprinkler systems in all residences will alert the occupants so they can self-rescue and summon the fire department early in the fire development to minimize the life and property loss due to fire.

Chapter 2 Purpose of a Fire Department

2-1 Fire Prevention and Risk Reduction.

2-1.1 The mission of a fire department is to attempt to prevent the outbreak of fires in the community and to limit the danger to persons and the damage to property caused by those fires that do occur. In a modern society that is surrounded by combustibles, this aspect of the fire department's activities should encompass a variety of approaches, including inspections, enforcement of fire codes, review of plans for new construction projects, consultation with builders, developers, and those responsible for the management of individual properties, and public education efforts.

2-1.2 Every fire department should have a program under which its personnel regularly examine every part of the community where a significant fire problem may develop. Personnel should inspect all property in the community with emphasis on identified high life and property hazard occupancies, according to a schedule based on risk.

2-1.3 Fire chiefs are usually required, through state or provincial and local statutes, to safeguard the public and its property from the dangers of fire and panic through prudent code enforcement. Case law has made it very clear that the fire chief, as well as authorized representatives and other governmental agencies, must discharge the duties of their positions and could be held liable for not carrying out their legal obligations for fire prevention. It is essential that all members of the fire service realize that this is an important part of their activity. Many fire departments have developed a combination fire inspector and fire company inspection organization to accomplish their inspection goals. This approach has gained wide acceptance

because it allows for both the technical expertise and the necessary personnel to maintain a regular inspection program throughout the community.

2-1.4 A service of the fire department should be to consult with local individuals and organizations who have fire problems and assist in their solution. The availability of a fire protection engineer and other fire safety specialists would greatly assist in consultations with developers, architects, contractors, and other engineers. In addition, such availability of expertise would enhance the on-going program of continued improvement of the fire defense system within the community. A number of fire departments have employed fire protection engineers on a full-time status.

2-1.5 Recent studies indicate that the majority of building fires are caused by carelessness and ignorance and are preventable primarily through educational and motivational efforts. Reducing the number of life losses, casualties, dollar losses, and fire incidents in this category is dependent on the fire department developing ongoing, comprehensive firesafety programs — with emphasis on “high risk” populations. Public firesafety education is becoming an increasingly important and cost-effective element in the community fire protection system. It must be a planned program including needs assessment, determination of objectives, evaluation, and allocation of sufficient resources.

2-1.6 An important aspect of controlling the combustibles within which man surrounds himself is the review of plans for new proposed structures or plans for renovations. Special consideration must be given to life safety, eliminating undesirable building features, providing fire protection systems and equipment, and ensuring access for fire suppression operations by the fire department.

2-2 Fire Suppression.

2-2.1 Fire suppression is a fundamental responsibility of the fire service, and the fire department should be organized to effectively combat fires that occur in the area it serves. The commitment to providing other emergency and nonemergency services and performing other functions should not interfere with the ability to effectively combat fires.

2-2.2 The priorities involved in fire suppression are to save lives, to control the fire and limit its spread, and to protect property from fire and related hazards.

2-2.3 An important purpose of an inspection program should be to reinforce the suppression system by evaluating potential fire conditions and planning how the fire department would manage these conditions. Decisions should be made on the potential severity of the fire emergency, response to be provided, tactical positions the fire companies may take, and phases of personnel operations at fires. These activities are necessary components for tactical training.

2-3 Rescue and Emergency Medical Services.

2-3.1 The delivery of services that are directed toward saving lives from a variety of perils are generally included in the mission of the fire service, although the nature and extent of these services varies from one jurisdiction to another.

Fire departments are usually staffed and deployed in a manner that readily supports the delivery of such additional emergency services when the necessary resources are provided.

2-3.2 Preservation of human life is the primary responsibility of the fire department at fires and other emergencies. Departments also should be prepared to perform rescue work and provide emergency care for those injured in connection with such incidents as traffic accidents, train wrecks, aircraft crashes, floods, windstorms, and earthquakes.

2-3.3 In many areas the fire department is designated as the primary provider of emergency medical services (EMS). This may involve the delivery of basic or advanced (paramedic) life support services and may include ambulance service. These services may be performed by fire fighters or by members of the fire department specializing in EMS. The impact on fire department resources and the departments continued ability to perform its fire control responsibilities must be considered when undertaking the EMS activity.

2-4 Hazardous Materials. In many communities the fire department is assigned the primary responsibility for the management of hazardous materials emergencies. In some cases this includes regulatory responsibilities to identify and limit risks to the community resulting from the storage, use, transportation, and disposal of hazardous materials.

2-5 Disaster Planning. Disaster planning should be coordinated on all levels of government in anticipation of large scale emergencies. Comprehensive response plans should be in writing and provide for management and coordination of all public and private services called into action in disasters such as explosions, air crashes, floods, building collapses, earthquakes, and radiological incidents.

There may be legislation or legal restrictions that establish the overall controlling authority in disaster operations. If present, these should be recognized and all planning and activity based on operating within that framework.

Chapter 3 Governmental Responsibilities

3-1 Local Government.

3-1.1 Fire protection is considered to be a local government responsibility in most areas in North America. Local government is broadly interpreted to include municipalities, comprising jurisdictions such as cities, towns, villages, and townships. Fire protection responsibilities may be assigned to fire districts and other jurisdictions established by law to provide services to the public. In most cases state or provincial legislation identifies the specific level or unit of government that is responsible for providing public fire protection through the granting of charters or by statute. For the purposes of this document, the term local government is used to cover all these jurisdictions.

3-1.2 The governmental agency responsible for the establishment and operation of the fire department should formally adopt a statement of purpose and policies for the fire department that includes the types and levels of services that are to be provided, the area to be served, and the delegation of authority to the fire chief and other officers to manage and operate the fire department.

3-1.3 Where fire services are provided by a governmental agency, the resources of other related governmental units, such as personnel systems, finance departments, planning agencies, purchasing systems, and similar components should be used cooperatively to achieve the most effective service delivery system. The fire department must rely on a close working relationship with the agencies responsible for law enforcement and water supply, among others, to operate in an effective and cooperative manner.

3-2 Intergovernmental Relationships.

3-2.1 State statutes, municipal charters, and the charters of townships, fire districts, or counties furnish the legal authority for operation of the fire department. Even independent volunteer fire departments and fire associations that are not under local governmental operation are subject to province or state laws defining the operations of such departments or associations. These laws also commonly provide authority to a fire department to operate outside of the municipal territory to which it is assigned and define the terms of such operation. The fire department should operate within and comply with the existing laws in all instances. Modification of these laws should be sought where necessary to allow for increased operations.

3-2.2 Fire investigation and fire prevention work are fire department functions authorized by province-state and local law. In most states in the United States and provinces in Canada, authority for these functions is vested in a state official (the state or provincial fire marshal) with the general provision that the local fire chief may act in a similar capacity within his particular municipal jurisdiction in accordance with state or provincial law.

3-2.3 There is also a class of legislation that imposes limits on the municipal officials. Example of this would be laws that specify the pay and working hours and other conditions of work for the members of fire departments. This type of legislation imposes specific limits on financial and operational management of a fire department by the municipalities.

3-2.4 One of the most important of province-state service functions performed for fire departments is the operation of a fire-service-oriented educational and training program. This is often administered by a state educational agency or institution cooperating with the individual fire departments and other organizations in operating schools and training facilities.

3-3 Private Fire Protection.

3-3.1 Organization of employees for first-aid fire fighting is one form of private protection. In some cases, the property management will also provide a fire department for its own service within its property. Such a property is sometimes large enough so that the form of its fire department

is similar to that of a fire department organized for the protection of a city or town. When a fire department is provided to supply fire protection for a specific piece of property, it should be described as "industrial" or "private" to distinguish it from one provided for a city, town, or other local governmental unit. The decision to provide such protection, in addition to that which is available from a public fire department, should be based on a management evaluation of risk.

"Industrial" or "private" fire departments are discussed in other National Fire Protection Association publications. (See *Appendix A*.)

3-3.2 There are also private, commercial, or independently owned and operated fire departments providing fire department services. In some areas these departments contract with individual property owners to provide services where there is no fire department operating as a function of local government. Some fire districts and municipalities contract with private or commercial fire departments for fire protection services.

Chapter 4 Fire Risk Analysis and Planning

4-1 Purpose. Communities must recognize the need for creation and implementation of a total concept master plan for a community-wide balanced fire control strategy, including extensive utilization of built-in early warning smoke and fire detection and automatic suppression systems.

4-1.1 The fire department must be concerned with planning its internal operations as well as being involved with all other community departments in planning for the anticipated overall community growth. The governing body should be encouraged to adopt a long-range community plan dedicated to the reduction of life and property loss from fire. (See *"America Burning," the report of the National Commission on Fire Prevention and Control. In Canada, see the National Research Council's "Study on Fire Prevention and Control Systems in Canada."*)

4-1.2 Where increased economic efficiency and program effectiveness are prime objectives in choosing between programs, cost benefit analysis can be used to obtain a ranking of alternative programs and provide the basis for department planning.

Program effectiveness is an important part of cost/benefit analysis. A higher cost method may be the most effective although it is not the most cost efficient. In the emergency services, value criteria must be considered, such as life safety being more highly valued than physical property.

Cost benefit analysis typically consists of five steps that draw heavily on systems analysis: determining need, developing objectives, developing the criteria for measuring effective accomplishment, generating alternatives, and analyzing and selecting alternatives.

4-2 Research and Planning.

4-2.1 Every fire department should have a continuing involvement in research and planning. In larger depart-

ments this should include a full time staff component, while smaller departments may assign these functions to committees or officers with other responsibilities. In some cases these functions may be performed in part by consultants or by planning agencies working within or in cooperation with governmental agencies.

4-2.2 Research and planning may encompass examination of any or all aspects of a fire department's activities, both generally and specifically. Its objectives are to work towards improving the efficiency and effectiveness of the fire department and to maintain a responsive approach in dealing with a community's changing needs for service.

4-2.3 The research and planning staff of the fire department should maintain a continuing relationship with other agencies that are involved in community planning and keep the fire chief and staff informed of community development plans, projected service demands, alternative approaches, and problems that may be created as change occurs. These liaisons should include budget and planning agencies, redevelopment agencies, water, streets, traffic and engineering departments, as well as private sector developers.

4-2.4 The research and planning staff should be concerned with maintaining a constant awareness of the state-of-the-art in the delivery of public protection services, in order to evaluate alternative approaches and methods and to consider their applicability to local situations.

4-3 Master Planning.

4-3.1 Master planning is a process designed to evaluate the level of fire risk in a community and to establish future objectives for limiting or reducing that risk. The overall approach is comprehensive, examining the resources available for fire prevention and suppression, along with the level of risk created by the built environment under varying regulatory approaches. The assumption is that the need for public protection can be modified by changing the required level of protection that must be provided by the private sector, in the form of fire alarm and detection systems, automatic sprinklers, and limiting the size and type of construction that is permitted. A desirable approach provides a low level of fire risk at a low overall cost, although the specific cost and risk levels are determined by local option.

4-3.2 A master planning process will identify what kind of community the fire department will have to protect ten or twenty years in the future. The costs of the fire department can be kept reasonable by limiting both potential life hazards and the combustible features of the community. If, in the area served by the fire department, excessive area buildings or noteworthy life risks without automatic sprinkler or other appropriate private fire protection are tolerated, the taxpayers must also accept either a high level of fire department expense or inadequate protection. The same is true of tolerance of other defects that set up a high conflagration hazard or present unreasonably difficult fire control problems.

4-3.3 Master planning should lead to a series of rational decisions that determine the levels of fire risk that will prevail in the community. Some communities have chosen

to require automatic sprinklers in all new construction or to retrofit protection in existing high risk structures, reducing the need for fire suppression capability. Alternatively, restrictions on types of construction, building size and siting, occupancy, and other building features have been used to reduce local fire exposure.

4-3.4 The planning procedures should enable the fire chief to justify recommending amounts of money to be allocated annually for the fire department operation after cost/benefit and program effectiveness analysis studies have been completed.

Some communities support a quality of fire department service that other communities have never had and therefore do not miss. Many fire departments do not receive good support simply because taxpayers have never experienced the valuable services that a good fire department can provide. Expenditure standards involve both technical questions and value judgments. There is usually no question as to whether fire department protection is to be provided. The annual operating cost of the fire department is largely established when the number of pumper and ladder companies it will maintain and the personnel required for these companies has been determined by an analysis of the degree of desired protection and ability to provide financial support.

4-3.5 The jurisdiction should be informed that the money that must be annually appropriated for the fire department is closely related to how well property owners accept responsibility for better protection of their individual properties from fire. Building, planning, water utility, and fire officials should study the benefits of automatic sprinkler systems and other forms of private fire protection. They should understand the impact of unnecessary requirements or added costs for connections to water systems for automatic sprinkler systems.

One of the most important ways private fire protection is accomplished is through the use of automatic sprinkler systems. The terms on which the water utility serving the community furnishes connections to such systems is a factor in how actively property owners will consider this self-protection. Local requirements often include flow detection devices, meters, and unnecessarily high annual charges. Unnecessary requirements for sprinkler connections can bring relatively trivial income to the water utility and trivial savings from loss of water. In comparison, lack of private fire protection can result in large fire losses. These losses would cause a demand for an increase of fire department expenditure over a period of years far in excess of the water utility income or savings.

4-3.6 Possible reduction of the ability of local government to provide public fire protection must be considered in any planning process. These reductions may be temporary, as in the case of a strike, or permanent because of a reduction in the tax base. The result of such events may range from slight inconvenience to total elimination of usual services. The fire department, unlike many community departments, provides an emergency service upon which may depend the saving of lives and control of major property destruction. The fire chief, in concert with community administration, should be prepared with practical contingency plans that may be implemented depend-

ing on the nature and degree of service curtailment. Local, state, and federal regulations and agreements should be guiding factors when planning for the contingency of any work curtailment.

4-3.7 Fire code enforcement, firesafety education, and community cleanup programs are a general approach to the reduction of fire suppression workload. On a short-term basis, they offer limited chance to affect fire department operating costs but they can be productive when undertaken on a long-term basis.

4-3.8 Computer software packages can be utilized to help determine optimum station locations, number of companies required, and best response routes. In addition they can assist in development of interjurisdictional fire response plans including mutual and automatic aid plans.

4-3.9 Research reports and analyses of fire loss, structural and occupancy trends, and demographic information should form the basis for all long-range planning.

4-3.10 A statement should be prepared describing what the fire department hopes to accomplish during a minimum future period of five years. It should indicate budget requests planned for personnel, equipment, and facilities based on established objectives.

Over a period of several years, capital items may be spread out, by use of reserve funds or borrowing, if necessary. A five-year plan enables major changes to be carried out on an extended and rational basis.

4-3.11 A statement should be prepared describing potential master plan accomplishments during a future period of ten years. It should indicate how long-range programs of the department and the community may begin to reduce losses. It should show how capital cost items for equipment and fire stations will be provided when needed.

Chapter 5 Organizational Structure of the Fire Department

5-1 Governing Body. The management organization of a fire department should be similar to a well-run commercial or industrial business. There should be a governing body corresponding to the board of directors in any enterprise. A general manager should be appointed and expected to manage the operations on a day-to-day basis and provide input to the governing body.

5-1.1 The governing body has three primary responsibilities: establishing the scope and level of service provided by the fire department, providing the necessary funding, and providing for the necessary personnel and facilities. In order to provide service, the governing body must have the power to levy taxes or solicit funding, to own property and equipment, and to cover personnel costs. The authority necessary is conveyed by law to a local jurisdiction.

The governing body should also be responsible for monitoring the achievement of the management goals of the de-

partment, such as fire prevention, fire suppression, employee training, communications, maintenance, public fire-safety education, and department administration.

5-1.2 The governing body should establish the primary policies of the fire department and should not act as an administrative agency nor direct day-to-day management of the department.

5-2 The Fire Chief.

5-2.1 The management activities of the department are separate from the activities of the governing body. The manager of the fire department is commonly designated as the fire chief and references to that title are intended to apply to the manager of the department even where some other title is used.

5-2.2 The fire chief should be appointed on a basis of merit and ability for an indefinite term, removable only for cause. NFPA 1021, *Fire Officer Professional Qualifications*, should be used as the basis of determining qualifications. If local regulations require election of the fire chief, the qualifications for office should be the same.

5-2.3 In a fire department service area organized exclusively for fire department purposes, the fire chief should be selected and appointed by the designated governing body or bodies.

5-2.4 In local government, where there is a chief executive known as mayor, or city manager, etc., the chief executive usually appoints the fire chief. Some municipalities utilize a governing board such as a fire commission.

5-2.5 The fire chief should communicate closely with the municipal chief executive and/or governing body. This is essential for long range planning, goal setting, and program and budget development. The municipal chief executive or governing board should be kept abreast of department performance and needs through regular reports submitted by the fire chief.

5-3 Operational Components. The governing body of the fire department, by its authorization of activities and appropriations, determines the total required amount of equipment and personnel. The fire chief should determine how operating units of the department should be organized into bureaus, divisions, fire companies, or response teams together with the number and distribution of such units. Where the term "fire companies" is hereinafter used, it will mean the principal response units of the department.

Practice followed in the United States and Canada traditionally establishes the basic unit of a fire department as the fire company. It is provided with at least one piece of fire apparatus and consists of personnel necessary to place the apparatus into service and operation when needed.

5-3.1 Fire companies whose primary function is to pump water are called engine or pumper companies. One company can perform basic fire fighting, but even in a jurisdiction of detached dwellings a minimum of two engine companies should be provided.

5-3.2 A ladder company performs ladder work, forcible entry, ventilation, rescue, and salvage work, and provides illumination at night fires. Ladder company operations must be performed at fires even where there are no ladder companies.

5-3.3 Other types of companies equipped with specialized apparatus and equipment should be available to assist pumper and ladder companies. Some departments provide companies for special purposes such as salvage, rescue, lighting, refilling self-contained breathing apparatus, and handling hazardous materials. Marine or aircraft fire fighting companies can be considered special pumper companies. (For further discussion, see Chapter 9, *Operating Procedures*.)

5-4 Officers and Fire Fighters. Fire departments in North America staff fire companies with personnel that respond from a fire station, personnel (volunteer or paid) who respond to an alarm from home or work, or other variations of these staffing methods. The mode of staffing tends to be determined by the level of fire frequency and severity, the ability of the community to afford paid personnel, and the availability of suitable volunteer personnel. In order to meet a minimum staffing level, some suburban communities have had to utilize a paid force for response by day because volunteer personnel are principally available only at night and on weekends/holidays.

5-4.1 The department should conduct a community fire risk analysis to identify the size and scope of the potential risk problem. This assessment should determine an adequate staffing level. See National Fire Academy Publication "Fire Risk Analysis—A Systems Approach" for an example.

5-4.2 The response personnel of a fire company should be comprised of the number necessary for safe fire fighting performance related to the expected life hazard, the potential property loss, the characteristics of the service area (including, but not limited to, water supplies, built-in fire protection, building size, occupancy, condition, construction, and accessibility, etc.), the type of fireground tactics employed as standard procedure, the type of apparatus in use, and the expected results to be obtained at the fire scene.

Response personnel refers to the number of physically able, competent, and well-trained personnel available to respond and includes both officers and fire fighters. NFPA 1001, *Fire Fighter Professional Qualifications*, NFPA 1002, *Fire Apparatus Driver/Operator Professional Qualifications*, and NFPA 1021, *Fire Officer Professional Qualifications*, should be used as the basis for determining personnel qualifications.

5-4.3 Departments that are principally composed of volunteer personnel should assure adequate response manning by designating personnel for scheduled response. A successful method has been to designate personnel responsible for responding on a predetermined schedule.

5-4.4 Each company should have an officer to provide leadership whenever the company is involved in any activity. Company officers should be included in the total personnel of companies.

5-4.5 One company officer should be designated and held responsible for the management and operational functions the company must perform. Respective ranking of all personnel for management purposes should be assigned by the fire chief. This designates who is responsible for the management and operation of the company.

5-4.6 The number of supervisory chief officers required depends on the size of the department. In some instances the functions of chief officers below the rank of chief of department may be combined. In a department of one or two companies, a ranking company officer can be designated second in command. The management objective should be to provide a ranking officer in command of the companies working at each fire or emergency. District or battalion chiefs should be provided as necessary considering geographical distribution and work load.

5-4.7 Command officers who have primary responsibility for directing emergency operations should be provided with aides. The function of the aide is to provide direct support to the command officer in managing the incident. These functions may include managing and recording information, operating communications equipment, making observations and reporting on conditions, transmitting orders, and providing other forms of assistance to the command officer.

In many fire departments, the duties of an aide include assisting with administrative functions and maintaining and operating the command vehicle.

5-5 Line Organization. The officers designated for fire companies and for response to command at fires should make up a "line" organization. The components are identified in the diagram below.

LINE ORGANIZATION OF A FIRE DEPARTMENT

Fire Chief
Deputy or Assistant Chiefs
Divisional Chiefs
District or Battalion Chiefs
Company Officers (Captains, Lieutenants)
Fire Fighters

5-6 Staff Functions.

5-6.1 The fire chief has responsibility for managerial functions in addition to command of the fire suppression or line organization. These functions are referred to as staff functions and include financial management, personnel management, fire protection engineering, fire prevention, firesafety education, fire investigation, research and planning, maintenance, training, community relations, communications, safety and health, and other activities.

5-6.2 As soon as the fire chief begins to assign any of the functional areas to other officers or personnel for attention, these people assume staff responsibilities. These staff officers and personnel do not have "line" authority when performing "staff" functions. In dealing with line officers the staff person is acting for the fire chief or for the line officer to whom the staff person may be assigned.

Especially in small departments, line officers may also have additional staff functions or assignments.

5-6.3 Staff functions should be established by policies or regulations of the department. Staff activity should be titled based on the function performed, not the rank of the person in charge. Personnel from any level of the department may be utilized to perform staff functions. Nonsworn/non-uniform personnel may also be utilized.

5-7 Fire Department Organizational Plans.

5-7.1 Fire departments, like other organizations, are comprised of a group of people working together in a coordinated effort to achieve a common set of objectives. In order for a department to function effectively, it should have an organizational plan that shows the relationship between the operating divisions and the total organization. An organizational plan does not preclude the necessity for active leadership; it merely provides the means by which the organization can be managed effectively. Organizational charts showing typical structures of small, medium, and large fire departments are shown in Figures 5-7.1(a), 5-7.1(b), and 5-7.1(c).

5-7.2 The manner in which fire departments are organized is dependent upon the size of the department and the scope of its operations. Organizational plans are designed to illustrate or show the relationship of each operating division to the total organization. It is essential that each fire department have an organizational plan that reflects the current status of the department. Some departments find projected plans useful for budgetary and planning purposes. A good plan is essentially a blueprint of the organization.

Accompanying the organizational plan should be a list of responsibilities or a job description for each position. In smaller departments, a single individual may have responsibility for more than one function. For example, a single officer may be responsible for training, safety, and maintenance. This should be detailed in the job description.

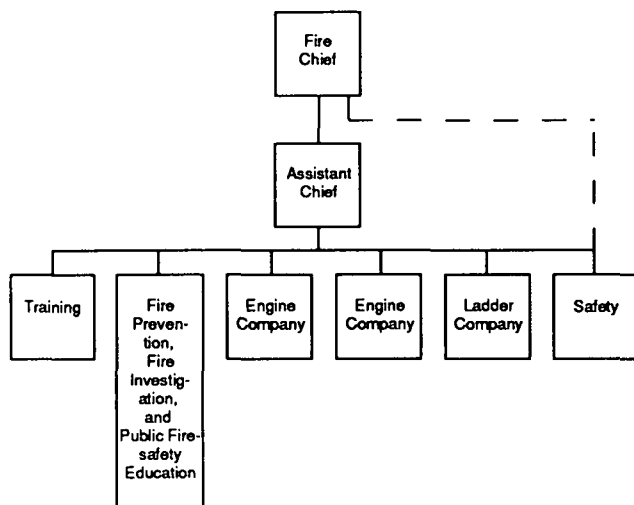


Figure 5-7.1(a).

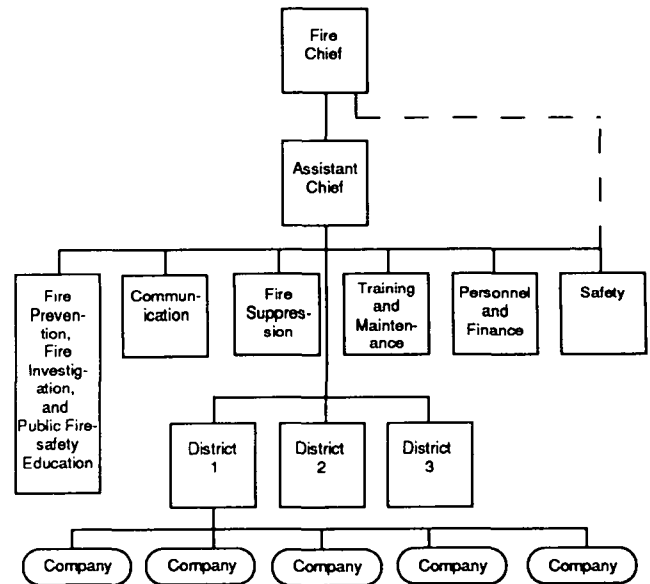


Figure 5-7.1(b).

5-8 Intercommunity Organization.

5-8.1 Every fire department should have an effective mutual aid arrangement with neighboring jurisdictions. Where appropriate, this should include automatic response on first alarms. The concept contemplates joint response of designated apparatus and personnel on a predetermined running assignment basis.

5-8.2 Mutual aid concepts should be considered on a regional basis. In an effective mutual aid arrangement, each fire department should retain reserves of personnel and apparatus. Participating fire departments that have no reserves can only receive aid.

5-8.3 Mutual aid agreements should be in writing. They should address such issues as liability for injuries, cost of service, authorization to respond, staffing, and equipment including the resources to be made available and the designation of the incident commander.

Traditionally and legally, overall command of the incident is vested with the senior officer of the jurisdiction having the emergency.

Some areas use consolidated dispatching to coordinate the response of fire companies to assist an outside fire department. The management of responses can be made easier by utilizing computerization, "running cards," and other advanced planning.

5-8.4 Training of the personnel of all fire departments should be comprehensive and standardized to produce an effective fire force for mutual aid to be effective. All personnel should have received sufficient training to assure uniform operations. Operational methods should be as uniform as practicable.

5-8.5 Apparatus responding to mutual aid incidents should be equipped with radios that allow personnel to communicate with the incident commander and sector of-

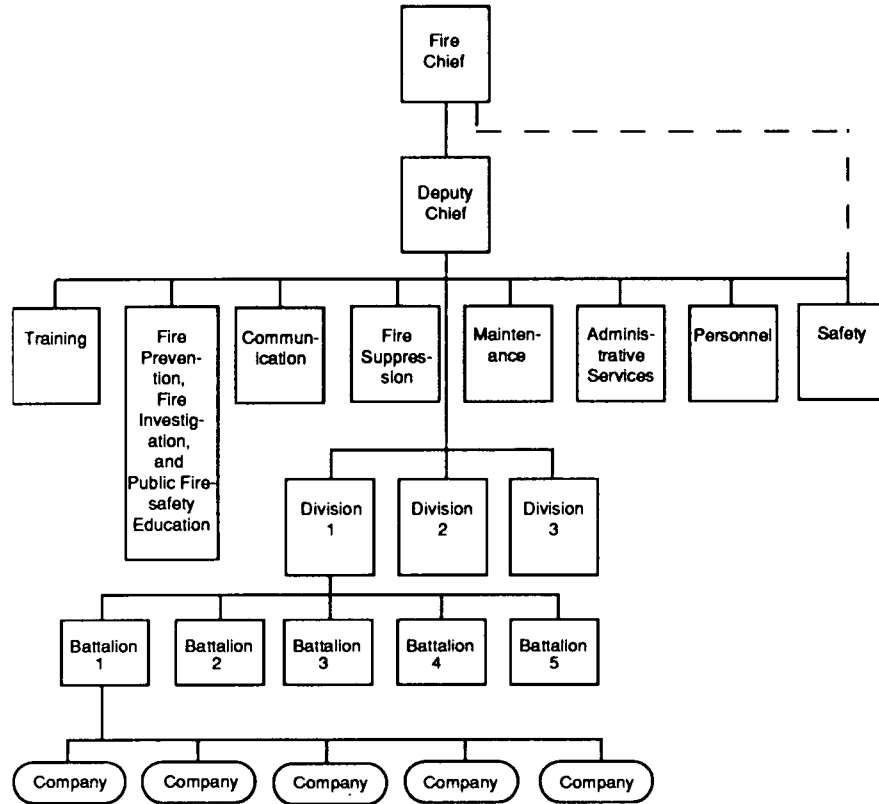


Figure 5-7.1(c).

ficers. Separate frequencies should be provided that allow mutual aid companies to communicate without disruption to their local frequency.

5-9 Intracommunity Cooperation or Consolidation.

5-9.1 To save money or to provide the necessary personnel and equipment to do an adequate job, some local government jurisdictions have combined compatible functions, such as communications, maintenance, and other services that can be shared with an overall increase in efficiency. In combining such functions, the fire chief should ensure that the ability of the fire department to effectively deliver emergency services is not impaired.

5-9.2 There is a direct relationship between the functions and objectives of a building department and a fire department, as both departments are involved in the enforcement of safety codes to properties within the jurisdiction. In several jurisdictions these functions have been successfully combined by making the building code enforcement program a part of the fire department organization structure.

5-9.3 To effectively deliver emergency services, the fire department must rely on other resources, such as police departments, public works departments, and water departments. There must be a positive ongoing relationship with these organizations to facilitate the necessary cooperation under emergency conditions.

Police and fire departments should coordinate their efforts in locating fire hazards, providing crowd and traffic

control at emergency incidents, investigating fires, and providing other emergency services to the public. This coordination should recognize that the two departments have separate and distinct responsibilities, but must operate with an effective level of interaction to support each other's missions.

5-10 Regionalization of Operations. When politics and geography permit, smaller departments should be combined to make a fire department of a size that is capable of giving adequate protection to the defined area. This can be accomplished by the creation of fire department districts by the municipalities concerned, or by transferring management of the fire department function to a regional government unit.

Intergovernment cooperation should also be considered in areas such as communication, automatic aid, EMS delivery, fire investigation, central purchasing, maintenance, and training. These are accepted practices in many communities.

Chapter 6 Financial Management

6-1 Accounting.

6-1.1 The fire department should have a system of accounts for financial administration. The system should keep

a record of funds received by the department and funds expended. Furthermore, the system should enable the fire chief to analyze how the money is spent and should provide analytical information to support the continuing challenge of finding more cost-effective ways of operating.

6-1.2 The system of accounts should include books of original entry and ledgers. Books of original entry should include a general journal and register for cash receipts, purchase orders, contracts, material issued, and payroll. There should be a general ledger, and subsidiary ledgers for revenue, appropriation expenditures, stores, bank funds, and property. If, as an independent fire district, the fire department performs municipal functions, it should have additional books of original entry for bonds and interest, for investments, and for insurance. It should have additional ledgers for tax rolls, individual unit taxes, special assessments, bonded debt interest payable, and investments.

Many of the recommended records can be maintained through appropriate computer technology. Care should be taken to maintain permanent records as well.

6-2 Budgeting.

6-2.1 A budget is the work program of the fire department expressed in dollars and cents. One part lists the services, activities, and projects with the estimated expenditure for each service. The other segment identifies the income to be used to meet the total expenses. Budgets are usually for a fiscal year. A final budget is adjusted when the appropriation items are known. In a municipality, the final fire department budget requires approval of the authority having jurisdiction such as the city council, township, or fire district. In an independent fire department area, the chief would usually be required to submit the budget to a governing body.

6-2.2 Salaries, hours, and benefits are principal factors in determining cost of the service and the amounts of money that must be appropriated and administered. The authority responsible for fiscal administration (city council, mayor, supervisor, or board) should consult with the fire chief on negotiations because of the potential financial impact to the fire department budget. There should be an established policy of periodic review of work hours, wages, and benefits to make sure they are competitive with comparable fire departments providing the same level and quality of services.

6-2.3 Relation to Planning. Good budget monitoring should call for the analysis of conditions and operations for the prior and current budget. What is learned from this analysis should be reflected in the program on which the succeeding budgets are based. Since annual budgets will inevitably be affected by the financial arrangements that will be made over a period of years, an annual budget would be supplemented by a budget for longer periods. Fire department long-range proposed budgets for five and ten years should be considered. Proposed budgets for long periods should show the approximate priority of the financial needs and resources.

A budget for any current cycle is inevitably influenced by past commitments, established standards of service, existing organization structure, current methods of operating, and future needs. The budget making process, being

annual as a rule, provides a chance to appraise the importance of the established practices at intervals. (See *Chapter 4, Fire Risk Analysis and Planning.*)

6-2.4 One of the most serious problems in a fire department is staffing for effective fire fighting companies. In allocating personnel to fire fighting companies, the fire chief should allow for the absences (sick leave and vacations) so as not to run short of personnel. The chief should keep attendance records of individuals and analyze these to provide figures for the specific conditions in his department. To fill vacancies due to sickness, vacations, and absences in excess of those taken care of by relief personnel or other arrangements, the fire chief should be authorized to employ available off-duty members, and pay for such duty of off-duty members should be included in the department budget.

The number of personnel required to fill a position may be determined by dividing 168 (7 days times 24 hours) by the number of hours in the duty work week. Due allowance should be provided for anticipated sick leave, absences, and vacations for personnel.

6-2.5 A list of capital projects should be made and studies and surveys undertaken to establish the priority of these projects.

In long-range budgets, a distinction has to be made between expenditures for normal continuing operations and those for capital improvements. The latter are long-term assets with larger costs. Once these two factors are identified, a fire department can set up a long-term operating budget that will keep the two types of cost coming along at a rate that can be met by a reasonable, uniform tax rate.

Long range planning involves listing and prioritizing the capital items necessary for the next five or ten years.

6-2.6 Revenue programs, pay-as-you-go, leasing, setting up of reserve funds, and the borrowing of funds should be adapted to what is best for the individual department. The financing of physical facilities should be coordinated with the overall financial policies and capital improvement financing of the city. In place of borrowing, communities should consider establishing reserve funds. These funds could be set up by paying into them an agreed upon portion of the annual income assigned to the fire department. The funds should then be drawn on for the intended purchases.

Borrowing obviously adds to the cost of expenditures for fire stations, equipment, and other physical facilities. Some communities finance the purchase of major equipment items by the issuance of bonds. Another possibility is the leasing of equipment (or purchasing it under a lease that eventually transfers the title to the governmental body). Leasing or lease-purchasing may be the most expensive of the methods of financing capital improvements, but it may make facilities immediately available.

6-2.7 The financial functions of budget control should be kept under the responsible direction of the fire chief in all departments, even the largest. Within a local jurisdiction's budget control operation, the fire chief should work closely with the chief administrative officer and department of finance on budget matters affecting the department. For assistance, the fire chief should have administrative and

other technical support in proportion to the department's operations.

6-3 Purchasing.

6-3.1 The fire department's record on purchases should be sufficiently detailed to permit the chief to have data available for actual cost estimates needed for planning and budget purposes. Records should be maintained on requisitions, quotations received from bidders, purchase orders, and general correspondence. Requisitions and purchase orders should be numbered and filed by number. A commodity price card file and a vendors' catalog file should be maintained.

The records that the fire department must keep on its purchasing operations will vary somewhat with the size of the department. In those jurisdictions where central purchasing is in effect, certain information may be available in central files. A commodity price card record file is particularly useful on fire department items. It tells how many of a given item are used, price experience with each item, and has a list of vendors from whom it would be useful to solicit bids at the time of a new purchase.

6-3.2 Standard specifications should be used for the purchase of major items. The fire department should have a file of specifications for major items, including fire apparatus, protective clothing, and fire fighting tools and equipment. References should be made to the applicable NFPA standards and specifications that have been prepared by technical associations and testing laboratories. (*See Chapter 17, Equipment and Buildings.*)

It is not absolutely necessary to standardize all articles purchased, particularly small items. However, specifications for major items help the fire department to define specific requirements. The fire department should identify acceptance tests on motorized fire equipment, hose, and other items.

Economies of scale have been achieved through the use of joint purchasing programs by fire departments on a regional basis. Efforts should be made to participate in such programs.

6-3.3 A standard form should be prepared to be used in invitations to bid or requests for quotations on items to be purchased. Such a form should contain all of the general conditions applying to the purchase. To it should be attached descriptions and specifications applying to each item. If it is required that the lowest or best value bids be accepted, the fire chief should be permitted to use judgment, within established guidelines, in deciding which bid is to be accepted. Considerations within such judgment decisions should include long-range cost of operations, maintenance, dependability of equipment, and reliability of supplier.

6-3.4 The fire chief should require a written report on goods received to show that they have been inspected and comply with the purchase order as to specifications, quantity, and cost and that they have complied with any test procedures specified.

6-4 Stores.

6-4.1 Inventory control makes it possible to know in whose custody major items are held. Items for consump-

tion should be released from stores only on the basis of properly signed requisitions to assure authorized use. Departments with a maintenance shop should require the shop to keep inventory records on major equipment. Companies should be charged with equipment issued to them. Equipment purchases for, or issued to, a training school, communications office, or other bureau should be charged to those bureaus.

6-4.2 There should be a record card or file on each parcel of land the fire department uses or has in custody, on each building, on major pieces of motor fire equipment, on small items of equipment and individual items of supplies. With each of these should be kept purchase records of vendors and prices. A physical inventory taken at least once each year should be checked against these basic records.

Chapter 7 Personnel Management

7-1 Personnel Standards.

7-1.1 Objective. The personnel standards of a fire department should establish and maintain a competent and well-trained force by attracting qualified personnel and providing an interesting and useful career from recruitment to retirement.

To accomplish this objective, hours of work, wages, and working conditions for fire department personnel should be at least equal to skilled personnel in the community or other skilled employees of a municipality. In accomplishing this objective due consideration should be given to provincial, state, and federal laws affecting such factors as age, race, and sex.

7-1.1.1 The fire chief should continuously review, revise, and execute the personnel standards of the department and issue the orders necessary for administering personnel procedures.

The fire chief may delegate authority to provide specific direction and control over members of the department, and these delegations should then take care of the mechanics of personnel administration. The fire chief may assign an assistant or deputy chief to specialize in personnel administration in order to provide an effective department personnel office. The specific personnel activities conducted by the fire department will depend to some extent on the character and extent of personnel services provided by municipal, state, or federal personnel agencies.

State and provincial legislation and the activities of independent municipal civil service commissions frequently affect the personnel policies of municipalities and fire departments. Such legislation may set standards of pay, hours, working conditions, and other features of personnel policy so as to limit the authority of the municipality and fire department. Final decisions affecting the personnel program for a fire department are properly made by the local governing authority or other authority having jurisdiction. The governing council or board defines the general policies of the department relative to salaries, methods of recruitment, promotion, conditions of employment, retirement, and other separations from the service

within the scope of its responsibility. The governing bodies' power to make financial appropriations gives it continuous control over the number and quality of department members.

The complexity of personnel management in larger cities has made it desirable to handle the administration of certain personnel functions on a central basis for all departments. A competent central personnel agency can perform valuable services of a technical nature for the fire department.

7-1.1.2 The fire chief should have authority to determine station and platoon or work group assignment for each member of the department. The city council (or other governing board of the fire department), or the mayor, city manager, or other chief executive officer of the municipality, should not limit the fire chief's authority for this function. This management authority is essential to the proper utilization of working forces. The fire chief should be authorized: (1) to place the member in a position that will make the greatest use of that individual's skill and knowledge, (2) to train members in different kinds of work by assigning them to a variety of positions so that they may later be advanced to more responsible work, (3) to bring about maximum productivity of the working forces by moving members about to take care of peak loads as they occur in various parts of the organization, and (4) to alleviate situations where there is a personality clash between a member and the supervisor that could be corrected by assignment to another supervisor. Great care must be taken not to make transfers punitive because this could adversely affect the morale of the entire department.

The company officers will make the actual work assignments within their general authority. A distinction should be made between the permanent assignment to regular stations and work groups and "details" that are made by the appropriate supervisor to take care of temporary situations such as absences. There is always a danger that a "permanent detail" will be made in cases where there is no budgetary provision for an essential position.

7-1.2 Standards Applying to All Members.

7-1.2.1 Each member of the department should be kept informed of what is expected in the way of attendance and other duties. Each member should be provided with a personnel manual or set of departmental regulations in which are explained working hours, leaves, vacations, and the responsibility of the member for personal protective equipment issued by the department, such as helmets, coats, and boots. The information on personal equipment may cover uniforms or uniform allowances, bedding linen, and laundry depending on how the department handles these matters.

7-1.2.2 A system of ranks should be established to provide officers for the department and budgetary provisions should be made for them. (The usual ranks for which provision should be made are Fire Chief, Assistant or Deputy Chiefs, District or Battalion Chiefs, Captain, Lieutenant, and Fire Fighter.) If a position classification system is used, it should be correlated to these ranks. Pay scales for special assignments in a given rank should be established as appropriate for the qualifications required for the assignment and the work to be performed.

Officer ranks are necessary to establish command responsibilities. A proliferation of special ranks for special assignments is undesirable as it tends to require too many "civil service" examinations and procedures and to freeze personnel in specific jobs. The procedures most desirable are those where the chief can make special assignments with considerable freedom without prejudicing a member's opportunity for promotion. Ranks should reflect the level of responsibility and not specific detailed duties. NFPA 1021, *Fire Officer Professional Qualifications*, should be used for determining the qualifications of personnel to fill any officer position.

7-1.2.3 Departmental regulations should describe the procedures to be followed in cases where disciplinary action is necessary. It should be administered by the fire chief and fire department officers. There should be some relatively informal procedures for dealing with minor disciplinary matters such as tardiness in attendance or in completion of routine duties or reports.

For serious violation of departmental regulations, formal disciplinary procedures should be adopted. An important objective of discipline is to maintain an effective level of performance by the members of the department. Good leadership and management involves positive discipline and a minimum of punitive action. Outside boards of discipline sometimes exist because there has been a history of inept administration of disciplinary procedures. These are often cumbersome agencies that interfere with efficient management. If the department has its own well-considered procedures, including provision for appeal, most cases can be satisfactorily handled. Recourse to court procedures is available both to the department administrators and to any member of the department who may feel the disciplinary action is unreasonable. Performance rating systems are sometimes employed, but they should not be a substitute for directed leadership and positive discipline.

7-1.3 Personnel Records.

7-1.3.1 As soon as a new member is added to the department, a file should be set up for their personnel records. This file should include all papers with information about the individual person, including commendations and discipline records.

7-1.3.2 The master file on each member of the department should be supplemented by a single sheet or card on which data is kept for ready reference. This data should include name, date of birth, height and weight, previous occupations, special aptitudes, work assignments, service records, and records of performance at fire department training courses.

7-1.3.3 Attendance records should be reported as a part of the procedures for preparing the payroll.

7-1.4 Health and Safety.

7-1.4.1 All fire department members should be physically fit for the duties they are expected to perform. The fire department should adopt a mandatory physical fitness program that addresses the particular demands of fire department activities. The program should be under the direction of qualified medical personnel.

7-1.4.2 The fire department should adopt a mandatory health maintenance program that includes medical standards by age and fire department activity. Personnel should be assisted in meeting the standards of such programs.

7-1.4.3 All members of the department should be furnished with an annual medical and physical examination. This should be performed by the fire department physician or the same medical facility that gives such examinations to candidates for the department. The confidentiality of personal health records must be maintained. The medical reports should establish the ability of each member of the department to perform emergency duties. When members are found to be unfit for emergency duties, or to perform the functions of their positions, the fire department should attempt to assist the member in correcting the problem or reassign the member to duties that do not create a hazard.

7-1.4.4 The fire department should adopt an occupational health and safety program that complies with NFPA 1500, *Fire Department Occupational Safety and Health Program*, and other applicable laws, standards, and regulations. Safe work procedures should be stressed and emphasized throughout a person's career. Accidents and injuries should be investigated and the findings should be included in the member's personnel record and appropriate actions taken. Every supervisor is responsible for ensuring that their employees use and maintain safety equipment in accordance with department regulation as well as state, provincial, and federal legislation.

7-1.4.5 The fire department should appoint a safety officer who has the duties and responsibilities as defined in NFPA 1501, *Standard on Fire Department Safety Officer*.

7-2 Selection of Personnel. The same goals of personnel selection as outlined below can be achieved with equal or higher quality results at less cost by utilizing college preemployment education and training programs. These college programs can provide personnel that meet education and training requirements, medical requirements, and physical agility requirements before employment by a fire department. (See *Appendix B for a discussion of the College Program in Southern California*.)

7-2.1 Recruitment. The fire department should establish a recruitment program. It should be coordinated with procedures of municipal or other personnel or civil service agencies having jurisdiction. It must be in accordance with federal and state requirements. It should be recognized that state regulations may vary and may be more restrictive than those of the federal government. The recruitment program should consist of the following steps:

(a) Conducting an active search for the best qualified persons available for membership in the department and encouraging them to apply for appointment. In an effort to reflect the socioeconomic makeup of the community, the department should actively recruit department candidates from within the community. The recruitment process should include lateral entry of candidates meeting the respective qualification level as outlined in the Standards of the National Professional Qualifications System.

(b) Rejecting without examination candidates who show

on their application form that they clearly fail to meet department standards for entrance.

(c) Testing to measure aptitudes and physical ability. Each candidate that receives a passing grade on the aptitude and physical ability tests should be interviewed. The oral interview should measure achievement and motivation characteristics.

(d) Subjecting candidates to a thorough physical and medical examination, which they should pass in order to fully perform fire department work.

(e) Investigating the character of candidates by interviewing former employers, personal references, neighbors, and others familiar with their record, and taking fingerprints for police record checkings.

(f) Requiring appropriate driving licenses before the completion of the recruit training.

7-2.2 A minimum age limit should be specified to assure that members are physically and mentally mature to perform fire fighting duties.

7-2.3 A high school education, or state recognized equivalent, should be required as a minimum. The wide variety of activities in which fire fighters now participate have made it desirable that recruits have higher levels of training and preparation than that which can be secured in elementary schools. It is not practical to recognize experience in lieu of education because entry personnel for the fire service should be recruited at an early age, which may limit their experience. Lateral entry personnel will bring higher levels of experience and training to the department. It is desirable to give preference to candidates that have taken Fire Science, Fire Technology, and Public Administration college courses.

7-2.4 The candidate's application should require a full employment history and personal references. When candidates report for an interview or tests, photographs, fingerprints, and signatures should be taken for identification purposes. The applicant's credit rating should be checked to eliminate irresponsible persons. Police and motor vehicle records should be obtained to eliminate persons with antisocial behaviors. However, the investigation of a candidate's background must be conducted in accordance with provincial and federal legislation. Past history may be a strong prediction of future performance.

7-2.5 Job related physical requirements should be stated in applications to eliminate candidates who are physically unqualified. A series of tests should be given after the medical examination to determine the applicant's strength, coordination, agility, dexterity, and endurance. Samples of actual fire service tasks will provide job related physical requirement testing.

7-2.6 The fire department should adopt job related medical standards unless those of a personnel agency serving it are adequate. It should require all applicants to pass an examination to reveal any physical handicaps, deformities, disease, organic deficiencies, or the use of medication or illegal drugs that may impair performance. It should designate the physical or medical facility that is to be responsible for the examination. All applicants should meet

the medical requirements as outlined in NFPA 1001, *Fire Fighter Professional Qualifications*.

7-2.7 It is advisable that job related written, oral, and performance tests for aptitudes and general knowledge be given to candidates. In most departments, aptitudes should be determined in a preliminary way at the time the candidate is interviewed, and from reports of supervisors and the training officer during a period of entry level or probationary training. General knowledge testing and measures of reading, thinking, and deciding should be validated for job relatedness and freedom from illegal discrimination.

7-2.8 For a period of at least 12 months before permanent appointment to the department, applicants should be assigned to a probationary training program and supervision. The fire fighter should meet the requirements for Fire Fighter I and Fire Fighter II of NFPA 1001, *Standard for Fire Fighter Professional Qualifications*, before permanent appointment. Following successful completion of basic training, the fire fighters should be assigned to a fire company for a test of how well they fit into fire department activities and routine. Periodic written reports or individual significant event reports from their supervisors and from the department training officer should be used to evaluate the cooperation and ability of the individual to be a successful member of the department.

Fire fighting is primarily a team function, especially in the case of a very large fire or emergency. Furthermore, the everyday life of a fire fighter is a group life, and members must have a high degree of ability to get along with other people. It is desirable that the candidate work under at least three supervisors during probation and receive a satisfactory written rating from each supervisor before permanent appointment. Prior to permanent appointment, a review board composed of the employee's supervisors should make recommendations as to the person's permanent appointment.

7-2.9 Applicants should be kept in probationary status until all phases of the selection process are completed including the period of probationary training. The chief should dismiss any candidate at any point in the period of probation for unsatisfactory performance after reasonable written warning and notice.

The fire chief's authority may be limited to recommending action where a personnel agency outside the fire department has jurisdiction over probationers or where another agency makes the actual appointments. Where a preemployment training procedure is not used, it often turns out that those who can meet physical and written tests for candidates cannot meet the actual performance requirements of department work. Many candidates voluntarily drop out when they find that they cannot perform the work during the probationary period. It is preferable to take advantage of preemployment fire science courses and basic training academics before probationary employment is offered to a candidate. This is more equitable to the candidate and to the taxpayers.

All applicants should be required to complete an intensive program of work and training in the department's operations with a satisfactory rating. The rating should be based on written reports from supervisors to whom they have been assigned and from the fire department training

officer. A satisfactory rating should include passing an examination to discover the extent to which they have assimilated information on fire department practices. Any candidate failing to meet the qualifications should be discharged at this point.

7-3 Promotion of Personnel. A printed career development guide should be provided to all members upon entry into the fire department. The career development guide should outline the opportunities and requirements for career advancement, including education, experience, time in grade, equal opportunity, affirmative action, and other considerations.

In addition to the traditional promotional program described below, fire departments should not overlook well organized and operated education programs available locally, regionally, and nationally. Some of these may include community colleges, universities, state fire academies, and the (U.S.) National Fire Academy.

7-3.1 The fire department should establish a documented job related personnel evaluation program for internal and lateral entry promotion to the various ranks. It should be coordinated with procedures of municipal or other personnel or civil service agencies having jurisdiction and should consist of the following steps:

(a) Preparing lists of members for in-service training for promotion to company officers, chief officers, and to positions requiring special qualification.

(b) Arranging assignments so that officer candidates may have a variety of duties (in several companies or districts) and experience in various staff work such as fire prevention, training, maintenance, and communications.

(c) Requiring a formal procedure whereby supervisors report on candidate's aptitudes, participation, and ability to function as part of a company for the purpose of evaluating the candidates' qualifications for promotion. Evaluate lateral entry candidates for inclusion or rejection on merit.

(d) Requiring candidates to complete an in-service training program, based on a job analysis for each position, and the passing of an examination on such training. Also, some departments require specialized training or completion of specific job related classes before candidates become eligible to compete for promotion. Lateral entry candidates may have already completed the required levels of preparation.

(e) Arranging assignments so that interested members may pursue courses for academic credit or college degrees at accredited and approved colleges and schools.

(f) Appointing candidates to positions after the procedures of the fire department as well as those of the personnel agency having jurisdiction have been met.

7-3.2 Seniority should never be the sole basis, nor a decisive factor, in promotion.

Some fire departments rely heavily on seniority as the determining factor in promotion. It is obvious that this has an adverse effect on members who have a capacity for more rapid advancement than their seniority would warrant or permit. At the same time, seniority may tend to push some members into positions beyond their ability with adverse effect to themselves, to the department, and to the public. Seniority is recognized adequately if the fire department

provides step raises of pay in grade. Older members do not need promotional credit as their exposure to more training and their experience can give them advantages over the younger members in promotional examinations. Where seniority is a major factor in promotion, ambitious individuals cannot consider fire department service as a career, nor will the interest of the public best be served by such a system.

7-3.3 Internal and lateral entry candidates for company officer should demonstrate proficiency in the respective officer level to which they aspire as outlined in NFPA 1021, *Fire Officer Professional Qualifications*. In addition to service as a fire fighter, such candidates should have completed a significant tour of duty in at least one phase of staff work covering fire prevention, training, maintenance, or communications. Questions in an examination for promotion, whether given by the fire department or a personnel agency, should be related to the principal duties of a company officer, which are:

- (a) To act as leader and instructor of a small work unit of people and related equipment and vehicles;
- (b) To respond to alarms to which the unit is assigned and to direct the operation of the unit;
- (c) To have sufficient knowledge of fire strategy to be able, in the absence of a chief officer, to make a proper size-up or appraisal of a large emergency and assume initial command;
- (d) To be familiar with the district to which assigned and to conduct and supervise inspections for fire hazards;
- (e) To manage a fire station, supervising station maintenance, care of apparatus, and stores.

7-3.4 Internal or lateral entry candidates for chief officer should meet the respective designated officer level as outlined within NFPA 1021, *Fire Officer Professional Qualifications*.

7-3.5 Internal and lateral entry candidates for promotion to positions requiring special qualifications should have education and experience satisfactory to the fire department for the duties of the position. They should meet the requirements necessary for the effective performance of duties required of them. They should meet the professional qualifications of the specific position as contained in NFPA 1021, *Fire Officer Professional Qualifications*; NFPA 1031, *Professional Qualifications for Fire Inspector*; NFPA 1033, *Professional Qualification for Fire Investigator*; NFPA 1035, *Professional Qualifications for Public Fire Educator*; and NFPA 1041, *Fire Service Instructor Professional Qualifications*.

7-4 Personnel Benefits Programs and Retirement.

7-4.1 It is expected that personnel benefits programs normally available to the employees of the community will be extended to the fire service personnel.

7-4.2 A retirement plan should be designed to aid recruitment by making the fire service more attractive to persons who might otherwise seek employment in private industry or in other governmental agencies providing retirement protection. The retirement plan should include vesting and reciprocity sections.

7-4.3 Compulsory Retirement Guidelines. A job related compulsory retirement system should be adopted. The system should discern ability to perform the job in terms of mental and physical fitness, and should not be confused with the voluntary retirement that is based on age and years of service.

The annual medical examination furnished by the department can provide the basis for appropriate personnel decisions and actions.

7-5 Personnel Practices.

7-5.1 In the formulation of personnel standards, the fire chief should include the opinion of members of the fire department as individuals or as supplied by any employee organization where such exists. There should be procedures by which members may submit constructive suggestions and report grievances on working conditions. Members should also be consulted in the department's policies toward programs for the welfare of members such as group insurance, group medical and nursing care, member assistance programs, credit unions, members' social and athletic clubs, and recreational facilities. The practical reason for such consultation is that it helps in providing understanding and support for personnel standards and policies.

7-5.2 The fire chief should ensure that lines of communication are open within the department. Feedback from the ranks can head off a situation before it becomes a serious problem. A technique that can improve communications is the institution of an organizational development program that involves personnel in group communication and problem solving sessions. However, the best insurance for open communications is the attitude and example set by the fire chief.

7-5.3 Educational Programs for Department Personnel.

7-5.3.1 Educational programs for department personnel should be directed to all members of the department. They should be of a continuous ongoing nature capable of responding to changes in the community's perception of the department. Departments should encourage and provide incentives for employees who continue their education to improve their fire science and management-related skills.

7-5.3.2 Educational programs should inform personnel of methods to communicate to the community served and to respond to their existing needs consistent with the objectives of the department. In addition, they should provide department members with the skills necessary to perform successfully in a rapidly changing fire service.

Chapter 8 Training

8-1 Functions of Chief Officers.

8-1.1 The fire chief is responsible for the training program of the department and should designate a chief officer to act in administering the program. The fire chief should budget for training facilities, expendable supplies, training aids, and training staff, including both in-house and guest instructors. The department should utilize train-

ing services provided by the National Fire Academy and state, provincial, or regional training programs where available.

For small departments, it may be possible to establish and staff a training facility for an appropriate region, such as a county. Such a training facility can be created by joint action of any group of departments. By joint contract or articles of association, the several departments can provide for the government of a joint facility. Each department supporting the facility would be expected to budget for its proportionate share of expenses for facilities, supplies, equipment, and staff.

8-1.2 Battalion chiefs and other chiefs in the line organization should fully support and be required to see that the training activities as prescribed by the training officer are carried out within their respective commands. They should be required to coordinate training with other activities, to make reports on training completed, and to assist the training officer in evaluating the effectiveness of the program.

8-2 Functions of Staff Officers.

8-2.1 The staff officers in charge of fire prevention, maintenance, communications, and other staff bureaus should be responsible for special training needed by the personnel assigned to their particular staff function. They should coordinate this special training with the other programs of the department and with the training officer.

8-2.2 All officers should assist the training officer in determining the subject matter, number of hours, and other details of training related to their functions that must be given to all members of the department.

8-3 The Training Officer.

8-3.1 The training officer should recommend the subjects in which training is to be given. The program should be related to the personnel needs of the department and should utilize all available resources within the community. See the NFPA-published Standards of the National Professional Qualifications System.

8-3.2 The training officer should recommend the performance standards to be covered by the training program and develop schedules to assure that the respective members of the department meet the standards. Instruction should be either at the department's own facilities for training, in stations, or at regional fire department training schools that may be available. There are often other facilities within the community that can be utilized for personnel training.

8-3.3 The effectiveness of department training should be continually evaluated by department staff, using fire critiques as an aid to such evaluation. At least annually, the program should be reviewed with a report to the chief suggesting new techniques or equipment for changing conditions. The training officer should witness operations at emergencies and at training sessions from time to time to determine progress and to see that training is uniform and that procedures are followed as directed.

8-3.4 Staff officers and company officers should make

reports on training sessions to the training officer. The training officer should review statements of staff and company officers as to the performance of members of the department assigned to training under these officers. Performance records of members of the department taking instruction at a training school other than one operated by the department itself should be obtained. The training officer should evaluate the performance of members assigned for instruction at the department training facilities and should be responsible for seeing that proper records and evaluation of training completed are furnished to the chief for the personnel file of each member of the department.

8-3.5 The training officer should be responsible for the work of department personnel assigned as instructors or assistants. This should include periodic evaluations of each instructor, reviewing such aspects as lesson preparation and instructional techniques. All instructors should meet the professional qualifications of NFPA 1041, *Fire Service Instructor Professional Qualifications*.

8-3.6 The training officer should be responsible for the operation of training equipment, fire service library, buildings, training aids, and other facilities. Departmental rules should cover the use of shared facilities and equipment.

8-4 Training of Company Members.

8-4.1 Company officers should be responsible for the training of members of the company assigned to them since the unit must work together as an effective team.

8-4.2 At least two hours of each tour of duty (at least four hours where shifts are 24 hours) should be devoted to training activity. This activity should be in the form of classroom instruction, practice drills, familiarization inspection, or pre-fire planning.

8-4.3 The training officer should recommend the subject matter for each training session so that periodically all personnel in the department complete training in specified subjects. The training officer should generally supervise the training program and review and approve lesson plans prepared by company officers.

8-4.4 Company officers should be required to complete the training scheduled, putting in the number of hours of training and covering the subject matter as developed by the chief and the training officer. They should coordinate the various daily company activities so that members assigned receive the scheduled training. They should be required to coordinate an individual's training with his off-days so that each member receives all required training in spite of sick leave and vacations. The training schedules of individual companies should be varied for effective use of available training aids.

8-4.5 Company officers should use lesson plans with a standard format so that each training session can be measured against a planned program of instruction. They should exercise versatility in using standard lesson plans to reflect the conditions in the company's principal response district.

8-4.6 Company officers should periodically evaluate members assigned to their company to determine that the

training is actually effective and to provide a basis for evaluation of the performance of individuals.

8-4.7 Company officers should evaluate the performance of assigned members at fires and drills to ensure that they are utilizing the techniques covered by the training program. Critiques of all company operations at fires should be held to discuss in general terms its performance as a team. Company officers should be alert to deficiencies of individuals or the company as a whole. They should repeat drill sessions as necessary to correct any deficiencies.

This requirement is one on which the training officer and chief should insist to avoid perfunctory training work.

8-4.8 Company officers should be required to furnish the training officer, through channels, reports on training sessions held, subjects covered, and hours of training. Reports on the performance of members of the company receiving training should be made by the company officer and sent to the training officer for further evaluation.

8-5 Training of New Personnel.

8-5.1 New personnel should be given comprehensive training before engaging in emergency duties to ensure that the trainee can work safely and effectively at fires. This should be a foundation for subsequent in-service training.

8-5.2 The course of probationary training should be consistent with the performance objectives as stated for the designated fire fighter level within NFPA 1001, *Fire Fighter Professional Qualifications*.

8-5.3 The course duration for new personnel instruction should be at least the minimum number of hours necessary to meet the performance objectives as stated within the designated fire fighter level of NFPA 1001, *Fire Fighter Professional Qualifications*. This entry training should be prior to serving as a member of a company during the probationary period.

8-5.4 Probationary training should be under the direction of the training officer.

8-6 Group Training and Evaluation.

8-6.1 The group training should be provided to enable the training officer to evaluate the ability of each company group to properly use assigned equipment. It should be provided to update operating methods and to demonstrate, or provide practice with, new equipment or methods. It should also bring pumper and ladder companies together to enable the training officer to evaluate operations of companies as a group utilizing the department's standard operating procedures as a basis for this evaluation.

8-6.2 Each shift of each company should be assigned to the training officer periodically for group training. This assignment should be for enough times, or a long enough single period, so that each member can complete the program objectives.

8-6.3 Annually, or more often as appropriate, the training officer should furnish the fire chief with a report on the performance of each company in group training sessions.

8-7 Education and Training of Company Officers.

8-7.1 Courses for the education and training of personnel to meet minimum qualifications as company officers should be provided by the training officer. Officer candidates should be relieved of company duty for the hours during which such courses are given. Whenever possible the scheduling of such courses should not cause the member to miss regular training periods. Departments that do not provide comprehensive training courses should arrange for courses of training at any available educational institution or fire department training facility. (See *Appendix B*.)

8-7.2 The subject matter of training courses should be designed to achieve the stated performance objectives within specific officer levels of NFPA 1021, *Fire Officer Professional Qualifications*.

Candidates should pass an examination on the above objectives as well as an examination on the complete training course. Candidates should be evaluated on the basis of their examination grades and class participation and in exercises to test their performance of officers' duties. (See *Appendix B*.)

This is primarily to measure the effectiveness of the instruction. These examinations and evaluations can serve the purposes of the fire department as part of the qualification for promotion, but where a separate personnel agency has jurisdiction, the candidate may also have to pass other examinations to satisfy the personnel agency concerned.

8-7.3 The training officer should see that the subject content of courses for promotion is appropriate, coordinate the scheduling of courses, provide the necessary instructors, and give the examinations. The training officer should also be required to advise the fire chief as to the candidate's overall performance in the training courses and in evaluation of the candidate's suitability for appointment as a company officer.

8-8 Other Training. Special and advanced training is desirable. Courses should be developed for individuals including special instruction and advanced training for all members to the extent that facilities, instruction personnel, and time permits.

Examples are courses for prospective chief officers, chief officers' aides, and personnel for special duties, administration, fire prevention, fire investigation, firesafety education, communications, and maintenance. Other examples are advanced courses for operators of pumps and special equipment and courses on advanced tactical operations.

8-9 Safety Considerations. Safety should be a primary consideration in all training exercises and drills. Prior to undertaking any training exercise, the safety aspects of the evolution should be discussed with all participants. Every training evolution and hands-on training session must be reviewed in advance for proper protection of personnel from accidents. Live structural training exercises should conform to the requirements of NFPA 1403, *Live Fire Training Evolutions in Structures*. NFPA 1500, *Fire Department Occupational Safety and Health Program*, should be adhered to in all training programs to ensure personnel safety. The fire chief is ultimately responsible for the safety of all fire department members.

Chapter 9 Operating Procedures

9-1 Organization.

9-1.1 Standard Operating Procedures and Operational Orders.

9-1.1.1 The fire chief should be governed in the formulation of regulations and orders by the provisions of all laws or ordinances that apply. The chief should maintain a file of such documents.

Provisions of law by which fire departments may be organized include statutes, city charters, or special acts that define a fire department's service area. In addition, there may be ordinances that apply to the fire department's organization and operations. These may include civil service provisions and other laws that regulate such items as permissible work hours for fire department members.

9-1.1.2 Departmental regulations and standard operating procedures should be developed for the purpose of assuring uniformity in department actions and operations. The fire chief should establish the organizational and operational procedures by the issuance of written administrative regulations and standard operating procedures. These should be published and circulated to all members, and training should be provided whenever major changes or additions are made. A system should be established that requires each member to read and to be aware of existing and changed regulations and procedures.

9-1.1.3 Procedures with which all members are concerned should be identified by general subject and published in a suitable form for general distribution. Such procedures should cover matters not requiring frequent changes and should be reviewed at least annually to ensure that they are current requirements.

9-1.1.4 Departmental procedures should require that all written orders be read and acknowledged by all affected members. The company or unit officer should maintain a file with such orders preserved consecutively. No order should be removed from this file unless it is updated or rescinded.

All members should have access to the official order file of their unit. Orders should be periodically reviewed by company officers in company meetings or training sessions.

9-1.1.5 The departmental procedures should specify the channels through which orders are to be transmitted. All orders should go through the established chain of command, and it should be required that they be acknowledged. The chain of command should also be followed, in the reverse order, for reports and other communications from units to headquarters.

9-1.1.6 Departmental procedures should state clearly the sequence in which members succeed to command responsibility. This is necessary to provide for the continuity of operations due to death, injury, disability, or the absence of individuals. Succession may include the designation "acting," but does not imply automatic reassignment or promotion.

9-1.2 Companies.

9-1.2.1 Personnel to respond to fires and emergencies should be organized in company units with appropriate related equipment assigned to such companies. The fire chief should determine the number and type of fire company units to be provided. All personnel except those assigned to staff or support units or those serving as chief officers should be assigned to a specific company unit.

The apparatus and responding personnel should be designated so that they can be identified in orders for response. Such identification is necessary for the use of dispatchers and command at incidents. The fire department should identify minimum staffing requirements to ensure that sufficient members to operate safely and effectively respond with each company. It is the fire chief's responsibility to see that the best use is made of personnel and equipment.

9-1.2.2 Departmental regulations should specify the officer responsible for all apparatus and equipment assigned to a particular company. This responsibility includes the inspection, maintenance, inventory control, and records management of all assigned equipment. These responsibilities may be divided among more than one officer, but the division of responsibilities should be clearly defined.

9-1.2.3 Departmental procedures should specify company officers as responsible for assigning individual members to the various working positions on the apparatus. They should require company officers to see that drivers, operators, and other members have properly qualified under the department's training procedure for their assigned duties.

9-1.2.4 Departmental procedures should specify fire company officers as responsible for the training of members of their companies in the use of all equipment and familiarity with hazards likely to be encountered in their area. The operating methods and training routines covered in company instruction should be those issued by the department.

9-1.2.5 Departmental procedures should assign each company a district in which it is to be responsible for the programs of the department, including inspections. In such districts, the company officer should be responsible for familiarization with high risk properties and special hazards and participation in pre-incident planning operations.

9-1.2.6 Fire companies should be responsible for identifying all target hazards or unusual properties in their district and developing pre-plans for use should a fire or other related emergency occur.

9-1.2.7 Each member should be assigned to a particular company and work under the direction of the company officer. The company officer must be aware of the identity of all members assigned to the company at all times and of the location and activity of each assigned member. Each member of the company must be aware of the identity of the company officer.

Orders addressed to individual members, particularly verbal orders and orders at incident scenes, should be transmitted through the company officer.

9-1.2.8 A journal should be kept for each station and/or company to provide a written record of daily activities, including the names of all members on duty, members on vacation, sick leave, special assignments, or absent for other reasons. The journal should record all incidents and all pertinent information relating to the operation of the company.

9-1.2.9 The company officer should prepare a standard report giving specified information for each response made by the company. These reports should include the location and nature of the fire or emergency and describe the operations performed. For volunteer or call departments, this report should identify the members responding to the incident.

The record of arrival time of units at incidents is particularly important for planning and analysis. Companies should report their arrival at the scene by radio transmission.

9-1.3 Company Officers.

9-1.3.1 A company officer should be assigned to be in charge of each company at all times. Departmental regulations should designate specific responsibilities among the individual officers assigned to each station for the management and administration of the station and all assigned personnel.

9-1.3.2 Procedures should require the officers assigned to each station to coordinate activities to execute the various programs of the department. The off-going and on-coming officers should be required to meet at the changing of duty shifts for the purpose of coordinating duty assignments between the shifts.

9-1.4 Chief Officers.

9-1.4.1 A suitable number of chief officers should be designated, based on the size and activities of the fire department. Departmental procedures should provide for at least one command officer to be available to respond and direct operations at a fire or emergency incident.

9-1.4.2 The assignment of command officers to specific districts should be based on the number of companies and response distances. Department administrative procedures should clearly indicate the jurisdiction of command officers.

9-2 Duty Requirements.

9-2.1 Working Shifts.

9-2.1.1 Departmental procedures should establish work groups or shifts to ensure that an adequate number of members are on duty or available to respond at all times.

9-2.1.2 Where off-duty members are subject to recall for emergency incidents, procedures should define the recall process. Such procedures should be periodically tested.

9-2.1.3 Departmental procedures should provide that members in on-duty status shall remain on duty until the relieving members of the on-coming shift have been declared on duty by the responsible officer. The duty roster should not be interpreted to automatically change duty status at a given time.

9-2.1.4 The fire department should have a sufficient number of members to maintain essential coverage with anticipated leave experience. Departmental procedures should indicate the minimum on-duty strength to be maintained in each company. In order to maintain coverage of all essential positions relief personnel, temporary assignments, or overtime may be necessary. An appropriate officer should be responsible for making such assignments as are necessary to meet staffing requirements, including temporarily reassigning members from one company to another.

9-2.1.5 Any exchange of shifts between company members should require approval by a designated officer.

9-2.2 Duty Regulations.

9-2.2.1 Departmental procedures should provide for a duty roster and instructions for its maintenance. This roster should indicate the current assignments of every member of the department by name and rank. It should show assignments to staff work or special assignments, members on duty in companies assigned to respond to fires and emergencies, members on shifts or work groups, members off duty, members on regular leave or vacation, and members on sick leave.

9-2.2.2 The master duty roster should be maintained at fire department headquarters. That part of the roster affecting companies and other units should be kept by the officers responsible for each unit and posted in unit quarters or fire stations. In departments with districts (battalions) or divisions, the district or division officers should maintain respective rosters for districts and divisions.

9-2.2.3 Departmental regulations should designate holidays and general vacation periods for department personnel. The roster maintenance procedure should provide for approval of the fire chief or designated officer of the vacation and holiday schedule of every member.

Vacations and holiday absences require adjustments in most work systems and an orderly procedure is necessary for keeping vital positions covered.

9-2.2.4 Departmental regulations should establish procedures for handling absences due to sickness and to avoid unnecessary absences. A record of absences should be maintained in the personnel file for each member. The fire department should have one or more physicians on call for assistance in handling absences due to sickness or injury.

The fire department should have a program to promote physical fitness and health maintenance for all members.

9-3 Response to Fires and Other Emergencies.

9-3.1 Standard response assignments should regulate the dispatch of companies and command officers to fires and other emergency incidents. The dispatcher should be responsible for maintaining the location and status of all units and their availability to respond at all times.

9-3.2 Response assignments should be predetermined by location and nature of the reported incident. The number and type of units assigned to respond to a reported fire incident should be based on risk analysis and pre-fire plan-

ning, according to specific locations or by zones or general areas. A variety of factors should be taken into account including the size and height of buildings, separation between structures, construction types, occupancy classifications, and other hazards.

Where street fire alarm boxes are provided, a response assignment should be prepared for each box location. Where there are no street boxes, zone numbers may be assigned to different points or sectors. When alarms are received, the response should be assigned on the basis of the appropriate zone or box location.

9-3.3 The units assigned to a particular incident will depend upon the availability of units at that specific time. Dispatchers should be given the authority to use judgement, within departmental guidelines, when they encounter situations or circumstances that require modification of normal response assignments.

9-3.4 When a fire or other emergency requires forces in addition to those responding on the first alarm, the response should take into account conditions as determined by pre-fire plans. Greater alarm responses should ordinarily be equal to the first alarm response.

9-3.5 For unusual incidents, requiring the response of large numbers of companies, procedures should be established to call for companies to respond in groups.

9-3.6 Situations requiring the recall of off-duty personnel should be defined in departmental procedures.

9-3.7 When companies from another jurisdiction are programmed to respond, a legal relationship should be established between the parties by formal or recognized agreement.

9-3.8 Procedures should include provisions for redistributing available companies within the jurisdiction in such a manner as to provide the best possible protection in the event of major incidents or high activity. Mutual aid companies may be used for back-up coverage in these situations.

Chapter 10 Incident Command Systems

10-1 Purpose. Emergency incidents may involve operations that vary considerably in their complexity and scale. The control of these incidents depends on the planned, systematic implementation of an effective fireground organization to accomplish identified objectives. Every fire department, regardless of size, needs a sound system to regulate and direct emergency forces and equipment at both routine and major incidents. The system should form the basic structure of operations, regardless of scale. An effective incident command system should be designed to manage incidents of different types, including structure fires, wildland fires, hazardous materials incidents, medical operations, and other types of emergencies.

Incident command systems, designed to provide a stan-

dard approach to all types of incidents, have been developed and implemented by many fire departments. A basic principal of these systems is the incremental approach to building a command structure, starting with the first officer arriving at the scene of an incident. The development of the command structure should coincide with the commitment of emergency forces to deal with the situation. There are differences in the specific methods used by fire departments throughout the country but the essential operational objectives remain consistent. The main distinguishing characteristics of the various incident command systems currently employed involve terminology and specific details of organization structures. The following summary describes the basic principles of a command system and the development of effective incident management organizations. It also identifies the essential interrelationships among the different components of command structures.

A model incident command system has been developed to manage all types of emergencies and all sizes of operations. The Federal Emergency Management Agency (FEMA) has assisted in the development of a standard incident command system for large incidents involving multiple agencies. This provides a standard terminology and methodology for accomplishment of similar functions for any agency and any type of operation. Information is available from the National Fire Academy.

10-1.1 Departmental procedures should require the officer or member in charge of the first company to arrive at the scene of any fire or emergency to assume command and give a brief situation report indicating the nature and extent of the emergency.

10-2 Establishing Command. The arrival of fire department officers at the scene of an incident seldom coincides with the structure of the organizational hierarchy. Higher ranking personnel usually arrive after initial responding units have arrived and initiated operations. This results in the upward transfer of command responsibility to successively higher ranking personnel as the scale of an incident grows. For this reason, the first fire department unit or officer to arrive at the scene of an incident should assume the responsibility of command until properly relieved. As the first link, that individual is responsible for initiating and developing an unbroken line of authority between the officer-in-command and those being commanded, while establishing a foundation of decisions that will interface with those of superior officers.

10-2.1 Upon arrival, the person assuming command should transmit a brief initial radio report to the alarm communications center. The message should identify the unit on the scene, confirm assumption of command, describe the building or area involved, state any obvious fire conditions, and describe the course of action initiated by that unit or company. In addition to this, the first officer to arrive must establish an effective command position, rapidly evaluate the situation (size-up), develop an action plan, assign other incoming units, and, if necessary, call for additional assistance.

10-2.2 Arriving companies that have not been assigned according to standard operating procedures or directions from the incident commander should automatically go into

a standby or staging position. These units should stop short and remain uncommitted about a block from the scene until assigned by the incident commander. Staging positions should take into account access to potential operating positions, water supply, and traffic conditions. The primary emphasis is to avoid the independent commitment of companies to tasks or positions that conflict with the incident commander's objectives. Once the initial command responsibilities have been completed, the incident commander should begin obtaining progress reports from operating units and begin to evaluate efforts. The initial action plan should then be revised or refined as necessary.

10-3 Transfer of Command. On a typical first alarm assignment, the chain of command is usually transferred on the arrival of a chief officer. The officer being relieved should be prepared to provide the superior with an assessment of the general conditions and tactical priorities, where companies have been assigned, what companies are available for assignment, and whether additional resources are needed.

Ideally, transfer of command involves face-to-face contact, but it may be accomplished by radio. The arrival of subsequent chief officers does not result in an automatic transfer of command. The identity of the officer-in-command may change during the course of an incident but the continuity of the command responsibility is maintained. The officer-in-command should remain at an identified command post location and use the radio designation of "Incident Command" to avoid confusion.

10-4 Command Options. When a command officer arrives with the first arriving units, the command officer should assume command and establish a fixed command post. If a company arrives at the scene initially, it is the responsibility of the company officer to assume command until relieved by a higher ranking officer. The situation faced by a company officer assuming initial command of an incident will dictate an operating mode in each case. The basic options available to that officer are:

- (a) **Investigation Mode**—If there is no fire evident, the first arriving company officer investigates while all other units stand by in staging positions. The company officer assumes command responsibility.
- (b) **Initial Attack Mode**—The first arriving company officer assumes command responsibility while leading an initial fast attack to stabilize the situation. This mode is effective when fast action is critical and will control the situation within a short duration.
- (c) **Command Post Mode**—The first arriving company officer identifies a large, complex situation and assigns resources while setting up a command post operation from the outset.

In each case the company officer assuming command is fully responsible for the identified tasks assigned to the command function. The degree of personal involvement in tactical actions varies in each mode.

10-5 Command Structures. The incident commander must delegate responsibility to others in order to personally concentrate on overall strategy. Therefore, as an emergency escalates, the number of staff and command positions will increase.

Developing a command organizational structure should begin with the implementation of initial tactical control measures. The size and complexity of the organization will be determined by the dimensions of the particular situation.

A model command structure for a large scale emergency typically includes four (4) levels of command plus staff support. (See Figure 10-5.)

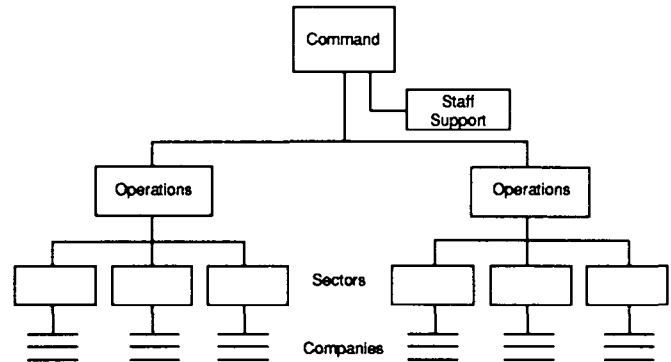


Figure 10-5 Model command structure.

10-5.1 The command level includes the functions necessary for overall control of operations and identification of strategic objectives. It is normally staffed by the highest ranking officers.

10-5.2 The operations control level is an optional level that may be implemented when command finds it necessary to group tactical objectives together for coordination and to maintain span of control. This level is crucial at large scale incidents to provide coordination among sectors and should be staffed by experienced command officers reporting directly to command.

10-5.3 The sector or division level provides the immediate tactical level that concentrates on specific operating areas or functions to meet operational objectives. Several fire companies may be assigned to each sector or division directed by an assigned officer.

10-5.4 The task or company level refers to evolution oriented functions at a company level. Each company officer supervises the efforts of a crew, under the direction of a sector or division officer. The combined efforts of these crews achieve the objectives of overall strategic plans.

10-5.5 Specific positions may be added to the command structure as needs arise to serve directly under command as staff or aides. This is meant to relieve the incident commander of the responsibility to supervise auxiliary activities not directly involved in the supervision of the emergency and to provide detailed or specialized information that may directly support command functions or fireground operations. These positions may be filled by a variety of personnel, depending on the situation and specific needs.

10-6 Deployment of Resources. The responsibility for assigning fire companies at an emergency belongs to the incident commander who must establish priorities and assign units based on identified objectives. Normally on a first alarm response, the first engine company and truck

company will respond directly to the front of the emergency, while other responding units will stand by or stage until assigned to a particular task. Whenever an emergency situation demands extended operational activities, additional alarms should be called for to provide reinforcements and a reserve supply of personnel and equipment at the scene.

The convergence of many units at the scene of an incident, particularly units that are not part of a planned response system, can cause major problems. Procedures should be established on a regional basis to provide for orderly response when major incidents occur. All responding multiple alarm companies should gather in a specific area designated by the incident commander. This formal staging area should be away from the emergency scene in order to provide adequate space for assembly of all responding apparatus. The first officer to arrive in this designated location should automatically assume control of the staging area. This officer should maintain an accurate log of available companies and, when requested by Command, verbally assign companies to report to specific sectors, divisions, or functions, telling them where and to whom to report.

Chapter 11 Emergency Medical Systems

11-1 Introduction. Many fire departments are involved in the delivery of emergency medical services (EMS), in addition to their other responsibilities. In many cases the EMS activity level exceeds the workload from fires and other types of emergencies by a considerable margin. The management and delivery of EMS systems is beyond the scope of this document. This section contains only basic information relating to the subject.

11-2 Resources. The resources needed to provide an emergency medical service system may include combinations of both public agencies and private organizations cooperating to respond to medical incidents. The fire department is an available resource to participate in this system in most areas.

The local fire department is a natural source of medical aid capability having a sizable body of reliable, trained personnel operating in an existing command structure, with a communications system and emergency vehicles geographically deployed throughout the community.

11-3 Pre-Hospital Care. The fire service role in EMS systems has contributed to advancements in extrication, communications, and transportation techniques. A well-designed EMS system should provide for rapid response by personnel trained at the Emergency Medical Technician (EMT) or Basic Life Support level, Advanced Life Support capability delivered by paramedic personnel, patient transportation, and specialized rescue and extrication capabilities. The fire department may be involved in some or all of these components.

11-4 Training. All fire department members should be trained in the delivery of emergency medical care, preferably to the EMT level, as a minimum.

11-5 Involvement. Fire department involvement in EMS varies significantly from one location to another. Variations include personnel on engine and ladder companies trained as first responders or Emergency Medical Technicians and ambulance systems operated by fire fighter-EMTs or civilian employees of the fire department. Advanced Life Support may be provided by paramedics operating ambulances, rescue vehicles, or staffing regular fire suppression companies.

In many cases the fire department operates as part of a system that includes a combination of public and private sector resources, such as private ambulances transporting patients after initial response and treatment has been provided by fire department personnel. In other areas, EMS is provided by a public agency, separate from the fire department, with initial response by fire department units.

11-6 Command. The benefits of an effective incident command system are readily transferrable to a medical incident. The fire department is often the first to arrive at the scene and the first to establish command.

Chapter 12 Community Relations

12-1 Purpose. The fire department should analyze the community and its subgroups in order to design a plan to develop public awareness and cooperation to manage the fire risk. The inclusion of the general public and the various community subgroups will assist in the solution to the fire protection problem.

12-2 Promoting Community Understanding of the Fire Department.

12-2.1 The fire department should apply special effort to earn the community's attention through a positive community relations program. Such a program should be a continuing effort and should be a persistent, well-planned, and well-organized activity to promote community understanding and appreciation of fire department services.

Community relations is an important management function that identifies fire department activities with the various interests of the public. The fire department must justify their programs and resource needs with respect to other municipal departments deserving attention of the public.

12-2.2 The fire chief should establish and maintain a community relations program. Due to the nature of community relations, the fire chief should personally monitor the program. The overall effectiveness of any community relations program is generally a direct reflection of the administrator's participation in the program. Whenever possible, a staff specialist should be assigned the responsibility for developing and implementing an organized program identifying objectives, time frames, and evaluation measures.

12-2.3 The fire department personnel should fully understand the department's organization and functions and what each is expected to contribute to the department's

community relations program. The department should be administered with community awareness in mind, and the community relations program should be one in which all members of the department participate. Community relations begin with positive behavior by all department members. A vital part of a good program is the manner in which the personnel appear to the public both on duty and off duty and their attitude towards all citizens of the community generally, but especially during home fire safety surveys, public education programs, and fire fighting operations.

12-3 Relations with the Community.

12-3.1 The department should attempt to identify the service needs of all segments of the community (socioeconomic, ethnic, etc.) and provide these services for all citizens without discrimination. Where feasible, support programs such as arson victim assistance and crisis intervention should be established in cooperation with other local service agencies for citizens affected by fires.

12-3.2 The department should promote public understanding through active liaison with its various citizens groups. Examples include the Chamber of Commerce, service clubs, Parent-Teacher Associations, senior citizens organizations, youth groups, ethnic groups, and neighborhood associations.

12-4 Relations within the Municipal Government.

12-4.1 The fire department's community relations program should ensure that the members of the municipal council, board, or commission (or governing body of its fire district) are kept fully informed of the department's achievements, operations, and problems.

The governing bodies should provide the fire department with an organizational structure and the required resources for community relations activities.

12-4.2 The fire department should carry out its public relations and educational programs in such a way as to strengthen the position of all departments of the local government with which it may be associated. The chief executive official (mayor, city manager, town manager, or supervisor), heads of principal municipal or local government departments, and their employees generally should be kept informed of the fire department's operations and programs. Municipal department heads should be consulted in all programs that may affect their departments and where support of their departments may be beneficial. The various planning agencies, water and building departments should especially receive particular attention.

12-4.3 Fire department public relations programs should be coordinated with those of neighboring communities especially as to the timing and scope of effort of education campaigns. These programs should be coordinated with area, county, and state-wide fire protection activities and fire prevention programs.

Chapter 13 Public Firesafety Education

13-1 Purpose. The majority of fires and fire-related deaths and injuries occur in residential occupancies, which are more difficult to inspect because of social resistance and constitutional protection. Fire officials recognize that public firesafety education is the most effective program to reduce these incidents. Although firesafety education has been a part of fire service operations for many years it is only recently that it has become focused and emerged as a major component of fire protection management.

13-2 Firesafety Education Function. The firesafety education objectives focus on providing citizens with information to help them guard their own safety and property from fire. This differs significantly from the community relations objective of promoting community understanding and appreciation of fire department services.

13-3 Staffing for Public Firesafety Education

13-3.1 The responsibility for public firesafety education is the responsibility of the fire chief.

13-3.2 The fire chief should appoint a public firesafety education officer to coordinate all firesafety education programs. This officer or specialist may also serve as spokesperson for the department if assigned the community relations responsibilities as well. The appointed officer provides for continuity and responsibility for the firesafety education function. The appointed officer should meet the professional qualifications of the position as contained in NFPA 1035, *Standard for Professional Qualifications for Public Fire Educator*.

13-3.3 While a fire department can make effective contributions working alone, it should enlist the cooperation of individuals in the community. A community committee adds enormously to the staffs and resources available to accomplish firesafety education program objectives. This group may have administrative and/or policy responsibility.

13-3.4 This group can be composed of representatives of the community and/or members of the fire department. It usually has staff responsibility for carrying out the program if there is no staff officer or specialist assigned.

13-4 Promoting Community Understanding of the Danger of Fire and Its Potential for Injury.

13-4.1 The fire department should provide for an orderly flow of information to the citizens of a community to help them increase their firesafety awareness. All outlets for dissemination of information including neighborhood, ethnic, social, and youth groups should be utilized. Active concern for and understanding of the hazards of fire by the public is necessary for the success of fire departments firesafety education programs.

13-4.2 The fire department should provide consulting and inspection services tailored to meet the needs of the various properties making up the community. The department should analyze the problem of communicating with people in the homes, stores, institutions, industry, and

other groups in a community to determine how best to educate each group about the fire department services performed for them. The community relations program should establish the foundation for citizens' cooperation in the cases where the fire department must enter private property for home firesafety surveys or inspections by ensuring that the purpose of those surveys or inspections are understood.

13-5 Firesafety Education Program Process. Those elements that produce sound fire service management planning should also apply to public firesafety education. These five planning steps or elements should be institutionalized and become a cyclical process that is completed every three to six months. Further information on the program process can be found in IFSTA Public Fire Education Manual. (See *Appendix A*.)

13-5.1 The first step involves identifying important local fire problems in order to focus the education effort on them. This includes gathering information on high risk locations, victims, behaviors, and hazards.

13-5.2 The selection step involves identifying community resources, available materials, and potential audiences then selecting the appropriate objectives that meet the community's needs and resources.

13-5.3 The third step is that of program design. This involves determining the content and format of the message and packaging the program for delivery within the community or high risk population groups.

13-5.4 The fourth step includes producing and distributing materials, training fire service personnel, and involving target audiences in the education process.

13-5.5 It is necessary to measure the impact of the program by comparing baseline data prior to the program's implementation with the data at an appropriate point following the implementation of that program. Such data may include fire deaths, injuries, property losses, and number and type of incidents. Pre- and post-program data on awareness, knowledge, and behavior in the community should also be compared to determine the success of the program and how the program can best be modified to improve its effectiveness.

13-6 Techniques and Media Utilized in Message Delivery. The following are only a sampling of techniques available. Further information can be found in "A Guide to Fire Education Resources." (See *Appendix A*.)

13-6.1 The fire department should effectively utilize all the media of mass communication such as newspapers, magazines, newsletters and house organs, radio and television stations, billboards, and vehicle advertising cards.

Utilization of mass media is the basic approach to public education. More people can be reached by these means than any other. Distribution of educational literature, displays, and exhibits also effectively reach large numbers of people.

13-6.2 Recent improvements in data collection and analysis now allow pinpointing of fire problems within a

given neighborhood. Narrowly targeted campaigns are designed to utilize direct mail, face-to-face, and telephone contact. These specialized campaigns have been proven to be more effective than mass media campaigns.

13-6.3 The fire department should make available and encourage the use of speakers, demonstrations, and audio-visual firesafety materials for presentation to or use by local community organizations.

13-6.4 As part of the fire department's objective to reduce residential losses in the community, they should organize a program of private home firesafety surveys. The approach should be educational and designed to identify and explain existing hazards with suggestions for eliminating them. Home firesafety survey programs accomplish direct elimination of fire hazards and have important educational aspects. Information on low cost, quick acting residential sprinkler systems and smoke detectors should be provided and strongly emphasized as part of home inspection programs. During the inspection, pointers on other firesafety practices should be given. The program can possibly be staffed by volunteers or senior citizens and/or handicapped individuals. All personnel performing home firesafety surveys should be trained and supervised by an appropriate and designated fire department officer.

13-6.5 Since children receive most of their formal education in schools, the elementary and secondary schools should be the focal point of their education and training in firesafety. The fire department should ensure that local school administrators are adequately supplied with fire safety information and materials. Prepackaged programs such as NFPA's Learn Not to Burn® and the Project Burn Prevention program provide comprehensive, educationally sound curricula for grade levels kindergarten through grade 12. The fire department's responsibility is to convince and assist administrators and educators at local schools and school districts to institute such programs, help raise funds for materials, and provide the necessary fire department resources for classroom visits and assemblies to reinforce program messages. Information on residential sprinklers and smoke detector programs are especially successful with school programs that utilize children to carry information home to share with their parents.

13-6.6 The fire department should encourage and assist industrial and commercial firms in instructing employees in fire-safe practices on and off the job. Special efforts and emphasis should be placed on firesafety training programs in hospitals, nursing homes, schools, and other occupancies where a high life hazard may be involved. The minimum instruction should be that all workers have procedures explained to them on how to use exit facilities and turn in a fire alarm. The fire department should encourage instruction by getting private sector firms and organizations to provide classes, demonstrations, bulletin board displays of posters and informational materials, folder distribution, and publicity in company newsletters and bulletins published for employees. Fire exit drills should be periodically held where practicable.

13-7 Use of Special Dates to Promote Programs.

13-7.1 The fire department should make effective use of the nationally observed Fire Prevention Week, which an-

nually is the full calendar week including October 9th, the date of the great Chicago Fire of 1871. Fire Prevention Week campaigns provide many opportunities to emphasize the year-round need for attention to firesafety and calls attention to current departmental programs such as low cost, quick acting residential sprinkler systems, and smoke detectors.

13-7.2 Cleanup campaigns, conducted during the spring in many areas, provide excellent opportunities to emphasize public firesafety. The fire department should make sure that firesafety is emphasized in any general program of home and civic beautification that is sponsored in the community.

A thorough cleaning out of rubbish, trash, and other hazardous materials in homes, farms, commercial establishments, and industrial plants should be the objective of these campaigns.

13-7.3 Holidays provide many seasonal opportunities for fire departments to stress particular fire prevention messages. At Christmas, information about the proper handling of Christmas trees, decorations, lighting sets, and wrappings should be provided. This is also an excellent opportunity for the fire department to recommend giving smoke detectors as Christmas presents. Fireworks hazards should be emphasized on the Fourth of July and all other holiday periods when fireworks are used. Halloween is a time when parents should be alerted to the hazards of flammable costumes and sources of ignition, like bonfires and candles.

13-7.4 The fire department should conduct specific activities in conjunction with any other national or local event designed to promote firesafety awareness.

Chapter 14 Code Enforcement

14-1 Purpose. Code enforcement is one of the major areas of responsibility for a fire department. The fire chief and building official are given the legal authority and responsibility to establish and maintain fire and life safety throughout the community. Ultimately, the citizens depend on the fire department to ensure that they are protected against the dangers of fire, panic, explosions, and other hazardous conditions and their resulting effects that may occur within the jurisdiction or district.

14-2 Legal Authority. An initial task of an effective code enforcement program is the comprehensive review of appropriate state laws and local ordinances, to determine the legal authority of the fire chief to enforce fire and life safety laws. Many federal, provincial, and state laws have direct impact on local fire departments. It is imperative to contact responsible legal authorities to determine the current status of the laws.

Some states or regions have preempted local authority by adopting laws for care facilities, schools, assemblies, high-rise buildings, and other critical life safety occupancies. The fire chief must determine how his authority interfaces with other federal, state, provincial, and political subdivisional agencies.

14-3 Codes and Regulations. The local fire department should initiate the adoption of a complete local fire code.

14-3.1 Most fire departments adopt one of the model codes that are developed by private code and standard development organizations. Sufficient time should be taken to carefully review each model code before adoption to ensure it meets the needs of the community. Model codes may be amended to adjust for local concerns and needs. The fire department should work closely with the local legal authority to develop adoptive ordinance for the code. It is critical that the public have an opportunity to review and comment on the proposed code before it is amended or adopted.

14-3.2 There should be an organized fire prevention code and regulations revision process, with an established frequency of revision.

14-3.2.1 The revision process should include input from a fire prevention regulations advisory committee that has representation from the fire department, building department, design profession, local business, and other entities.

14-3.2.2 The fire prevention regulations revision process should include procedures to enact emergency regulations.

14-3.2.3 The fire prevention regulations revision process should identify retrospective requirements for existing buildings as well as requirements for new construction.

14-3.2.4 The local fire department should actively participate in the code revision process at the state level, within model code organizations, or wherever.

14-3.3 In addition to codes and regulations, many communities have identified selected fire protection measures that are adopted by local ordinances.

14-3.3.1 Many communities have determined that certain types of occupancies, or buildings exceeding specific heights or floor areas, should be required to install automatic fire sprinkler systems. Some local governments require automatic sprinklers in all buildings including residential occupancies. The rationale is to build in the fire protection rather than completely relying on fire suppression services. New advances in automatic sprinkler technology have made systems cost effective in residential properties. Such provisions have a direct impact on the overall life and property losses within the community as well as on the size and cost of providing manual suppression forces. (See 4-3, *Master Planning*.)

14-3.3.2 Requirements for the installation of smoke detectors are intended to increase life safety for residents living in apartments, hotels, motels, dormitories, condominiums, dwellings, and other residential property through early warning. Smoke detector ordinances should be retroactive for existing occupancies and apply to all new occupancies. Most model building codes currently require detectors in new residential occupancies, but local laws can make smoke detector requirements retroactive in order to protect the health and safety of the community. Properly installed and maintained smoke detectors have been proven to reduce loss of life due to fire. This is cost-effective fire

protection, and fire departments should be active in ensuring detector protection is provided in all residential-type occupancies.

14-3.3.3 Fire lanes should be required to provide access to structures for fire department vehicles during emergency incidents. Fire lane parking violation ordinances should be developed to keep these access roadways clear.

14-3.3.4 Other fire protection measures such as weed abatement ordinances and dilapidated building removal ordinances should be enacted and enforced as necessary to remove potential fire problems before they become a public danger.

14-4 Enforcement Personnel. In the past, most fire prevention activities were limited to a small nucleus of full-time specialists who might be civilian or uniformed personnel. While it is still necessary to maintain full-time fire prevention personnel, the responsibilities of the fire department are greater than can be performed by specialists. Fire suppression personnel have been increasingly active in inspections and code enforcement. With proper training and support, suppression personnel are effective in performing code enforcement inspections. It is imperative that all fire department personnel recognize that firesafety education and prevention are a major part of the fire fighter's responsibilities.

14-5 Enforcement Administration.

14-5.1 Fire Company Inspection. The concept of utilizing fire companies for fire prevention inspection duties has been widely used in the fire service for the past decade. This practice has allowed the fire department to maintain an acceptable level of fire and life safety in a broad range of critical occupancies. The fire chief can utilize most of the fire department personnel by incorporating fire prevention duties into fire company activities. In order for this concept to be effective several basic rules must be followed:

- (1) The fire chief must thoroughly understand and fully support the concept.
- (2) Each fire company member should receive adequate training on inspection procedures, laws and basic codes, and departmental policies.
- (3) Fire company inspection manuals should be developed and issued to all personnel to give general code violations and inspection procedures.
- (4) Geographical areas of responsibility should be assigned to each fire company. These areas may correspond to first alarm suppression districts.
- (5) Full-time fire prevention personnel should be assigned to assist the fire companies.
- (6) Priorities should be established as to what occupancies are critical for life safety inspection (i.e., hospitals, schools, etc.).
- (7) Fire companies must be held accountable for completion of their assigned responsibilities.

The advantages to this type of program include increased productivity for fire companies and more contact with the public. The ability to inspect far more occupancies reduces the need to expand full-time fire prevention positions and contributes to an increased level of service.

14-5.2 Fire Prevention Bureau Inspections.

14-5.2.1 Due to the limited number of full-time fire prevention positions and the responsibility for firesafety, each community must decide what level of service the fire department should provide. Many departments have prioritized inspections based on life safety considerations in order to utilize their inspection staff in the critical areas. Once the priorities have been established, each inspector can work in the priority areas. This allows a community to receive a high level of service for the investment.

14-5.2.2 The agency responsible for administration of the fire prevention regulations should establish an inspection schedule for all properties in the community. Inspectors should have sufficient authority granted by the authority having jurisdiction to enforce the provisions of the fire prevention regulations. Inspectors should also be trained to the requirements of Fire Inspector I, II, and III of NFPA 1031, *Professional Qualifications for Fire Inspector*.

14-5.3 Inspection Frequency.

14-5.3.1 Some model fire codes and national standards suggest some occupancies to be inspected quarterly or semi-annually. Many states license care facilities and schools and require an annual inspection. Where inspection intervals are required by law they should be strictly followed.

Another practice is to assign inspections of less complex occupancies to fire company inspectors. This allows full-time inspectors to concentrate on the more complex and new occupancies.

14-5.3.2 The agency responsible should provide for a structured program of scheduled field checks to determine the quality and adequacy of inspections being performed. There should be a periodic review of the adequacy, effectiveness, and efficiency of the procedures used in identifying, scheduling, assigning, and performing inspections and related activities and the adequacy of the training that supports those activities.

14-5.3.3 The fire department, in coordination with the local legal counsel, should develop a program for the issuance of citation of code violation and the proper follow up of all citations issued to insure compliance or correction.

14-5.3.4 The fire department should work with prosecutors, judges, and other elements of the legal system to assure that sanctions sought by the fire department for uncorrected regulation violations are applied swiftly and fairly, with sufficient force to be effective and in accordance with the requirements of due process. There should be a clear and effective chain of command for its regulations administration and enforcement activities.

14-5.4 Code enforcement education and training should be an important part of the department's overall training goal. New employees should receive instruction in fire codes and inspection practices. Regular code enforcement education and training should be provided to keep the inspection staff and fire companies doing code enforcement current with new codes, policies, and interpretations. The training staff should use subject matter specialists to provide this training.

Some state fire marshals offer regular training classes for fire inspectors. Model code groups offer excellent courses for inspectors in fire codes, building codes, and plans review. The National Fire Academy offers classes to the fire service in fire prevention. In addition to these, state fire chiefs' and fire prevention officers' associations are good sources for information concerning special classes, seminars, tests, or demonstrations that may occur within the state or area. Local colleges may offer courses in fire technology or fire science.

14-5.5 Three basic organizational plans have developed within the fire service for code enforcement personnel. One utilizes the technical subject specialist who inspects only certain types of occupancies. The second employs the generalist who inspects all occupancies. The third plan utilizes a combination of specialists and generalist inspectors.

14-6 Other Responsibilities.

14-6.1 The code enforcement staff receives numerous inquiries concerning advanced planning for buildings and subdivisions, technical subjects, and code interpretation. The fire department should provide prompt and complete staff work in these technical areas.

The code enforcement staff should also assist fire suppression forces in developing pre-fire plans.

14-6.2 During the planning phase of construction, the fire department should meet and confer with architects, building owners, and structural engineers to work out details on the design, type of use, arrangement, integrity of exit systems, fire protection, and special agreements concerning the construction of the building and its siting. The resulting agreements should be in writing and become part of the permanent record of the occupancy. If the representatives of the fire department determine that the matters being reviewed require more technical analysis, documentation on code compliance, or conformance with special conditions placed on the building, the owner should be required to obtain and provide, without cost to the fire department, the needed information.

For the convenience of the public, many fire departments provide a walk-up counter to facilitate small or routine plan checks and to answer questions.

14-6.2.1 Building construction and site plans should not be approved without the consent of the fire department except upon successful appeal to the board of appeals.

14-6.3 All major model codes provide for an appeals procedure, whereby citizens have the opportunity to appeal code interpretations and present alternative methods of compliance. It is important that provision for this service be established and maintained.

The board of appeals should be composed of independent members of the community that have expertise to judge matters relating to fire and life safety standards. The fire chief or authorized representative is usually an ex-officio member. For efficiency and uniformity of interpretation, a single board hears both the fire code and building code appeals in many communities. All interpretations issued by the board of appeals should be in writing and thus serve as the basis for uniform code application and support subsequent revisions to the code.

14-6.4 Accurate records should be kept and maintained of all complaints, permits, past inspections, legal action, investigations, and special conditions. This is necessary because inspectors must review the history of the occupancies prior to making inspections. Also, in case of litigation, fire department records are subject to subpoena as evidence in court. In addition, the data from the records can assist in prioritizing and scheduling inspection work loads and tracking violations in code compliance. Record retention schedules should be established outlining the period for retention of all documents and the procedure for their timely purging.

14-7 Zoning Regulations.

14-7.1 Zoning regulations should be adopted. The zoning regulations should include provisions for evaluating how buildings and occupancies will affect the fire service demands of the community. Representatives from the fire department should be consulted by the local zoning authority on new proposals, revisions, or exceptions to the zoning regulations. Entities exempt from local zoning regulations should be identified. Fire departments should establish good working relationships with these entities so that review of their development and construction proposals can identify fire protection requirements.

14-7.2 Major use classifications should be established to categorize fire service demands. There should be a local determination based upon size, environmental effects, height limitations, hazardous industrial processes, water supply requirements, and similar contingencies. Allowances should be considered for the provision of built-in fire protection such as fire sprinkler systems, smoke and fire detection systems, fire standpipes, and compartmentation. Water supply for fire suppression should be established in relation to the fire service demands and should be a part of the zoning requirement. The regulations should provide for a periodic review of zoning regulations to assess changing conditions, and adjust zoning requirements accordingly.

14-7.3 The responsibility for enforcement should be clearly established in the zoning regulations. It is desirable for fire officials to have the power to approve or disapprove plans and applications. Penalties with sufficient force to be effective should be established in the zoning regulations.

14-7.4 Qualifications for personnel serving on zoning regulatory bodies should be established to assure needed expertise for proper evaluation of zoning proposals. Procedures should be adopted to assure that all zoning personnel are periodically and systematically advised as to revisions in regulations and departmental policies.

14-8 Building Regulations.

14-8.1 Building regulations should be adopted that are at least comparable to recognized model codes. There should be an organized building regulations revision process with an established frequency of revision.

The regulations should set appropriate requirements or restrictions so that local fire suppression capabilities can meet the community's fire service demand.

14-8.1.1 The code revision process should include a building regulations advisory committee with representation from the building department, fire department, design profession, building contractors, local business, and other affected entities.

14-8.1.2 The building regulations should include procedures to enact emergency regulations.

14-8.1.3 The regulations revision process should identify retrospective requirements for existing buildings as well as requirements for new construction.

14-8.2 The fire department should insure that fire protection and safety be part of the building permit application, plans check, approval, and certificate of occupancy process. A procedure should be established to obtain the approval of the fire official having jurisdiction on all requests for variances and equivalencies that affect fire safety. Utility services should require a valid certificate of occupancy. Joint field inspections between the building and fire department should be conducted at occupancies and buildings with substantial life risk, property risk, or with fire protection systems. The occupancies covered by the definition should be jointly determined by the fire department and the building department. Additionally, a procedure should be established for referral of hazards and regulations violations between the building and fire departments, and other inspection agencies. Joint action by the building and fire departments should be taken when fire investigation data indicates building conditions in specific geographical areas are a major contributing factor in fire losses.

14-8.3 The agency responsible for enforcement of the building regulations should be clearly identified and should work with prosecutors, judges, and other elements of the legal system to assure that sanctions sought for uncorrected regulation violations are applied swiftly and fairly, with sufficient force to be effective and in accordance with due process.

14-8.4 The system of files, records, and reports should be effectively organized to provide easy access. Plans and other pertinent documents should be kept on file for an appropriate amount of time. It is important to retain plans for issuance of a certificate of occupancy for future reference. State statutes should be consulted for records retention schedules.

14-8.5 Qualifications for personnel serving in the building department should be established to assure needed expertise for proper enforcement of building regulations. Procedures should be adopted to assure that all building department personnel are periodically and systematically advised as to revisions in regulations and departmental policies.

Chapter 15 Fire Investigation

15-1 Purpose. The investigation of fires identifies the factors that can be used to lessen the number and severity

of fires in the future. Data from fire investigations should be a part of the department's management information system.

Fire investigation information is a valuable tool to use in developing an effective fire prevention program, determining necessary code revisions or additions, identifying public education programs, describing a community's fire problem, and planning future fire protection needs.

All fires should be investigated to determine the origin and cause of the fire. If the fire is determined to be accidental, the investigation should consider methods of eliminating or reducing this type of fire. If the fire is determined to be incendiary or suspicious, then a full investigation must be initiated. A thorough investigation of all incendiary or suspicious fires is a powerful deterrent to the crime of arson.

15-2 Organization.

15-2.1 All fire suppression personnel should be trained in basic fire cause determination, arson detection, and investigation procedures to provide a high origin and cause determination frequency.

15-2.2 If suspicious fires are going to be successfully investigated and arsonists apprehended and convicted, technical specialists are needed. These specialists should be specifically trained and qualified in two areas 1) cause and origin determination and 2) investigative procedures. Because these are two divergent skills, it may be desirable to have two individuals having expertise in each area.

15-2.2.1 Teams or task forces have been established throughout the United States and Canada that are made up of members from both fire and law enforcement agencies. The most successful of these teams have taken the technical skills of the fire department investigator and the investigative skills of the law enforcement detective and integrated them into a unified team. Other members of this team may come from the district attorney's office, federal enforcement agencies, the insurance industry, and citizen action groups. It should be the responsibility of the fire department as the lead agency to organize this team and direct its activities.

15-2.2.2 The formation of a joint team or task force will require interagency coordination to determine responsibilities. A high ranking local government official with authority over all members should provide direction, define roles, and assign responsibilities.

15-2.3 When the formation of a fire investigation-arson team is not practical and the volume of work in fire investigation goes beyond what the fire chief can handle or delegate, he should appoint fire investigating staff personnel including a chief officer for fire investigation. In communities where a fire investigating official may have been established prior to the formation of the fire department, the fire chief should recommend that the official be absorbed into the fire department.

The fire marshal or chief of the fire prevention bureau is also charged with fire investigation work in many departments. State and some county fire marshals in the United States and provincial fire marshals in Canada usually have the authority to subpoena witnesses to determine fire cause.

This requires close coordination with the local agency responsible for the prosecution, when the case goes to trial.

Any persons appointed to fire investigator positions should meet the appropriate professional qualifications as contained in NFPA 1033, *Professional Qualifications for Fire Investigator*.

15-2.4 Control and release of all information about suspicious fires should be performed under the supervision of the fire chief, the fire marshal, or the supervisor of the fire investigation team. Information resulting from the investigation of a fire may have important implications in the development of a case against an arsonist. It is important that no information be released to the public until the cause of the fire has been firmly established. If the cause has been determined to be arson, then information should only be released upon the approval of the prosecutor or supervising fire investigator. Premature release of information can often damage an arson case. Only one individual should be responsible for the release of information to the media.

15-3 Fire Investigation Information Systems.

15-3.1 A fire investigation information system (often referred to as Arson Information Systems) should be established and maintained for efficient and effective information retrieval. This system should be county or, if possible, state-wide. Such systems, as a minimum, should serve:

(a) A management function by providing accurate data for planning purposes regarding the scope and extent of the arson problem;

(b) As an investigative tool to provide prior fire activity data concerning the current fire incident and parties thereto, to quickly match trademark or modus operandi (m/o) data with other incidents, and cross reference back to hard copy files; and

(c) As an information source to provide any needed statistical data not provided for in other reporting systems such as the Incident Reporting System.

The information system must be easy to use by individual investigators but secure against compromise by unauthorized users.

15-3.2 The department should establish systems to collect information that is needed for each incident. Special information needs for particular types of incidents such as incendiary or suspicious fires should be identified. The results of fire investigation should then be incorporated in various department reports and records.

NFPA 901, *Uniform Coding for Fire Protection*, NFPA 902M, *Fire Reporting Field Incident Manual*, NFPA 904M, *Incident Follow-up Report Manual*, and the National Fire Incident Reporting System (NFIRS) from the Federal Emergency Management Agency, Washington, DC, all provide information on incident reporting systems and should be used as the basis of development for an incident reporting system.

All information on each incident should be maintained at the fire investigation offices. A chronological list of all incidents should be kept. Reports should be cross-filed by street and number, owner/occupant, date, suspect, or m/o, as this enables the complete fire history of any particular building, location, or person to be quickly identified.

15-3.3 Confidential Files. In some fire investigations, information is developed that should not be open to the public. These investigation files are regarded as confidential but must be kept in separate files in order to preserve that legal classification of confidential information. Otherwise any person could obtain copies of all records of fires and interfere with or prevent criminal investigations and prosecutions for arson and fire related crimes.

Chapter 16 Communication

16-1 General Requirements.

16-1.1 The provision and operation of a reliable communication system is an essential requirement to facilitate the delivery of public fire services. The nature and extent of the systems provided will vary with the size and nature of the jurisdiction served, the services provided, and other local conditions and preferences.

16-1.2 All communication facilities and equipment should comply with NFPA 1221, *Standard for the Installation, Maintenance, and Use of Public Fire Service Communication Systems*.

16-1.3 A fire communication system may serve an individual jurisdiction or multiple jurisdictions. In many cases a regional system, operating under a valid inter-governmental agreement, will provide operational advantages and reduced overall costs as compared with a number of smaller systems serving individual jurisdictions. The benefits may be reflected in a more functional mutual aid system, in addition to operational advantages within the communication system itself.

16-2 Communication Center.

16-2.1 A communication center should be provided to receive requests for emergency assistance from the public, to dispatch assistance, to coordinate communications with units providing emergency services, and to provide overall coordination and control of fire department operations.

16-2.1.1 The facilities provided at the communication center should be based on the requirements of the area for which service is to be provided. An emphasis must be placed on the adequacy and reliability of the systems provided, for both routine and emergency conditions.

16-2.1.2 In a small fire department an adequate communication system may be provided and designed into a fire station or other facility. In larger jurisdictions a separate communication facility should be provided and staffed with trained operators to ensure that the needs of the area are served adequately and reliably on a 24-hour basis.

16-2.1.3 An emphasis should be placed on making the communications center highly reliable and safe from natural and man-caused perils. A back-up or alternate facility should be available in case the primary facility is disabled.

16-2.2 The communication center for a fire department may be incorporated with communication facilities provided for other emergency services, including emergency medical services, law enforcement, and other governmental operations. It is a responsibility of the fire chief to ensure that the necessary provisions are included to provide adequate and reliable communications for the fire department mission and operations, without compromise to serve other priorities.

16-2.2.1 The communication requirements that are necessary to support the operations of a fire department are different from those required for other services. Where joint communication systems are operated, adequate supervision, training, operating procedures, and systems must be provided to ensure that communication center personnel are prepared to meet the specific needs of the fire department.

16-3 Public Reporting of Fires and Emergencies.

16-3.1 Facilities and systems should be provided to ensure that the public can notify the fire department of fires and emergencies.

16-3.1.1 The primary method of alerting the fire department in most jurisdictions is the public telephone system.

16-3.1.2 Alternate systems for notification of emergencies include fire alarm box systems, automatic and manual fire alarm systems connected to private or public alarm monitoring systems, and 911 public safety telephone systems.

16-3.1.3 The fire department should conduct an ongoing public education program to ensure that citizens are aware of the proper methods to request fire department emergency services.

16-3.2 The telephone number to be used for reporting fires and other emergencies should be prominently displayed in telephone directories and materials provided by the fire department. Stickers for telephones indicating the proper emergency number should be widely distributed in the community.

16-3.2.1 The telephone number used to report emergencies should be easy to recognize and remember. The use of the 911 emergency number for this purpose is highly desirable.

16-3.2.2 When the telephone number for reporting emergencies is changed, as with the introduction of 911 service, the old number should be maintained in service as an alternate method to report emergencies until the public is fully aware of the new number. In many cases this transition will take several years.

16-3.2.3 Where 911 service has not been introduced, the telephone company should provide an operator to intercept calls from persons dialing 911 and connect the caller to an appropriate emergency service.

16-3.2.4 Automatic Number Identification (ANI) and Automatic Location Identification (ALI) are valuable sys-

tems to provide rapid assistance to persons calling a 911 emergency reporting system.

16-3.2.5 The communication center should provide an adequate number of incoming telephone lines and trained operators to answer the volume of calls that can be anticipated under routine, unusual, and emergency conditions. The staffing level should be varied, as appropriate, according to call volume experience based on different hours of the day, days of the week, seasonal patterns, and unusual or emergency conditions. An adequate number of telephone lines and answering points should be provided for anticipated high call volume periods.

16-3.2.6 A contingency plan should be in place to provide for emergency reporting in the event of a failure of all or part of the public telephone system. This plan should include measures such as sending radio equipped vehicles on patrol or to specific locations, establishing radio communications with other radio-equipped vehicle fleets (i.e. police, public vehicles, taxi cabs, ham radio operators), and notification of the public of the alternate methods that are to be used.

16-3.2.7 The connection of automatic-dialing emergency reporting equipment to the primary emergency reporting lines should be prohibited, to prevent malfunctioning equipment from occupying the lines. An alternate telephone number may be provided for this purpose or the authority having jurisdiction should require such equipment to be connected to an approved alarm monitoring service.

16-3.3 Public fire alarm box systems are an alternate method to summon emergency assistance. These systems are highly desirable in commercial and industrial areas where telephones may not be readily available, particularly at night, and to provide direct access to the fire department from schools, hospitals, and other public institutions. Alarm boxes are sometimes installed in residential areas, depending on local priorities and requirements.

16-3.3.1 A public fire alarm box system may include telegraph systems that transmit coded signals, radio alarm boxes, telephone boxes utilizing dedicated telephone lines, and other systems.

16-3.3.2 Alarm systems installed in building and individual properties may be connected to public fire alarm systems if approved by the authority having jurisdiction.

16-3.3.3 Fire alarm box locations should be highly visible and marked with lights or reflective material to provide for their rapid identification by persons reporting emergencies.

16-3.3.4 The decision to install or to remove public fire alarm boxes should be based on an evaluation of local conditions including the availability of public telephones, utilization of the system, false alarm experiences, costs of maintenance and repair, and the number of properties protected by other systems.

16-4 Dispatch Systems.

16-4.1 The communication center should be responsi-

ble for dispatching the appropriate units to any reported emergency incident, based on written standard operating procedures. These procedures should establish the standard response to any given location, as determined by a classification of the incident type. This requires the capabilities to research the location and classify the incident, reliable equipment to transmit the information to units selected for dispatch, and a method to maintain the status of all units controlled by the communication center.

16-4.2 A variety of methods may be employed to research the location and determine the appropriate classification of an incident. These methods vary from manual quick reference files to computer aided dispatch systems. The system selected should be appropriate for the number of calls and the complexity of the service area to allow for the response to be determined within 30 seconds.

16-4.3 A minimum of 2 approved methods should be available to transmit a dispatch message to each fire station so a fully independent back-up is available in the event of failure of the primary method. The approved methods are identified in NFPA 1221, *Standard for the Installation, Maintenance, and Use of Public Fire Service Communications Systems*.

16-4.3.1 All units that are available for dispatch to emergency incidents that are not in quarters at a fire station should have constant radio contact capability with the communication center. This may include mobile radios in vehicles, portable radios assigned to units or individuals, and pagers assigned to various personnel.

16-4.3.2 Where the response of volunteer or call personnel is anticipated, the communication system should provide a reliable means to notify these personnel of an alarm. Approved systems include tone activated radios and pagers as well as outside horns or sirens and special telephone systems.

16-4.4 All equipment installed in fire stations should be provided with stand-by or emergency power and should be supervised to indicate any malfunction that could interfere with the receipt of an alarm.

16-4.5 Appropriate methods should be employed to alert personnel within each fire station when an alarm is received. These methods may include the activation of lights, visual indicators, and audible devices, activated automatically or by a member assigned to house watch duties. It is preferable to have vocal alerting systems to announce the nature and location of alarms to all responding personnel.

16-4.5.1 Auxiliary equipment may be included in the station alerting systems to perform such functions as opening and closing doors and turning off cooking appliances when an alarm is received.

16-4.6 Each fire station should have a means to manually acknowledge the receipt of alarms back to the communication center.

16-4.7 The communication center should be informed of all changes in the availability status of each unit, to make

proper determinations of which units to dispatch to emergency incidents. A standard method should be used to record and display this unit status at all times.

16-4.7.1 Unit status may be maintained by radio or telephone using a manually operated status display in small departments. Larger communication systems should be provided with automated status and display systems.

16-4.8 Where automated or computer aided equipment and systems are used as a routine part of the dispatch system, manual back-up systems and procedures should be in place and exercised periodically to maintain the skills of operators in the event of a failure.

16-4.9 A high priority should be placed on maintaining all dispatch equipment and systems in full working order.

16-5 Radio Communication.

16-5.1 Radios are an integral part of a fire department's communication system and are essential for efficient operations. Radios keep fire fighting units in communication with each other and with the communications center to coordinate fireground activities, provide progress reports, request assistance, or return units that will not be needed. Radios are also necessary to maintain communication with units that are out of quarters to provide for their dispatch to emergency incidents.

16-5.1.1 Transmitters/receivers should be provided at headquarters, in vehicles, and at fire stations.

16-5.1.2 Every chief officer and company officer assigned to emergency duty should be provided with a portable transmitter/receiver.

16-5.1.3 The fire department should have a selective alerting system by which it can summon designated personnel at any hour of the day or night. Certain emergencies may require summoning the fire chief, other officers, or off-duty members. Radio receivers or pagers can be provided for all personnel, as in volunteer departments, or for selected officers and personnel in other departments. Through these instruments, a particular individual or group of individuals can be alerted without disturbing the general public or other personnel.

16-5.2 Multiple radio frequencies should be provided, according to the needs of a particular fire department or communication system. The number of frequencies required depends on the amount of radio traffic that is anticipated and the need to communicate simultaneously with different individuals or groups.

16-5.2.1 Frequency allocations must meet the requirements of the Federal Communications Commission in the United States and the Department of Transport in Canada. Multifrequency operation should be planned, even if facilities for such operation are not immediately provided.

16-5.2.2 Separate frequencies may be provided for dispatch, fireground communication, command officers, interagency and mutual aid communication, and other specialized purposes. Multi-channel radios should be used to

provide access for any channel that the user may need to access.

16-5.2.3 Sufficient frequencies should be provided so that one or more frequencies may be used for fireground tactical and command communications at incidents.

16-5.3 Where a group of fire departments operate a common communication system and mutual aid network, all users should have access to any and all frequencies used in the system to provide for effective communication. Specific radio frequencies should be designated for use in anticipated situations according to a written communication plan.

16-5.4 The department should establish standard operating procedures for radio communication. All members should be trained in radio procedures to provide for efficient use of the system.

16-5.4.1 The adoption of standard terminology for voice communication is important for expeditious message transmission and avoidance of errors. It is necessary to phrase messages such that they will not be misunderstood. In regions where numerous fire departments may be involved at an emergency, communication procedures should be formalized with all assisting departments. The use of clear text is generally preferred to coded messages.

16-5.4.2 Standard procedure should define how the person originating a message should be identified, for example by unit number or by rank and name.

16-5.4.3 Operators should be given direction as to priorities in handling messages. First priority should be given to transmission of alarms and calls for additional companies.

16-5.4.4 Records of Messages. All radio and telephone messages to the communication center should be automatically recorded using equipment that automatically records the time as well. If the equipment does not automatically record the time, it should be stated whenever possible. Separate equipment should be provided to immediately play back pertinent telephone and radio communications related to the reporting or handling of fires or emergencies.

16-5.5 Fireground Communication.

16-5.5.1 The first unit to arrive at an emergency should notify the communication center by radio of its arrival and give a brief description of the conditions visible and location of the incident. The responding chief officer should report arriving at the scene and should establish incident command at the fire or emergency.

16-5.5.2 As soon as conditions allow, the officer in charge should report supplementary information to the communication center and should make additional status reports if operations keep the fire units at the emergency beyond a few minutes. Report intervals should be established and the communication center should initiate contact when report frequency exceeds such intervals.

16-5.5.3 Major fires and emergencies impose complex communication requirements on the officer-in-charge. The

command officer may assign an aide to handle communications. If an aide is not available, a qualified person should be designated to handle communications including calls for additional alarms, special companies, and equipment.

16-5.5.4 Large fire incidents may necessitate the use of a special fireground communication unit that responds to provide the chief officer in charge with additional facilities and communication officers when needed.

16-6 Nonemergency Communications.

16-6.1 As an operating organization, the fire department requires a functional business communication system, apart from the emergency communication system. This system should be designed and operated in a manner to ensure that emergency communications take priority over nonemergency messages.

16-6.1.1 Where components of the emergency communication system are utilized for nonemergency purposes, these uses must yield to the priority of emergency functions.

16-6.1.2 The nonemergency or "business" telephone number of the fire department should be listed in telephone directories so that persons do not utilize the emergency number unnecessarily.

16-7 Private Alarm Systems. Property owners should be encouraged to install automatic and manual fire alarm systems that can be connected directly to fire communication centers or to alarm monitoring services. Such systems should, however, be properly installed and maintained in accordance with NFPA standards to provide for reliable operation and to minimize unnecessary alarms.

Chapter 17 Equipment and Buildings

17-1 Fire Equipment Needs.

17-1.1 The department should maintain a current inventory of all apparatus, vehicles, and equipment owned, leased, utilized, or maintained by the department. The purpose of such inventory is to present the current status of all assets of the department, project remaining service life, and serve as a programming tool for projecting future needs and obtaining requisite approvals for acquisitions. For pumpers, aerial apparatus, and other major pieces of equipment, such inventories should contain such information as age, down time, annual maintenance costs by unit, and recommended replacement date. On smaller and more numerous items of equipment, the inventory should show expected replacement requirements due to use or loss based on the department's experience.

17-1.2 A list should be maintained of all requirements for new apparatus and equipment. As a minimum, the listing should indicate specific acquisition requirements for one year ahead and should be projected for a minimum of 5 years in the future. Such projections should be consistent with the department's long-range plan.

Cost estimates should be developed and presented in current dollars and then projected to proposed purchase date

using appropriate inflation factors. In connection with preparation of the budget, these lists should then be reviewed and incorporated as appropriate. Multi-year listings should recognize expected annexations of territory to the service area of the department, changes in the aid that can be obtained from neighboring communities, as well as changes in organization or operations of the department itself. Adequate reserve vehicles should also be included in all equipment lists.

17-2 Purchasing of Equipment.

17-2.1 Specifications should be prepared for the purchase of all pieces of fire apparatus, vehicles, major equipment, and for minor equipment, as appropriate. The specifications should be expressed in terms of the emergency use of the equipment and requirements for reliable performance. In setting performance requirements, the need and ease of performing routine maintenance should be considered.

17-2.1.1 The specifications should include detailed lists of all tools and equipment to be provided with each apparatus. Use of NFPA 1901, *Automotive Fire Apparatus*, is recommended as the foundational basis of new apparatus specifications.

17-2.1.2 The specifications should state a delivery place and date, state any tests to be performed at the point of delivery, identify the party responsible for such testing, and identify who is to supply the required testing equipment. Tests should include appropriate road tests, operational tests of all pumping and aerial equipment and all emergency systems, and performance tests of all specialty equipment.

17-2.1.3 The specifications should also state the required certifications, warranties, and maintenance manuals to be delivered with the vehicle or equipment.

17-2.2 Acceptance tests should be witnessed and recorded by a representative of the fire department. The individual responsible for witnessing the testing and executing the acceptance documents should be identified in the purchase specification.

17-2.3 In general, public entities are required to publicly advertise and solicit responsible bids for purchases of apparatus or equipment in accordance with state, provincial, or local law. Where a private entity is involved, solicitation of bids should be considered in an effort to minimize costs for new acquisitions. Legal counsel should be contacted to ensure that proper procedures are followed.

17-2.4 Apparatus or equipment leasing, or lease/purchase, is an option employed by a growing number of departments. It releases funds formerly encumbered in large capital outlay expenditures or permits earlier acquisition of critically needed equipment. Care should be undertaken in executing any such lease or lease/purchase agreement to ensure that all governmental and legal requisites are complied with.

17-3 Maintenance.

17-3.1 Following any response, maintenance should be immediately performed to restore the apparatus and equip-

ment to ready status in anticipation of another response. This should include replenishment of supplies used, restoration of ladders, tools, and respiratory equipment after use, inspection of apparatus and equipment for damage, and verification that all personal safety equipment is fully operational. Any unsatisfactory condition noted should be properly recorded and corrective action initiated.

17-3.2 In addition to regular inspections by the vehicle operator, a procedure for periodic inspection of apparatus and related equipment by qualified personnel should be established. Written instructions should define the performance of the work, the frequency schedule, and the requirements for documentation. The manufacturer's recommendations and the department's experience for the service of each piece of apparatus and equipment should be used as the basis for defining the scope and frequency of the maintenance inspection and service.

17-3.3 Pumps, aerial ladders, and ground ladders should be tested on a periodic basis and after major repairs. Apparatus testing should include a road performance test and operation of all functions. Ladders should also be tested after any suspected destructive impact, overloading, or destructive exposure to fire. NFPA 1911, *Acceptance and Service Tests of Fire Department Pumping Apparatus*, NFPA 1914, *Testing Fire Department Aerial Devices*, and NFPA 1932, *Use, Maintenance, and Service Testing of Fire Department Ground Ladders*, should be the basis of the test procedures. Suitable and adequate records of all test procedures and results should be maintained for the service life of each piece of covered equipment.

17-3.4 A cost record should be kept on each piece of apparatus and equipment purchased or otherwise acquired. All costs of service and repair should be similarly recorded. Such information should serve to indicate actual operating costs of each piece of apparatus or equipment and provide a comparative record that could be used when making future purchases.

17-4 Hose.

17-4.1 The fire department should develop written specifications for each type and size of fire hose utilized. Particular attention should be paid to compatibility of hose couplings and their screw threads to fire apparatus pump, fire hydrant, and automatic sprinkler connections, both in the local jurisdiction and in the mutual aid jurisdiction. NFPA 1961, *Standard for Fire Hose*, and NFPA 1963, *Standard for Screw Threads and Gaskets for Fire Hose Connections*, should be used as the basis of specifications for purchase of such equipment.

17-4.2 A complete inventory of all fire hose, including purchase date, cost, and results of acceptance and annual service tests should be maintained. To facilitate such record development, each length of hose and each hose coupling should be given a unique serial number for inventory purposes. In each instance of repair, the work performed and cost should be recorded. These should be periodically reviewed to ascertain any trends in equipment failure indicative of a systemic problem. NFPA 1962, *Standard for the Care, Use, and Maintenance of Fire Hose Including Connections and Nozzles*, should be referred to for further details.

17-4.3 The department should adopt standards for the amount and size of hose carried on each piece of apparatus, depending on its operating practices, rated pump capacity, and its utilization in delivering required fire flows.

17-4.4 Hose coupling and connection threads, including those on all master streams and other water control devices, should be standardized throughout the department. Where threaded connection couplings are employed, coupling threads should conform to the American National Fire Hose Connection Screw Thread as specified in NFPA 1963, *Standard for Screw Threads and Gaskets for Fire Hose Connections*. Where local hose coupling threads do not conform to the national standard, the fire chief should designate the threads to be used.

For situations where hose or devices of different threads must be connected, suitable adapter couplings should be acquired and provided on all responding units. Interoperability should not be compromised from lack of suitable interconnecting devices.

17-4.5 All fire department hose should be tested in accordance with NFPA 1962, *Standard for the Care, Use, and Maintenance of Fire Hose Including Connections and Nozzles*. In addition, hoses should be tested after exposure to freezing and after the repair/replacement of any coupling.

17-5 Personal Equipment.

17-5.1 Members of the department should be provided with personal protective clothing and equipment prior to engagement in any fire department response or hands-on training activity. All equipment necessary to meet NFPA 1500, *Fire Department Occupational Safety and Health Program*, requirements as well as federal, state, provincial, or local law should be provided.

In the purchase of personal protective equipment, such as breathing apparatus, protective clothing, gloves, footwear, and helmets, particular attention should be given to meeting the NFPA standards for the personal protective clothing and equipment.

These standards include NFPA 1971, *Protective Clothing for Structural Fire Fighting*; NFPA 1972, *Helmets for Structural Fire Fighting*; NFPA 1973, *Gloves for Structural Fire Fighting*; NFPA 1974, *Protective Footwear for Structural Fire Fighting*; NFPA 1975, *Station/Work Uniforms for Fire Fighters*; NFPA 1981, *Open-Circuit Self-Contained Breathing Apparatus for Fire Fighters*; NFPA 1982, *Personal Alert Safety Systems (PASS) for Fire Fighters*; and NFPA 1983, *Fire Service Life Safety Rope, Harnesses, and Hardware*.

17-5.2 Maintenance of Personal Equipment.

17-5.2.1 Procedures should be adopted for thoroughly inspecting and servicing personal protective equipment, particularly after fires or other emergency usage. The procedures employed for such servicing, particularly product washing or other cleaning, should be in conformance with manufacturers' recommendations in all respects.

17-5.2.2 A procedure should be established for determining whether personal equipment should be repaired or replaced. All repairs should be made in conformance with the manufacturer's recommendations. Completed repairs should be approved by the department.

Such a determination may need to be made when personal equipment is damaged by a particular use. It may also have to be made when an item is substantially damaged by ordinary wear before the period set for normal replacement. In either case, manufacturer approved repair specifications may facilitate such repair/replacement determinations.

17-6 Fire Department Buildings.

17-6.1 Building Program.

17-6.1.1 A file should be established for all buildings and structures owned, occupied, or utilized by the fire department. The file should include all documents in the custody of the department covering the rental, lease, or ownership of both land and buildings, responsibility for maintenance, restrictions on usage, cost data, cost of alterations and improvements, expenditures for maintenance, and other pertinent information.

17-6.1.2 Each fire department should prepare a five and possibly ten year plan for future station locations in accordance with the projected growth or service demands of the area protected by the department. In addition, a program should be prepared for any new buildings needed, including locations and land requirements. The fire chief should seek general approval of the program by the governing authority of the fire department and any municipal officials concerned. The program should be updated annually and recognize expected annexations of territory to the area served by the department and changes in the operation of the department that will affect the buildings and land required.

17-6.2 Purchasing and Leasing.

17-6.2.1 Land for fire department buildings should be obtained in accordance with a planned program of development. The general development plans of a community or area projected for annexation should be reviewed, and future station locations should be identified. Acquisition proceedings should be undertaken to make sites available for future fire department use. If zoning changes will be necessary, this should be accomplished before beginning construction.

Land requirements for fire department facilities should be estimated realistically, recognizing the long term need for station usage and the expanding role of the fire department in the community.

Land requirements should consider the requirements for parking, refueling facilities, space for maintenance and service, for drill work, for a ramp at the front of the fire station, and for the station itself. Because of the additional safety afforded by drive-through stations, land to permit rear access of vehicles should also be considered. Parking space and drill space should be located so that parking does not interfere with drill activities. Stations should be set back from the street with a ramp area in front so apparatus does not have a blind entry into a public way.

17-6.2.2 The requirements to be met by any building should be determined before plans and specifications are prepared. Written comments should be solicited from all interested parties, both within and out of the department, who have any interest in the future use of the facility. The

final draft of such requirements should be fully detailed, to provide a firm basis for actual design of the facility.

Fire department buildings should be fully protected by smoke detectors and automatic sprinkler systems. Fire departments frequently have to recommend protection for other important privately and publicly owned buildings in the community. Installing such systems in fire department facilities sets a good example and provides reliable protection for an important community facility. In addition, systems in fire department buildings can be used for training fire fighters.

17-6.3 Maintenance of Land and Buildings.

17-6.3.1 Routine maintenance procedures should be established for all fire department facilities including both land and buildings. The procedures should cover paving, grass, and other areas, including proper drainage. They should cover the building structure including exterior and interior finish. They should be appropriate for each major item of building equipment, including plumbing, heating, and air conditioning.

17-6.3.2 Maintenance to be performed should be defined in written orders or purchase requests. For minor maintenance items performed by fire department personnel, forms should be provided for recording time and materials involved. The associated labor and material costs should then be periodically tabulated to ascertain annual recurring costs of maintenance for the department's facilities. Written repair or purchase orders should be issued to the responsible city agency or outside contractor for work beyond the scope of department responsibility.

Maintenance expense should be identified for the fire department budget. If fire department personnel are used on maintenance, such personnel will have less time for important fire department activities, such as training, pre-fire planning, and fire prevention.

17-6.4 Where there are shifting patterns of population, fire departments have considered alternatives to the construction of permanent stations. Temporary or portable stations may provide flexibility in station location planning and do not require a large capital investment.

17-6.4.1 Fire stations should be designed to conform with the surrounding neighborhood and meet the service demand in terms of space for apparatus and personnel.

17-6.4.2 When planning sites for new fire stations, adequate land should be provided for parking and other needs. Because many fire stations serve as community and administrative centers, a realistic decision on parking space is necessary.

17-6.4.3 Floor space requirements should be determined recognizing current and projected future needs. The requirements for floor space for apparatus can quickly exceed those originally provided, as additional responsibilities are assumed by the fire department, such as emergency medical or hazardous material control services. Apparatus and equipment storage space may become significant requirements. Such contingencies should be considered at the time of initial land acquisition and building design.

17-6.4.4 Floor spaces in a fire station should be provided for chief and staff officers' vehicles. Access to the building for such vehicles should not interfere with access for apparatus response.

17-6.4.5 Construction specifications should provide details of facilities to be provided in new fire stations. These should include storage areas for equipment, areas for inspecting, cleaning, and maintaining equipment, and a control or watch facility near the main entrance to monitor station and department activities.

Building utilities to support station activities should be provided including water connections to fill vehicle/equipment tanks, refueling facilities, and an emergency power source. It should be possible to operate all doors manually in case of failure of electric operators. Vent connections may also be provided to allow apparatus motors to operate safely inside of structures.

17-6.4.6 The structure and finish of the apparatus floor section should be considered separately from the framing and finish of other parts of the fire station building. Entry doors should be adequate for all equipment projected to be housed, and ceiling height should be sufficient to permit an individual to stand safely on all apparatus surfaces without stooping. Nonslip flooring should be provided on apparatus floors to permit the cleaning of vehicles and equipment inside under safe conditions. The structure should be adequate to support all anticipated equipment and other loads including snow and wind.

17-6.4.7 Requirements should be prepared for personnel quarters in fire stations. Due consideration should be given to provide for both male and female personnel and the desire for individual privacy. If the station is to house chief officers, a separate section should be provided for such officers, independent of general station facilities. Because stations are staffed at meal times, a basic requirement is for food preparation and serving space, including refrigeration, general storage, and cooking facilities. Automatic shut-off switches for cooking appliances should be provided to prevent fires during a station's emergency response. Automatic dishwashers should be provided to reduce the risk of contagious illness.

17-6.4.8 Due consideration should be given to the requirements for training. Requirements for classroom space, telecommunications capabilities, utilization and storage of audiovisuals and written materials, and for personal study space within the fire station should be specified.

17-6.5 Training Facilities.

17-6.5.1 Training facilities should include adequate classrooms, lecture halls, conference rooms, library and study rooms, assembly areas, and audiovisual facilities for the needs of the fire department. These space requirements often make shared or regional facilities highly desirable to support the cost of maintenance and operation of the facility. Joint facilities permit collective use of resources and the personnel talents of many departments. Joint facilities also facilitate development of cooperative efforts used in mutual-aid and automatic-aid activities.

A classroom or similar lecture facility for in-service or continuing education training should be available within

every fire department. Adequate audiovisual and reference materials should be available to support the department's training activities and cover all subjects addressed in the NFPA professional qualifications standards for the ranks of personnel in the department. In addition, the department should have access to training facilities for ground ladder training, live smoke and fire training, flammable liquids fires, pumping and drafting operations, and apparatus driver training.

17-6.5.2 Training buildings should be supplemented by sufficient yard space to provide room for fuel pits, oil tanks, and other mock-ups of fire or emergency situations that can be created to make training realistic. The site should be sufficiently isolated from other properties to eliminate inconvenience to the public from training activities. The site should have proper drainage, adequate water supplies for hydrants, appropriate pollution abatement equipment, and a pond or reservoir for pumper drafting operations. A separate water supply should be considered to avoid inconvenience to the surrounding area when pumping operations are conducted. Suitable lighting and public address systems should be provided. Also, adequate facilities to monitor operations and safeguard trainee safety must be provided. Finally, on-site parking for extra vehicles should be provided.

The training facilities discussed here are those for training members of the fire department separate from the training and drill work done at fire stations. Certain facilities such as those for pumper training operations may be similar to the facilities needed by a department vehicle repair facility for pumper testing. There is an element of convenience if the training building and vehicle repair facility can be in the same general neighborhood.

17-6.5.3 NFPA 1402, *Building Fire Service Training Centers*, should be used to design a proper training facility. The facility should include one or more drill towers, buildings in which actual fires can be set and rescue operations performed, classrooms, laboratories, administrative and storage space. In some cases, dormitories are provided for students.

17-6.5.4 A training center should include an appropriate selection of built-in fire protection equipment including smoke detectors, automatic sprinklers, standpipe systems, fire pumps, tanks, and other equipment with which fire department personnel should be familiar.

17-6.5.5 Paved areas should be provided for driving instruction.

17-6.6 Vehicle Maintenance Buildings. The fire department requirements for vehicle maintenance facilities should be determined. In departments with a limited number of vehicles, isolating a maintenance area in the apparatus area of the fire station may be appropriate. Larger fire departments may require a fully equipped and staffed facility for apparatus and equipment maintenance and repair.

Departments with only a few vehicles may find it advantageous to have vehicle maintenance work performed by qualified contractors or in a consolidated, municipal vehicle repair facility.

Chapter 18 Management of Water for Fire Protection

18-1 Organization of Water Supplies.

18-1.1 The fire department should establish minimum fire flow requirements for representative structures and locations in the municipality or fire district as a part of fire risk evaluation and pre-fire planning. The fire flow requirements are based on estimates of the number of hose streams required at a given location for unprotected structures and facilities and the water flow demand plus hose stream allowance for sprinkler protected properties.

The fire department should predetermine fire flow requirements for proposed projects involving structures or complexes of structures. Through coordination with the building inspection department, satisfactory plans for provision of such flows should be a condition of authorization to issue a building permit. Significant reductions in required fire flow can often be achieved by the installation of an approved sprinkler system throughout the building.

18-1.2 The fire chief should assign a full- or part-time water officer, depending on the size of the department, to maintain regular contact with the managers of public and private water systems and to keep the department informed about all sources of water available for fighting fires. Other duties in which the water officer should assist the fire chief include:

- (a) Preparing the information to make determinations of fire flow.
- (b) Joint planning with the water department or water utility for extension of the distribution system and proper locations of fire hydrants.
- (c) Supervising the inspection and tests of hydrants, private fire connections, and other water facilities.
- (d) Verifying that maintenance work is completed on auxiliary and other water supply facilities that may be a responsibility of the fire department.
- (e) Pre-fire planning for water supplies at fires.
- (f) Keeping the officer in charge at a major fire informed of any water supply problems and assisting in maintaining adequate flows and pressures.
- (g) Providing training for members of the department in water supply matters.

18-1.3 Each company in the fire department should maintain a water resources map of its response area. As a minimum, the map should indicate the following:

- (a) The location and size of mains in public or private water systems.
- (b) The location and capacities of hydrants on the public or private system.
- (c) Indications of any sections of the water source where insufficient flows or pressures will require special operations.
- (d) The accessibility and capacity of auxiliary water supplies.

Command officers should have water resource maps in their vehicles. Companies should keep the maps and file data in a form that can be referenced enroute to an incident. It should be made the responsibility of the individual

fire company to make inspections of the water facilities assigned to it and to discover any changes in these water facilities. Water distribution maps are usually available from the water utility department or company.

18-1.4 The training program should include information and instructions with regard to available water supplies and their use. All department members should have a thorough knowledge of the subject. In addition, periodic field exercises should be conducted to give all members a better working knowledge of the water system and other water supplies available.

18-2 Water Operations.

18-2.1 The fire department should have standard operating procedures outlining utilization of available water supply and taking into account any weaknesses or deficiencies.

Where deficiencies are identified, the fire department should plan to supplement the weak supply through the use of large diameter hose and/or response of mobile water supply apparatus.

18-2.2 For operations outside the service area of any water facility, the fire department should provide portable pumps and mobile water supply apparatus with water tanks. It should also develop the necessary operating practices to effectively utilize water supplied by such equipment.

18-2.3 The fire department should develop and maintain inspection and testing procedures to ensure the adequacy and availability of public or private water for fire protection.

18-3 Public Water Supply Facilities.

18-3.1 The fire department should constantly evaluate all water sources and maintain liaisons with any water authorities on fire protection water supply matters. In general, the fire department does not have responsibility for the design, installation, maintenance, or operation of the water systems from which it must obtain water for fire fighting operations. In most protected municipalities, water supply for domestic and fire protection purposes is provided by a public waterworks system owned and operated by a municipal water department, or by a privately owned water company. While most fire departments have only one utility with which to maintain liaison, some departments have several.

18-3.1.1 The fire chief or his representative should have the authority to determine water supply demands in new residential and commercial districts.

18-3.1.2 The fire chief should make periodic reports in writing to the head of any water department or water company affected, outlining recommendations for anticipated or planned developments in the fire district.

18-3.1.3 The chief should also identify weaknesses in the water supply in existing portions of the district and make recommendations for their improvement.

18-3.2 The fire chief and the manager of the water utility should maintain close liaison or assign specific individ-

uals to such work. The liaison developed between fire departments and water utilities should follow four basic rules:

(a) Water utility officials should recognize their responsibility as an important element of the fire protection system and look to the fire department for advice on supply needs, location of hydrants, and type of hydrants.

(b) The members of the fire department should leave the details of operation of the water system to the engineers responsible for these functions. Through the help of a staff fire protection engineer, criteria can be established for fire service water supply requirements.

(c) The fire department and the water utility should appoint liaison officers who are concerned with carrying out the responsibilities of public fire protection service. In small departments, the fire chief and the waterworks superintendent may perform this function. In larger departments, a fire department staff officer and a waterworks engineer should have the responsibility.

(d) An open line of communications must be maintained between the two departments so that both departments will be aware of any changes that could affect the operations.

18-3.2.1 Where the utility is owned by the city and both the fire chief and the manager of the waterworks report to the chief administrative officer of the city, the respective responsibilities of the two departments should be clearly delineated and liaison personnel should be provided. The chief administrator should resolve conflicts making recommendations to the city's council or governing board where needed.

18-3.2.2 Relationships are more complicated where the city owns the utility but an independent administrator or board is established to govern its operation. The fire chief should be a member, ex officio, of the water authority board in this type of organization to improve the relationship.

18-3.3 In the cases where the utility is privately owned, or in the cases where the utility is owned by a public authority serving an area larger or smaller than the fire department area, the utility may have a franchise or contract with the city or fire department area authority. These franchises or contracts give the utility certain basic rights. It is particularly important to the fire department that the contract should include terms adequately reimbursing the utility for the fire protection service it furnishes. If a utility is not adequately paid for fire protection, it may limit such service and the fire department may be inadequately served.

The fire department should be familiar with franchise and contract provisions of utilities that affect its operations. The fire department should act through appropriate administrative channels to see that any needed revisions of franchise or contracts are made whenever such franchises or contracts are renewed.

18-4 Hydrant Service.

18-4.1 The fire department should have authority for the approval of hydrant design and installations. This should include the size and type of hydrants, number and size of outlets, and the threads used, as well as approval of each specific hydrant location and installation. Hydrant place-

ment should reflect the hazards of the locality and the needs of the fire department in dealing with those hazards.

18-4.2 Fire hydrant locations should be clearly marked and maintained so that each hydrant location is visible and accessible at all times. Each hydrant should be marked to provide pumper operators with some idea as to available flow.

Hydrant barrels may be painted with reflective paint for nighttime location. Reflective markers can be placed in the middle of the street opposite hydrants to assist in nighttime location or in daytime location if hidden behind parked vehicles or other obstacles.

NFPA 291, *Fire Flow Testing and Marking of Hydrants*, explains a method of conducting flow tests and a marking scheme using colors for tops and caps to indicate flow. Flow data on individual hydrants is principally of value in weak areas of a distribution system and on dead-end mains to alert officers and pumper operators to very limited flows.

18-4.3 All hydrants should be inspected and tested at least once per year, preferably twice per year, and after use at fires if problems related to hydrant performance were experienced. If not inspected and tested by the water utility, the hydrants should be inspected and tested by the fire department. Where problems or deficiencies are identified, the fire department should file a report with the water utility asking for specific relocations, repairs, or other adjustments to correct the problem.

American Water Works Association Manual M-17, *Installation, Field Testing, and Maintenance of Fire Hydrants*, can be helpful in this process.

18-4.4 The fire department communication center should be notified by the water utility whenever any fire hydrant is placed out of service or returned to service. The communication center should then advise all stations for posting of the information to all members.

18-5 Private Fire Connections.

18-5.1 Private fire connections are the connections from public utility street mains that are made in individual properties to furnish water for fighting fires. The simplest connections serve sprinkler or standpipe systems. More complicated situations feed private underground yard systems and hydrants or storage tanks providing a private fire pump supply.

The fire department should know how water systems in individual properties supplied by private fire connections may be employed most effectively in fighting fires and should have the authority for approval and general supervision of private fire connections.

The water utility should be required to inform the fire department whenever a connection is made to supply fire protection systems in a specific property and to furnish detailed plans of the connection to the fire department. The fire department should approve any fire department connections provided in private systems.

18-5.2 The fire department should maintain a file of records or plans of the piping and valves in all connections to water utility systems for fire protection of specific properties. It should inspect such connections at the time of in-

stallation, when changes are made, when pre-fire plans are being made, and at other times as necessary or at least annually.

Particular attention should be given to pumps supplying sprinkler and standpipe systems.

18-5.3 The fire department should continually emphasize the need for the installation of sprinkler systems and other forms of private fire protection through education programs, press releases, and liaisons with special interest groups within the municipality.

Some large occupancies present uncontrollable fire potential if they are not protected by automatic sprinklers. Some occupancies, such as nursing homes, convalescent centers, and hospitals, are serious life hazards without sprinkler protection. Fires in tall buildings are extremely difficult to fight if the buildings are not fully sprinklered. Reductions in insurance premiums for fully sprinklered buildings are often sufficient to recover the expense of the sprinkler system over a period of several years.

18-5.3.1 Automatic alarm signals from built-in detection and suppression systems provide early warning and enable earlier fire department response. The installation of such systems should be encouraged where alarm receiving facilities are available or can be provided.

18-5.3.2 The authority having jurisdiction should prohibit unnecessary meter requirements, pit arrangements, and standby charges that do not represent a real cost to the utility for private fire connections.

18-6 Alternate Water Supplies.

18-6.1 The fire department should study alternate sources of water supply, in the event of a major disruption in public water supply capabilities.

Water is available in many communities from natural lakes and ponds, streams, and the ocean. To make them available for pumper suction, these sources may require that dry hydrants and piping be installed or that driveways, ramps, platforms, or floats be provided. It may also be possible to obtain water from swimming pools, decorative pools, stock tanks, or storm drainage systems.

18-6.2 Written agreements should be signed with the parties concerned where the auxiliary water sources are privately owned or under the control of a separate public authority.

18-7 Supervision of Private Water Systems. The fire department should require managers of properties with private fire protection systems to notify it when any of the valves controlling private water supplies have to be closed for repairs, extensions, or other reasons.

Managers of industrial and other properties with extensive yard systems of private piping for fire protection usually require employees to notify the officer in charge of loss prevention in such cases. In such plants, notification of the fire department would provide a valuable supporting service to plant protection as the fire department can develop contingency plans to support the fire protection in the impaired areas in case of a fire.

Plants without an official assigned to fire loss preven-

tion should be asked to require maintenance personnel to notify both plant management and the fire department of system impairments.

Chapter 19 Hazardous Materials

19-1 Assignment of Responsibility.

19-1.1 The storage, use, transportation, and disposal of hazardous materials and hazardous wastes have been recognized as significant risks in most communities. To effectively manage these risks requires particular expertise and specialized capabilities. In many cases the fire department has been assigned as the primary or lead agency in protecting the community from these risks.

19-1.2 The responsibility for managing the community hazardous materials program requires extensive interaction with other agencies on the local, regional, state/provincial, and federal levels, organized planning groups, and private sector organizations.

19-1.3 The fire department should be directly involved, as either a lead or participating agency, in the process of gathering and organizing information, identifying risks, planning for hazardous materials emergencies, and regulating the storage, use, transportation, and disposal of hazardous materials and hazardous wastes. The particular role of the fire department in these functions will vary, based on local and regional determinations.

19-2 Hazardous Materials Incident Response.

19-2.1 All fire department members should be trained to recognize and deal with emergencies involving hazardous materials. The level of training for individual members should depend on the role they are expected to perform in dealing with a hazardous materials incident. The training level should be derived from established and recognized levels as described in NFPA 472, *Professional Competence of Responders to Hazardous Materials Incidents*.

19-2.2 To safely and effectively manage hazardous materials incidents, fire service personnel must be properly trained and equipped and must have access to resources beyond those normally used for fire suppression. These considerations include specialized protective clothing and breathing apparatus, disposal containers, neutralizing agents, monitoring equipment, reference materials, and communications with other agencies and sources of information that may be needed in the event of a leak or spill.

19-2.3 The fire department should have an inventory and specific information on the hazardous materials that are stored or used at each fixed location in the community. This information should include material safety data sheets, plans and diagrams, information on potential sources of leaks or spills, and appropriate intervention strategies to be employed in predictable situations.

19-2.4 The fire department should adopt standard operating procedures for hazardous materials incidents that are integrated with the incident command system and pro-

cedures used for other types of incidents. Pre-incident plans should be prepared for specific occupancies. The planning process should be coordinated with community and private sector planning processes that are implemented to meet legal requirements. These plans should include evacuation plans, intervention strategies, sources of expertise, and specialized assistance and disposal plans. The planning process should clearly identify the authority having jurisdiction for command responsibility during hazardous materials incidents.

19-2.5 Hazardous materials response teams should be established in jurisdictions with significant hazardous materials risks. The establishment of a hazardous materials response team requires a significant commitment in terms of training, equipment, and medical support. Where the fire department lacks the necessary resources to fully support and operate a hazardous materials response team, alternatives such as regional teams and private sector support should be evaluated.

Chapter 20 Emergency Management

20-1 Purpose. The fire department should be involved in planning for emergencies that go beyond the scale of major fires and have the potential to exceed the resource capabilities of a particular jurisdiction.

20-1.1 Emergency management is a complex subject that goes beyond the scope of this document. The information provided in this section is intended only to describe the basic components of emergency management.

Emergency management is usually considered in four phases: mitigation, preparedness (including planning), response, and recovery. These phases are commonly known as comprehensive emergency management. The fire department is usually involved primarily in the functions that relate to preparedness and response.

20-2 Disaster Planning.

20-2.1 A disaster plan should be developed that is broad enough to encompass all situations that a community might face (all hazard approach). These could include: conflagrations, earthquakes, floods, nuclear war, nuclear generating plant accidents, transportation incidents (vehicle, railroad, aircraft, marine vessels), gas explosions, toxic material releases, tidal waves, hurricanes, and any other event that would require multi-agency action to preserve life and property and to facilitate recovery from the event.

20-2.2 The disaster plan should identify and evaluate risk (hazard analysis), formulate objectives, determine resource requirements and availability, assign responsibilities, develop special situation plans, provide the structure for directing and managing response operations, and develop plans for short- and long-term recovery.

20-2.3 The authority to take actions to protect lives and property and to preserve the well-being of the community will be in federal laws, state or provincial laws, county laws and ordinances, and city laws and ordinances. These should be researched and included in the plan.

20-2.4 Local disaster plans should be coordinated with county and state emergency plans as well as plans by federal agencies such as the Federal Emergency Management Agency.

20-2.5 The following emergency functions should be considered in the development of a disaster plan.

- (a) Law and order
- (b) Communications
- (c) Public notification and evacuation
- (d) Fire protection
- (e) Rescue
- (f) Ambulance
- (g) Engineering
- (h) Public works
- (i) Public utilities
- (j) Private utilities
- (k) Health and medical
- (l) Emergency welfare services
- (m) Personnel
- (n) Finance
- (o) Damage assessment
- (p) Transportation
- (q) Emergency public information
- (r) Shelter (natural or nuclear)
- (s) Legal
- (t) Radiological defense
- (u) Multi-agency cooperation.

Chapter 21 Management Reports and Records

21-1 Types of Reports and Records.

21-1.1 Records must be maintained to satisfy legal requirements for provincial, state, and federal agencies as well as providing the data base from which management reports can be generated. Information should be collected so that it satisfies the requirements and provides useful data for decision making.

21-1.2 A records system should support the management of the fire department by providing the fire chief and other administrative officers with data that indicates the effectiveness of the department in preventing, suppressing, and investigating fires.

21-1.3 A records system should provide data for reports on department activities, accomplishments, and long-range needs. The fire chief should base reports to the city officials or members of a fire department governing board, and to the public, on these records.

21-1.4 It is necessary to do more than just collect data. It should be analyzed and interpreted in relation with other statistics and factors. Training for use and interpretation

of data by department personnel should be included when a reporting system is implemented.

21-2 Records System.

21-2.1 The fire chief should review legal requirements relating to reporting and retention of records and specify the records to be kept and methods of gathering data. All records should be examined for their usefulness and effectiveness to assist management. Records should be made or kept only for a valid management or legal purpose. A records retention and disposal system should be instituted.

The extensiveness of the record system will depend upon the size of the fire department, the type of organizational structure, and the expertise of personnel assigned to maintain it. Although the basic data that should be recorded is essentially the same for all sizes of fire departments, the method of gathering and recording the data may become complex in large departments. A study of fire department operations or the development of information for long-range plans may suggest compiling certain information. The fact that certain data may be needed for special purposes, however, does not mean that such data should be collected indefinitely.

The use of computers has enhanced the record keeping functions in many fire departments. Computers can enhance the quality of the data in the file by editing the data as it is entered. They also allow for a quick retrieval of specific records or data, easy summarization of data into management reports, and the ability to cross-tie information between files (e.g., incident data and inspection data).

Local universities, colleges, and high schools are excellent resources for fire departments looking for help in setting up computerized record systems.

21-2.2 The various references in Appendix A should be used by the fire department to structure its management reports and records.

21-3 Incident Reporting.

21-3.1 Reports on emergencies are essential to providing an accurate record of a department's activities. Reports should outline conditions encountered at an emergency and all actions taken by the department to control the condition. They should serve as a basis for determining incident responsibility.

Reports also serve as a basis for determining local, state, and national fire trends and establishing the needs of a fire department. NFPA 901, *Uniform Coding for Fire Protection*, should be used as the basis for classifying data on emergency incidents. NFPA 902M, *Fire Reporting Field Incident Manual*, and the National Fire Incident Reporting System (NFIRS), Federal Emergency Management Agency, Washington, DC, should form the basis of an incident reporting system.

21-3.1.1 Each fire company should record necessary information on each response. The officer in charge of each alarm should collect the company information and consolidate the data in them that applies to a particular alarm or fire. This should be the basic record summarizing the operations of the department. From these reports, information should be available for daily, monthly, and annual reports of the work of the department. In large depart-