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Unit II

Fire Protection and Prevention Organization

The local assistant, whether a fire chief or not, usually has some responsibility for the fire protection of their area of jurisdiction, and has an obligation to the prevention of fires. This unit is dedicated to providing specific information regarding the organization of fire prevention and protection services for any jurisdiction. Some of the information may appear to be focused on municipalities that do not have a fire department. However, municipalities without a fire service may use this Unit to help organize a fire service and municipalities with a fire service may find the information helpful in improving their existing fire service.

Establishing a Fire Department

It is important that fire departments be organized in accordance with the laws of the province to protect the members in matters of legal responsibility. The Municipal Acts allow a municipality to set up and operate a fire service as a municipal service. This includes acquisition of fire fighting vehicles, equipment and apparatus, staffing, setting up fire halls and establishing agreements with other municipalities or agencies for this service. The operation may be a paid department, a volunteer department or a combination department (ie: some paid members and some volunteer members).

The first step in organizing a department therefore should be to contact any existing local government bodies to solicit their advice and support in the review and establishment process. The Urban Municipality Act (section 136), The Northern Municipality Act (section 100.1), and the Rural Municipality Act (section 215) provide councils with powers to provide for fire protection and prevention in their municipalities. The provisions of these three acts are quite similar, however, in developing bylaws, the municipality must refer to the enabling sections in its own act.
Note that for urban municipalities the construction, operation and maintenance of the fire hall must be done through a bylaw. Other municipalities may accomplish this by resolution, although a bylaw is recommended.

The following steps should be undertaken in order to support a request for fire protection service establishment as a Municipal responsibility:

1. Carry out an "economic and technical" feasibility study. (see “Planning for Fire Protection” below). This should be done as a joint exercise between the organizing committee and the local government jurisdiction being asked to take on the service. The power to set up a fire department is discretionary. A municipality is not required to establish a fire department, however, due consideration must be given whether to have one or not.

2. Obtain the necessary "approvals". The following approvals will be necessary in order for the fire protection service to become a reality:
    a. Electorate approval - those expected to benefit and pay.
    b. Local Government - Municipal Council or Board. - Province (as applicable).

3. Put the service in operation.

Planning for Fire Protection

Reasons for planning for Fire Protection.

- to reduce life and property loss.
- to improve fire protection services, especially fire prevention.
- to involve non - traditional agencies and groups in fire protection.
- to control fire protection expenditures.
- to identify community fire protection goals.
- to document current and future fire protection environment.
- to document current and planned fire services.
- to identify current and future fire protection resources.

- to establish inter - agency fire protection policies, procedures and responsibilities.
- to establish fire protection requirements in community development plans.
- to evaluate innovative methods of fire protection.
- to establish training programs.
- to identify gaps in service that compromise public safety.

Fire protection generally has not been considered as a system that can be defined, directed and controlled. However, planning is the key to adequate fire protection, but the planning must be done at the local level. Planning should include:

- identification of the community's fire situation and the factors influencing it. This is done for the present and the future.
- establishment of goals and objectives. Determine what level of fire protection is needed now and what will be needed at the end of the period for which you are planning.

Communities are being challenged to control or reduce costs and yet maintain or improve services - herein lies the challenge facing master planning. The community as a whole needs to understand what master planning is and what it is not. People must not feel threatened by the planning process; they should feel that they are a part of it and have a say in what happens. Planning will take a lot of work and some of the decisions will be difficult, but the results are well worth the effort. When it is completed, the master plan is presented for approval and adoption. The question of who presents and adopts this plan is left up to the community to answer. As has been indicated, the fire department cannot plan alone, and it is advisable to involve the community in the planning process. It is suggested that in some communities a committee may do the planning with the chairperson presenting the plan to the entire town at a meeting. In other communities, perhaps the fire chief will do all the planning and present it to council. A listing of suggested organizations, agencies and individuals that may have an interest in planning, and who may also be involved in committee work is included in this section.

Adoption of the plan is the final step of the planning phase; it is here that the community commits itself to the plan. Commitment means that the level of fire protection service, and therefore the risk, is fully understood and accepted. This is especially important where changes in current methods are to be made, for example, increased private sector participation through mandatory installation of smoke alarms, smoke detectors or sprinkler systems to offset levels of service.

To better understand fire prevention and control as a workable system, consider the term "fire protection" as defined by the National Fire Protection Association:

> *"Fire Protection. The sciences of reducing loss of life and property by fire, including both fire prevention and fire extinguishment by public or private means. Also, the degree to which such protection is applied."*

Fire protection has long been thought of as a service that is provided by a fire department in the form of fire fighters and fire engines speeding to the scene of a burning building. This may be an accurate view of some fire departments, but, there is much more to fire protection than putting out fires and rescuing people. Although not generally recognized as such, perhaps the most important part of fire protection is a system where people and equipment work together to prevent fires. For example, if there were no fire prevention oriented building codes and if people were not reasonably aware of fire danger, fire losses would be immeasurably greater and fire suppression forces would be overwhelmed.

In a typical community each of the following organizations is a part of the fire protection system:

- Fire Department - Performs rescue, fire extinguishment, fire cause determination, emergency medical services, routine fire prevention activities such as inspection, education and code enforcement.
- The Fire Chief - should be appointed as a Local Assistant to the Fire Commissioner to enforce the Fire Prevention Act and pursuant regulations.
- Building Department - Administers and enforces the Uniform Building and Accessibility Standards Act and Regulations in new construction and existing construction undergoing remodelling.

- Road/Street Department (Public Works) - Constructs, marks and maintains traffic corridors (roads, bridges, access design) for motor vehicle use, including fire apparatus. Rural property identification and numbering along with a detailed map of area to be protected. These departments are a source for bulldozers, road graders, water tanks, and other heavy equipment useful in times of major fires.
- Law Enforcement Agencies - Function in fire investigation, arrests, prosecution, traffic control, and other police action necessary in times of major fires (crowd/traffic control).
- Water Purveyor or Water District - Supplies and distributes water for fire protection.
- Emergency Health Services - Administers emergency medical care and transports fire and accident victims.
- Public Schools and Community Colleges - Sponsors public awareness programs in fire prevention and control to educate children and adults.
- Planning Commission - Determine zoning and property use which influences the spread of fire.
- Citizens - A personal concern and responsibility for themselves and their neighbours.

Major Items to be Considered

Major items that must be considered when planning are:

1. Fire Apparatus - ie: must be compatible with water sources, area to be served (will the vehicle be used on roads or must it also be capable of being used "off-road").
2. Fire Fighting Equipment - including personal protective equipment, clothing and SCBA.
3. Fire Station - location and design
4. Staffing - as many members as possible - a minimum of 15 persons (two crews of 7 and one officer) is recommended as the smallest fire department.
5. Communication System

- -from the public to the fire department, reporting the emergency,
- -from the fire department to the fire fighter, to gain response,
- -between fire fighters, at the emergency to control operations, and
- -between mutual aid agencies.

6. Water Supplies - hydrants, standpipes, lakes, streams and other man made sources, reliability and quantity
7. Private Property - the ability of a fire department to enter onto private property to extinguish a fire which is endangering surrounding property or buildings. Permission/right is granted by the Fire Prevention Act, but is it physically possible?
8. Mutual Aid - legal agreements under Municipal Acts, with adjacent fire departments and with Federal and Provincial authorities (ie: forests and parks)
9. Personal Protection - compensation for the fire fighters in the event of an accident.
10. Geographical Boundaries - what areas will be included in the fire protection area; - mutual aid areas; - areas where fire protection will be required in the future.
11. Population data - the total population now, projected population in 5 years and seasonal variations, age, and other population demographics,
12. Physical data - the road system, topography, weather conditions,
13. Land use - total area, urban, rural, residential, wild land, grasslands, commercial, industrial, agricultural
14. Legal considerations - Workers' Compensation Board requirements and indemnification of local government and fire department members for liability and injury.
15. Funding - Long term capital planning in place to ensure the resources are available to finance future capital improvements and to fund the day to day operations of the department.

Community growth will have a greatest impact on planning. If there is a great influx of people and services into your area, there will be a need to re-assess the capital items that would be required to accommodate that growth. The following areas will require careful consideration:

1. Replacement of worn out or inadequate equipment.
2. The type of development, whether residential, commercial or industrial, and the implications for equipment because of taller buildings or toxic material storage or manufacturing plants.
3. Demands on staffing due to increased calls, inspections and education.

4. The distance development is occurring from existing or proposed fire stations, satellite halls may be required.
5. Water requirements with systems having adequate fire flows or alternate sources of water.
6. Establishing guidelines with regards to accessibility, road grades, sprinklers in commercial buildings and the location of hydrants.

A basic, systematic approach should result in determining the answers to the following questions:

- What are the real fire problems?
- Do people know how to behave in fires?
- Do we have "high risk" groups of people in the area?
- What kinds of fires have occurred, and what losses have resulted from these fires?
- How could fires have been prevented or the losses reduced?
- What specific fire risks now exist or are expected to exist in the foreseeable future?
- Is there an increase or decrease in the population?
- What is the present economic make-up?
- What are the future growth projections land use and zoning plans?
- What is the condition of housing?
- What is the projected industrial growth?
- What are the transportation conditions?
- What plans are in existence at community, local government (municipal, regional district or improvement district) or provincial levels which could influence the planning?

Answering these questions may be difficult. Community involvement is an important element in the planning process. Early citizen participation and support can do much to eliminate concerns and avoid misunderstandings. The people served by the fire department should be made aware of the value of their fire service.

Fire Protection Costs and Value

Whenever a movement is begun either to establish fire protection or to improve the existing services, voices may be raised in alarm. Often the citizens express the feeling that the proposed changes are too costly. Similar exclamations are frequently heard about the costs of maintaining the existing levels of protection.
One reason for the belief that fire protection may be too costly is that people may not understand what fire protection really is. They are not sure whether the protection they pay for is the protection they need or whether they are paying more than their fair share.

Careful planning offers the best approach toward balancing costs with fire protection needs as reflected by the thoughtful desires of local citizens. Involving citizens in the planning process provides the opportunity to inform them regarding fire protection costs, benefits and risks and thereby gain their support for implementing a fire protection system of known performance and cost.

Determining the cost and value of fire protection has been traditionally difficult. Few communities actually try to measure such things, consequently few know the true costs of operating a fire protection system. The expenses of running an organized fire department are regularly calculated, but they are by no means all the costs of fire protection. Here a few of the "other" costs:

- Water distribution and maintenance costs of pipes, hydrants and plant capacity and operations used for fire protection.
- Fire insurance costs.
- Costs for built-in fire protection such as sprinkler systems and smoke and heat detectors.
- Private fire brigade.

In addition, the costs of administering building and fire codes, building permit and inspection programs, and other similarly oriented fire protection programs, must be included.

There are also benefits to these costs, which are important, such as:

- Life safety, which is applicable to anyone.
- Fire loss, the reduction in dollar losses to property as a result of fire.
- Job loss, the reduction in the number of jobs, or the dollar value of those jobs, lost to fire.
- Community tax loss, the reduction of loss of revenue to the area due to loss of property and jobs due to fire.
- Fire insurance premiums, the reduction in insurance costs.
- An organized body of trained individuals that can be called upon in a community emergency.
- Peace of mind.

Use of Available Resources to Improve Fire Protection

Some ways fire protection can be improved, even if resources are relatively scarce, include inexpensive programs of action to raise everyone's level of fire awareness and reduce the number of existing hazards. In communities where public funds can be made available, you may wish to consider the value of expanding fire programs to include:

- The Fire Department objectives of preventing fires from starting; of preventing loss of life and property when a fire starts; of confining a fire to the place where it starts; and of putting out the fire.
- Public education programs designed to reach all citizens in your community through regular classroom instruction, group lectures and demonstrations.
- An active and constructive fire inspection program, coupled with the public education program, organized with the intent to remove common and not-so-common fire hazards.
- An active fire cause investigation program.
- A smoke alarm installation and maintenance program.
- A fire extinguisher program designed to put portable extinguishers into homes and places of business and to teach everyone how to use them.
- Encouraging the development of better water supply and distribution systems.

Fire Protection Bylaw

Once the fire protection service has been established as a local government responsibility, the respective elected bodies will be required to pass a bylaw or resolution for the establishment, organization and regulation of a fire department within their jurisdiction as required by the governing Municipal Act. A recognized fire department should operate as an agency of local government through a Municipality (city/district/town/village), Rural Municipality or Northern Municipality.

Definition of a Recognized Fire Department

> means a fire department established by or contracted with a municipality. (see section 2(e) of the Fire Prevention Act, 1992).

Typically, a fire department has a sustainable source of funding, which could include taxation, fees for services provided, contracts, permit fees or other reliable sources of revenue which will support the cost of services provided. The fire department will include a minimum number of trained persons, able and equipped to respond with motorized fire fighting apparatus to extinguish fires or to respond to other emergency circumstances which may occur within a designated geographical area. The minimum requirements for a fire department to meet the above definition would include the following criteria which should be established within a Fire Protection Bylaw:

1. Organization and Administration - the Fire Department should be formally established under the appropriate Municipal Act. It should identify requirements for the establishment of boundaries, provision of funding and for the formal appointment of a fire chief by the local government body. Administration of the department, such as lines of authority, meetings, compensation, reporting procedures, areas of responsibility and services (such as public education, inspections, fire suppression, rescue, emergency medical, etc...) to be provided by the fire department should also be identified.

2. Membership - establish adequate staffing levels and policy for the fire department including qualifications, hiring, dismissal, and where necessary, the total number of members. Include identification of the number of officers and the specific duties and responsibilities of staff.
3. Training - establish minimum training levels including required frequency of training and maintenance of training records.
4. Fire Fighting Apparatus - establish and/or specify standards and requirements that apparatus must comply with. Reference to recognized standards such as ULC S515 and NFPA 1900 series or equivalent standards is recommended.
5. Fire Apparatus Equipment - establish minimum equipment requirements pursuant to apparatus standards and local needs and operating conditions. Equipment must be in line with services provided (ie: if your department provides vehicle extrication, there must be adequate equipment to fulfil this service).
6. Fire Hall(s) - establish the requirement for a well designed and suitably located fire hall(s) to serve the department and the community.
7. Alarm Notification - require a reliable means of providing for the receipt of alarms and the immediate notification of fire fighters required to respond to these alarms.
8. Water Supply - require that a fire department has an adequate water supply for fire suppression purposes.

NOTE: Some of the above may be established within the bylaw or within operating guidelines for the fire department. The bylaw should require the development of operating guidelines for the department. Operating guidelines have advantages such as the ability to be modified easily to meet changing conditions and still maintain requirements.

An alternative to formally establishing a fire department under a Municipal Act would be to form an association or cooperative (private) fire department incorporated under provincial legislation such as the Cooperatives or Society Act. The main disadvantage with this method is that the department may not meet the definition of a "recognized" fire department as it would not have local government involvement. A Cooperative or private fire department may not have a sustainable source of funding such as taxation or other reliable sources of revenue which will support the cost of services provided.

One other alternative is to “hire” fire protection under a fire protection agreement. (see “Fire Protection Agreements”). This may be a municipal fire department or a private fire department in the area. The advantages and disadvantages of hiring a fire protection service can be numerous depending on circumstances. The primary areas of concern in hiring a fire department are distance of response and availability.

Other Bylaws

Fire Prevention

A Fire Prevention Bylaw differs from that of a "Fire Protection" Bylaw. The "Fire Protection" Bylaw establishes and organizes a fire protection service for a community while the "Fire Prevention" Bylaw establishes fire prevention measures in the form of regulations to be adhered to by the citizens in the community in the interest of preventing fires or reducing the impact of one occurring. While there is nothing prohibiting these two bylaws from being drafted as one bylaw, it is not recommended. Each has a separate function and combining these two separate functions tends to clutter and confuse the bylaw.

A "Fire Prevention" Bylaw is unnecessary if the municipality simply wishes to recognize existing legislation and codes because if no bylaw is adopted, the Fire Prevention Act, 1992 remains in force throughout the Province of Saskatchewan. For some communities this will be all that is necessary in the way of fire prevention bylaws but for other communities even the many codes and regulations accessed through the Fire Prevention Act will not meet local requirements.
A bylaw may only provide regulations for the municipality that adopted it. Individual municipalities must adopt their own separate bylaws and are not governed by bylaws from other jurisdictions. A "Fire Prevention" Bylaw should provide regulations for those instances where existing legislation, codes and

regulations fall short or fail to meet the local requirement. To keep a "Fire Prevention" Bylaw as simple as possible, keep its entries confined to those situations not adequately covered by other existing legislation. For example, The Saskatchewan Fire Code regulation allows open burning, anytime, in almost any location, provided it is done within certain safety guidelines identified in the regulations. To establish control (the where, when and how) of this potentially hazardous activity, a municipality would require a bylaw to regulate the activity and enable enforcement. The Saskatchewan Fire Code regulation does not cover the when, where or how because this is deemed a municipal responsibility. A municipality may establish a bylaw with a section on "Burning Permits" to govern the when, where and how open burning in the community will be permitted.

Fire Protection and Mutual Aid Agreements

Legal, fire protection and mutual aid agreements should be entered into with neighbouring communities and with appropriate agencies. This can provide additional resources in the event of a major emergency or simultaneous emergencies within one jurisdiction. Entering into an agreement takes some planning and the following is intended as a guide through some critical areas of the agreement that must be addressed to ensure the agreement will work as required.
Fire protection and mutual aid agreements are permitted under the Urban Municipality Act, 1984, Section 136, the Northern Municipalities Act, Section 100.1, and the Rural Municipality Act, Section 214.1. Each of the Acts state a council may, by bylaw, enter into agreements with any other municipality or municipal government in another jurisdiction, department, organization or agency of the Government of Saskatchewan or the Government of Canada, Indian Band, person or other properly constituted authority, organization or agency for the furnishing or receiving of fire fighting or fire prevention services or emergency services and the use of fire fighting or other emergency response equipment or facilities either inside or outside the municipality or a specified area on any terms that may be agreed on, including the setting and payment of charges.

The Acts also allow a municipality to charge for any fire fighting, fire prevention or emergency service, or use of any equipment or facilities inside or outside the municipality where no agreements exist, if a request for the services, use of equipment or facilities is made by any other municipality, a municipal government in another jurisdiction, department, organization or agency of the Government of Saskatchewan or Government of Canada, Indian Band, person or other property constituted authority, organization or agency.

Note that the provision of services either with or without agreements is permitted within certain parameters. If there is no contract or agreement, the municipality can pass a bylaw authorizing fire fighting service outside the municipality on a fee for service basis where the service is requested by a municipality or person. This bylaw should contain provisions similar to those of the fire protection bylaw. The terms of the agreement or bylaw will impose duties and obligations on the municipality and the fire department. The advantages of the formal "agreement" is that the municipalities will have been in a position to think through the various types of calls and the procedures they wish to employ in requesting and providing aid, and to avoid liability complications.

While Fire Protection and Mutual Aid agreements have similarities, it must be realized that the agreements are designed to cover specific situations.

In a Fire Protection Agreement (FPA), one municipality has a fire service while the other does not. The agreement is made so that the municipality with the fire service may provide fire protection services to the municipality without a fire service.

In a Mutual Aid Agreement (MAA), both municipalities have a fire service. The agreement is made so that either municipality may call upon the other municipality's fire service for assistance in the event of an emergency.

Considerations in making an Agreement.

Areas the agreement should address are:

- the amount of the fee to be paid by the municipality receiving the fire protection and how it is calculated;
- the period of the agreement;
- arbitration provisions to settle disputes;
- the exact services to be provided, including level of service such as response time, equipment and personnel to be dispatched;
- a description of the area the agreement applies to
- who receives priority in the event of simultaneous calls and
- liability for equipment, actions, etc...

Preamble

The start of the agreement should provide a context for the reader and aid in the interpretation of the agreement should it's meaning prove unclear at some point in time.

Definitions

This section is intended to establish clarity in the use of selected words and phrases, where the meaning might depart from the ordinary meaning of the words used or to avoid needless repetition of a concept that might be difficult to convey in a few words. Care should be taken to use defined terms consistently, and one method employed by authors of agreements such as these is to use capital letters when using defined words or terms.

Term of Agreement

This establishes the duration of the agreement. Instead of establishing a fixed period that would require the municipal councils to renew an expiring agreement, it is recommended the agreement work until such time as one party serves a notice of termination. The terms of termination should be agreed upon (ie: 90 days) so each party has a period for negotiation or to determine other parties for an agreement.

Procedure for Requests

The advantages to the formal agreement is that the municipalities have the luxury of thinking through proposed procedures for responding to calls (FPA) and in calling on another department (MAA). This planning should be done carefully, and all personnel should be aware of the resulting protocols and procedures. One area of extreme liability is where fire departments do not respond to calls because the dispatcher did not know the caller was within the area of jurisdiction. The agreements must be included in operating procedure manuals for the fire department to ensure fire department staff are aware they exist and procedures to follow in responding to calls.

In Fire Protection Agreements, the area covered by the fire department must be clearly established and defined to ensure fire department staff know what property is and is not within the fire protection agreement area. The area of the agreement becomes the area of jurisdiction for the fire department and any person within the area covered by the agreement must be provided a response to a call for assistance.
For Mutual Aid, the Fire Chief (or designate) of each fire department should be the person authorized to request or extend mutual aid services.

Mutual Aid

What happens if a municipality "A" has agreed to provide fire services to an adjoining R.M. "B", but is unable to respond to a call from that R.M. and wishes to call on a nearby fire department "C" to assist under a Mutual Aid agreement? A problem arises, as the fire department "C" might not be authorized to respond since no agreement exists between R.M. "B" and fire department "C". The R.M. should be asked to agree to the substitution in a FPA and the fire department "A" must have the provision installed in the

MAA with the fire department "C". It should be noted that jurisdictional problems are not a priority issue as both the Fire Prevention Act and Municipal Acts allow a fire department to respond anywhere to put out a fire. Fire departments requested to respond outside of their jurisdiction may do so with liability protection provided by legislation.

Jurisdiction and Command

In a fire protection agreement the fire department (usually) must be allowed command of itself and jurisdiction must be identified (see section H of the Fire Prevention Act, 1992) and given to the fire department to allow response to calls within the fire protection agreement area. In a mutual aid agreement the establishment of a command structure as well as procedures for the possible transfer of command must be established. Typically, the department having jurisdiction at the scene will establish command, but the agreement should describe the basis upon which senior officers of the respective departments might take on or surrender command. The chief of the assisting department should be treated as an extension of the chief having jurisdiction's own manpower and equipment.

The agreement must allow the chief of the assisting department to decline to carry out instructions if they unduly place fire fighters and/or equipment at risk or are contrary to law (which might include obligations under The Occupational Health and Safety Act.)

Discretionary Powers and Decisions

In a Mutual Aid agreement, the assisting fire department does not necessarily expand its area of jurisdiction, and thus does not owe a legal or contractual duty to respond to every request for assistance. In a Fire Protection agreement, the fire department is the authority having jurisdiction (jurisdiction must be given by a fire protection agreement) and has increased its area of jurisdiction to include the fire protection area identified within the agreement.
In both types of agreements, provision must be made to allow the responding/assisting fire department to divert a response to another location, and to withdraw from an incident scene if another incident deserves a higher priority.

Insurance/Mutual Releases/Indemnification

A mutual aid agreement presents some "risk management' challenges. A fire department may respond to a call on unfamiliar ground and expose its people and property to risks, or it may assist the requesting fire department adequately, and still find itself, by its mere presence at the incident, being named as a co-Defendant in a legal action alleging negligence.
The agreement should propose that both parties to the mutual aid arrangement should carry insurance to certain minimum standards. It is also recommended the requesting fire department should defend the assisting fire department against third party lawsuits (thus making the adequacy of the insurance a very relevant consideration) except to the extent the assisting fire department is responsible for the damages at the scene of the incident. It is suggested that both departments waive direct claims against the other.

Each department should seek advice from its lawyer and/or insurance broker in these matters. Many factors unique to each municipality's insurance portfolio (or self-insurance plan) could come into play, and it is possible that insurance carriers may resist the provisions described above.

It might be noted here that certain fire department operations and equipment are often excluded from "standard form" property and liability policies. Unlicensed trucks, for example, may still be classified as "vehicles" under a standard liability policy and excluded from coverage. Because they are unlicensed, standard plate insurance will not apply.
In addition, for property insurance purposes, fire vehicles and apparatus might be classified as "specialized equipment" and excluded from coverage in the event of loss or damage. Special policy riders or endorsements might be required to extend coverage to this property.

For Mutual aid agreements, there must be some provision to allow fire departments to work together. This may require development of operational guidelines covering such items as;

- communications between departments
- common terminology
- maps
- training together
- and other considerations that directly effect a fire departments ability to operate effectively.

Communications

There will be a need for public reporting, dispatching, telephone and two-way radio systems to fulfil the following functions:

- receiving the fire alarm or emergency call from the public,
- notifying fire fighters and other interested agencies of an incident,
- communication on the fire ground between fire fighters and or the dispatch center.

The alarm should be received on a dedicated line for fire emergencies only. The alarm can be received at a central 24 hour answering service, or through radio-telephones carried by fire fighters. The department must quickly dispatch fire fighters and apparatus by using the following methods:

- sirens
- air horns
- telephone/radio fan-out system; or
- pagers

Once at the scene, fire fighters may need to talk to each other, the fire apparatus or the dispatches center. There will be a need for portable radios and mobile radios in apparatus.
Communication on the fire ground and during emergency operations is critical to the success of the operation. Fire officers should examine the need for communications and select a system that will meet local needs, whether it involves sophisticated radio-telephone system or an existing telephone system. One of the larger areas of liability a fire department faces is in the receipt of alarms and subsequent actions/systems to ensure dispatch of personnel and equipment.

Fire Department Training Program

One of the primary functions a fire department must perform is training. Training is critical to ensuring an effective and efficient service to the community, and more importantly, it provides fire department members with the skills and knowledge to prevent them from being injured or killed, or causing other department members to be injured or killed, on the fire ground. The primary objectives of any fire department training program should be:

1. To increase the efficiency of officers and fire fighters when responding to emergencies.
2. To teach only safety principles and practices that will result in the best use of people, apparatus, tools and equipment found in each community.

In general, there are three broad fields of fire fighter training:

1. Training for fire fighters both as individuals and teams.
2. Training for officers.
3. Training for fire instructors.

All Fire Department Training should be divided into three phases:

1. What they must know to do the job. (Knowledge)
2. What they should be able to do. (Skills)
3. What they must know to become skilled fire fighters.

The following is an outline of subjects for a training program which may be drawn up for your department. One point should be understood clearly at this time, "every fire department should have a committee to formulate their training program". The chief may be a member of the committee, but cannot run the entire program if expected to perform other duties effectively.

Training for Chief

Training must address the fire department requirements and consequent responsibilities placed upon the chief:

Requirements of a fire department
Selection and supervision of personnel
Water supplies
Resources and reserves
Establishing running orders
Requirements for major fires
Special operations
Fire Prevention and Education Programming

Training For A Fire Department Officer

Training should include the requirements of a fire department officer:

Fire fighting tactics
Requirements for major fires
Spotting apparatus and equipment
Establishing running orders

Training for Fire Fighters

Training in fire department organization and operation, before, during and after a fire.

Responsibilities of a fire fighter
Duties of a fire fighter
Ladder practices
Hose practices
Overhaul procedures
Ventilation
First Aid
Fire Prevention Education
Fire fighting practices
Fire travel and control
Building construction and occupancy
Forcible entry
Minor extinguishment
Rope work
Salvage operations
Fire stream practices
Inspection practices
Special apparatus and equipment
Rescue
Private fire protection
Water distribution
Fire causes and hazards

All items listed should be adopted and developed to meet the department's needs, its apparatus and equipment and the community it serves. Leadership and initiative must be built into the whole structure. Remember - Training is a job within itself. Results depend upon the ability of the instructor to present his/her knowledge in a way that students will understand and be able to put it into practice.

Administration and Operation of a Fire Department

If the fire protection service is to be provided efficiently and effectively, there must be dialogue and trust between the elected officials and the appointed officers. Both parties have a role in finding the basis for consensus and compromise. The elected officials have to balance the priorities of all the services provided to the taxpayers. The Fire Chief must be prepared to document and promote the needs of the Fire Service and to function within the limit of resources provided.

Modern day Councils and Boards, as a result of public pressure from increasing taxes and debt and the liability issues overshadowing municipal services, are becoming increasingly more interested in the specifics of service operations (including fire protection). Once a fire protection service has been established, it is important that it be implemented and maintained to meet the demands of the area served. Trends in cost cutting and the reduction of municipal services require the Fire Chief to establish and maintain a cooperative relationship between the fire department and the municipal council or board. The challenge for the Fire Chief is to develop and operate a fire department capable of providing a level of service which is acceptable to: the public it serves, the public officials it reports to, and those who provide the service.

Guidelines for the Fire Chief:

- Leave policy-making to the elected officials but understand your role in its development.
- Develop established (documented) lines of communication between yourself and the elected officials to deal with all matters involving both groups.
- Be prepared to support your position on all service-related issues in the form of reports.

- Understand the roles of elected body (Council or Board) and yourself before taking on the position.
- Be accessible.
- Be professional.
- Attend Council meetings regularly and provide reports.

Remember the public and elected officials are always right. The Fire Department can no longer just "exist" in a municipality. It must clearly establish its role and ensure the services it provides to the community are the best available.

Reference and Technical Library

An up-to-date library with reference materials and Codes, can provide guidance and knowledge to fire department personnel. The following current manuals should be included:

- Saskatchewan Fire Prevention Act, 1992.
- Saskatchewan Fire Code Regulations.
- National Fire Code of Canada (edition currently in force).
- National Building Code of Canada
- Provincial Occupational Health and Safety Legislation and Regulations
- W.C.B. Industrial Health and Safety Regulations
- NFPA Fire Protection Handbook
- applicable NFPA Standards
- International Fire Service Training Association (IFSTA) manuals

Fire Chiefs and Local Assistants should also maintain a copy of the Local Assistant's Handbook in the library.

Insurance

The job of fire fighting is extremely dangerous and involves many duties. It is recommended that you gain insurance coverage for your health and life in case of an accident while performing fire fighting duties, responding as a First Responder or as part of an ambulance crew. There are numerous agencies that offer insurance to fire fighters and this is not intended to advertise any policy, company or organization as a place to obtain insurance coverage. However, there are agencies that do offer insurance to municipalities. Where fire departments or municipalities are covered by insurance they may have a life/injury insurance package also. It is strongly recommended fire fighters determine what insurance coverage they have through the municipality and where lacking, obtain insurance from one of the companies that does offer insurance.

Wildfire Threats to Urban Interface Areas

Rural areas are becoming increasingly popular as outstanding locations for both seasonal and permanent residences.

A bylaw should be established to control vegetation and construction methods in urban interface areas. The Department of Environment and Resource Management has legislation that can assist municipalities in the passage of this bylaw. The department can assist residents in the interface area with many good recommendations on safety.

Public and private education will lessen the risk of wildland/urban interface fires. An increased awareness and homeowner involvement will ensure greater safety in this area.

Operational Guidelines

In order for a fire department to function effectively it must be organized so that all members are working in a coordinated effort to accomplish the objectives and requirements of the department. The fire department should develop and implement an Operational Guidelines Manual that should include but not be limited to the following procedures:

- Training safety operations personal protective equipment equipment safety/maintenance
- special operations dangerous goods work site safety respiratory protection program

These procedures will enhance employee safety, minimize public risk from fire department operations, increase operational effectiveness and protect fire department assets from possible loss.
The Operational Guidelines should be kept in a binder readily available for each member to read. Maintaining a very comprehensive Operational Guidelines Manual will reduce the risk of liability claims against the fire department.

The following formats of Operational Guidelines are provided to assist fire department officers in developing a formal outline for guidelines. The formats include basic guidelines that should be developed. Fire officers should review the formats presented and include guidelines applicable to their department.

Fire Department Policy

Policy is a preferred course of action and/or method of operation that has been selected in advance of the situation. Fire Departments must have a highly developed awareness of what is expected of them in the performance of their duties. The issue of policy cannot be resolved at the scene of an incident. Therefore, policies that will be instrumental in decision making must be in place and operative prior to an incident.
The worst form of policymaking that a fire department can use is the development of a Do's and Don'ts list. The best form a fire department can use is the development of a set of performance procedures or guidelines for the fire department that relate to fire problems in that area. Individuals may develop these various policies, but it is, however, preferable to utilize groups of persons or committees set up for that expressed purpose.
A policy should start with a "Mission Statement" which defines the purpose and goals of the fire department.

As a result of policy, the performance standards should include a concept of Operating Procedures or Guidelines to which the fire department adheres. Since Operating Procedures flow out of policy and policy may vary from department to department, it is necessary that each department develop and implement its own.
The following pages offer a suggested listing of topics, and suggested layout formats that a fire department may wish to consider when developing operating procedures/guidelines.

Fire Department Operating Guidelines

Small Fire Departments

CONSTITUTION

1. Mission statement
   defines the purpose and goals of the department.
2. Fire Protection By-law
   identify the bylaw for the departments formation and any interpretation. Maintain a copy in the appendix.
3. Fire Prevention By-law
   identify the bylaw for the prevention of fire and interpretation. Maintain a copy in the appendix.
4. Policy Statement
   state what the procedures/guidelines are to accomplish, their purpose and intent.
5. Organizational Structure
   this should define the fire department organization in specific detail. How many members, how many officers, how are members/officers accepted or promoted into the department, under who's approval (councils ?), how (accepted/appointed in writing ?), roles and duties of members and officers in a general statement. Organizational structure(s) should be established as required.

6. Organizational Charts
   This provides a visual aid to the organization of the department and can be important to establishing a solid chain of command and organization in the department.
7. Staffing Duties
   Who and what duties members of the department are responsible for. Include all positions in the organizational structure and be specific.
8. Jurisdiction and Boundaries
   where does the department have authority to operate or provide services and restrictions or procedures on leaving the area of jurisdiction.
9. Administration
   When does the department meet/train. What happens if members miss meetings or training ? Who is responsible for record keeping ?
10. Fire Department Operation
    policy statement for reference to Operating Procedures/Guidelines in next section.
11. Revisions to Policy and Operations
    method of establishing and revising policy and procedures and in the instance where a situation is not covered by established policy or procedure.

GENERAL OPERATING PROCEDURES/GUIDELINES

1. Duty Crew
   How many, how scheduled, by whom, restrictions on leaving area of jurisdiction, etc... Establishes a minimum level of manning in the jurisdiction for protection.
   This should also establish specific duties for the duty crew (ie: any maintenance, checks or services required for equipment.)
2. Vehicle and Equipment Maintenance
   What, when, how often, etc equipment is maintenance, and who is responsible for establishing schedules. A maintenance schedule and log should be established for ALL equipment in the department, including personal protective clothing.

EMERGENCY OPERATING PROCEDURES

1. Emergency Notification
   When an emergency is reported, who is responsible for record keeping, what information must be obtained, how is the department mobilized to respond, how is communication established, what is the minimum response, etc.. This should establish a procedure for emergency response.
2. Mutual Aid
   Same as 1. above, but may also include who may receive and dispatch to mutual aid requests, and who may request and procedures for mutual aid from other departments. This must follow the agreement made (kept in appendix).

The following should provide a response procedure and guide for target or risk occupancies in the community. Information may contain minimum personnel and equipment response, when to make mutual aid calls, initial attack procedures and other information on responding to an emergency at these buildings. The procedures should be established through pre-fire planning.

- Hospital
- Senior's Nursing Home
- Elementary School
- High School
- Bulk Fuel – Dangerous Goods Storage/Warehousing
- Grain Elevators

APPENDIXES
Appendix A - Fire Protection By-law
Appendix B - Fire Prevention By-law
Appendix C - Mutual Aid Agreements

A more comprehensive topic listing for a larger fire department follows.

FIRE DEPARTMENT OPERATIONAL GUIDELINES INDEX

DEFINITIONS
- Operational Guideline Definitions
- Operational Guideline Policy

SECTION 1: SAFETY
- Occupational Health and Safety Program and Policy
- Written and Practical Safe Work Procedures
- Training for Fire Fighters and Officers
- Supervision of Workers
- Regular Inspections and Monitoring
- Hazardous Materials and Substances
- Monitoring of Workplace Exposures
- Medical Examinations and Health Monitoring
- First Aid Services and Equipment
- Investigation of Accidents and Diseases
- Joint Occupational Safety and Health Committee
- Records and Statistics
- Review of Occupational Safety and Health Program
- Respiratory Protection Program
- Personal Protective Equipment
- Personal Protective Clothing Inspection and Cleaning
- Personal Alert Safety Devices
- Incident Safety
- Incident Accountability
- Incident Rehabilitation
- Work site Safety
- Monitoring During Salvage and Overhaul
- Vehicle Response Safety
- Warning Devices in Emergency Operations
- Warning Devices in Non-Emergency Operations
- Vehicle Response Safety

Equipment Safety and Maintenance
- Self Contained Breathing Apparatus
- Hydrants
- Aerial Apparatus
- Vehicle Air Brake Systems
- Apparatus
- Small Tools
- Compressed Gas Cylinders
- Encapsulated Suits
- Ground Ladders
- Hose
- Hydraulic Rescue Tools
- Portable Fire Extinguishers
- Ropes

SECTION 2: OPERATIONS
- Department Organizational Structure
- Incident Command System
- Communications Procedures
- Tactical Priorities
- Mutual Aid
- Multiple Site Coordination
- Staging
- Major Medical Incident
- Law Enforcement Liaison
- Emergency Operations Centre
- Emergency Operations Plan
- Summoning Additional Resources
- Termination of Incident
- Safety Officer
- Incident Critique

Communications
- Dispatch Procedures
- Emergency Scene
- Apparatus

Water Supply
- Hydrant Operations
- Tanker Operations

Response to Calls
- SCBA
- Portable Extinguishers
- Small Tools
- Power Tools
- Hydraulic Tools
- Ropes
- Ground Ladders
- Hose
- Fire Streams
- Ventilation

- Forcible Entry
- Rescue
  - Building Collapse
  - Canyon
  - Confined Spaces
  - High Angle
  - Machinery
  - MVA Extrication
  - Structure Fires
  - Technical
  - Trench
  - Water
- Fire Suppression
  - Vehicle
  - Flammable Liquids
  - Garbage Containers
  - High Rises
  - Mailboxes
  - Metals
  - Natural Gas
  - Post Fire Operations
  - Structure - General
  - Structure with Installed Fire Protection
  - Apparatus Placement
  - Fire Watch Detail
  - Wildland/Urban Interface
- Salvage
- Overhaul
- Installed Fire Protection Systems
- Complaints
  - Open Burning
- First Responder First Aid
  - Emergency First Aid
  - Cardio-Pulmonary Resuscitation
  - Triage
  - Trauma Support Kits
  - Helicopter Patient Transfer
  - Hospital Transportation
  - Dead on Arrival
  - Do Not Resuscitate Orders
  - Vial of Life and Medic Alert Tags
- Dangerous Goods
  - Exposure
  - Decontamination
  - Encapsulated Suits
  - PCBs
  - Pesticides
  - Preplanning
  - Radioactive Materials
- Evacuation
  - Buildings
  - Area
- Special Operations
  - Airport
  - Aircraft
  - Attempted Suicide
  - Earthquake
  - Electrical
  - Elevator
  - Escalator
  - Explosives and Bomb Threats
  - Finding of Valuables
  - Flammable Liquids
  - Freeway Operations
  - Fumigation
  - Natural Gas
  - Railroad
  - Response to Riots
- Investigations
  - Fire Cause Determination
  - Suspected Arson
  - Suspected Juvenile Fire Setter
  - Fire Casualty
  - Fire Reports
  - Safety and Respiratory Protection During Investigations
  - Call Out of Off Duty Personnel

SECTION 3: TRAINING

- Standards
  - Career Fire Fighters
  - Volunteer Fire Fighters
  - Maintenance of Qualifications
- Live Fire
- Driver / Operator
- Aerial Apparatus
- Dangerous Goods

SECTION 4: INTER-AGENCY

- Office of the Fire Commissioner
- Mutual Aid
- Emergency Health Services - Coroner
- Police
- Provincial Emergency Program
- Ministry of Forests
- Power Authority
- Gas Authority
- Public Works
- Coroner

SECTION 5: ADMINISTRATION

- Personnel
- Use of Alcohol and Drugs
- Attendance
- Conduct
- Department Uniform
- Employee Assistance Program
- Evaluations
- Grievance Procedures
- Promotions
- Recruitment
- Selection
- Service
- Termination of Service
- Unions
- Volunteer Executive Committee
- Associations

Finance

- Accounts Payable
- Accounts Receivable
- Petty Cash
- Compensation for Damaged Personal Items
- Compensation for Training Fees
- Universal Credit Cards
- Remuneration / Payroll

Fire Prevention

- Frequency of Inspections
- Public Information
- Fire Permits
- Public Education
- Public Education Strategic Plan
- Fire Safety House Operation
- Juvenile Fire Setters

OPERATIONAL GUIDELINE (suggested page format)

FIRE DEPARTMENT O.G. # 0.00

TITLE: OPERATIONAL GUIDELINE DEFINITIONS
Page 1 of 1

PURPOSE: The PURPOSE of the O.G. is described in general terms. One or two brief sentences are used.

To establish a policy for training fire fighters.

SCOPE: The SCOPE identifies the members of the Fire Department to whom the O.G. applies.

This Operational Guideline applies to all fire fighters.

POLICY: A POLICY states the guiding principle or course of action to be adopted while achieving the objective or purpose of the O.G.

All fire fighters shall be trained to meet part 3 of this Operations Manual.

PROCEDURE: A PROCEDURE states the circumstances under which certain actions are to be taken and sometimes those actions are listed. This section describes what actions are to be taken but should avoid describing how the actions are to be performed. If "how to" descriptions are used, this section becomes unnecessarily long. "How to" descriptions belong in a training manual and not in the O.G. Ensure that personnel have either existing skills or have the means to acquire skills prior to O.G. implementation.

Training shall be conducted daily between 1300 and 1500 hours under the direction of the Training Battalion Chief.

REFERENCE: This section lists document references such as legislation, training standards or departmental training documents that apply.

Also see O.G.# Other O.G.s may be related to this O.G. These are referenced here.

Signature of Fire Chief

Date of Issue: This O.G. Replaces:

An important part of the Operation Procedures\Guidelines is the Occupational Health and Safety section. This may be contained within, or can be a separate document from, the Operations Manual. A listing of suggested topics to cover in the OH&S Guidelines are:

PART 1	OCCUPATIONAL HEALTH AND SAFETY POLICY
PART 2	WRITTEN AND PRACTICAL SAFE WORK PROCEDURES
PART 3	TRAINING FOR FIRE FIGHTERS AND OFFICERS
PART 4	SUPERVISION OF WORKERS
PART 5	REGULAR INSPECTIONS AND MONITORING
PART 6	HAZARDOUS MATERIALS AND SUBSTANCES
PART 7	MONITORING OF WORKPLACE EXPOSURES
PART 8	MEDICAL EXAMINATIONS AND HEALTH MONITORING
PART 9	FIRST AID SERVICES AND EQUIPMENT
PART 10	INVESTIGATION OF ACCIDENTS AND DISEASES
PART 11	JOINT OCCUPATIONAL SAFETY AND HEALTH COMMITTEE
PART 12	RECORDS AND STATISTICS
PART 13	REVIEW OF OCCUPATIONAL SAFETY AND HEALTH PROGRAM

Reference to provincial Occupational Health and Safety legislation/regulations and to NFPA 1500 on Occupational Health and Safety Programs for Fire Departments is strongly recommended in developing this document.

The Operating Procedure/Guidelines suggestions presented are not complete, and may be too comprehensive or not comprehensive enough for some fire departments. Operating Procedures/Guidelines should be drafted in concert with legal and local governing administration to ensure the legality of the documents. Talk to other Departments and review their Operating Procedures/Guidelines and bylaws. It is even suggested you may want to discuss this issue with fire departments in other provinces also.

Records and Reports

A fire department cannot plan its work, nor operate without businesslike record procedures. Effective campaigns against fire cannot be successful unless information of fire causes is available. Practical fire records provide the basis or starting point for all intelligent fire prevention activity.
Fires are fought with paper and pencil, as well as with chemicals and water.
The Object of a Record System is to:

1. Provide the fire chief and chief administrator with information that shows the effectiveness of the fire department of the in preventing and fighting fires.
2. Indicate in just which occupancies fires are occurring and what hazards are responsible for them.
3. Show the trend in fire losses, causes for fires and activities of the department as compared with previous years.
4. Suggest the need for certain by-laws, regulations and indicate a change of procedure.
5. Serve as an instrument of control. The recorded depreciation of apparatus may give the chief jurisdiction for recommending the purchase of new equipment.
6. Make for better public relations, by more informative and systematic reporting of the department's activities.
7. Provide reliable facts to indicate trends within the community and uniformity of information for comparisons with other communities of similar size.

The first step in establishing a record system is simply to decide what information is necessary and then set up reports to provide it. Printed forms are the most effective instrument to maintain a record system, but they must be kept up-to-date. Most fire record systems provide the following information:

1. When the event happens
2. A monthly total
3. An annual total
4. A comparison with the previous month or year, whichever is applicable.

Records of a Volunteer Fire Department should be kept to a minimum yet show a fairly accurate picture of the Department's activities. It is suggested the following would form the basis of a record system for volunteer departments.

Fire Department Journal

The journal can be an inexpensive hard covered book with plain ruled lines. Information entered should show a permanent record of:

Roster of department

- Inventory of property
- Inventory of apparatus
- Inventory of equipment
- Apparatus repairs
- Record of hose changes
- Training evolutions
- Building inspections
- Complaints referred to other authority
- Any changes in department procedure

The journal is a diary of the fire department. It will show a good outline of the fire department, its members, equipment and activities. If kept up to date, it provides a record of what happened and when it happened.

- Fire reports
- Inspection record - Property Fire Inspection Report
- Monthly or quarterly summary reports
- The annual report

The annual report should be limited to four pages

a) Year-end review

- Statement of accomplishments
- What work was done
- How it was done
- What were the results
- Are the citizens helping

b) Organization and Personnel

- Line of authority
- Deaths
- Injuries
- Retirements
- Additions
- Any exceptional service

c) Financial

- Expenditures
- Funds received
- A brief financial report

d) Recommendations

- Personnel
- Equipment
- Outlays
- New bylaws
- Bylaw revisions
- Fire loss per capita

Pre-Fire Planning

Pre-fire planning is preparing a course of action to follow against a possible fire. A course is available through the Office of the Fire Commissioner. The process will prepare a fire department for an emergency before it happens, by providing basic information about specific areas and or buildings. Pre-planning may involve generalized planning or disaster planning for fire, transportation or medical emergencies that may occur in the fire protection service area. Any building or area with a high risk to life of property should be pre-planned. Consideration should also be given to properties with particular problems of exposures, such as large structures with little or no fire resistive properties, lack of water and poor fire department access particularly in the winter and the spring. For example, fuel storage and propane storage tanks present special hazards in a rural setting.

A common format for pre-plans is an 8.5 x 11-inch sheet with a scale drawing of the building. The following information is then collected:

- exposure hazards
- water main sizes
- hydrant location
- alternate source of water supply
- total water available
- street name, address
- location of power lines
- location of utilities shut-offs - power, gas, water
- name, telephone number of owner/occupier
- storage of hazardous materials
- location/type of fire protection equipment
- fire safety plans
- fire department access

The drawing should include wall and roof construction, stairwells, elevators, sprinkler systems, alarm systems, door and window locations.
Ultimately the plan is used to assist the fire department to safely address an incident. The plan should indicate general initial attack positions of responding apparatus, highlighted water sources and necessary hose evolutions.
Completed plans must be available to those who will use them on the fire ground. The plans are a great training tool. All plans should be kept current. It is good practice to keep copies of pre-plans in all first line apparatus and in the fire station.

Water Supplies

A reliable and adequate water supply for fire fighting is an essential part of the fire protection system. Water must be available to replenish water tank trucks during and after training and/or at fires. This supply can come from hydrants in the community or from natural or man-made sources. A study should be undertaken to determine the availability and also the reliability of local water supplies considering the possibility of factors such as during dry periods and cold weather.
Methods should be devised wherein all natural water sources in the fire protection area can be used at any time of the year. This would entail providing year round access with secure right-of-ways and providing dry and draft hydrants. A formal agreement for the maintenance and upkeep of fire hydrants on the water system should be in place between the fire and water authority. The agreement is based on the principal that the local government agency responsible for the water system should retain responsibility for maintaining the hydrants. There are reasons that the local fire authority might be willing to pay all or part of the cost for maintaining them. The reasoning behind this principle, is that the water authority:

1. Owns the entire water system on which the hydrants are located.
2. Controls the design of the water system and the location of hydrants;
3. Has the regulations requiring developers to install hydrants;
4. Has the staff who are knowledgeable about maintaining water system components and the necessary equipment.
5. Also uses the hydrants to flush their water mains.

The fire department wants assurances that the hydrants will be in proper operating order when they are needed in an emergency.
Upgrades or replacements are generally picked up as part of the water authority's annual upgrading and maintenance program in conjunction with the Fire Department's recommendations, but within the financial capacity of the community.

A written agreement should be drawn up for maintenance and use of any private water systems.

An important function of maintaining a water supply system is the maintenance of hydrants. The following is a recommended practice.

FIRE HYDRANT MAINTENANCE SCHEDULE

The following will be undertaken on an annual basis for each fire hydrant:
INSPECTION

1. Check the condition of the thread on the operating spindle and nut.
2. Check the straightness of the operating spindle and "off-pitch" of twist of the thread on the spindle.
1. Check the thrust collar and bearing surfaces of the operating nut on a compression hydrant
2. Check all "O" ring seals and packing in the thrust collar, stuffing box, head assembly,
3. "O" ring seal plate, seat ring, etc.
4. Check the main valve seat rubber, drain rubbers and drain mechanism
5. Check the main valve seat ring
6. Check for proper drainage
7. Pressure test

MAINTENANCE

1. Replace any worn or malfunctioning parts
2. Lubricate threads with appropriate grease

3. Repaint as required (including colour coding for hydrant capacity)
4. Clear any growth/structure which hinders access to the hydrants

In addition to the above, the District will keep a maintenance record for each hydrant and note the general condition of each hydrant. It is strongly recommended that a system of maintenance be established to ensure hydrants are accessible and operational.

1. Clear snow away and mark hydrants in the winter to ensure they can be located and used.
2. Hydrants should be flushed in the spring, especially "dead end" hydrants.
3. Hydrants should be checked before freeze up to ensure they are free of water. The use of antifreeze should not be necessary except where "wet" barrel hydrants are in place.
4. Hydrants should be tested on an annual basis to determine the flow of the hydrant and overall capability of the water supply system. Testing should be conducted on a 4-year cycle involving 25% of total hydrants each year. This ensures hydrants are flushed and tested on a regular basis and gives an indication of problems that may be present in the distribution system.

Location and Design of Fire Halls

The functional worth of a fire hall is established in the planning stages. In these days of high construction costs the expenditure of public funds must be carefully considered to avoid serious and costly mistakes. The area to be protected is a determining factor in planning the location, type and size of the hall - whether it be residential, urban, suburban, rural, mercantile or industrial; congested, high hazard, open, zoned or unrestricted. The proximity of schools, hospitals, theatres or other places of public assembly; also the geographical and topographical relationship to other halls if any; existence of permanent traffic obstructions such as railroad tracks must also be taken into account.
Other fundamental considerations are the number and types of apparatus to be quartered and whether or not a chief officer or officers will be headquartered there.

Fire halls should not be located on heavily traveled roads, or one-way streets. The street should be of good width, perhaps a secondary arterial that could provide a clear fire lane across the protection area. There should be a minimum of traffic congestion in the area.
The site should be level, never on a hill side and when possible one of more rear doors provided for the apparatus room for drive-through traffic. If the hall is in a residential area it should be on a sufficiently large plot to allow for attractive landscaping. In such locations it is essential to conform the design to the architecture of the locale.
The problem of locating a fire hall has probably caused more debate than anything else affecting the fire service. Fire chiefs who encounter the opposition of taxpayers, real estate and other groups in selecting a site for a fire hall in a residential area should be able to prove that locating a modern fire hall in any residential area does not decrease property values, but tends rather to increase it.

The apparatus room is the heart of every fire hall; its location, size , shape, layout and provision for easy, quick access from all areas are factors that establish good functional design. In determining size and layout the planning committee must consider both immediate and future needs of the fire fighters that may occupy the hall.
Apparatus Room doors should be at least 3.6 metres (12ft) wide and 4.3 meters (14ft) high, and when possible each piece of apparatus should have direct access to the street. Single truck halls should be at least 7.5 meters (25ft) wide whereas multi truck halls require a minimum width of 6 meters (20 ft) per truck. Depth is dependent upon the number of pieces of apparatus to be housed. Ample space must be provided at the front, sides and rear of apparatus to permit routine maintenance, ease of response and repacking of hose.
Apparatus room floors should be of concrete slab construction with care taken to avoid a slick finish. The floor should be pitched for adequate drainage, but not so steeply that the apparatus will roll toward the doors when the brakes are off.
Suggested ceiling height for the room is 5 meters (16 ft). Overhead, counterbalanced, electrically operated doors with controls either at the alarm room or apparatus room are recommended, however, provision should be made for manual operation in case of power failure.

Other equipment in the apparatus room should include a battery charger, water taps, cleanup tools and maintenance equipment.

Electric or gas fired hose drying equipment is available, which can effectively replace the hose tower. Several of the advantages of this modern equipment include reduced construction costs and energy efficiency.
Fire hose washing machines along with dryers and storage racks properly belong in the apparatus area unless a special hose-servicing room is provided.
The mobile type of hose rack, equipped with locking casters and a rotating table for reloading apparatus, is very popular and offers several advantages over the old type racks which were made of pipe and wood.

The Alarm Room is the nerve centre of the hall, where supervision is maintained over all communications. The old time watch desk, formerly located on the apparatus floor, has given way to a separate room where all alarm communications and controls are centred.
Tack boards, bulletins, radio consoles, telephones, annunciators, speakers and all other signalling and alarm equipment should be arranged in a compact orderly manner and conveniently located.
Ready access to the concealed wiring and cables should be provided and a hall-wide public address system is desirable.

A minimum of two showers, two water closets, two urinal and two wash basins should be provided for the male personnel and the equivalent for the female personnel.

The electrical system should be surveyed and determined by a qualified electrical engineer. There should be plenty of service outlets for cooking, air conditioning, radio, television, battery chargers, electric portable tools, projection and sound equipment, etc.
Fluorescent lighting fixtures are recommended in all areas with possible exceptions of closets, storage rooms and basements. Exterior flood lights are advisable for drives and parking areas.

Ample windows, providing plenty of daylight, eases the demand on lighting circuits.

A clean, sound proof room dedicated to self contained breathing apparatus air filling can be incorporated into the design. The compressor and air bank can be located for easy access.

A well equipped lecture and reading room with good chairs, convenient tables, television, VCR, radio, and a library with books and subscriptions to leading Fire Trade periodicals is desirable.

While the requirements considered above are common to both volunteer and paid departments, there are some differences in hall design. Because the hall may be used for other functions, they may be equipped with kitchens, sometimes meeting rooms which can be divided into several smaller rooms as the occasions require by means of folding partitions. A separate entrance will help alleviate traffic through the fire hall.
Because the fire protection needs of jurisdictions are always changing, a fire hall which is adequate today may require extensive expansion or modification in just a few years. It is necessary for local fire halls to be designed and constructed to accommodate anticipated changes to their staff, equipment and services.

Only when they have been designed for flexibility and adaptability to change can these essential facilities expand and adjust to meet new demands with the cost effective alterations.
There are many fire halls located within the province. It would be wise for any department contemplating a new hall to look at other existing halls. Other fire departments can state what they like and don't like about their own fire hall.

Basic Fire Department Equipment

(Reprinted from U.L.C. S515)
The following list of equipment is compiled for fire departments who have one piece of fire apparatus. Where specific information regarding apparatus is required, the Underwriters' Laboratories of Canada Standard ULC S515 or NFPA Standards should be referred to. This Standard may be purchased from the Underwriters' Laboratories of Canada.

Equipment Typically Carried by Water Tank Trucks (Mobile Water Supply)

- 2-hydrant wrenches
- 1-900mm crowbar
- 1-7m metal extension ladder
- 2-axes, (one pick-head, one flathead) with unpainted wooden handles
- 2-electric hand lights, minimum 6V dry-cell or 4 V wet cell
- 2-approved hand portable fire extinguishers, the variety to be suitable for use on
- Class A, B and C fire. Minimum capabilities to be 20BC rating in dry chemical, 10BC in CO2 and 2A in water type extinguishers.
- 1-pike pole at least 2m
- 240 m of 38 mm hose with two combination solid stream-spray nozzles
- 120 m of 65 mm hose
- 4-back pack type pump tank extinguishers
- 2- shovels, long handle, pointed
- 2-hose spanner wrenches
- 2-hay forks, 3-tine
- 2-14L buckets
- 1-double female 65mm coupling
- 1-double male 65mm coupling
- 1-first aid kit
- 1-portable collapsible water tank of at least 3600 L capacity
- 1-portable pump with gasoline-driven engine
- 9m of smooth-bore hard suction hose of size appropriate to the pump or pumps carriedand with strainer of adequate capacity.

Equipment Recommended for Each Triple Combination Engine (Typical Municipal Service)

- 1 - 3 kg pick-head axe, with unpainted wooden handle
- 1 - flathead axe, with unpainted wooden handle
- 1 - 4m, fire department type metal ladder with folding roof hooks
- 1 - fire department type metal extension ladder to extend at least 7 m
- NOTE: Purchaser should specify a greater length such as 9 or 10 m as being more useful
- in most cases.
- 2 - electric hand lights, 6 V dry cell or 4 V wet cell minimum
- 2 - approved hand portable fire extinguishers such that Class A, B and C fires may be
- handled. Minimum sizes shall be 20BC rating for dry chemicals, 10BC for carbon dioxide
- and 2A rating for water types.
- NOTE: Purchaser should specify details of types desired.
- 1 - pike-pole or plaster hook, minimum 2 m.
- (Hard suction hose of diameter and length to be specified by purchaser. (See Clause
- Usually to 3 m lengths.
- 1 - strainer of adequate capacity for suction hose if hard suction hose is specified
- 1 - swivel adapter with suction hose threads on one end and local large hydrant thread on
- the other end.
- If apparatus is equipped with hose reel, 60 m of 25 mm booster hose with shut-off nozzle
- of combination solid stream and variable cone spray type, capable of delivering at least
- 45L/min at 675 kPa nozzle pressure.
- 1 - 65 mm double female coupling
- 1 - 65 mm double male coupling
- 2 - hydrant wrenches
- 4 - hose spanners for use on both 38 mm and 65 mm hose
- 1 - 125 cm crowbar
- 1 - 65 mm shut-off play-pipes for each 900L/min of pumper rating

- 2 - or more combination solid stream and variable cone spray nozzle tips capable of
- delivering 900L/min at 675 kPa nozzle pressure in each way for 65 mm play-pipes.
- 1 - set of solid stream nozzle tips of 25, 29 and 32 mm diameter for at least half of the 65
- mm play-pipes
- 2 - 38 mm shut-off nozzles of combination solid stream and variable cone spray type
- capable of delivering at least 400L/min at 675 kPa nozzle pressure in each way
- 1 - gate of ball-valve 65 to 38 mm reducing wye
- 1 - 65 mm single date or ball valve
- 1 - first aid kit (24 unit fire department assortment)
- 2 - salvage covers, 350 by 550 cm
- 3 - sprinkler stoppers or wedges
- 2 - brooms
- 1 - scoop shovel
- 1 - pail
- 2 - hose straps or belts
- 1 - 38 m or 16 mm rope
- 1 - hose clamp
- 2 - self-contained approved breathing apparatus sets of at least 1/2 h rating and two spare
- tanks or canisters
- At least 120 m or 38 mm hose
- At least 360 m of 65 mm hose preferable in part of larger diameter

Additional Equipment Desirable for Engines (According to nature of service)

- 6 - back-pack type pump tank extinguishers
- 2 - hay forks, 3-tine
- 1 - pair bolt cutters
- 4 - fire brooms
- 1 - portable pump with gasoline-driven engine
- 2 - metal rakes
- 2 - long handle, pointed shovels
- Additional 38 mm hose and nozzles for rural service
- Additional longer extension ladder in lieu of ladder truck support
- Additional self-contained breathing apparatus sufficient that each fire fighter fighting interior
- fires may be equipped, along with one spare bottle per S.C.B.A.

Fire Apparatus

Purchasing the correct apparatus that is capable of doing the best job for the least amount of money is a tremendous responsibility for fire department officers. As these vehicles involve an investment of thousands of dollars, caution must be exercised when writing specifications, evaluating bids, and awarding the contracts.

Competitive Bid Purchase For New Apparatus

Generally, purchases are made specifying the features desired in a fire apparatus and asking for bids. This method is known as purchasing by competitive bids based on adequate specifications. It is designed to eliminate favouritism or personal influence, ensure delivery of equipment that will perform satisfactorily and provide the purchaser with maximum utility and economy.

However, such benefits are only realized through the use of proper standards as the apparatus will be no better than the specifications. Few are able to employ personnel with qualifications and ability to draw up specifications that will adequately cover all phases of construction and performance of fire apparatus. Frequently, in attempting to draw up adequate specifications, the result becomes so excessive of restrictive in some requirements that it increases the cost unnecessarily or prohibits bidding entirely. Often important requirements are omitted and irrelevant and unduly costly provisions are included. In order to provide uniformity and ensure basic essentials are included, the Office of the Fire Commissioner suggests that fire apparatus be designed using ULC S515 Standard for Automobile Fire Fighting Apparatus and/or an NFPA standard (1900 series). The specific sections to meet your needs are explained in this guide.

Writing the Specifications

Determining exactly what type, size, and model to purchase is the first step in writing specifications for fire department apparatus. As the department will probably be either blessed or stuck with this equipment for 20 or more years, a great amount of thought must be devoted to acquiring the best vehicle for the job. Considerations should be given to the fire hazards, terrain, roads and highways, weather and climatic conditions, building heights and areas, water supply, fire hall location, mutual aid arrangements, and every other character of the response area that this apparatus will be expected to protect.

Growth possibilities of the area should also be considered. Higher structures and larger buildings may be constructed. Unprotected areas may be annexed.

After all of these variables are analyzed, then a definite idea can be formed of what size and type of apparatus will do the best task.

A department that has to primarily protect rural areas must be concerned about not ordering a vehicle that is too heavy for the unimproved roads.

Highly manoeuvrable apparatus are needed in areas with narrow and winding streets. Areas with large industrial factories may require an engine with a 6800 litres per minute (1500 IGPM) capacity and a 2300 litre (500 gallon) water tank, while a rural department may be better served with a 2840 litre per minute (625 IGPM) engine with a 4500 litre (1000 gallon) water tank.

It is best to order by performance specifications as detailed in ULC S515. They allow the manufacturer greater latitude in selecting the best and most modern components and equipment for the vehicle. A deviation from this principle may be to designate a diesel engine over gasoline powered, an automatic instead of a manual transmission, certain model of chassis because of the availability of repair facilities, or other definite preferences.

Specification Checklist

This list of questions is designated to assist you when reviewing your specifications prior to sending them out.

- Is year of chassis shown?
- If gas engine, is the carburetor 2 or 4 BBL?
- What size of engine?
- What type of engine, gas or diesel?
- What size of pump?
- What type of transmission - manual or automatic?
- Are rear end ratios given?
- Are the springs and axles adequate for the anticipated gross vehicle weight?
- Is the tire size adequate for the gross vehicle weight?
- Are the tires readily available commercially?
- What capacity in C.F.M. is compressor rated?
- Is an electric compressor included?
- Is air dryer included?
- Are batteries in parallel and if dual battery system is used is cut off switch on dash?
- What is fuel tank capacity?
- Do West Coast Mirrors include amber lights?
- What alternator amperage capacity is shown?
- Is block heater included, if so what type?
- Is unit equipped with back up alarm?
- What gauges are listed on pump operator's panel?
- Is booster tank water gauge specified?
- Do compartments have full adjustable door catches?
- On lower compartments are all floors raised for easier cleaning?
- Are compartment door seals replaceable?
- Are all ladder and suction hose brackets adjustable?
- Do upper compartments have swing up doors c/w lights and gas cylinders?
- Is rear step supported by 4" channel iron from main frame?
- Is tank under warranty for 15 years?
- If unit is equipped with transverse hose beds are rollers and spools supplied?
- Does pump panel have lights?
- Is unit equipped with suction hoses and screen?
- Is hot water heater and fan installed behind operator's gauge panel to prevent freezing of instruments?
- Does pump have auto lube system?

- On pump spec sheet, is pump rated and tested to 600 p.s.i. (4100Kpa) hydrostatically and hydrodynamically?
- What type of fire fighting equipment is included on quote specs?
- If booster reels are requested, are rollers, hose and nozzle included on quote specs?
- Is unit lettered and painted?
- Is firm delivery date shown on quote?
- Are ladders and extinguishers included in spec sheet?
- If unit is equipped with automatic radiator shutters, is manual override included?
- On units equipped with transverse hose beds, are hose beds equipped with 1-1/2 Chicksan Swivel joints?
- Does the vehicle comply with W.C.B. and Highway requirements?

Awarding the Contract

Most governmental agencies are have established policies when writing specifications, advertising for bids, and awarding the contracts for any purchase of a substantial amount. Because these are primarily legal processes, local laws play a fundamental role in the apparatus and equipment acquisition process. If the estimated amount of the contract exceeds a certain specified sum of money, sealed bids must be solicited by public notice in the particular manner and subject to the requirements of the law.

When any agency calls for bids for the purchase of apparatus or equipment, specifications should not be prepared so as to exclude all but one type or kind, but should include competitive supplies and equipment. Writing specifications with the intent of securing one certain model and make of apparatus is discouraged. Fire department officers occasionally are so convinced that one manufacturer builds better equipment, they will use the product's advertising specifications to write the bid specifications. This practice smothers competition and may prevent the department from gaining an innovative or desirable piece of equipment.
The underlying principle of the bidding process is that the governmental body awards the contract to the best competitor meeting the terms and conditions of the bid invitation.
To determine if a bidder is truly responsible and capable of fully performing the desired services or furnishing the wanted equipment or vehicle, it is the obligation of the agency to investigate the bidders to determine that they do have the skills, abilities, and record of past performances to ensure that the specified item will be delivered at the correct time.

The low bid does not have to be accepted if it can be clearly shown that a higher priced apparatus is a better buy for the money. There are many legitimate questions that should be answered before a bid is awarded.

Only after the correct type and size of apparatus has been decided on, proper specifications written, bids solicited from a reasonable number of manufacturers and the bids are analysed can the contract be awarded.
Supervision during construction may be required. A thorough inspection and testing period should be conducted upon delivery of the equipment or vehicle. This way the department have the certainty they have selected the apparatus that will do the best job for the best price.

Recognition of Used or Rebuilt Fire Apparatus

The performance ability and overall acceptability of older apparatus has been debated between municipal administrations, the public fire service and many others for many years. The Fire Underwriters Survey (F.U.S.) have addressed this question as follows:

> The public fire service is unique. It is probably the only emergency service whose vehicles are not continuously in use. However, when in use the apparatus is subject to considerable mechanical stress due to the nature of its function. This stress does not normally manifest itself on the exterior of the equipment. It is effectively masked in most departments by a high standard of aesthetic care and maintenance. Truck and pump manufacturer maintain a parts inventory for each model year for a finite time. After that period, obtaining necessary parts may be difficult. This parts shortage is particularly acute with fire apparatus due to the narrow market conditions for these devices.

Fire apparatus should be built by recognized manufacturers. Fire apparatus should respond to first alarms for the first fifteen years of service. For the next five years it should be held in reserve for use at major fires or used as a replacement for out-of-service first line apparatus. Depending on use and condition, apparatus should be retired from service at twenty years of age. This is a very general guide to planning the “life” cycle of apparatus. Apparatus with limited use and proper care may be used for much longer periods than identified above. The replacement of apparatus is dependant on use and condition. Present practice indicates that the recommended service periods are usually followed by the first purchaser. However, at the end of that period the apparatus is either traded in on new apparatus or sold to another fire department. At this juncture, the unit may have one or more faults which precludes effective use for emergency service.
These deficiencies may include:
i) inadequate braking system
ii) slow pick-up and acceleration
iii) structurally weakened chassis due to overloading
iv) pump water

This is not to indicate the apparatus is not able to be used, but that potential buyers should be aware that the equipment may cost more than they expect. The purchaser may demand (and it is strongly recommended) the apparatus be tested. If the apparatus does not pass the tests or even if it fails, the buyer is at least able to determine the desirability of purchasing the equipment.

Recommended Service Tests for Used or Modified Fire Apparatus

The intent of this section is to ensure that all used or modified fire apparatus, equipped with a pump or used for tanker service, essentially meets the requirements of Underwriters' Laboratories of Canada "Standard for Automobile Fire Fighting Apparatus" - S515 – or subsequent current editions of the Standard. Full adherence with the following specified tests is recommended.

Weight Tests

Load Balance Test:
When fully laden (including a 460kg (1,000 pounds) personnel weight full fuel and water tanks, specified load of hose and miscellaneous equipment), the vehicle shall have a load balance of 22% to 50% of total vehicle mass on the front axle and 50% to 78% of this mass on the rear axle. Distribution of mass of 33% and 67% respectively on the front and rear axles is preferable for a vehicle having dual rear tires, or tandem rear axles. For a vehicle having tandem rear axles and dual tires on each axle, a loading of between 18% and 25% on the front axle with a balance of mass on the rear axles is permissible.

Road Tests

From a standing start, the apparatus shall attain a true speed of 55 kmh (35mph) within 25 seconds for pumpers carrying up to 3,150 litres (700 gallons) of water. For apparatus carrying in excess of 3150 litres (700 gallons) or apparatus equipped with aerial ladders or elevating platforms, a true speed of 55km/h (35 mph) in 30 seconds should be attained. The vehicle should attain a top speed of at least 80 kmh (50 mph).

Braking Test

The service brakes shall be capable of bringing the fully-laden apparatus to a complete stop from an initial speed of 30 kmh (20mph) in a distance not exceeding 9 metres (30 ft) on a dry, hard surfaced road that is free of loose material, oil or grease.

Pump Performance Tests

Hydrostatic Test
Recent evidence of hydrostatic testing of pump for 10 minutes at a minimum pressure of 3,4000 Kpa (500 p.s.i.). APPLICABLE OF NEW OR REBUILT PUMPS ONLY.

Priming and Suction Capability Tests
The pump priming device, with a capped suction at least six metres (20 ft) long, shall develop 75 Kpa (22 inches of mercury) at altitudes up to 300 metres (1,000 ft) and hold the vacuum with a drop of not in excess of 34 Kpa (10 inches of mercury) in ten minutes.
For every 300 metres (1,000 ft) of elevation, the required vacuum shall be reduced 3.4 Kpa (1 inch of mercury). The primer shall not be used after the 10 minute test period has been started. Tests shall be made with discharge outlets uncapped.

Suction Capability Test
The pump (in parallel or series) when dry, shall be capable of taking suction and discharging water with a lift of not more than 3 metres (10 ft) through six metres (20 ft) of suction hose of appropriate size, in not more than 30 seconds, and not over 45 seconds for 6,000 L/min (1320 Igpm) or larger capacity pumps, an additional 10 seconds priming time will be allowed. The test will be conducted with all discharge caps removed.

Pump Performance
Capacity Test
Consists of drafting water (preferably with a 3 metre [10 ft lift] and pumping the rated capacity at 1,000 Kpa (150 psi) net pump pressure for a continuous period of at least one hour.

Pressure Test
Under the same conditions as above, pumping 50% of the rated capacity at 1700 Kpa (250 psi) net pump pressure for at least 1/2 hour.

For additional information on the above noted tests and the test procedures, the following documents provide useful data:
1. Underwriters' Laboratories of Canada, Standard S515, "Standard for Automobile Fire Fighting Apparatus"
2. Fire Underwriters' Survey publication entitled "Fire Stream Tables and Testing Data"
3. International Fire Service Training Association, "Fire Department Pumping Apparatus
4. National Fire Protection Association (NFPA) Standards (1900).

Replacement Purchase
It is wasteful economy for a municipality not to provide apparatus and equipment of the best and most dependable type. The largest expense for a fire department is the cost of maintenance of the fire apparatus and equipment, self contained breathing apparatus, fire hall, licences, insurances, heat and light.
The initial cost of apparatus which has a service life of at least 20 years is proportionally small in the overall budget.
The number of miles travelled and hours of pumping operation do not normally provide a basis for replacement. Many other factors limit the effective and economical life of an apparatus and make replacement desirable: advancements in design of fire fighting equipment; inadequate protection for driver and fire fighters; structurally weakened chassis because of overloading; increased maintenance costs; parts replacement difficulties with old apparatus; and lack of reliability under the stress of emergency service.
Some of these drawbacks increase the dangers to the public and to fire fighters because of the increased chance of accidents.
Apparatus relieved from first-line service may be retained as reserve equipment; this should also be considered when assessing replacement costs.
Reserve funds should be in place so that a fire department is not left in the situation of shutting down because there are no funds available to continue due to broken down equipment that cannot meet the certification.