Fire Underwriters Survey – Six Nations Fire Insurance Classification Results

Fire Underwriters Survey is a national organization that represents approximately 90 percent of the private sector and casualty insurers in Canada. Fire Underwriters Survey provides data to program subscribers regarding public fire protection for fire insurance statistical and underwriting evaluation.

Fire Underwriters Survey last conducted a complete and full assessment of each area of the fire defenses primarily for fire insurance grading and classification purposes in 1992, this update indicates significant changes to fire protection that have gone unreported. The following letter provides a brief description of the grading process.

The Public Fire Protection Classification (PFPC) is a numerical grading system scaled from 1 to 10 that is used by Commercial Lines insurance. Class 1 represents the highest grading possible and Class 10 indicates that little to no fire protection is in place. The PFPC grading system evaluates the ability of a community’s fire protection programs to prevent and control major fires that may occur in multi-family residential, commercial, industrial, institutional buildings, and course of construction developments.

Fire Underwriters Survey also assigns a second grade for fire protection. The second grading system, entitled Dwelling Protection Grade (DPG), assesses the protection available for small buildings such as single-family dwellings and is used by Personal Lines insurers.

The DPG is a numerical grading system scaled from 1 to 5. One (1) is the highest grading possible and five (5) indicates little or no fire protection is present. This grading reflects the ability of a community to handle fires in small buildings.

Fire Underwriters Survey is pleased to inform Six Nations Band that the fire insurance classifications assigned to the community have improved in regards to both Commercial Lines and Personal Lines insurance. Subsequently, further improvements can be achieved through minor changes and should be reported to Fire Underwriters Survey to ensure these investments in fire protection are communicated to the insurance industry.

Please find further information in this letter regarding how the community scored in each area of the grading, as well as some narrative commentary aimed at areas where improvements should be considered.

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1 Commercial Lines: A distinction marking property and liability coverage written for business or entrepreneurial interests (includes institutional, industrial, multi-family residential and all buildings other than detached dwellings that are designated single-family residential or duplex) as opposed to Personal Lines.

2 Personal Lines: Insurance covering the liability and property damage exposures of private individuals and their households as opposed to Commercial Lines. Typically includes all detached dwellings that are designated single family residential or duplex. The following tables illustrates past fire insurance classifications, as well as the current fire insurance classifications assigned to the community based on the results of our assessment.
Fire Department Grading Items
The Fire Department grading consists of nineteen (19) items and makes up forty percent (40%) of the Public Fire Protection Classification (PFPC). Please note, each item is divided by sub-items, as each item carries a different weight within the Fire Department section and the overall classification.

The areas reviewed in the assessment of the Fire Department are as follows:
FD-1 – Engine Service
FD-2 – Ladder Service
FD-3 – Distribution of Companies
FD-4 – Engine and Ladder Pump Capacities
FD-5 – Design, Maintenance, and Conditions of Fire Apparatus
FD-6 – Number of Line Officers – Fire Suppression
FD-7 – Total Fire Force Available
FD-8 – Engine and Ladder Company Unit Manning
FD-9 – Master and Special Stream Devices
FD-10 – Equipment for Engines and Ladder Apparatus, General
FD-11 – Fire Hose
FD-12 – Conditions of Fire Hose
FD-13 – Training and Qualifications
FD-14 – Response to Alarms
FD-15 – Fire Ground Operations
FD-16 – Special Protection Required
FD-17 – Miscellaneous Factors and Conditions
FD-18 – Pre-Incident Planning
FD-19 – Administration

Fire Department (40%)
Water Supply Grading Items
The Water Supply grading consists of fifteen (15) items and makes up thirty percent (30%) of the Public Fire Protection Classification (PFPC). Please note, each item is divided by sub-items, and carries different weight within the Water Supply section and the overall classification.

Areas reviewed in the assessment of the Water Supply are as follows:

WS-1 – Normal Adequacy of Supply Works
WS-2 – Reliability of Supply Works
WS-3 – Reliability of Pumping Capacity (Pumps and Drivers)
WS-4 – Reliability of Power Supply
WS-5 – Reliability, Condition, Arrangement, Operation and Maintenance of System Components
WS-6 – Fire Flow Delivery by Mains
WS-7 – Reliability of Principal Mains
WS-8 – Installation of Pipe
WS-9 – Arrangement of Distribution System
WS-10 – Additional Factors and Conditions Relating to Supply and Distribution
WS-11 – Distribution of Hydrants
WS-12 – Hydrants – Size, Type and Installation
WS-13 – Hydrants – Condition and Inspection
WS-14 – Other Conditions Affecting Adequacy and Reliability
WS-15 – Management

Water Supply (30%)
Emergency Communication Grading Items

The Emergency Communications grading consists of seven (7) items and makes up ten percent (10%) of the Public Fire Protection Classification (PFPC).

Areas reviewed in the assessment of the Emergency Communications are as follows:
Comm-1 – Communication Centre
Comm-2 – Means of Transmitting Alarm by Public
Comm-3 – Fire Department Telephone Service (Incoming from Public)
Comm-4 – Means of Alarm Dispatch
Comm-5 – Dispatching Service
Comm-6 – Operations Radio
Comm-7 – Miscellaneous Factor

Fire Safety Control Grading Items

Fire Safety Control grading consists of four (4) items and makes up twenty percent (20%) of the Public Fire Protection Classification (PFPC). Fire Safety Control has become an increasingly heavily weighted portion of the fire insurance grading system. This is the result of statistical data showing that communities employing effective programs in these areas have significantly reduced fire related losses.

Areas reviewed in the assessment of the Fire Safety Control (Fire Prevention and Public Education) are as follows:
FSC-1 – General Program
FSC-2 – Codes and Enforcement
FSC-3 – Building Construction Laws
FSC-4 – Electrical Code and Inspection
Six Nations Fire & Emergency Services has made significant improvements over the last number of years that has resulted in improvements to both the Dwelling Protection Grades (DPG) – Personal Lines Insurance and the Public Fire Protection Classifications (PFPC) – Commercial Lines insurance. These improvement are reflected in the Table of Grades provided below. Areas that warrant consideration, as it pertains to fire insurance classifications of the community should include an increase in fire prevention and public education activities. Employing door to door smoke alarm and hazard reduction inspections, are generally considered cost effective ways to improve a community’s fire insurance classification, while at the same time improving community safety. Regular and routine inspections should also be carried out on all buildings not considered single family dwellings.

In regards to Dwelling Protection Grades (DPG), minor increases in volunteer staffing can greatly improve fire insurance classifications associated with personal lines insurance. The community should focus on maintaining a minimum volunteer firefighting roster of 15 volunteer fire fighters per fire station. Please review Appendix C for a full description of requirements per Fire Station and associated Dwelling Protection Grades (DPG).

Of note, as it pertains to apparatus, the Fire Department currently deploys to Mobile Water Supply Apparatus (Tankers) which are both over 20 years of age. These apparatus must be within 20 years of age to establish fire insurance recognition. Please review Appendix D, FUS Technical Bulletin – Insurance Grading Recognition of Used or Rebuilt Fire Apparatus for further information.

The system of fire insurance grading in Canada is set up to reward communities that make investments in managing fire risk and maintaining the capacity to respond to structure fires effectively. For communities to receive full credit for these investments the communities must report the levels of investment through the FUS data collection program. The Canadian insurance community is becoming increasingly strict regarding credit for outdated information and FUS has been asked to reduce credits given for any fire protection data elements that are over 5 years old. Going forward, for communities to receive full credit for their fire protection investments they will be required to provide verification of the fire protection service levels at least every 5 years. Note that the system is
entirely voluntary and communities are not required to participate, however the fire insurance grades determined with this system impact insurance line capacities and property insurance premiums.

**Table 1 – Public Fire Protection Classification (PFPC) – Six Nations**

<table>
<thead>
<tr>
<th>SUB DISTRICT(S) and (contract protection areas)</th>
<th>1992 PFPC</th>
<th>2018 PFPC</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six Nations Fire Station #1 (H.P.A)</td>
<td>6</td>
<td>4</td>
<td>Hydrant Protected – Commercial Lines insured properties within 5 km of a fire hall, and within 150 m of a hydrant.</td>
</tr>
<tr>
<td>Six Nations Fire Station #2 (F.P.A)</td>
<td>N/A</td>
<td>9</td>
<td>Hydrant Protected – Commercial Lines insured properties within 5 km of a fire hall, and within 150 m of a hydrant.</td>
</tr>
<tr>
<td>Six Nations Fire Station #3 (F.P.A)</td>
<td>N/A</td>
<td>9</td>
<td>Hydrant Protected – Commercial Lines insured properties within 5 km of a fire hall, and within 150 m of a hydrant.</td>
</tr>
<tr>
<td>Six Nations Fire Station #4 (F.P.A,)</td>
<td>N/A</td>
<td>9</td>
<td>Fire Hall Protected – Commercial Lines insured properties within 5 km of a fire hall, not within 150m of a hydrant.</td>
</tr>
<tr>
<td>Six Nations All Other Areas</td>
<td>10</td>
<td>10</td>
<td>Commercial lines property beyond 5km by road of a Fire Hall.</td>
</tr>
</tbody>
</table>

**Table 2 – Dwelling Protection Grade (DPG) – Six Nations**

<table>
<thead>
<tr>
<th>SUB DISTRICT(S) and (contract protection areas)</th>
<th>1992 DPG</th>
<th>2018 DPG</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six Nations Fire Station #1 (H.P.A)</td>
<td>3A</td>
<td>1</td>
<td>Hydrant Protected – Personal Lines insured properties within 8 km of a fire hall, and within 300m of a Fire Hydrant.</td>
</tr>
<tr>
<td>Six Nations Fire Station #1 (F.P.A)</td>
<td>3B</td>
<td>3B</td>
<td>Superior Tanker Shuttle Service (STSS) – Personal Lines insured Properties within 8 km of a fire hall, and within 5 km of a hydrant.</td>
</tr>
<tr>
<td>Six Nations Fire Station #2 (F.P.A)</td>
<td>N/A</td>
<td>4</td>
<td>Hydrant Protected – Personal Lines insured properties within 8 km of a fire hall, and within 300m of a Fire Hydrant.</td>
</tr>
<tr>
<td>Six Nations Fire Station #3 (F.P.A)</td>
<td>N/A</td>
<td>4</td>
<td>Superior Tanker Shuttle Service (STSS) – Personal Lines insured Properties within 8 km of a fire hall, and within 5 km of a hydrant.</td>
</tr>
<tr>
<td>Six Nations Fire Station #4 (F.P.A)</td>
<td>N/A</td>
<td>4</td>
<td>Hydrant Protected – Personal Lines insured properties within 8 km of a fire hall, and within 300m of a Fire Hydrant.</td>
</tr>
<tr>
<td>Six Nations All Other Areas</td>
<td>5</td>
<td>5</td>
<td>Personal Lines insured property beyond 8km by road travel distance of a fire hall.</td>
</tr>
</tbody>
</table>

Please note, Fire Insurance Grade Mapping of the above classifications is located within Appendix A & B of this letter.

Please note that this letter is private and confidential. The underlying data of this report has been developed for fire insurance grading and classification purposes. This letter may be used by the stakeholders to assist in planning the future direction of fire protection services for the Six Nations Reserve.

Sincerely,

Robert Aguiar B.Sc & Fire, C.Tech  
Senior Public Fire Protection Specialist  
Fire Underwriters Survey
Appendix A
Appendix B
### Dwelling Protection Grade Summary of Basic Requirements per Fire Station

<table>
<thead>
<tr>
<th>DWELLING PROTECTION GRADE</th>
<th>WATER WORKS SYSTEM</th>
<th>FIRE DEPARTMENT</th>
<th>FIRE PROTECTION GRADE</th>
<th>CORRELATION WITH PFPC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water supply system designed in accordance with Fire Underwriters Survey standard &quot;Water Supply for Public Fire Protection&quot; with a relative classification of 5 or better</td>
<td>Response from within 8 km by road of a triple combination pumpers</td>
<td>Minimum Response: - On-duty: 3 career fire fighters, plus - Off-duty: fire chief or other officer</td>
<td>Water Supply and Fire Department must grade PFPC Relative Class 5 or better</td>
</tr>
<tr>
<td>2</td>
<td>Water supply system designed in accordance with Fire Underwriters Survey standard &quot;Water Supply for Public Fire Protection&quot; with a relative classification of 6 or better</td>
<td>Response from within 8 km by road of a triple combination pumpers</td>
<td>Minimum Response: - On-duty: 1 career fire fighters, plus - On-call: 15 auxiliary fire fighters</td>
<td>Water Supply and Fire Department must grade PFPC Relative Class 6 or better</td>
</tr>
<tr>
<td>3A</td>
<td>Water supply system designed in accordance with, and meeting the minimum requirements of, Fire Underwriters Survey standard &quot;Water Supply for Public Fire Protection&quot;</td>
<td>Response from within 8 km by road of a triple combination pumpers</td>
<td>15 auxiliary fire fighters</td>
<td>No Public Fire Protection Classification required</td>
</tr>
<tr>
<td>3B</td>
<td>Not required – however fire department must have adequate equipment, training and access to approved water supplies to deliver standard shuttle service in accordance with NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting</td>
<td>2 units required. Triple combination pumpers plus a mobile water supply with a combined water carrying capacity of not less than 6820 L (1500 IG)</td>
<td>15 auxiliary fire fighters</td>
<td>No Public Fire Protection Classification required</td>
</tr>
<tr>
<td>4</td>
<td>Not required – however fire department must have adequate equipment, training and access to approved water supplies to deliver shuttle service in accordance with NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting</td>
<td>2 units required. Triple combination pumpers plus a mobile water supply with a combined water carrying capacity of not less than 6820 L (1500 IG)</td>
<td>15 auxiliary fire fighters</td>
<td>No Public Fire Protection Classification required</td>
</tr>
<tr>
<td>5</td>
<td>Unprotected communities or communities not qualifying for Grades 1, 2, 3A, 3B, or 4 above</td>
<td>Unprotected communities or communities not qualifying for Grades 1, 2, 3A, 3B, or 4 above</td>
<td>No Public Fire Protection Classification required</td>
<td></td>
</tr>
</tbody>
</table>

1 Refer to additional notes and requirements for interpretation

2 The P.F.P.C. is a sophisticated municipal fire protection grading system utilized for Commercial Lines insurance. PFPC fire insurance grades are scaled from 1 to 10. One (1) represents a high level of fire protection and 10 indicates little or no recognized fire protection. This system evaluates the ability of a community’s fire defenses to prevent and control major fires that may occur in commercial, industrial and institutional buildings and/or districts.

3 Requirements for Dwelling Protection Grade 4 are the same as for Dwelling Protection Grade 3B, however in some cases, an allowance may be considered for Dwelling Protection Grade 4 where all of the criteria for Dwelling Protection Grade 3B have been met with one exception. If more than one criteria has not been met (ex. less than 15 auxiliary fire fighters and a single pumper apparatus) Dwelling Protection Grade 5 is applied. Where Dwelling Protection Grade 4 is applied, a signed letter of intent from the community is to be sent to Fire Underwriters Survey indicating that improvements will be made, within an agreed timeframe, to meet the criteria of Dwelling Protection Grade 3B. It is important to note that the absolute minimum number of auxiliary fire fighters considered within the fire insurance grading is 10 and that maximum age of apparatus that can be considered is 30 year.
Appendix D
INSURANCE GRADING 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 years. Fire Underwriters Survey (FUS) has reviewed experiences across Canada and in other countries and has developed a standard for acceptance of apparatus as the apparatus becomes less reliable with age and use.

The public fire service is unique compared to other emergency services in that fire apparatus 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 higher standard of aesthetic care and maintenance. Lack of replacement parts further complicates long term use of apparatus. Truck and pump manufacturers 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 for these devices.

Fire Underwriters Survey lengthy experience in evaluating fire apparatus indicates that apparatus should be designed to an acceptable standard. The standard that is accepted throughout Canada by Fire Underwriters Survey is the Underwriters’ Laboratories of Canada (ULC) Standard S515 (most updated version) titled, “Automobile Fire Fighting Apparatus,” which was adopted as a National Standard of Canada in September 2004. Alternatively, NFPA 1901, the Standard for Automotive Fire Apparatus (most updated version) is also accepted by Fire Underwriters Survey with respect to apparatus design. Fire apparatus should be built by recognized manufacturers and tested by a suitably accredited third party.

Fire apparatus should respond to first alarms for the first fifteen years of service. During this period it has reasonably been shown that apparatus effectively responds and performs as designed without failure at least 95% of the time. For the next five years, it should be held in reserve status for use at major fires or used as a temporary replacement for out-of-service first line apparatus. Apparatus should be retired from service at twenty years of age. Present practice indicates the recommended service periods and protocols 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 preclude effective use for emergency service. These deficiencies include:

a. Inadequate braking system
b. Slow pick-up and acceleration
c. Structurally weakened chassis due to constant load bearing and/or overloading
d. Pump wear
FUS has modified its application of the age requirement for used or rebuilt apparatus. Due to municipal budget constraints within small communities we have continued to recognize apparatus over twenty years of age, provided the truck successfully meets the recommended annual tests and has been deemed to be in excellent mechanical condition. The specified service tests are outlined below under the heading “Recommended Service Tests for Used or Modified Fire Apparatus”. Testing and apparatus maintenance should only be completed by a technician who is certified to an appropriate level in accordance with NFPA 1071, *Standard for Emergency Vehicle Technician Professional Qualifications*.

Insurance grading recognition may be extended for a limited period of time if we receive documentation verifying that the apparatus has successfully passed the specified tests. If the apparatus does not pass the required tests or experiences long periods of “downtime” we may request the municipal authority to replace the equipment with new or newer apparatus. If replacement does not occur, fire insurance grading recognition may be revoked for the specific apparatus which may adversely affect the fire insurance grades of the community. This can also affect the rates of insurance for property owners throughout the community.

### Table 1 Service Schedule for Fire Apparatus For Fire Insurance Grading Purposes

<table>
<thead>
<tr>
<th>Apparatus Age</th>
<th>Major Cities ³</th>
<th>Medium Sized Cities ⁴</th>
<th>Small Communities and Rural Centres ⁵</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 15 Years</td>
<td>First Line Duty</td>
<td>First Line Duty</td>
<td>First Line Duty</td>
</tr>
<tr>
<td>16 – 20 Years</td>
<td>Reserve</td>
<td>2nd Line Duty</td>
<td>First Line Duty</td>
</tr>
<tr>
<td>20 – 25 Years</td>
<td>No Credit in Grading</td>
<td>No Credit in Grading or Reserve ²</td>
<td>No Credit in Grading or Reserve ²</td>
</tr>
<tr>
<td>26 – 29 Years</td>
<td>No Credit in Grading</td>
<td>No Credit in Grading or Reserve ²</td>
<td>No Credit in Grading or Reserve ²</td>
</tr>
<tr>
<td>30 Years +</td>
<td>No Credit in Grading</td>
<td>No Credit in Grading</td>
<td>No Credit in Grading</td>
</tr>
</tbody>
</table>

³ All listed fire apparatus 20 years of age and older are required to be service tested by recognized testing agency on an annual basis to be eligible for grading recognition. (NFPA 1071)

² Exceptions to age status may be considered in a small to medium sized communities and rural centres conditionally, when apparatus condition is acceptable and apparatus successfully passes required testing.

³ Major Cities are defined as an incorporated or unincorporated community that has:
   - a populated area (or multiple areas) with a density of at least 400 people per square kilometre; AND
   - a total population of 100,000 or greater.

⁴ Medium Communities are defined as an incorporated or unincorporated community that has:
   - a populated area (or multiple areas) with a density of at least 200 people per square kilometre; AND/OR
   - a total population of 1,000 or greater.

⁵ Small Communities are defined as an incorporated or unincorporated community that has:
   - no populated areas with densities that exceed 200 people per square kilometre; AND
   - does not have a total population in excess of 1,000.
### Table 2 Frequency of Listed Fire Apparatus Acceptance and Service Tests

<table>
<thead>
<tr>
<th></th>
<th>@ Time of Purchase New or Used</th>
<th>Annual Basis</th>
<th>@ 15 Years</th>
<th>@ 20 Years</th>
<th>20 to 25 Years (annually)</th>
<th>After Extensive Repairs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended For Fire Insurance Purposes</strong></td>
<td>Acceptance Test if new; Service Test if used &amp; &lt; 20 Years</td>
<td>Service Test</td>
<td>Acceptance Test</td>
<td>Acceptance Test</td>
<td>Acceptance Test</td>
<td>Acceptance Test or Service Test depending on extent of repair</td>
</tr>
<tr>
<td><strong>Required For Fire Insurance Purposes</strong></td>
<td>Acceptance Test if new; Service Test if used &amp; &lt; 20 Years</td>
<td>No Test Required</td>
<td>No Test Required</td>
<td>Acceptance Test</td>
<td>Acceptance Test</td>
<td>Acceptance Test or Service Test depending on extent of repair</td>
</tr>
<tr>
<td><strong>Factor in FUS Grading</strong></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Required By Listing Agency</strong></td>
<td>Acceptance Test</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>N/A</td>
<td>Acceptance Test</td>
</tr>
<tr>
<td><strong>Required By NFPA See Note 6</strong></td>
<td>Acceptance Test</td>
<td>Annual Service Test</td>
<td>Annual Service Test</td>
<td>Annual Service Test</td>
<td>Annual Service Test</td>
<td>Service Test</td>
</tr>
</tbody>
</table>

**Note 1:** See: ‘Service Tests for Used or Rebuilt Fire Apparatus’ for description of applicable tests
**Note 2:** Acceptance Tests consist of 60 minute capacity and 30 minute pressure tests
**Note 3:** Service Tests consist of 20 minute capacity test and 10 minute pressure test in addition to other listed tests
**Note 4:** Apparatus exceeding 20 years of age may not be considered to be eligible for insurance grading purposes regardless of testing. Application must be made in writing to Fire Underwriters Survey for an extension of the grade-able life of the apparatus.
**Note 5:** Testing after extensive repairs should occur regardless of apparatus age within reason.
**Note 6:** Acceptance Tests: See NFPA 1901, Standard for Automotive Fire Apparatus
SERVICE TESTS FOR USED OR MODIFIED FIRE APPARATUS

The intent of this document is to ensure that all used or modified fire apparatus, equipped with a pump or used for tanker service, essentially meet the requirements of Underwriters’ Laboratories of Canada (ULC) “Standard for Automobile Fire Fighting Apparatus” S515-04 or subsequent (current) editions of the Standard. Full adherence with the following specified tests is recommended when purchasing used apparatus.

**Weight Tests**

**Load Balance Test:**

When fully laden (including a 460kg (1000 lbs) 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 the balance of mass on the rear axles is permissible.

**Road Tests**

**Acceleration Tests:**

2.1.1) From a standing start, the apparatus shall attain a true speed of 55 km/h (35 mph) within 25 seconds for Pumpers carrying up to 3,150 litres (700 gallons) of water.

For apparatus carrying in excess of 3,150 litres (700 gallons) or apparatus equipped with aerial ladders or elevating platforms, a true speed of 55 km/h (35 mph) in 30 seconds should be attained.

2.1.2) The vehicle should attain a top speed of at least 80 km/h (50mph).

**Braking Test:**

The service brakes shall be capable of bringing the fully laden apparatus to a complete stop from an initial speed of 30 km/h (20 mph) in a distance not exceeding 9 metres (30 feet) by actual measurement. The test should be conducted on a dry, hard surfaced road that is free of loose material, oil and grease.
Pump Performance Tests

Hydrostatic Test

Recent evidence of hydrostatic testing of the pump for 10 minutes at a minimum pressure of 3,400 kPa (500 psi). APPLICABLE TO NEW OR REBUILT PUMPS ONLY (see 3.3).

Priming and Suction Capability Tests

Vacuum Test:

The pump priming device, with a capped suction at least 6 metres (20 feet) long, shall develop –75 kPa (22 inches of mercury) at altitudes up to 300 metres (1000 feet) and hold the vacuum with a drop of not in excess of 34 kPa (10 inches of mercury) in 10 minutes.

For every 300 metres (1000 feet) of elevation, the required vacuum shall be reduced 3.4 kPa (1 inch mercury).

The primer shall not be used after the 10-minute test period has been started. The test 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 feet) through 6 metres (20 feet) of suction hose of appropriate size, in not more than 30 seconds and not over 45 seconds for 6000 L/min (1320 Igpm) or larger capacity pumps. Where front or rear suction is provided on midship pumps, an additional 10 seconds priming time will be allowed. The test shall be conducted with all discharge caps removed.

Pump Performance

Capacity Test:

Consists of drafting water (preferably with a 10 feet lift) and pumping the rated capacity at 1000 kPa (150 psi) net pump pressure for a continuous period of at least 1 hour.

Pressure Test:

Under the same conditions as in 3.3.1 above pumping 50% of the rated capacity at 1700 kPa (250 psi) net pump pressure for at least ½ hour.
For additional information on the above noted tests and test procedures, the following documents provide useful data:


- Fire Underwriters Survey (FUS) publication titled Fire Stream Tables and Testing Data latest edition.

- International Fire Service Training Association (IFSTA) publication titled Fire Department Pumping Apparatus, latest edition.


For further information regarding the acceptability of emergency apparatus for fire insurance grading purposes, please contact:

<table>
<thead>
<tr>
<th>Western Canada</th>
<th>Quebec</th>
<th>Ontario</th>
<th>Atlantic Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Underwriters Survey</td>
<td>Fire Underwriters Survey</td>
<td>Fire Underwriters Survey</td>
<td>Fire Underwriters Survey</td>
</tr>
<tr>
<td>3999 Henning Drive</td>
<td>255, boul. Crémazie E</td>
<td>175 Commerce Valley Drive, West</td>
<td>238 Brownlow Avenue, Suite 300</td>
</tr>
<tr>
<td>Burnaby, BC V5C 6P9</td>
<td>Montreal, Quebec H2M 1M2</td>
<td>Markham, Ontario L3T 7P6</td>
<td>Dartmouth, Nova Scotia B3B 1Y2</td>
</tr>
<tr>
<td>1-800-665-5661</td>
<td>1-800-263-5361</td>
<td>1-800-268-8080</td>
<td>1-877-634-8564</td>
</tr>
</tbody>
</table>