New Requirements for Automotive Fire Apparatus and Trailers
Complying with the 2009 edition of NFPA 1901

by Thomas A. Hillenbrand

The 2009 edition of NFPA 1901, Standard for Automotive Fire Apparatus, defines minimum requirements for new automotive fire apparatus and trailers used for transporting personnel and equipment under emergency conditions. Chapter 4 of NFPA 1901 outlines the responsibilities of a purchaser, manufacturer (or contractor) and third-party certification organization.

Compliance requirements
Under NFPA 1901, a purchaser is responsible for specifying the following details for apparatus so that manufacturers can design NFPA 1901-compliant apparatus:

- Required performance of the apparatus including situations when the equipment must operate at elevations above 2,000 feet or on grades exceeding 6 percent
- The maximum number of fire fighters riding within the apparatus

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UL Moves Into Green Space with Launch of UL Environment

Underwriters Laboratories is synonymous with safety. Now, after growing confusion in the green marketplace has left consumers doubting the truth of the environmental claims on products, UL has boldly stepped in to clarify the green space with the launch of UL Environment, Inc., a new wholly-owned subsidiary of UL.

Created in response to the increased demand for environmentally sustainable products, UL Environment will help businesses and consumers make sense of green claims and aid manufacturers in maintaining transparency and credibility in the marketplace. In the same way UL helps code officials, builders and consumers understand that UL certified products are safer, UL Environment will help the public understand that products on the shelf are as green as they claim to be.

“UL Environment leverages UL’s heritage and strong reputation as a leading third-party product testing and certification organization to help manufacturers turn eco claims into a competitive advantage,” said Steve Wenc, president, UL Environment. “These environmental services will turn the promise of more sustainable products and processes into a reality for our customers.”

**Service offering**

UL Environment’s services include two new offerings: Environmental Claims Validation (ECV), a program that tests and validates manufacturers’ environmental claims on products and packaging, and Sustainable Product Certification for testing and certifying products to industry-accepted environmental standards. In the summer of 2009, UL Environment plans to expand its portfolio with additional training and advisory services.

“We expect demand for ‘green’ product testing to be high, especially given the prevalence of environmentally driven products on the market today,” said Marcello Manca, vice president and general manager, UL Environment. “Until now, many businesses have struggled with how to maximize the economic potential of their sustainably driven innovations. UL Environment is responding with offerings that will make a difference in our partners’ bottom lines.”

**Global reach**

UL Environment was launched just as companies in all sectors all around the world are facing questions about their design and manufacturing processes. Because of its global reach, UL has the capacity to serve customers globally and has the credibility and trust that industries can rely upon in markets around the world.
“Having a strong trusted brand in the marketplace will help clarify the confusion around what is truly a sustainable product,” said Wenc.

Within the fire safety industry, new challenges are emerging as manufacturers begin to phase out some elements of their supply chain while continuing to maintain the fire performance called for by safety standards and installation codes. The challenge of designing and creating a safer and healthier product will spur innovation and inspire others to think about the impact their product is having on the people using it and the planet.

As part of the UL family of companies, UL Environment is well positioned to develop the emerging standards in the environmental arena. UL Environment will begin developing global sustainability standards in various product industries early this summer. UL Environment plans to utilize a standards development process similar to the one used by UL that seeks input from various stakeholder groups.

For a complete list of UL Environment validated or certified products, to request a quote, or for more information about future services, please visit www.ulenvironment.com.

For more information, please contact Julia Farber at +1.847.664.3088 or at Julia.Farber@ulenvironment.com.

“We expect demand for ‘green’ product testing to be high, especially given the prevalence of environmentally driven products on the market today. Until now, many businesses have struggled with how to maximize their economic potential. UL Environment is responding with offerings that will make a difference in our partners’ bottom lines.”
 Specific electrical loads comprising the minimum continuous electrical load

- Any hose, ground ladders or equipment exceeding the minimum equipment requirements of NFPA 1901

### Certification requirements

When NFPA 1901 requires that the results of tests be certified by an independent third-party certification organization, the third-party organization must meet the following requirements:

- Be accredited for inspection and testing systems on fire apparatus in accordance with ISO/IEC 17020, general criteria for the operation of various types of bodies performing inspection, or ISO/IEC Guide 65, general requirements for bodies operating product certification systems
- Not be owned or controlled by manufacturers or vendors of a product that is being tested
- Engaged primarily in certification work without a monetary interest in a product’s ultimate profitability
- Witness all tests and refuse to certify any test results for a system if all components of that system requiring testing do not pass the testing required by NFPA 1901
- Issue no conditional, temporary or partial certification of test results
- Provide and use appropriate forms or data sheets during the testing
- Have programs in place for training, proficiency testing and performance verification of any staff involved with certification
- Provide a mechanism in operating procedures for a manufacturer to appeal decisions

### Different Types of Trailers

If a trailer is being purchased to transport fire rescue response equipment, a purchaser must specify whether a trailer is a Type I, Type II or Type III configuration as defined below:

- **Type I:** A trailer designed to remain connected to a tow vehicle throughout a response event and dependent on a tow vehicle for required electrical power and conspicuity requirements of NFPA 1901
- **Type II:** A trailer designed to be separated from a tow vehicle and not dependent on a tow vehicle for required electrical power and conspicuity requirements of NFPA 1901
- **Type III:** An open trailer designed to transport other vehicles, equipment or containers that will be removed from a trailer. A Type III trailer will not block the right-of-way during an incident

### Manufacturer's documentation

A manufacturer must provide a detailed description of each apparatus, list of all furnished equipment, and any other construction and performance details the apparatus is required to meet. At a minimum, a detailed description must include estimated in-service weight, wheelbase, turning clearance radius, principle dimensions, angle of approach and departure, axle ratios, and, if applicable, rated capacity of any aerial device.

With each apparatus, manufacturers are also responsible for delivering the following documentation:

- Two sets of all operations and service documents supplied with installed components and equipment or provided with the apparatus
- Third-party certificate of test results required to be witnessed by an accredited third-party, i.e., pump, aerial and generator testing
- Manufacturer’s certification of test results where required by the Standard, i.e., water tank capacity, foam testing, etc.

### Procurement considerations

Many purchasers of a new fire apparatus are aware of NFPA 1901 requirements for third-party certification of test results for aerial devices, pump systems and fixed power sources because this certification is included with documentation delivered with a new apparatus. However, responsible purchasers may not be aware of the additional certificates of compliance or testing results covering low-voltage electrical, auxiliary pumps, water tank capacity, foam systems and breathing air systems that manufacturers are required to provide upon delivery of a new apparatus. A purchaser may specify that some or all of these tests be certified by a third-party testing organization.

It is vital that purchasers of fire apparatus are knowledgeable about the test results and certification of systems they are receiving. Not only will this information provide purchasers with important information about their new vehicles, it will also provide baseline information when establishing a preventive maintenance and inspection regimen for any new in-service apparatus.

The entity responsible for final assembly of an apparatus is required to deliver either a certification that an apparatus
fully complies with all requirements of NFPA 1901 or a statement of exceptions specifically describing each aspect of a completed apparatus that is not fully compliant with the requirements of NFPA 1901 at the time of delivery. For each noncompliance or missing required item, a statement of exceptions shall contain the following:

- Reference to the applicable section of NFPA 1901 for which an apparatus is noncompliant
- Detailed description of the noncompliance or missing required equipment
- Description of any additional modifications that must be completed for an apparatus to achieve full compliance

A manufacturer must provide a detailed description of each apparatus, list of all furnished equipment, and any other construction and performance details the apparatus is required to meet.

- Identification of the entity responsible for making any necessary post-delivery changes or modifications or for supplying and installing any missing required equipment to achieve full compliance with NFPA 1901

**Apparatus assessment**

By the time of delivery of an apparatus, any statement of exceptions must be signed by an authorized agent of the organization responsible for final assembly and by an authorized agent of a purchasing entity to indicate mutual understanding and agreement between the parties regarding the contents of the statement of exceptions.

Any delivered apparatus subject to a statement of exceptions may not be placed in emergency service until the apparatus has been modified as necessary to achieve full compliance with NFPA 1901.

To assist apparatus manufacturers and purchasers with identifying aspects of an apparatus not fully compliant with NFPA 1901, UL offers a total vehicle assessment program. UL issues an automotive fire apparatus certificate indicating that a fire apparatus was assessed to the 2009 edition of NFPA 1901 except for features noted on the certificate expressly excluded by a purchaser.

For questions regarding UL’s total vehicle assessment program or other fire apparatus inspection programs, please contact Tom Hillenbrand at +1.847.664.2603 or at Thomas.A.Hillenbrand@us.ul.com.
ULC was recently invited to join the Conference Board of Canada’s Council on Security and Technology.

In 2006, the Conference Board of Canada began examining the issue of critical infrastructure along the Canada-U.S. border. Owners and operators of this critical infrastructure lacked a clear understanding of what was transpiring across the border. When critical infrastructure, including transportation, energy and communications systems, fails in one country, it has a direct effect on the other country.

Within the structure of the national security and public safety sector, the Conference Board of Canada has established three executive networks, one of which is the Council on Security and Technology.

In the fall 2007, ULC was invited to join the Council on Security and Technology. Though this Council does not write standards or set policy, ULC carefully considered the invitation and determined that the company could make a substantial and tangible contribution to the Council’s work.

Membership on the Council on Security and Technology has provided ULC with the opportunity to gain critical strategic perspectives and insights on how overlapping issues of technology and security are being addressed comprehensively. It has also allowed ULC to contribute to the discussions by drawing on its standards development expertise, its links to other key stakeholder groups and its international standards activities on security. The meetings of the Council are private and limited to members, hosts and presenters. There are three two-day meetings annually featuring presentations by guest speakers, descriptions of members’ initiatives, site visits and active discussion about issues core to security and technology.

Members of the Council work on identifying trends in security technology; hear about practices developing on a global basis; work to develop shared, strategic points of view on security risks and threats; and gain understanding of the advantages and limitations of advanced technologies. In turn, the members are able to take this information back to their stakeholders.

As a member of the Council for Security and Technology, ULC is able to also participate in joint meetings with other Conference Board groups, including the Centre for National Security, Council for Security Executives, Innovation Council and Council for CIOs.

ULC has been able to share information from its work with the Council with our committees on issues such as biometrics and identity management. We have also been able to link other stakeholders in our networks who can benefit and contribute to the work underway.

Other members of the Council include:
- AMEC NSS
- Bell Canada
- British Columbia Ministry of Labour Citizen, Information Security Branch
- Canadian Air Transport Security Authority
- CBRN Research Technology Initiative (CRTI)
- EDS Canada Inc.
- General Dynamics Canada Ltd.
- Greater Toronto Airports Authority
- Public Safety Canada, Security and Technology Division
- Royal Canadian Mounted Police

Recent meetings have included presentations from:
- Defence Research and Development Canada, National Defence
- Nuclear Safety Solutions Limited
- Office of the Privacy Commissioner of Canada
- Great Canadian Gaming Corporation
- Ministry of Labour and Citizens Services
- University of Victoria, Division of Continuing Studies
- Transport Canada
- British Columbia Ferry Services Inc.
- Project Scope Solutions Group

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Questions & Answers

I have recently heard about condensed aerosol generators. Can you explain what they are, where they can be used, and whether they are UL Listed?

Condensed aerosol generators are the primary component of fixed condensed aerosol extinguishing system units. Other components of these units include the mounting brackets for the generators, actuating mechanisms and other accessory equipment. These units are not intended for portable or semi-fixed use.

Generators are similar to the storage containers of other fixed extinguishing system units such as dry chemical, carbon dioxide, or clean agents. However, generators differ in that they do not store the agent under pressure as do dry chemical, carbon dioxide and clean agent storage containers. Instead, they store an aerosol-forming compound consisting of oxidants and combustible components.

Igniting the aerosol-forming compound and burning it at a controlled rate produces an aerosol-extinguishing agent consisting of gaseous matter and finely divided solid particles. The agent then flows through a cooling mechanism integral to the generator.

Unlike typical fixed extinguishing systems that may include several discharge nozzles attached with distribution piping to the storage containers, fixed condensed aerosol extinguishing systems include discharge ports integral to the generator and do not have distribution piping.

Fixed condensed aerosol extinguishing system units are intended for total flooding applications when they are installed, inspected, tested and maintained in accordance with ANSI/NFPA 2010, Fixed Aerosol Fire Extinguishing Systems, as well as a manufacturer’s design, installation, operation and maintenance instruction manual. For total flooding applications, a hazard is surrounded by a fixed enclosure to achieve and maintain the required aerosol extinguishing agent design application density for the required hold time so the fire within the enclosure can be effectively extinguished. Additional information regarding ANSI/NFPA 2010 is available from the National Fire Protection Association’s Web site at www.nfpa.org.

Fixed condensed aerosol extinguishing system units can be either aerosol-generating extinguishing system units or aerosol-generating automatic extinguisher units. When assembled into a system with one or more condensed aerosol generators, aerosol-generating extinguishing system units are designed for automatic and manual actuation and are intended for surface-type Class A, B and C fires. Aerosol-generating automatic extinguisher units are self-contained units designed for automatic thermal actuation, lack a means for manual actuation, are limited to a single protected enclosure volume, and are intended for Class B and C fires. Aerosol-generating automatic extinguisher units may also be intended for surface-type Class A.

The basic requirements used to investigate fixed condensed aerosol extinguishing system units are contained in UL Subject 2775, Outline of Investigation for Fixed Condensed Aerosol Extinguishing System Units. The potential effects of aerosol-extinguishing agent discharge residue on sensitive equipment and other objects that may be within the enclosure are not evaluated by UL. UL Subject 2775 is available for purchase at www.comm-2000.com.

For a list of manufacturers and products certified by UL under the product category for fixed condensed aerosol extinguishing system units, please visit UL's Online Certifications Directory at www.ul.com/database and search for UL product category code FWSA.

Manufacturers interested in having a product evaluated by UL can start the process at www.ul.com/firesafetyquote or via telephone at +877.854.3577.

Prior to submitting a product to UL for certification, the agent of a fixed condensed aerosol extinguishing system unit first needs to be evaluated in a manner equivalent to the process used by the U.S. Environmental Protection Agency’s (EPA) Significant New Alternatives Policy (SNAP) Program as referenced in NFPA 2010. Additional information is available at www.epa.gov/ozone/snap.

For more information, please contact Blake Shugarman at +1.847.664.2022 or at Blake.M.Shugarman@us.ul.com.
Calendar of Events

To the right is a list of meetings and important events for the fire and security communities. If you would like The Fire & Security Authority to consider publishing your upcoming events, contact Kim Mulhall, editor, in Northbrook, Ill., by e-mail at Kimberly.A.Mulhall@us.ul.com. Please type “Calendar” in the subject line.

**July 28–30**
National Fire Protection Association (NFPA)
America’s Fire Expo
Miami
www.americasfireandsecurity.com

**August 5**
Fire & Police Night at U.S. Cellular Field
Chicago
http://chicago.whitesox.mlb.com/cws/ballpark/index.jsp

**August 12–14**
Seguriexpo Buenos Aires 2009
Buenos Aires, Argentina
www.seguriexpo.com/ingles/index.htm

**August 25–29**
Fire-Rescue Intl (FRI)
Dallas
www.iafc.org

**September 16–25**
Door Hardware Institute (DHI) Expo
Orlando, Fla.
www.dhi.org

**September 21–23**
America’s Security Intl Show (ASIS)
Anaheim, Calif.
www.asisonline.org