NFPA®

1906

Standard for Wildland Fire Apparatus

2016

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NFPA® 1906

Standard for

Wildland Fire Apparatus

2016 Edition

This edition of NFPA 1906, *Standard for Wildland Fire Apparatus*, was prepared by the Technical Committee on Fire Department Apparatus. It was issued by the Standards Council on May 26, 2015, with an effective date of June 15, 2015, and supersedes all previous editions.

This document has been amended by one or more Tentative Interim Amendments (TIAs) and/or Errata. See "Codes & Standards" at www.nfpa.org for more information.

This edition of NFPA 1906 was approved as an American National Standard on June 15, 2015.

Origin and Development of NFPA 1906

The first edition of NFPA 1906, *Standard for Wildland Fire Apparatus*, was published in 1995 to provide a standard for apparatus that are basically designed and deployed to combat fires in wildland. The document covered apparatus with pumps ranging in size from 20 gpm to 250 gpm (76 L/min to 950 L/min) and water tanks with a capacity of 125 gal (473 L) or more.

Requirements were also provided for the first time for foam proportioning systems using Class A foam as a fire suppressant agent and for compressed air foam systems (CAFS). The apparatus covered in the standard included built-to-specification apparatus and fire-fighting packages designed to be slipped onto a vehicle chassis.

In the 2001 edition, the requirements for low-voltage electrical systems, including the emergency warning systems, were brought in line with the requirements in NFPA 1901, *Standard for Automotive Fire Apparatus*. The chapter on pumps was reorganized to provide requirements for four types of pumps, with the range of sizes changed to include pumps from 10 gpm (38 L/min) to 500 gpm (1900 L/min). The allowable minimum size on water tanks was lowered to 50 gal (190 L), and the chapter on line-voltage systems was removed. The document was also updated in other areas where appropriate to make the requirements consistent with those in NFPA 1901.

The 2006 edition was a general updating of the document, including making requirements consistent with those in NFPA 1901 where appropriate. It added requirements for what the manufacturer certification of test results must include and for better illumination and signage for controls, switches, instruction plates, gauges, and instruments. This edition also introduced the concept of estimated in-service weight as a basis for measuring certain stability requirements and linked the maximum top speed of the apparatus to the tire manufacturer's ratings. It also required more head height at seating positions and the use of red seat belts if available.

The 2006 edition also reorganized the requirements for water pumps installed on the wildland fire apparatus into seven categories and updated the requirements for baffling water tanks to better address smaller water tanks. The standard required type testing of foam systems followed by individualized testing of each installation. Two annexes were added, one to provide an equipment size and weight chart, the other to provide guidelines for first-line and reserve fire apparatus. Finally, the document was reorganized according to the *Manual of Style for NFPA Technical Committee Documents*.

The 2012 edition was a complete reorganization of the document, to follow the same format and style as NFPA 1901, *Standard for Automotive Fire Apparatus*. It included a new category of wildland fire apparatus titled Wildland Mobile Water Supply Apparatus, giving specific requirements for vehicles equipped with a minimum of 1000 gal (4000 L) water tanks designed to operate off-road. This revision also included appropriate updates consistent with those requirements in NFPA 1901.

The 2016 edition of NFPA 1906 includes a new chapter on the design of wildland fire crew carriers specifically for the purpose of transporting wildland fire crews. It also includes a new chapter

on ultra-high pressure (UHP) fire pumps and associated equipment due to the increased use of UHP fire pumps. This edition provides guidance to manufacturers and purchasers as to the design, testing, and performance of UHP fire pumps with a rated discharge pressure of 1100 psi (7600 kPa) or greater. The 2016 edition of NFPA 1906 also introduces a new design concept of the on-board pump-and-roll firefighting position in Chapter 14. This is a seated, belted, and protected position that allows for safe and effective use of pump-and-roll operations in situations where walk along-side pump-and-roll operations are not practical. The Committee also has clarified the requirements within Chapter 16 for pump controls and has added updated tables to the chapter for the engine speed advancement interlock test. Additional changes have been made throughout the document to remove redundant language and to clarify requirements.

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NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents on the design and performance of fire apparatus for use by the fire service.

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NFPA 1906

Standard for

Wildland Fire Apparatus

2016 Edition

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

A reference in brackets [ ] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex E. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

Information on referenced publications can be found in Chapter 2 and Annex E.

Chapter 1 Administration

1.1* Scope. This standard shall define the minimum requirements for the design, performance, and testing of new automotive fire apparatus that are designed primarily to support wildland fire suppression operations.

1.2 Purpose. The purpose of this standard shall be to establish the minimum requirements for new automotive wildland fire apparatus that will be safe and reliable when properly maintained and used within design parameters.

1.3 Application.

1.3.1* This standard shall apply to new fire apparatus that meet the following criteria:

(1) Rated at minimum 10,001 lb (4501 kg) gross vehicle weight rating (GVWR)
(2) Designed specifically for supporting wildland fire suppression operations
(3) Contracted for on or after January 1, 2016

1.3.2 Nothing shall prevent the use of the standard prior to January 1, 2016, if the purchaser and the contractor agree.

1.3.3 This standard shall not apply to fire apparatus designed to support structural fire fighting or associated fire department operations, which are covered by the requirements of NFPA 1901.

1.4* Retroactivity. The standard is not intended to be applied retroactively.

1.5 Equivalency. Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this standard.

1.5.1 Technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency.

1.5.2 The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.

1.6 Units of Measure.

1.6.1* In this standard, values for measurement in U.S. customary units shall be followed by an equivalent in SI units.

1.6.2 Either set of values can be used, but the same set of values (either U.S. customary units or SI units) shall be used consistently.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 1901, *Standard for Automotive Fire Apparatus,* 2016 edition.

NFPA 1963, *Standard for Fire Hose Connections,* 2014 edition.

2.3 Other Publications.

2.3.1 ANSI Publications. American National Standards Institute, 25 West 43rd Street, 4th floor, New York, NY 10036.

ANSI/NEMA Z535.4, *Product Safety Signs and Labels*, 2011.

2.3.2 ASME Publications. American Society of Mechanical Engineers, Two Park Avenue, New York, NY 10016-5990.

ANSI/ASME B1.20.7, *Hose Coupling Screw Threads, Inch*, 1991 (R2003).

ASME B40.100, *Pressure Gauges and Gauge Attachments*, 2005.

Boiler and Pressure Vessel Code, Section VIII, Division 1, 2013.

2.3.3 ASTM Publications. ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959.

ASTM D4956, *Standard Specification for Retroreflective Sheeting for Traffic Control*, 2013.

2.3.4 FAMA Publications. Fire Apparatus Manufacturers Association, P.O. Box 397, Lynnfield, MA 01940-0397.

FAMA TC008, *Graphical Symbols for Automotive Fire Apparatus*, 2013.

FAMA TC010, *Standard Product Safety Sign Catalog for Automotive Fire Apparatus,* 2014.

2.3.5 ISEA Publications. International Safety Equipment Association, 1901 North Moore Street, Arlington, VA 22209-1762, www.safetyequipment.org.

ANSI/ISEA 207, *Standard for High-Visibility Public Safety Vests*, 2011.

2.3.6 ISO Publications. International Standards Organization, 1 rue de Varembé, Case Postale 56, CH-1211 Genéve 20, Switzerland.

ISO 9244, *Earth-moving machinery — Machine safety labels — General principles,* 2008.

ISO/IEC 17020, *General criteria for the operation of various types of bodies performing inspection*, 1998.

ISO/IEC 17065, *Conformity Assessment: Requirements for bodies certifying products, processes and services,* 2012.

2.3.7 Parker Hannifin, Racor Division Publication. Parker Hannifin, Racor Division, Attn: Dan Haggard, 805 West Street, Holly Springs, MS 38634.

LF 1093-90, *Ember Separation Test Procedure*, January 2003.

2.3.8 SAE Publications. Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J156, *Fusible Links*, 2012.

SAE J541, *Voltage Drop for Starting Motor Circuits*, 1996.

SAE J551/1, *Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz)*, 2010.

SAE J553, *Circuit Breakers*, 2004.

SAE J554, *Electric Fuses (Cartridge Type)*, 1987.

SAE J575, *Test Methods and Equipment for Lighting Devices and Components for Use on Vehicles Less Than 2032 mm in Overall Width*, 2012.

SAE J578, *Color Specification*, 2012.

SAE J595, *Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles*, 2008.

SAE J683, *Tire Chain Clearance — Trucks, Buses (Except Suburban, Intercity, and Transit Buses), and Combinations of Vehicles*, 2011.

SAE J845, *Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles*, 2007.

SAE J994, *Alarm — Backup — Electric, Laboratory Performance Testing*, 2009.

SAE J1127, *Low Voltage Battery Cable*, 2012.

SAE J1128, *Low Voltage Primary Cable*, 2012.

SAE J1194, *Rollover Protective Structures (ROPS) for Wheeled Agricultural Tractors*, 2009.

SAE J1330, *Photometry Laboratory Accuracy Guidelines*, 2007.

SAE J1690, *Flashers*, 1996.

SAE J1849, *Emergency Vehicle Sirens*, 2012.

SAE J1888, *High Current Time Lag Electric Fuses*, 1990.

SAE J1889, *L.E.D. Signal and Marking Lighting Devices*, 2011.

SAE J2077, *Miniature Blade Type Electrical Fuses*, 1990.

SAE J2180, *A Tilt Table Procedure for Measuring the Static Rollover Threshold for Heavy Trucks*, 2011.

SAE J2202, *Heavy-Duty Wiring Systems for On-Highway Trucks*, 2008.

SAE J2418, *Occupant Restraint System Evaluation — Frontal Impact Component-Level Heavy Trucks*, 1998, reaffirmed 2003.

SAE J2420, *COE Frontal Strength Evaluation — Dynamic Loading Heavy Trucks*, 2010.

SAE J2422, *Cab Roof Strength Evaluation — Quasi-Static Loading Heavy Trucks*, 2010.

2.3.9 TRA Publications. Tire and Rim Association, Inc., 175 Montrose West Ave., Suite 150, Copley, OH 44321.

Tire and Rim Association — Year Book, 2015.

2.3.10 UL Publications. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

ANSI/UL 969, *Standard for Marking and Labeling Systems*, 1995, with revisions through November 24, 2008.

2.3.11 UNECE Publications. UN Economic Commission for Europe, Palais des Nations, CH – 1211, Geneva 10 Switzerland, www.UNECE.org.

ECE Regulation number 29, *Uniform Provisions Concerning the Approval of Vehicles with Regard to the Protection of the Occupants of the Cab of a Commercial Vehicle,*2011.

2.3.12 U.S. Department of Agriculture Publications. USDA Forest Service, San Dimas Technology and Development Center, 444 East Bonita Avenue, San Dimas, CA 91773.

USDA - Forest Service Standard 5100-1.

2.3.13 U.S. Government Publications. U.S. Government Printing Office, Washington, DC 20402.

Public Law 89-563.

Title 29, Code of Federal Regulations, Part 1910.169, "Air receivers." 29 CFR 1910.169.

Title 49, Code of Federal Regulations, Part 178.37, "Specification 3AA and 3AAX seamless steel cylinders." 49 CFR 178.37.

Title 49, Code of Federal Regulations, Part 393.94(c), "Interior noise levels in power units." 49 CFR 393.94(c).

2.3.14 Other Publications.

Merriam-Webster's Collegiate Dictionary, 11th edition, Merriam-Webster, Inc., Springfield, MA, 2003.

2.4 References for Extracts in Mandatory Sections.

NFPA 10, *Standard for Portable Fire Extinguishers,* 2013 edition.
NFPA 70® , *National Electrical Code®*, 2014 edition.