

NFPA 1003 Professional Qualifications for Airport Fire Fighters 1987 Edition



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Policy Adopted by NFPA Board of Directors on December 3, 1982

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

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

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NATIONAL FIRE PROTECTION ASSOCIATION

National Professional Qualifications System
established by the
Joint Council of National Fire Service Organizations

Constituent Members of the
Joint Council of National Fire Service Organizations

Fire Marshals Association of North America
International Association of Arson Investigators
International Association of Black Professional Fire Fighters
International Association of Fire Chiefs
International Association of Fire Fighters
International Fire Service Training Association
International Municipal Signal Association
International Society of Fire Service Instructors
Metropolitan Committee of International Association of Fire Chiefs
National Fire Protection Association
National Volunteer Fire Council

The Joint Council of National Fire Service Organizations consists of leaders of the principal national organizations representing the Fire Service of the United States. It meets periodically to review current developments and to establish areas of common interest where cooperative efforts of member organizations can be used for maximum results.

An important step in the establishment of national standards of professional competence for the fire service was taken by the Joint Council on October 25, 1972.

The Council decided that one area of common interest in which national collective action was desirable was in the establishment of standards upon which the levels of competency within the fire service could be determined.

A committee of the Council was delegated the responsibility of preparing an acceptable system for the development of the standards. Following several months of work, during which the suggestions of constituent organizations were incorporated, the Committee submitted the final proposal to the Joint Council and the following system was approved and established:

1. Committees to develop standards of professional competency, made up of peer group representation; and
2. An independent Board to oversee and validate standards developed and the implementation of such standards in a nationally coordinated continuing professional development program for the fire service.

The Secretariat for Committees and Board is to be provided by the staff of the National Fire Protection Association.

1. Fire Service Professional Standards Development Committees

There are four committees, each of which is made up of representatives of organizations which are constituent members of the Joint Council and certain other persons nominated by the Joint Council, collectively.

The four committees are respectively responsible for the development and preparation of recommended minimum standards of professional competence required of:

1. Fire Fighters
2. Fire Inspectors and Investigators
3. Fire Service Instructors
4. Fire Service Officers.

Each committee is established and operated under NFPA standards-making procedures with one important variation, which is that no draft standard shall be submitted to NFPA for final adoption until it has been approved by the National Professional Qualifications Board for the Fire Service.

Standards are prepared for use after final adoption as a basis for nationally standardized examinations by authorized agencies and the standards are available for adoption by federal, state and local authorities.

Committees do not determine, or become involved in, actual certification procedures or the direct implementation of the standards; they do assist implementing agencies by a continuing review and revision of the standards.

The authorized representation on each committee is as follows:

1. Fire Fighter Qualifications Committee

International Association of Fire Chiefs
International Association of Fire Fighters
International Association of Black Professional Fire Fighters
International Fire Service Training Association
International Society of Fire Service Instructors
National Fire Protection Association
Joint Council of National Fire Service Organizations

2. Fire Inspector and Investigator Qualifications Committee

Fire Marshals Association of North America
International Association of Arson Investigators
International Association of Fire Chiefs
International Association of Fire Fighters
National Fire Protection Association
Joint Council of National Fire Service Organizations

3. Fire Service Instructor Qualifications Committee

International Association of Fire Chiefs
International Association of Fire Fighters
International Fire Service Training Association
International Society of Fire Service Instructors
National Fire Protection Association
Joint Council of National Fire Service Organizations

4. Fire Service Officer Qualifications Committee

Fire Marshals Association of North America
International Association of Fire Chiefs
International Association of Fire Fighters
International Association of Black Professional Fire Fighters
International Society of Fire Service Instructors
Metropolitan Committee of the International Association of Fire Chiefs
National Fire Protection Association
Joint Council of National Fire Service Organizations

2. National Professional Qualifications Board for the Fire Service

A nine-person Board appointed by the Joint Council to act on behalf of the Council in the following duties and responsibilities:

- (i) The Board is constituted to supervise a nationally coordinated continuing professional development program for the Fire Service.
- (ii) The Board shall be responsive to the needs and opinions of all groups involved with the Fire Service and of others, including individuals who have related interests.
- (iii) It shall identify and define levels of professional progression.
- (iv) It shall correlate, review, and validate draft standards prepared by the Technical Committees established to produce professional standards for each level of fire service responsibility.
- (v) It shall approve all draft standards before such are submitted for final adoption procedures.
- (vi) It shall be responsible for the accreditation and supervision of any national programs of certification and shall coordinate with implementing agencies to ensure validity and reliability of the evaluation criteria used in connection with such programs.

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STATEMENT BY THE BOARD AS TO THE APPLICABILITY OF STANDARDS DEVELOPED UNDER THE SYSTEM

Application to Existing Positions

It is not the intent of the Board that these standards shall have the effect of rendering invalid any rank, qualification and appointment acquired prior to the adoption of this standard.

Upon adoption of any standard, the authority having jurisdiction shall classify its existing ranks, qualifications, and appointments to determine equivalency with an appropriate level of the standard.

An incumbent of a position established prior to adoption of a standard shall be considered qualified and eligible for future progression in accordance with the standards.

Existing Systems

Those existing systems of qualifications which meet or exceed these minimum standards should continue in force.

It is the intent, however, that existing systems of qualifications that fail to meet these standards be discontinued after adoption of the standard, so that all persons acquiring qualification thereafter do so in accordance with this standard.

The Board recognizes that, at present, wide variations exist in the standards of competence required of members of the fire service; and, that due to geographic considerations and the differing requirements of the many organizations providing fire protection, higher levels of competence than those provided in the standards produced under the National System may be desirable in certain areas.

The Board considers it essential that all members of the fire service eventually achieve the minimum standards.

Performance Objectives

The Board directed all committees to develop standards in terms of terminal performance objectives, which are considered the *minimum* necessary for a person to be considered competent to engage in providing fire service at the respective level and in the role specified by the standard, no matter where that person is serving.

In this connection, it is pointed out that the statement of performance objectives contained in the standards is not a training program outline. A number of instructional steps are required for mastery of an objective. Teaching outlines will be more detailed and extensive, as a single objective can require many hours of instruction and may interrelate to instruction for other objectives.

The Standards

The standards are designed so that any member of the fire service can achieve the level required by various means; these include participation in state and local training programs, self-study, attendance at colleges offering suitable courses, and by combinations of these means.

The standards are the first step: there must also be a controlled testing procedure by which personnel can be officially certified when they have demonstrated their competency. The Board stresses that such testing procedures are essential to a meaningful program of professionalism and, accordingly, is prepared, in conformance with the directions of the Joint Council of National Fire Service Organizations, to review the validity and quality of testing procedures established by state and local authorities, and to accredit such procedures.

The Board strongly recommends that certification procedures be established on a statewide basis in every state where no such system exists at present, and that every fire department participate in the program.

The establishment of standards and testing procedures will not, in themselves, ensure that all personnel will achieve the required levels of competency. It follows that training programs should be developed to prepare members of the fire service to acquire the skills and knowledge necessary to achieve the terminal performance objectives of the standards.

Throughout the standards, levels of numerical ascending sequence have been used to denote increasing degrees of responsibility: e.g., Fire Fighter I, II, III, the lowest or basic level being I. A similar sequence will be used in each standard; the total number of levels varying in accordance with the number of steps involved in the individual standard.

Approval of Standard

This version of NFPA 1003, *Standard for Airport Fire Fighter Professional Qualifications*, was approved by the National Professional Qualifications Board for the Fire Service in November, 1986, with the recommendation that it be submitted for adoption at the NFPA Fall Meeting to be held in Denver, Colorado in November, 1986.

(The foregoing is not part of the standard.)

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NFPA 1003
Standard for
Professional Qualifications
for Airport Fire Fighters
1987 Edition

This edition of NFPA 1003, *Standard for Professional Qualifications for Airport Fire Fighters*, was prepared by the Technical Committee on Fire Fighter Professional Qualifications, and acted on by the National Fire Protection Association, Inc. at its Fall Meeting held November 17-20, 1986, in Denver, Colorado. It was issued by the Standards Council on December 10, 1986, with an effective date of December 30, 1986, and supersedes all previous editions.

The 1987 edition of this standard has been approved by the American National Standards Institute.

Origin and Development of NFPA 1003

On December 14, 1972 the National Professional Qualifications Board for the Fire Service directed the chairman of four technical committees to develop minimum standards for each of the following areas: fire fighter, fire instructor, fire investigator and inspector, and fire officer.

In compliance with this directive, the Fire Service Professional Development Committee met in several general sessions during 1976, 1977, and 1978. Initial work on the standard started in 1973.

This standard is the third in a series of Fire Fighter Professional Qualifications Standards. The format and philosophy of this standard are intended to be compatible with NFPA 1001, *Fire Fighter Professional Qualifications*, and NFPA 1002, *Fire Apparatus Driver/Operator Professional Qualifications*.

The intent of the committee was to develop performance standards in such a clear and concise manner that they can be used to determine, without doubt, that any person so measured does truly possess the skills to be an airport fire fighter. The committee further contends that these performance objectives can be used in any fire department in any city, town, or private organization throughout the North American continent.

The committee revised the standard and submitted it to the Professional Qualifications Board and to the NFPA membership at the NFPA Fall Meeting in 1986.

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*This list represents the membership at the time the Committee was balloted on the text of this edition.
Since that time, changes in the membership may have occurred.*

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.

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NFPA 1003
Standard for
Professional Qualifications
for Airport Fire Fighters
1987 Edition

NOTICE: An asterisk(*) following the number or letter designating a subdivision indicates explanatory material on that subdivision in Appendix A.

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

Chapter 1 Administration

1-1* Scope. This standard identifies the level of professional competence required of the airport fire fighter for aircraft rescue and fire fighting.

1-2 Purpose. The purpose of this standard is to specify, in terms of performance objectives, the minimum requirements of competence required for service as an airport fire fighter.

It is not the intent of this standard to restrict any jurisdiction from exceeding these minimum requirements.

1-3 General.

1-3.1 The candidate shall meet all the requirements of this standard before being certified as an airport fire fighter.

1-3.2 Each of the performance objectives for the airport fire fighter shall be performed swiftly, safely, and with competence. Each objective shall be met in its entirety.

1-3.3 It is not required that the objectives be mastered in the order they appear. The training program shall establish the instructional priority and the training program content to prepare individuals to meet the performance objectives of this standard.

1-3.4 Performance of objectives for qualification, when the word *demonstrate* is used in this standard, shall require that actual performance and operation be accomplished, unless otherwise indicated within the specific objective. Simulation, explanation, and illustration may be substituted when actual operation is not feasible.

1-3.5 Wherever in this standard the terms *rules, regulations, procedures, supplies, apparatus and equipment* are referred to, it is implied that they are those of the authority having jurisdiction.

1-3.6 Performance of objectives for qualification covered by this standard shall be evaluated by three approved individuals from the fire service, one of whom may be from the state or regional fire service training agency.

1-4 Definitions.

Aircraft Accident. An occurrence during the operation of an aircraft in which any person involved suffers death or serious injury or in which the aircraft receives substantial damage.

Aircraft Incident. An occurrence other than an accident associated with the operation of an aircraft, that affects or could affect continued safe operation if not corrected. An incident does not result in serious injury to persons or substantial damage to aircraft.

Airport Fire Fighter. Fire fighter who has demonstrated the knowledge and ability to perform the objectives specified in this standard.

Approved. Acceptable to the "authority having jurisdiction."

NOTE: The National Fire Protection Association does not approve, inspect or certify any installations, procedures, equipment, or materials nor does it approve or evaluate testing laboratories. In determining the acceptability of installations or procedures, equipment or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization concerned with product evaluations which is in a position to determine compliance with appropriate standards for the current production of listed items.

Authority Having Jurisdiction. The "authority having jurisdiction" is the organization, office or individual responsible for "approving" equipment, an installation or a procedure.

NOTE: The phrase "authority having jurisdiction" is used in NFPA documents in a broad manner since jurisdictions and "approval" agencies vary as do their responsibilities. Where public safety is primary, the "authority having jurisdiction" may be a federal, state, local or other regional department or individual such as a fire chief, fire marshal, chief of a fire prevention bureau, labor department, health department, building official, electrical inspector, or others having statutory authority. For insurance purposes, an insurance inspection department, rating bureau, or other insurance company representative may be the "authority having jurisdiction." In many circumstances the property owner or his designated agent assumes the role of the "authority having jurisdiction"; at government installations, the commanding officer or departmental official may be the "authority having jurisdiction."

Demonstrate. To show by actual use.

Fire Fighter. The individual who has fulfilled the entrance requirements of Chapter 2 of this standard, but has not met the objectives of this standard.

Identify. To physically select, indicate, or explain verbally or in writing using standard terms or signals recognized by the fire, airport, and airline services.

Objective. A goal that is achieved through the attainment of a skill, knowledge, or both, that can be observed or measured.

Qualified. Having satisfactorily completed the requirements of the objectives.

Safely. To perform the objective without injury to self or to others, and without unnecessary damage to aircraft, fire department vehicles, or equipment.

Shall. Indicates a mandatory requirement.

Should. Indicates a recommendation or that which is advised but not required.

Swiftly. The time, as determined by the authority having jurisdiction, that it takes a qualified airport fire fighter to perform the objective satisfactorily.

With Competence. Possessing knowledge, skills, and judgment needed to perform the objective satisfactorily.

Chapter 2 Entrance Requirements

2-1* General.

2-1.1* The candidate shall have a high school diploma or a state-recognized equivalent.

2-1.2* The candidate shall be at least 18 years of age.

2-1.3* The candidate shall meet the medical and physical fitness requirements included in Chapter 2.

2-1.4* There shall be a thorough investigation and evaluation of the candidate's character before the candidate is accepted into the fire department.

2-2 Medical Requirements for Airport Fire Fighter. The candidate shall be rejected when the medical examination reveals any of the following conditions:

2-2.1 Abdominal Organs and Gastrointestinal System. The causes for rejection for appointment shall be:

(a) Cholecystectomy, sequelae of, such as postoperative stricture of common bile duct, reforming of stones in hepatic or common bile ducts, or incisional hernia, or postcholecystectomy syndrome when symptoms are so severe as to interfere with normal performance of duty.

(b) Cholecystitis, acute or chronic, with or without cholelithiasis, if diagnosis is confirmed by usual laboratory procedures or authentic medical records.

(c) Cirrhosis, with or without history of chronic alcoholism, regardless of the absence of manifestations such as jaundice, ascites or known esophageal varices, or abnormal liver function tests.

(d) Fistula, in ano.

(e) Gastritis, chronic hypertrophic, severe.

(f) Hemorrhoids:

1. External hemorrhoids producing marked symptoms.

2. Internal hemorrhoids, if large or accompanied with hemorrhage or protruding intermittently or constantly.

(g) Hepatitis, within the preceding six months, or per-

sistence of symptoms after a reasonable period of time with objective evidence of impairment of liver function.

(h) Hernia:

1. Hernia, other than small asymptomatic umbilical or hiatal.

2. History of operation for hernia within the preceding 60 days.

(i) Intestinal obstruction, or authenticated history of more than one episode, if either occurred during the preceding 5 years, or if a resulting condition remains which produces significant symptoms or requires treatment.

(j) Megacolon, of more than minimal degree, diverticulitis, regional enteritis, and ulcerative colitis. Irritable colon of more than moderate degree.

(k) Pancreas, acute or chronic disease of, if proven by laboratory tests, or authenticated medical records.

(l) Rectum, stricture or prolapse of.

(m) Resection, gastric or bowel; or gastroenterostomy. However, minimal intestinal resection in infancy, or childhood (for example: for intussusception or pyloric stenosis) is acceptable if the individual has been asymptomatic since the resection and if surgical consultation (to include upper and lower gastrointestinal series) gives complete clearance.

(n) Scars:

1. Scars, abdominal, regardless of cause, that show hernial bulging or that interfere with movements.

2. Scar pain associated with disturbance of function of abdominal wall or contained viscera.

(o) Sinuses of the abdominal wall.

(p) Splenectomy, except when accomplished for the following:

1. Trauma.

2. Causes unrelated to diseases of the spleen.

3. Hereditary spherocytosis.

4. Disease involving the spleen when followed by correction of the condition for a period of at least two years.

(q) Tumors (*see 2-2.17*).

(r) Ulcer:

1. Ulcer of the stomach or duodenum, if diagnosis is confirmed by X-ray examination, or authenticated history thereof.

2. Authentic history of surgical operation(s) for gastric or duodenal ulcer.

(s) Other congenital or acquired abnormalities and defects that preclude satisfactory performance of fire duties or that require frequent and prolonged treatment.

2-2.2 Blood and Blood-Forming Tissue Diseases. The causes for rejection for appointment shall be:

(a) Anemia:

1. Blood loss anemia — until both condition and basic cause are corrected.

2. Deficiency anemia, not controlled by medication.

3. Abnormal destruction of RBCs: hemolytic anemia.

4. Faulty RBC construction: hereditary hemolytic anemia, thalassemia and sickle-cell anemia.

5. Myelophthisic anemia: myelomatosis, leukemia, Hodgkin's disease.

6. Primary refractory anemia: aplastic anemia, Di-Guglielmo's syndrome.

(b) Hemorrhagic states:

1. Due to changes in coagulation system (hemophilia, etc.).

2. Due to platelet deficiency.

3. Due to vascular instability.

(c) Leukopenia, chronic or recurrent, associated with increased susceptibility to infection.

(d) Myeloproliferative disease (other than leukemia):

1. Myelofibrosis.

2. Megakaryocytic myelosis.

3. Polycythemia vera.

(e) Splenomegaly, until the cause is remedied.

(f) Thromboembolic disease, except for acute nonre-current conditions.

2-2.3 Dental. The causes for rejection for appointment shall be:

(a) Diseases of the jaws or associated tissues, that are not easily remediable and that will incapacitate the individual or prevent the satisfactory performance of duty.

(b) Malocclusion, severe, which interferes with the mastication of a normal diet.

(c) Orthodontic appliances: individuals with orthodontic appliances attached to the teeth are administratively unacceptable so long as active treatment is required. Individuals with retainer orthodontic appliances, who are not considered to require active treatment, are administratively acceptable.

(d) Oral tissues, extensive loss in an amount that would prevent replacement of missing teeth with a satisfactory prosthetic appliance.

(e) Relationship between the mandible and maxilla of such a nature as to preclude future satisfactory prosthodontic replacement.

2-2.4 Ears and Hearing.

2-2.4.1 Ears. The causes for rejection for appointment shall be:

(a) Auditory canal:

1. Atresia or severe stenosis of the external auditory canal.

2. Tumors of the external auditory canal, except mild exostoses.

3. Severe external otitis, acute or chronic.

(b) Auricle: Agenesis, severe; or severe traumatic deformity, unilateral or bilateral.

(c) Mastoids:

1. Mastoiditis, acute or chronic.

2. Residual or mastoid operation with marked external deformity that precludes or interferes with the wearing of a gas mask or helmet.

3. Mastoid fistula.

(d) Meniere's syndrome.

(e) Middle ear:

1. Acute or chronic suppurative otitis media. Individuals with a recent history of acute suppurative otitis media will not be accepted unless the condition is healed and a sufficient interval of time subsequent to treatment has elapsed to ensure that the disease is in fact not chronic.

2. Adhesive otitis media associated with hearing level by audiometric test of 20 db or more average for the speech frequencies (500, 1000, or 2000 cycles per second) in either ear regardless of the hearing level in the other ear.

3. Acute or chronic serious otitis media.

4. Presence of attic perforation in which presence of cholesteatoma is suspected.

5. Repeated attacks of catarrhal otitis media; intact grayish, thickened drum(s).

(f) Tympanic membrane:

1. Any perforation of the tympanic membrane.

2. Severe scarring of the tympanic membrane associated with hearing level by audiometric test of 20 db or more average for the speech frequencies (500, 1000, and 2000 cycles per second) in either ear regardless of the hearing level in the other ear.

(g) Other diseases and defects of the ear that obviously preclude satisfactory performance of duty or that require frequent and prolonged treatment.

2-2.4.2 Hearing. The cause for rejection for appointment shall be:

Hearing acuity loss by audiometric test of 20 decibels or more for the speech frequencies (500, 1000, 2000 cycles per second) in either ear, or loss of speech reception of phonetically balanced words at or below 90 percent normal reception for either ear.

2-2.5 Endocrine and Metabolic Disorders. The causes for rejection for appointment shall be:

(a) Adrenal gland, malfunction of, of any degree.

(b) Cretinism.

(c) Diabetes insipidus.

(d) Diabetes mellitus.

(e) Gigantism or acromegaly.

(f) Glycosuria, persistent, regardless of cause.

(g) Goiter:

1. Simple goiter with definite pressure symptoms or so large in size as to interfere with the wearing of a uniform or fire fighting equipment.

2. Thyrotoxicosis.

(h) Gout.

(i) Hyperinsulinism, confirmed, symptomatic.

(j) Hyperparathyroidism and hypoparathyroidism.

(k) Hypopituitarism, severe.

(l) Myxedema, spontaneous or postoperative (with clinical manifestations and not based solely on low basal metabolic rate).

(m) Nutritional deficiency diseases (including sprue, beriberi, pellagra, and scurvy) that are more than mild and not readily remediable or in which permanent pathological changes have been established.

(n) Other endocrine or metabolic disorders that obviously preclude satisfactory performance of duty or that require frequent and prolonged treatment.

2-2.6 Extremities.

2-2.6.1 Upper Extremities.

2-2.6.1.1 Limitation of Motion. The causes for rejection for appointment shall be joint ranges of motion less than the measurements listed below:

(a) Shoulder:

1. Forward elevation to 90 degrees.
2. Abduction to 90 degrees.

(b) Elbow:

1. Flexion to 100 degrees.
2. Extension to 15 degrees.

(c) Wrist: A total range of 15 degrees (extension plus flexion).

(d) Hand: Pronation to the first quarter of the normal arc.

(e) Fingers: Inability to clench fist, pick up a pin or needle, and grasp an object.

2-2.6.1.2 Hand and Fingers. The causes for rejection for appointment shall be:

(a) Absence (or loss) of more than one-third of the distal phalanx of either thumb.

(b) Absence (or loss) of distal and middle phalanx of an index, middle, or ring finger of either hand irrespective of the absence (or loss) of little finger.

(c) Absence of more than the distal phalanx of any two of the following fingers: index, middle, or ring finger, of either hand.

(d) Absence of hand or any portion thereof except for fingers as noted above.

(e) Hyperoactylia.

(f) Scars and deformities of the fingers, hands, or both that impair circulation, are symptomatic, or that impair normal function to such a degree as to interfere with the satisfactory performance of fire duty.

2-2.6.1.3 Wrist, Forearm, Elbow, Arm, and Shoulder. The causes for rejection for appointment shall be:

Healed disease or injury of wrist, elbow, or shoulder with residual weakness or symptoms of such a degree as to preclude satisfactory performance of duty.

2-2.6.2 Lower Extremities (see also 2-2.6.3).

2-2.6.2.1 Limitation of Motion. The causes for rejection for appointment shall be joint ranges of motion less than the measurement listed below:

(a) Hip:

1. Flexion to 90 degrees.
2. Extension to 10 degrees (beyond 0).

(b) Knee:

1. Full extension.
2. Flexion to 90 degrees.

(c) Ankle:

1. Dorsiflexion to 10 degrees.
2. Plantar flexion to 10 degrees.

(d) Toes. Stiffness that interferes with walking, running, or jumping.

2-2.6.2.2 Foot and Ankle. The causes for rejection for appointment shall be:

(a) Absence of one or more small toes of one or both feet, if function of the foot is poor or running or jumping is precluded, or absence of foot or any portion thereof except for toes as noted herein.

(b) Absence (or loss) of great toe(s) or loss of dorsal flexion thereof if function of the foot is impaired.

(c) Claw toes precluding the wearing of service boots.

(d) Clubfoot.

(e) Flatfoot, pronounced cases, with decided eversion of the foot and marked bulging of the inner border, due to inward rotation of the astragalus, regardless of the presence or absence of symptoms.

(f) Flatfoot, spastic.

(g) Hallux valgus, if severe and associated with marked exostosis or bunion.

(h) Hammer toe that interferes with the wearing of boots.

(i) Healed disease, injury, or deformity including hyperdactylia that precludes running, is accompanied by disabling pain, or that prohibits wearing of service boots.

(j) Ingrowing toenails, if severe, and not remediable.

(k) Obliteration of the transverse arch associated with permanent flexion of the small toes.

(l) Pes cavus, with contracted plantar fascia, dorsiflexed toes, tenderness under the metatarsal heads, and callosity under the weight-bearing areas.

2-2.6.2.3 Leg, Knee, Thigh, and Hip. The causes for rejection for appointment shall be:

(a) Dislocated semilunar cartilage, loose or foreign bodies within the knee joint, or history of surgical correction of same if:

1. Within the preceding six months.
2. Six months or more have elapsed since operation without recurrence, and there is instability of the knee ligaments in lateral or anteroposterior directions in comparison with the normal knee or abnormalities noted on X-ray; significant atrophy or weakness of the thigh musculature in comparison with the normal side; unacceptable active motion in flexion and extension, or there are other symptoms of internal derangement.

(b) Authentic history or physical findings of an unstable or internally deranged joint causing disabling pain or seriously limiting functions. Individuals with verified episodes of buckling or locking of the knee who have not undergone satisfactory surgical correction or, if subsequent to surgery, there is evidence of more than

mild instability of the knee ligaments in lateral and anteroposterior directions in comparison with a normal knee weakness or atrophy of the thigh musculature in comparison with the normal side, or if the individual requires medical treatment of sufficient frequency to interfere with the performance of duty.

2-2.6.2.4 General. The causes for rejection for appointment shall be:

(a) Deformities of one or both lower extremities that have interfered with function to such a degree as to prevent the individual from following a physically active vocation in life or that would interfere with the satisfactory completion of prescribed training and performance of fire duty.

(b) Diseases or deformities of the hip, knee, or ankle joint that interfere with walking, running, or weight bearing.

(c) Pain in lower back or leg that is intractable and disabling to the degree of interfering with walking, running, and weight bearing.

(d) Shortening of a lower extremity resulting in any limp of noticeable degree.

2-2.6.3 Miscellaneous (*see also 2-2.6.1 and 2-2.6.2*). The causes for rejection for appointment shall be:

(a) Arthritis.

1. Active or subacute arthritis, including Marie-Strümpell type.

2. Chronic osteoarthritis or traumatic arthritis of isolated joints of more than minimal degree, that has interfered with the following of a physically active vocation in civilian life or that precludes the satisfactory performance of duty.

3. Documented clinical history of rheumatoid arthritis.

4. Traumatic arthritis of a major joint of more than minimal degree.

(b) Disease of any bone or joint, healed, with such resulting deformity or rigidity that function is impaired to such a degree that it will interfere with fire service.

(c) Dislocation, old unreduced; substantiated history of recurrent dislocations of major joints; instability of a major joint, symptomatic and more than mild; or if, subsequent to surgery, there is evidence of more than mild instability in comparison with the normal joint, weakness or atrophy in comparison with the normal side, or if the individual requires medical treatment of sufficient frequency to interfere with the performance of duty.

(d) Fractures.

1. Malunited fractures that interfere significantly with function.

2. Ununited fractures.

3. Any old or recent fracture in which a plate, pin, or screws were used for fixation and left in place and that may be subject to easy trauma, i.e., as a plated tibia, etc.

(e) Injury of a bone or joint within the preceding six weeks, without fracture or dislocation, of more than a minor nature.

(f) Muscular paralysis, contracture, or atrophy, if progressive or of sufficient degree to interfere with fire service.

(g) Myotonia congenita. Confirmed.

(h) Osteomyelitis, active or recurrent, of any bone or substantiated history of osteomyelitis of any of the long bones unless successfully treated two or more years previously without subsequent recurrence or disqualifying sequelae as demonstrated by both clinical and X-ray evidence.

(i) Osteoporosis.

(j) Scars, extensive, deep, or adherent, of the skin and soft tissues or neuromas of an extremity that are painful, that interfere with muscular movements, preclude the wearing of fire equipment, or show a tendency to break down.

(k) Chondromalacia, manifested by verified history of joint effusion, interference with function, or residuals from surgery.

2-2.7 Eyes and Vision.

2-2.7.1 Eyes.

2-2.7.1.1 Lids. The causes for rejection for appointment shall be:

(a) Blepharitis, chronic more than mild. Cases of acute blepharitis will be rejected until cured.

(b) Blepharospasm.

(c) Dacryocystitis, acute or chronic.

(d) Destruction of lids, complete or extensive, sufficient to impair protection of the eye from exposure.

(e) Disfiguring cicatrices and adhesions of the eyelids to each other or to the eyeball.

(f) Growth or tumor of the eyelid other than small early basal cell tumors of the eyelid, which can be cured by treatment, and small nonprogressive asymptomatic benign lesions.

(g) Lagophthalmos.

(h) Ptosis interfering with vision.

(i) Trichiasis, severe.

2-2.7.1.2 Conjunctiva. The causes for rejection for appointment shall be:

(a) Conjunctivitis, chronic, including vernal catarrh and trachoma. Individuals with acute conjunctivitis are unacceptable until the condition is cured.

(b) Pterygium.

1. Pterygium recurring after three operative procedures.

2. Pterygium encroaching on the cornea in excess of three millimeters interfering with vision.

2-2.7.1.3 Cornea. The causes for rejection for appointment shall be:

(a) Dystrophy, corneal, of any type including keratoconus of any degree.

(b) Keratitis, acute or chronic.

(c) Ulcer, corneal; history of recurrent ulcers or corneal abrasions (including herpetic ulcers).

(d) Vascularization or opacification of the cornea from any cause that interferes with visual function or is progressive.

2-2.7.1.4 Uveal Tract. The cause for rejection for appointment shall be inflammation of the uveal tract except healed traumatic choroiditis.

2-2.7.1.5 Retina. The causes for rejection for appointment shall be:

(a) Angiomas, phakomas, retinal cysts, and other congenito-hereditary conditions that impair visual function.

(b) Degenerations of the retina to include macular cysts, holes, and other degenerations (hereditary or acquired degenerative changes) and other conditions affecting the macula. All types of pigmentary degenerations (primary and secondary).

(c) Detachment of the retina or history of surgery for same.

(d) Inflammation of the retina (retinitis or other inflammatory conditions of the retina to include Coat's disease, diabetic retinopathy, Eales' disease, and retinitis proliferans).

2-2.7.1.6 Optic Nerve. The causes for rejection for appointment shall be:

(a) Congenito-hereditary conditions of the optic nerve or any other central-nervous-system pathology affecting the efficient function of the optic nerve.

(b) Optic neuritis, neuroretinitis, or secondary optic atrophy resulting therefrom or documented history of attacks of retrobulbar neuritis.

(c) Optic atrophy (primary or secondary).

(d) Papilledema.

2-2.7.1.7 Lens. The causes for rejection for appointment shall be:

(a) Aphakia (unilateral or bilateral).

(b) Dislocation, partial or complete, of a lens.

(c) Opacities of the lens that interfere with vision or are considered to be progressive.

2-2.7.1.8 Ocular Mobility and Motility. The causes for rejection for appointment shall be:

(a) Diplopia, documented, constant, or intermittent, from any cause or of any degree interfering with visual function (i.e., may suppress).

(b) Diplopia, monocular, documented, interfering with visual function.

(c) Nystagmus, with both eyes fixing, congenital or acquired.

(d) Strabismus of 40 prism diopters or more, uncorrectable by lenses to less than 40 diopters.

(e) Strabismus of any degree accompanied by documented diplopia.

(f) Strabismus, surgery for the correction of, within the preceding six months.

2-2.7.1.9 Miscellaneous Defects and Diseases. The causes for rejection for appointment shall be:

(a) Abnormal conditions of the eye or visual fields due to diseases of the central nervous system.

(b) Absence of an eye.

(c) Asthenopia severe.

(d) Exophthalmos, unilateral or bilateral.

(e) Glaucoma, primary or secondary.

(f) Hemianopsia of any type.

(g) Loss of normal pupillary reflex reactions to light or accommodation to distance of Adies syndrome.

(h) Loss of visual fields due to organic disease.

(i) Night blindness associated with objective disease of the eye. Verified congenital night blindness.

(j) Residuals of old contusions, lacerations, penetrations, etc., which impair visual function required for satisfactory performance of fire duty.

(k) Retained intraocular foreign body.

(l) Tumors [see also 2-2.7.1.1(f)].

(m) Any organic disease of the eye or adnexa not specified above that threatens continuity of vision or impairment of visual function.

2-2.7.2 Vision. The cause for rejection for appointment shall be:

(a) Color Vision. Failure to identify red, or green, or both.

(b) Standard Visual Acuity. Standard visual acuity without correction, less than 20/40 in one eye, and 20/100 in the other eye; and with correction, less than 20/20 in one eye, and 20/40 in the other eye.

(c) Near Visual Acuity. Near vision acuity with correction, less than J6.

(d) Refractive Error. Refractive error above 8 diopters spherical equivalent, either plus or minus.

(e) Corrective Devices. Complicated impairments requiring contact lens for adequate correction of vision, such as keratoconus, corneal scars, irregular astigmatism; or the comfortable wearing of ordinary glasses (spectacles) without prismatic displacement, ghost images, or similar symptoms.

2-2.8 Genitourinary System.

2-2.8.1 Genitalia. The causes for rejection for appointment shall be:

(a) Bartholinitis, Bartholin's cyst.

(b) Cervicitis, acute or chronic manifested by leukorrhea.

(c) Dysmenorrhea, incapacitating to a degree that necessitates recurrent absences of more than a few hours from routine activities.

(d) Endometriosis, or confirmed history thereof.

(e) Hermaphroditism.

(f) Menopausal syndrome, either physiologic or artificial, if manifested by more than mild constitutional or mental symptoms, or artificial menopause if less than 13 months have elapsed since cessation of menses. In all

cases of artificial menopause, the clinical diagnosis will be reported; if accomplished by surgery, the pathologic report will be obtained and recorded.

(g) Menstrual cycle, irregularities of, including menorrhagia, if excessive; metrorrhagia; polymenorrhea; amenorrhea except as noted in (f) above.

(h) New growths of the internal or external genitalia except single uterine fibroid, subserous, asymptomatic, less than 3 centimeters in diameter, with no general enlargement of the uterus (*see also 2-2.17*).

(i) Oophoritis, acute or chronic.

(j) Ovarian cysts, persistent and considered to be of clinical significance.

(k) Pregnancy.

(l) Salpingitis, acute or chronic.

(m) Testicle(s), undiagnosed enlargement or mass of testicle or epididymis.

(n) Urethritis, acute or chronic, other than gonorrheal urethritis without complications.

(o) Uterus.

1. Cervical polyps, cervical ulcer, or marked erosion.

2. Endocervicitis, more than mild.

3. Generalized enlargement of the uterus due to any cause.

4. Malposition of the uterus if more than mildly symptomatic.

(p) Vagina.

1. Congenital abnormalities or severe lacerations of the vagina.

2. Vaginitis, acute or chronic, manifested by leukorrhea.

(q) Varicocele or hydrocele, if large or painful.

(r) Vulva.

1. Leukoplakia.

2. Vulvitis, acute or chronic.

(s) Major abnormalities and defects of the genitalia such as a change of sex, a history thereof, or complications (adhesions, disfiguring scars, etc.) residual to surgical correction of these conditions.

2-2.8.2 Urinary System (*see also 2-2.5 and 2-2.17*). The causes for rejection for appointment shall be:

(a) Albuminuria, if persistent or recurrent, including so-called orthostatic or functional albuminuria.

(b) Cystitis, chronic. Individuals with acute cystitis are unacceptable until the condition is cured.

(c) Enuresis determined to be a symptom of an organic defect not amenable to treatment.

(d) Epispadias or hypospadias when accompanied by evidence of infection of the urinary tract or if clothing is soiled with voiding.

(e) Hematuria, cylindruria, or other findings indicative of renal tract disease.

(f) Incontinence of urine.

(g) Kidney.

1. Acute or chronic infections of the kidney.

2. Cystic or polycystic kidney, confirmed history of.

3. Hydronephrosis or pyonephrosis.

4. Nephritis, acute or chronic.

5. Pyelitis, pyelonephritis.

(h) Prostate gland, hypertrophy of, with urinary retention.

(i) Renal calculus.

1. Substantiated history of bilateral renal calculus at any time.

2. Verified history of renal calculus at any time with evidence of stone formation within the preceding twelve months, current symptoms or positive X-ray for calculus.

(j) Skeneitis.

(k) Urethra.

1. Stricture of the urethra.

2. Urethritis, acute or chronic, other than gonorrheal urethritis without complications.

(l) Urinary fistula.

(m) Other diseases and defects of the urinary system that obviously preclude satisfactory performance of duty or that require frequent and prolonged treatment.

2-2.9 Head and Neck.

2-2.9.1 Head. The causes for rejection for appointment shall be:

(a) Abnormalities that are apparently temporary in character resulting from recent injuries until a period of three months has elapsed. These include severe contusions and other wounds of the scalp, and cerebral concussion.

(b) Deformities of the skull in the nature of depressions, exostoses, etc., of a degree that would prevent the individual from wearing protective breathing apparatus, or fire headgear.

(c) Deformities of the skull of any degree associated with evidence of disease of the brain, spinal cord, or peripheral nerves.

(d) Loss or congenital absence of the bony substance of the skull except that the examiner may find individuals acceptable when:

1. The area does not exceed 2.5 centimeters square, and does not overlie the motor cortex or a dural sinus.

2. There is no evidence of alteration of brain function in any of its several spheres (intelligence, judgment, perception, behavior, motor control, sensory function, etc.)

3. There is no evidence of bone degeneration, disease, or other complications of such a defect.

2-2.9.2 Neck. The causes for rejection for appointment shall be:

(a) Cervical ribs if symptomatic, or so obvious that they are found on routine physical examination. (Detection based primarily on X-ray is not considered to meet this criterion.)

(b) Congenital cysts of branchial cleft origin or those developing from the remnants of the thyroglossal duct, with or without fistulous tracts.

(c) Fistula, chronic draining, of any type.

(d) Healed tuberculosis lymph nodes when extensive in number or densely calcified.

(e) Nonspastic contraction of the muscles of the neck or cicatricial contracture of the neck to the extent that it interferes with the wearing of a uniform or fire equipment.

(f) Spastic contraction of the muscles of the neck, persistent, and chronic.

(g) Tumor of thyroid or other structures of the neck (*see also 2-2.17*).

2-2.10 Heart and Vascular System.

2-2.10.1 Heart. The causes for rejection for appointment shall be:

(a) All organic valvular diseases of the heart, including those improved by surgical procedures.

(b) Coronary artery disease or myocardial infarction, old or recent or true angina pectoris, at any time.

(c) Electrocardiographic evidence of major arrhythmias such as:

1. Atrial tachycardia, flutter, or fibrillation; ventricular tachycardia or fibrillation.

2. Conduction defects such as first degree atrioventricular block and right bundle branch block. (These conditions occurring as isolated findings are not unfitting when cardiac evaluation reveals no cardiac disease.)

3. Left bundle branch block, second and third degree A-V block.

4. Unequivocal electrocardiographic evidence of old or recent myocardial infarction; coronary insufficiency at rest or after stress; or evidence of heart muscle disease.

(d) Hypertrophy or dilatation of the heart as evidenced by clinical examination or roentgenographic examination and supported by electrocardiographic examination. Care should be taken to distinguish abnormal enlargement from increased diastolic filling as seen in the well-conditioned subject with a sinus bradycardia.

(e) Myocardial insufficiency (congestive circulatory failure, cardiac decompensation), obvious or covert, regardless of cause.

(f) Paroxysmal tachycardia within the preceding five years, or at any time if recurrent or disabling or if associated with electrocardiographic evidence of accelerated A-V conduction (Wolff-Parkinson-White).

(g) Pericarditis; endocarditis; or myocarditis; history or finding of, except for a history of a single acute idiopathic or coxsackie pericarditis with no residuals.

(h) Tachycardia persistent with a resting pulse rate of 100 or more, regardless of cause.

2-2.10.2 Vascular System. The causes for rejection for appointment shall be:

(a) Congenital or acquired lesions of the aorta and major vessels, such as syphilitic aortitis, demonstrable atherosclerosis that interferes with circulation, congenital

or acquired dilatation of the aorta (especially if associated with other features of Marfan's syndrome), and pronounced dilatation of the main pulmonary artery.

(b) Hypertension evidenced by preponderant blood pressure readings of 150 mm or more systolic in an individual over 35 years of age or preponderant readings of 140 mm or more systolic in an individual 35 years of age or less. Preponderant diastolic pressure over 90 mm diastolic is cause for rejection at any age.

(c) Marked circulatory instability as indicated by orthostatic hypotension, persistent tachycardia, severe peripheral vasomotor disturbances, and sympatheticotonia.

(d) Peripheral vascular disease including Raynaud's phenomena, Buerger's disease (thromboangiitis obliterans), erythromelalgia, arteriosclerotic and diabetic vascular disease. Special tests will be employed in doubtful cases.

(e) Thrombophlebitis.

1. History of thrombophlebitis with persistent thrombus or evidence of circulatory obstruction or deep venous incompetence in the involved veins.

2. Recurrent thrombophlebitis.

(f) Varicose veins, if more than mild, or if associated with edema, skin ulceration, or residual scars from ulceration.

2-2.10.3 Miscellaneous. The causes for rejection for appointment shall be:

(a) Aneurysm of the heart or major vessel, congenital or acquired.

(b) History and evidence of a congenital abnormality that has been treated by surgery but with residual abnormalities or complications, for example: patent ductus arteriosus with residual cardiac enlargement or pulmonary hypertension; resection of a coarctation of the aorta without a graft when there are other cardiac abnormalities or complications; closure of a secundum-type atrial septal defect when there are residual abnormalities or complications.

(c) Major congenital abnormalities and defects of the heart and vessels unless satisfactorily corrected without residuals or complications. Uncomplicated dextrocardia and other minor asymptomatic anomalies are acceptable.

(d) Substantiated history of rheumatic fever or chorea within the previous two years, recurrent attacks of rheumatic fever or chorea at any time, or with evidence of residual cardiac damage.

2-2.11 Lungs and Chest Wall.

2-2.11.1 General. Until reexamination indicates complete recovery without disqualifying sequelae, the causes for rejection for appointment shall be:

(a) Abnormal elevation of the diaphragm on either side.

(b) Acute abscess of the lung.

(c) Acute bronchitis.

(d) Acute fibrinous pleurisy, associated with acute nontuberculous pulmonary infection.

(e) Acute mycotic disease of the lung such as coccidioidomycosis and histoplasmosis.

(f) Acute nontuberculous pneumonia.

(g) Foreign body in trachea of bronchus.

(h) Foreign body of the chest wall causing symptoms.

(i) Lobectomy, history of, for a nontuberculous non-malignant lesion with residual pulmonary disease. Removal of more than one lobe is cause for rejection regardless of the absence of residuals.

(j) Other traumatic lesions of the chest or its contents with residual physiologic abnormalities.

(k) Pneumothorax, regardless of etiology or history thereof.

(l) Recent fracture of ribs, sternum, clavicle, or scapula.

(m) Significant abnormal findings on physical examination of the chest.

2-2.11.2 Tuberculous Lesion (*see also 2-2.16.1*). The causes for rejection for appointment shall be:

(a) Active tuberculosis in any form or location.

(b) Pulmonary tuberculosis, active within the past five years.

(c) Substantiated history or X-ray findings of pulmonary tuberculosis of more than minimal extent at any time; or minimal tuberculosis not treated with a full year of approved chemotherapy or combined chemotherapy and surgery; or a history of pulmonary tuberculosis with reactivation, relapse, or other evidence of poor host resistance.

2-2.11.3 Nontuberculous Lesions. The causes for rejection for appointment shall be:

(a) Acute mastitis, chronic cystic mastitis, if more than mild.

(b) Bronchial asthma, except for childhood asthma with a trustworthy history of freedom from symptoms since the twelfth birthday.

(c) Bronchitis, chronic with evidence of pulmonary function disturbance.

(d) Bronchiectasis.

(e) Bronchopleura fistula.

(f) Chronic abscess of lung.

(g) Chronic fibrous pleuritis of sufficient extent to interfere with pulmonary function or obscure the lung field in the roentgenogram.

(h) Chronic mycotic diseases of the lung including coccidioidomycosis; residual cavitation or more than a few small-sized inactive and stable residual nodules demonstrated to be due to mycotic disease.

(i) Empyema, residual sacculization or unhealed sinuses of chest wall following operation for empyema.

(j) Extensive pulmonary fibrosis from any cause, producing dyspnea on exertion.

(k) Foreign body of the lung or mediastinum causing symptoms or active inflammatory reaction.

(l) Multiple cystic disease of the lung, or a solitary cyst that is large and incapacitating.

(m) New growth on breast, history of mastectomy.

(n) Osteomyelitis of rib, sternum, clavicle, scapula, or vertebra.

(o) Pleurisy with effusion of unknown origin within the preceding five years.

(p) Sarcoidosis (*see also 2-2.16.1*).

(q) Suppurative periostitis of rib, sternum, clavicle, scapula, or vertebra.

2-2.12 Mouth, Nose, Pharynx, Trachea, Esophagus, and Larynx.

2-2.12.1 Mouth. The causes for rejection for appointment shall be:

(a) Hard palate, perforation of.

(b) Harelip, unless satisfactorily repaired by surgery.

(c) Leukoplaxia, if severe.

(d) Ranula, if extensive (*for other tumors see 2-2.17*).

2-2.12.2 Nose. The causes for rejection for appointment shall be:

(a) Allergic manifestations.

1. Chronic atrophic rhinitis.

2. Hay fever if severe; or if not controllable by antihistamines or by desensitization, or both.

(b) Choana, atresia, or stenosis of, if symptomatic.

(c) Nasal septum, perforation of:

1. Associated with interference of function, ulceration or crusting, and when the result of organic disease.

2. If progressive.

3. If respiration is accompanied by a whistling sound.

(d) Sinusitis, acute.

(e) Sinusitis, chronic, when more than mild:

1. Evidenced by any of the following: Chronic purulent nasal discharge, large nasal polyps, hyperplastic changes of the nasal tissues or symptoms requiring frequent medical attention.

2. Confirmed by transillumination or X-ray examination or both.

2-2.12.3 Pharynx, Trachea, Esophagus, and Larynx. The causes for rejection for appointment shall be:

(a) Esophagus; organic disease of, such as ulceration, varices, achalasia — if confirmed by appropriate X-ray or esophagoscopy examinations.

(b) Laryngeal paralysis, sensory or motor, of any cause.

(c) Larynx, organic disease of, such as neoplasm, polyps, granuloma, ulceration, and chronic laryngitis.

(d) Plica oesophonia ventricularis.

(e) Tracheostomy or tracheal fistula.

2-2.12.4 Other Defects and Diseases. The causes for rejection for appointment shall be:

(a) Aphonia.

(b) Deformities or conditions of the mouth, throat,

pharynx, larynx, esophagus, and nose that interfere with mastication and swallowing of ordinary food, with speech, or with breathing.

(c) Destructive syphilitic disease of the mouth, nose, throat, larynx, or esophagus (*see also* 2-2.18).

(d) Pharyngitis and nasopharyngitis, chronic, with positive history and objective evidence, if of such a degree as to result in excessive time lost in the fire environment.

2-2.13 Neurological Disorders.

2-2.13.1 Degenerative Disorders. The causes for rejection for appointment shall be:

- (a) Cerebellar and Friedreich's ataxia.
- (b) Cerebral arteriosclerosis symptomatic.
- (c) Encephalomyelitis, residuals of, that preclude the satisfactory performance of fire duties.
- (d) Huntington's chorea.
- (e) Multiple sclerosis.
- (f) Muscular atrophies and dystrophies of any type.

2-2.13.2 Miscellaneous. The causes for rejection for appointment shall be:

- (a) Congenital malformations if associated with neurological manifestations and meningocele, even if uncomplicated.
- (b) Migraine when frequent and incapacitating.
- (c) Paralysis or weakness, deformity, discoordination, pain, disturbances of consciousness, disturbances of sensation, or personality abnormalities regardless of cause, that are of such a nature or degree as to preclude the satisfactory performance of fire duties.
- (d) Tremors, spasmodic torticollis, athetosis, or other abnormal movements more than mild.

2-2.13.3 Neurosyphilis. The causes for rejection for appointment shall be:

Any form of neurosyphilis (general paresis, tabes dorsalis, meningovascular syphilis).

2-2.13.4 Paroxymal Convulsive Disorders. The causes for rejection for appointment shall be:

Disturbances of consciousness, all forms of psychomotor, focal, petit mal, or grand mal epilepsy or history thereof except for seizures associated with toxic states or fever during childhood up to the age of twelve.

2-2.13.5 Peripheral Nerve Disorder. The causes for rejection for appointment shall be:

- (a) Polyneuritis.
- (b) Mononeuritis or neuralgia that is chronic or recurrent and of an intensity that is periodically incapacitating.
- (c) Neurofibromatosis.

2-2.13.6 Spontaneous Subarchnoid Hemorrhage. The cause for rejection for appointment shall be: verified history of, unless cause has been surgically corrected.

2-2.14 Skin and Cellular Tissues. The causes for rejection for appointment shall be:

(a) Acne. Severe, when the face is markedly disfigured, or when extensive involvement of the neck, shoulders, chest, or back would be aggravated by or interfere with the wearing of fire equipment.

(b) Atopic dermatitis, with active or residual lesions in characteristic areas (face and neck, antecubital and popliteal fossae, occasionally wrists and hands), or documented history thereof.

(c) Cysts.

1. Cysts, other than pilonidal. Of such a size or location as to interfere with the normal wearing of fire fighting equipment.

2. Cysts, pilonidal. Pilonidal cysts, if evidenced by the presence of a tumor mass or a discharging sinus.

(d) Dermatitis factitia.

(e) Dermatitis herpetiformis.

(f) Eczema. Any type that is chronic and resistant to treatment.

(g) Elephantiasis or chronic lymphedema.

(h) Epidermolysis bullosa; pemphigus.

(i) Fungus infections, systemic or superficial types: if extensive and not amenable to treatment.

(j) Furunculosis. Extensive, recurrent, or chronic.

(k) Hyperhidrosis of hands or feet: chronic or severe.

(l) Ichthyosis. Severe.

(m) Leprosy. Any type.

(n) Leukemia cutis; mycosis fungoides; Hodgkin's disease.

(o) Lichen planus.

(p) Lupus erythematosus (acute, subacute, or chronic) or any other dermatosis aggravated by sunlight.

(q) Neurofibromatosis (Von Recklinghausen's disease).

(r) Nevi or vascular tumors: If extensive, unsightly, or exposed to constant irritation.

(s) Psoriasis or a verified history thereof.

(t) Radiodermatitis.

(u) Scars that are so extensive, deep, or adherent that they may interfere with the wearing of fire equipment, or that show a tendency to ulcerate.

(v) Scleroderma. Diffuse type.

(w) Tuberculosis (*see also* 2-2.16.1).

(x) Urticaria. Chronic.

(y) Warts, Plantar, that have materially interfered with the following of a physically active vocation.

(z) Xanthoma. If disabling or accompanied by hypercholesterolemia or hyperlipemia.

(aa) Any other chronic skin disorder of a degree or nature which requires frequent outpatient treatment or hospitalization, or interferes with the satisfactory performance of duty.

2-2.15 Spine, Scapulae, Ribs, and Sacroiliac Joints.

2-2.15.1 Spine and Sacroiliac Joints (*see also* 2-2.6). The causes for rejection for appointment shall be:

(a) Arthritis [*see also* 2-2.6.3(a)].

(b) Complaint of disease or injury of the spine or sacroiliac joints, either with or without objective signs or symptoms that have prevented the individual from successfully following a physically active vocation. Substantiation or documentation of the complaint without symptoms and objective signs is required.

(c) Deviation or curvature of spine from normal alignment, structure, or function (scoliosis, kyphosis, or lordosis spina bifida acculta, spondylolysis, etc.) if:

1. Mobility and weight-bearing power is poor.
2. More than moderate restriction of normal physical activities is required.
3. Of a degree that will interfere with the wearing of fire equipment.
4. Symptomatic, associated with positive physical finding(s) demonstrable by X-ray.

(d) Diseases of the lumbosacral or sacroiliac joints of a chronic type and obviously associated with pain referred to the lower extremities, muscular spasm, postural deformities and limitation of motion in the lumbar region of the spine.

(e) Granulomatous diseases, either active or healed.

(f) Healed fracture of the spine or pelvic bones with associated symptoms that have prevented the individual from following a physically active vocation, or that preclude the satisfactory performance of fire fighting duties.

(g) Ruptured nucleus pulposus (herniation of intervertebral disk) or history of operation for this condition.

(h) Spondylolysis or spondylolisthesis that is symptomatic or is likely to interfere with performance of duty is likely to require assignment limitations.

2-2.15.2 Scapulae, Clavicles, and Ribs (*see also* 2-2.6.3). The causes for rejection for appointment shall be:

- (a) Fractures, until well healed, and until determined that the residuals thereof will not preclude the satisfactory performance of fire fighting duties.
- (b) Injury within the preceding six weeks, without fracture, or dislocation, of more than a minor nature.
- (c) Osteomyelitis of rib, sternum, clavicle, scapula, or vertebra.
- (d) Prominent scapulae interfering with function or with the wearing of fire equipment.

2-2.16 Systemic Diseases and Miscellaneous Conditions and Defects.

2-2.16.1 Systemic Diseases. The causes for rejection for appointment shall be:

- (a) Dermatomyositis.
- (b) Lupus erythematosus: acute, subacute, or chronic.
- (c) Progressive systemic sclerosis.
- (d) Reiter's disease.
- (e) Sarcoidosis.
- (f) Scleroderma, diffuse type.

(g) Tuberculosis:

1. Active tuberculosis in any form or location.
2. Pulmonary tuberculosis.
3. Confirmed history of tuberculosis of a bone or joint, genitourinary organs, intestines, peritoneum, or mesenteric glands at any time.
4. Meningeal tuberculosis; disseminated tuberculosis.

2-2.16.2 General and Miscellaneous Conditions and Defects. The causes for rejection for appointment shall be:

(a) Allergic manifestations.

1. Allergic rhinitis (hay fever) (*see also* 2-2.12.2).
2. Asthma (*see also* 2-2.13).
3. Allergic dermatoses (*see also* 2-2.14).
4. Visceral, abdominal, and cerebral allergy, if severe or not responsive to treatment.

(b) Any acute pathological condition, including acute communicable diseases, until recovery has occurred without sequelae.

(c) Any deformity that impairs general functional ability to such an extent as to prevent satisfactory performance of duty.

(d) Chronic metallic poisoning, especially beryllium, manganese, and mercury. Undesirable residuals from lead, arsenic, or silver poisoning make the examinee medically unacceptable.

(e) Cold injury, residuals of (example: frostbite, chilblain, immersion foot, or trench foot) such as deep-seated ache, paresthesia, hyperhidrosis, easily traumatized skin, cyanosis, amputation of any digit, or ankylosis.

(f) Positive tests for syphilis with negative TPI test unless there is a documented history of adequately treated lues or any of the several conditions that are known to give a false-positive S.T.S. (vaccinia, infectious hepatitis, immunizations, a typical pneumonia, etc.) or unless there has been a reversal to a negative S.T.S. during an appropriate follow-up period (3 to 6 months).

(g) Filariasis; trypanosomiasis; amebiasis; schistosomiasis; uncinariasis (hookworm) associated with anemia, malnutrition etc., if more than mild; and other similar worm or animal parasitic infestations, including the carrier states thereof.

(h) Heat pyrexia (heatstroke, sunstroke, etc.): Documented evidence of predisposition (includes disorders of sweat mechanism and previous serious episode), recurrent episodes requiring medical attention, or residual injury resulting therefrom (especially cardiac, cerebral, hepatic, and renal).

(i) Industrial solvent and other chemical intoxication, chronic, including carbon bisulfide, trichlorethylene, carbon tetrachloride, and methyl cellosolve.

(j) Mycotic infection of internal organs.

(k) Myositis or fibrositis, severe, chronic.

(l) Residuals of tropical fevers and various parasitic or protozoal infestations which, in the opinion of the medical examiner, preclude the satisfactory performance of duty.

2-2.17 Tumors and Malignant Diseases.

2-2.17.1 Benign Tumors. The causes for rejection for appointment shall be:

- (a) Any tumor of the:
 - 1. Auditory canal, if obstructive.
 - 2. Eye or orbit.
 - 3. Kidney, bladder, testicle, or penis.
 - 4. Central nervous system and its membraneous coverings unless five years after surgery and no otherwise disqualifying residuals of surgery of original lesion.
- (b) Benign tumors of the abdominal wall if sufficiently large to interfere with fire duty.
- (c) Benign tumors of bone likely to continue to enlarge, be subjected to trauma during service, or show malignant potential.
- (d) Benign tumors of the thyroid or other structures of the neck, including enlarged lymph nodes, if the enlargement is of such degree as to interfere with the wearing of fire equipment.
- (e) Tongue, benign tumor of, if it interferes with function.
- (f) Breast, thoracic contents, or chest wall, tumors of, other than fibromata lipomata, and inclusion of sebaceous cysts that do not interfere with fire fighting duties.
- (g) Tumors of the internal or external female genitalia.

2-2.17.2 Malignant Disease and Tumors. The causes for rejection for appointment shall be:

- (a) Leukemia, acute or chronic.
- (b) Malignant lymphomata.
- (c) Malignant tumor of any kind, at any time, substantiated diagnosis of, even though surgically removed, confirmed by accepted laboratory procedures, except as noted in 2-2.7.1.1(f).

2-2.18 Venereal Diseases. In general, the finding of acute, uncomplicated venereal disease that can be expected to respond to treatment is not a cause for medical rejection for fire service. The causes for rejection for appointment shall be:

- (a) Chronic venereal disease that has not satisfactorily responded to treatment. The finding of a positive serologic test for syphilis following adequate treatment of syphilis is not in itself considered evidence of chronic venereal disease that has not responded to treatment [see also 2-2.16.2(f)].
- (b) Complications and permanent residuals of venereal disease if progressive, of such nature as to interfere with the satisfactory performance of duty, or if subject to aggravation by fire fighting duties.
- (c) Neurosyphilis (see also 2-2.13.3).

2-3* Minimum Physical Fitness Requirements.

2-3.1* The candidate, after successfully completing the medical examination and with written authorization of the examining physician, shall complete one of the following:

- (a) Run 1½ miles within 13 minutes.
- (b) Walk 3 miles within 38 minutes.
- (c) Bicycle 4 miles within 12 minutes.
- (d) Swim 500 yards within 8 minutes and 20 seconds.
- (e) Run in place 75 steps per minute for 15 minutes.
- (f) Run on motorized horizontal treadmill at 10 miles per hour for 6 minutes.
- (g) Climb stairs consisting of 10 steps at 9 round trips per minute for 9 minutes.

2-3.2* The candidate shall perform 35 bent-knee sit-ups within 2 minutes.

2-3.3* The candidate shall complete one of the following:

- (a) Flexed arm hang - minimum time: 8 seconds (palms away),
- (b) Pull-ups - minimum: 7 (palms away),
- (c) Push-ups (standard) - minimum: 25.

2-3.4* The candidate, given a beam secured to a level floor and measuring 20 ft (6 m) long by 3 to 4 in. (76 to 102 mm) wide, and given a length of fire hose weighing at least 20 lb (9 kg), shall walk the length of the beam, carrying the length of hose, without falling off, or stepping off the beam.

2-3.5* The candidate, given a weight of 125 lb (57 kg), shall lift the weight from the floor and carry the weight 100 ft (30.5 m) without stopping.

2-3.6* The candidate, starting from an erect position with feet apart, the distance closely approximating shoulder width, shall move a 15-lb (7-kg) weight in the following manner: bend over, grasp the weight with both hands while it is at a point on the floor between the feet, and lift weight to waist level, then place the weight on the floor approximately 12 in. (305 mm) outside the left foot, and without letting go, raise the weight to waist level and touch it to the floor about 12 in. (305 mm) outside the right foot. The weight shall then be moved alternately in this fashion from left foot, to waist level, to right; right to waist level to left until it has been moved 7 times in each direction with the total horizontal distance of travel being at least 24 in. (610 mm) more than the space between the feet for each of the 14 moves. This shall be done in less than 35 seconds.

Chapter 3 Airport Fire Fighter**3-1 General.**

3-1.1* The airport fire fighter shall identify the organization of the airport fire department.

3-1.2 The airport fire fighter shall identify the size of the fire department, the scope of its operation, and the standard operational procedures.

3-1.3 The airport fire fighter shall identify the fire department rules and regulations that apply to the position of airport fire fighter.

3-1.4* The airport fire fighter shall identify the characteristics and classification of flammable liquids and hazardous materials/dangerous goods common to airports and aircraft.

3-2 Fire Behavior.

3-2.1 The airport fire fighter shall define fire.

3-2.2 The airport fire fighter shall define the fire triangle and tetrahedron.

3-2.3 The airport fire fighter shall identify two chemical, mechanical, and electrical energy heat sources.

3-2.4 The airport fire fighter shall define the following states of fire:

- (a) Incipient,
- (b) Flame spread,
- (c) Hot smoldering,
- (d) Flashover,
- (e) Steady state,
- (f) Clear burning.

3-2.5 The airport fire fighter shall define the three methods of heat transfer.

3-2.6 The airport fire fighter shall identify the three physical stages of matter in which fuels are commonly found.

3-2.7 The airport fire fighter shall define the hazard of finely divided fuels as they relate to the combustion process.

3-2.8 The airport fire fighter shall define flash point, fire point, and ignition temperature.

3-2.9 The airport fire fighter shall define concentrations of oxygen in air as it affects combustion.

3-2.10 The airport fire fighter shall identify three products of combustion commonly found in fires which create a life hazard.

3-2.11 The airport fire fighter shall write a basic fire incident report.

4-1.2 The airport fire fighter shall identify the color code system for airport onfield lighting.

4-1.3 The airport fire fighter, given a map of the airport, shall identify all motor vehicle traffic routes and the traffic flow system of the airport, including vehicle parking and storage areas.

4-1.4 The airport fire fighter, given a map of the airport and vicinity, shall identify all runways, their length and direction; access roads; routes; taxiways; aircraft parking areas; and vehicles permitted access to those areas.

4-1.5 The airport fire fighter shall identify aircraft-arresting barriers, emergency airfield egress points, breakway fences, and explain their location, purpose, and manner of operation.

4-1.6 The airport fire fighter shall identify the specific functions of the air traffic control tower, flight service station, or other control point, as related to airport fire protection.

4-1.7 The airport fire fighter, given specific locations both on and off airport property, shall identify the shortest and safest travel routes to the locations.

4-1.8 The airport fire fighter shall identify the airport security system and restricted-access security areas.

4-1.9 The airport fire fighter, given a map of the airport, shall identify the buildings, their occupancy, and their general use.

4-1.10 The airport fire fighter shall identify the fuel distribution systems of the airport.

4-1.11 The airport fire fighter shall identify the drainage systems of the airport.

4-1.12 The airport fire fighter shall identify the hazardous materials areas of the airport, and explain the inherent hazards of each respective area.

4-1.13 The airport fire fighter shall identify and demonstrate the reference materials and publications related to the airport fire department.

4-1.14 The airport fire fighter shall identify the water distribution system at the airport and its capacity.

4-1.15 The airport fire fighter shall identify all objects in the aircraft undershoot and overrun areas that may result in damage to aircraft in an emergency situation.

Chapter 4 Airport Familiarization

4-1 General.

4-1.1 The airport fire fighter shall identify established procedures for control of vehicle movements on taxiways and runways by air traffic control.

Chapter 5 Aircraft Familiarization

5-1 General.

5-1.1 The airport fire fighter shall identify types of aircraft that use the airport.

5-1.2* The airport fire fighter shall identify color coding and symbol systems for aircraft piping.

5-1.3 The airport fire fighter shall demonstrate the operation of all normal and emergency exits and escape devices on all aircraft identified in 5-1.1.

5-1.4 The airport fire fighter, given aircraft as identified in 5-1.1, shall identify forcible entry points.

5-1.5 The airport fire fighter, given aircraft as identified in 5-1.1, shall identify and locate fuel and oxygen tanks.

5-1.6 The airport fire fighter, using aircraft terminology, shall identify aircraft construction as it relates to rescue and fire fighting with the aircraft identified in 5-1.1.

5-1.7 The airport fire fighter shall identify all aircrew and passenger positions in the military and commercial aircraft identified in 5-1.1.

5-1.8 The airport fire fighter shall identify facts and principles about explosive devices used in canopy and seat ejection mechanisms, as identified in 5-1.1.

5-1.9 The airport fire fighter shall demonstrate shutting off or disconnecting the following aircraft systems:

- (a) Engines,
- (b) Batteries,
- (c) Oxygen.

5-1.10 The airport fire fighter shall demonstrate inserting the appropriate safety pins to secure aircraft landing gear as identified in 5-1.1.

5-1.11 The airport fire fighter shall identify the following devices that may be present at an incident, and explain the dangers of each device as identified in 5-1.1:

- (a) Initiators,
- (b) Rotary actuators,
- (c) Thrusters,
- (d) Explosive squibs,
- (e) Armament systems,
- (f) Destruct systems.

Chapter 6 Personnel Protective Equipment

6-1 General.

6-1.1 The airport fire fighter shall identify the component parts and specific types and limitations of all protective clothing.

6-1.2 The airport fire fighter, given a set of each type of protective clothing, shall don and wear the protective clothing with and without self-contained breathing apparatus.

6-1.3 The airport fire fighter shall demonstrate the care and maintenance of protective clothing, in accordance with manufacturer's technical data.

6-2 Self-contained Breathing Apparatus.

6-2.1 The fire fighter shall identify at least four hazardous respiratory environments encountered in fire fighting.

6-2.2* The airport fire fighter shall identify the procedure for daily inspection and maintenance of self-contained breathing apparatus.

6-2.3 The airport fire fighter shall identify the physical requirements of the wearer, the limitations of the self-contained breathing apparatus, and the safety features of the self-contained breathing apparatus.

6-2.4* The airport fire fighter shall demonstrate donning self-contained breathing apparatus while wearing protective clothing.

6-2.5 The airport fire fighter shall demonstrate that self-contained breathing apparatus is in a safe operating condition for immediate use.

6-2.6* The airport fire fighter shall demonstrate the use of self-contained breathing apparatus in a dense smoke environment.

6-2.7* The airport fire fighter shall demonstrate the following emergency techniques using breathing apparatus to:

- (a) Assist other fire fighters,
- (b) Conserve air,
- (c) Use the bypass valves.

6-2.8 The airport fire fighter shall identify the procedure for cleaning and sanitizing self-contained breathing apparatus for future use.

6-2.9 The fire fighter, given each type of breathing apparatus, shall demonstrate the correct procedure for recharging.

Chapter 7 Emergency Medical Care

7-1* General.

7-1.1* The airport fire fighter shall identify a primary survey for life-threatening injuries.

7-1.2* The airport fire fighter shall identify procedures for determining whether or not a victim has an open airway.

7-1.3 The airport fire fighter shall identify procedures for establishing an open airway in a nonbreathing person.

7-1.4* The airport fire fighter shall demonstrate mouth-to-mouth and mouth-to-nose resuscitation.

7-1.5* The airport fire fighter shall demonstrate oronasal ventilation.

7-1.6 The airport fire fighter shall identify the three signs of cardiac arrest.

7-1.7* The airport fire fighter shall demonstrate cardiopulmonary resuscitation.

7-1.8 The airport fire fighter shall identify three types of external bleeding, and the characteristics of each type.

7-1.9 The airport fire fighter shall demonstrate techniques for controlling external bleeding.

7-1.10 The airport fire fighter shall identify four sources from which information might be gathered pertaining to the nature of an accident victim's injuries.

7-1.11 The airport fire fighter, given specific situations, shall identify what injuries might be suspected from observation of the injury-producing mechanisms in addition to those injuries that are obvious.

7-1.12* The airport fire fighter, given a victim, shall conduct a secondary survey for other than life-threatening injuries.

7-1.13 The airport fire fighter shall identify the signs and symptoms of internal bleeding.

7-1.14 The airport fire fighter shall demonstrate the emergency care for a person with known or suspected internal bleeding.

7-1.15 The airport fire fighter shall identify characteristics and emergency medical care of thermal burns according to severity.

7-1.16 The airport fire fighter, given a specific situation, shall demonstrate and define the sequential emergency medical care indicated.

7-1.17 The airport fire fighter shall identify the emergency medical care for chemical burns, including chemical burns of the eyes.

7-1.18 The airport fire fighter shall define the types of fractures and describe the differences.

7-1.19 The airport fire fighter shall identify three general signs and symptoms of fractures.

7-1.20 The airport fire fighter, given an identified fracture, shall demonstrate the emergency medical care necessary to transport the victim.

7-1.21 The airport fire fighter shall identify the anatomical process of breathing.

7-1.22 The airport fire fighter shall identify the heart-lung-brain relationship as it affects life and shall define what occurs when an airway obstruction is not corrected.

7-1.23 The airport fire fighter shall demonstrate car-

diopulmonary resuscitation employing the two-person technique.

7-1.24 The airport fire fighter shall identify symptoms and demonstrate emergency medical care of traumatic shock.

7-1.25* The airport fire fighter shall demonstrate the use of breathing-aid equipment.

Chapter 8 Ropes

8-1 Ropes.

8-1.1 The fire fighter, given the proper rope, shall demonstrate the bight, loop, round turn, and half hitch as used in tying knots and hitches.

8-1.2 The fire fighter, when given the proper size and amount of rope, shall demonstrate tying a bowline knot, a clove hitch, rescue knot, becket or sheet bend, and figure-of-eight knot.

8-1.3 The fire fighter, when given the name, picture, or actual knot, as specified in 8-1.2, shall identify it and describe the purpose for which it would be used.

8-1.4 The airport fire fighter, using an approved knot, shall demonstrate hoisting any selected forcible entry tool, ground ladder, or appliance to a height of at least 20 ft (6 m).

8-1.5 The airport fire fighter shall demonstrate the techniques of inspecting, cleaning, and maintaining rope.

Chapter 9 Forcible Entry

9-1 General.

9-1.1* The fire fighter shall identify and demonstrate the use of each type of manual forcible-entry tool.

9-1.2 The airport fire fighter shall identify size of openings for forcible entry, correct locations of these openings, and precautions to be taken in accordance with manufacturer's technical data and established forcible-entry procedures.

9-1.3 The airport fire fighter shall identify where to make emergency openings for entry into all types of aircraft identified in 5-1.1.

9-1.4 The airport fire fighter shall identify the method and procedure of properly cleaning, maintaining, and inspecting each type of forcible-entry tool and equipment.

Chapter 10 Salvage

10-1 General.

10-1.1* The airport fire fighter shall identify the purpose of salvage and its importance.

10-1.2 The airport fire fighter shall demonstrate salvage operations as they pertain to aircraft listed in 5-1.1.

10-1.3 The airport fire fighter shall demonstrate the techniques of inspection, cleaning, and maintaining salvage equipment used at the airport.

10-1.4 The airport fire fighter shall identify the purpose of preservation of evidence including voice and data recorders.

Chapter 11 Fire Streams

11-1 General.

11-1.1 The airport fire fighter shall define a fire stream and methods of application.

11-1.2* The airport fire fighter shall manipulate a nozzle so as to attack a Class A, Class B, and Class C fire.

11-1.3 The airport fire fighter shall demonstrate how to open and close any nozzle used at the airport.

11-1.4 The airport fire fighter shall identify and define all fire fighting appliances and demonstrate the application of each type of agent used at the airport.

11-1.5 The airport fire fighter shall identify three observable results that are obtained when the proper application of each agent is accomplished.

11-1.6 The airport fire fighter shall demonstrate procedures for a refractometer test performing in accordance with NFPA 412, *Standard for Evaluating Foam Fire Fighting Equipment on Aircraft Rescue and Fire Fighting Vehicles*.

Chapter 12 Ladders

12-1 General.

12-1.1 The airport fire fighter shall identify each type of ladder that is used by the airport fire fighting unit.

12-1.2* The airport fire fighter shall climb the full length of every type of ground and aerial ladder.

12-1.3 The airport fire fighter shall climb the full length of each type of ladder utilized carrying fire fighting tools or equipment while ascending and descending.

12-1.4* The airport fire fighter shall climb the full length of each type of ladder utilized and bring an "injured person" down the ladders.

12-1.5 The airport fire fighter shall demonstrate the techniques of maintaining ladders.

12-1.6 The airport fire fighter, operating as an individual and as a member of a team, shall demonstrate ladder carries.

12-1.7 The fire fighter, operating as an individual and as a member of a team, shall raise each type and size of ground ladder using several different raises for each ladder.

Chapter 13 Ventilation

13-1 General.

13-1.1 The fire fighter shall define the principles of ventilation, and identify the advantages and effects of ventilation as it applies to aircraft.

13-1.2 The fire fighter shall identify the dangers present, and precautions to be taken in performing aircraft ventilation.

13-1.3 The airport fire fighter, given aircraft identified in 5-1.1, shall demonstrate natural and forced horizontal and vertical ventilation using normal and emergency openings.

13-1.4 The airport fire fighter shall identify openings for ventilation, where to locate these openings, and what precautions are to be taken during ventilation of an aircraft.

13-1.5 The airport fire fighter shall demonstrate ventilation procedures for all types of aircraft identified in 5-1.1 in accordance with aircraft manufacturers' technical data and established ventilation procedures.

13-1.6 The airport fire fighter shall define the theory of a flashover and back draft explosion.

13-1.7 The fire fighter shall demonstrate types of equipment used for forced ventilation for aircraft.

Chapter 14 Fire Hose, Nozzles, and Appliances

14-1 General.

14-1.1 The airport fire fighter, given an airport fire fighting vehicle, shall identify the use of hose adaptors and hose appliances carried on the vehicle.

14-1.2 The airport fire fighter, given any aircraft rescue and fire fighting vehicles used at the airport, shall identify

tify the location and demonstrate the use of all types of tools, and other equipment carried on that vehicle.

14-1.3 The airport fire fighter, given an aircraft rescue and fire fighting vehicle used at the airport, shall identify the sizes, types, amounts, and use of hose carried on the vehicle.

14-1.4 The airport fire fighter shall demonstrate the methods for cleaning fire hose, couplings, and nozzles; and inspecting for damage.

14-1.5 The airport fire fighter shall connect a fire hose to a hydrant, and fully open and close the hydrant.

14-1.6 The airport fire fighter shall demonstrate the loading of fire hose on fire apparatus.

14-1.7 The airport fire fighter shall demonstrate coupling and uncoupling fire hose.

14-1.8 The airport fire fighter shall work from a ladder with a charged attack line.

14-1.9 The airport fire fighter shall demonstrate the methods for extending a hose line.

Chapter 15 Rescue

15-1 General.

15-1.1 The airport fire fighter shall identify the procedures for the evacuation, removal, and care of persons from the hazard area.

15-1.2 The airport fire fighter, given aircraft or simulated aircraft as identified in 5-1.1, shall demonstrate searching for victims inside and outside the aircraft.

15-1.3 The airport fire fighter, given aircraft or simulated aircraft as identified in 5-1.1, shall demonstrate the removal of victims from inside the aircraft to a safe area through normal and emergency exits, and forced entry points.

15-1.4 The airport fire fighter, using power rescue equipment, shall demonstrate the extrication of a victim from an aircraft.

Chapter 16 Fire Fighting Operations

16-1 General.

16-1.1 The airport fire fighter shall identify hazards common to aircraft fire fighting and the procedures to be followed.

16-1.2* The airport fire fighter shall demonstrate hand signals used in aircraft fire fighting operations.

16-1.3* The airport fire fighter shall identify the fire suppression sequence for specific types of aircraft fires on all aircraft identified in 5-1.1 including: response, size-up, approach, vehicle position, attack, rescue, extinguishment, salvage, and overhaul.

16-1.4 The airport fire fighter, given an airport-type foam fire fighting vehicle(s) shall demonstrate the control and extinguishment of a simulated aircraft fire using handlines and/or turrets.

16-1.5 The airport fire fighter, given an airport fire fighting vehicle(s), shall demonstrate using fire streams to protect fire fighters and occupants.

16-1.6 The airport fire fighter, given each type other than foam-type fire fighting vehicle(s), shall demonstrate control and extinguishment of a simulated aircraft fire using handlines and turrets.

16-1.7 The airport fire fighter shall identify the airport response procedures and vehicle positioning for approach and rollout emergencies and other incidents peculiar to the aircraft as identified in 5-1.1.

16-1.8 The airport fire fighter shall identify the airport response procedures and vehicle positioning for maintenance activities and other situations including:

- (a) Welding and cutting,
- (b) Abnormal fuel transfers,
- (c) Defueling,
- (d) Hot brakes,
- (e) Fuel spills.

16-1.9 The airport fire fighter shall identify the airport response procedures and vehicle positioning for specific types of aircraft emergencies.

16-1.10* The airport fire fighter shall identify prefire plan response and procedures for both on- and off-airport incidents for aircraft.

16-1.11 The airport fire fighter shall identify activities and responsibilities for each position on all fire fighting and rescue vehicles given a simulated aircraft incident including response, size-up, approach, vehicle position, attack, rescue, extinguishment, salvage, and overhaul.

16-1.12 The airport fire fighter shall demonstrate procedures for rapid resupply of agents to aircraft fire fighting vehicles for extended operations.

16-1.13 The airport fire fighter shall demonstrate command of a simulated fireground operation.

16-1.14 The airport fire fighter shall demonstrate, under actual or simulated conditions, the ability to respond to all areas of the instrument runways during the lowest visibility condition authorized for flight operations at that airport.

Chapter 17 Fire Alarm and Communications

17-1 General.

17-1.1* The airport fire fighter shall demonstrate the phonetic alphabet as used in airport communications.

17-1.2* The airport fire fighter shall demonstrate standard terminology used in airport communications.

17-1.3 The airport fire fighter shall demonstrate prescribed airport radio procedures for the fire department.

17-1.4 The airport fire fighter shall demonstrate the re-winding, resetting, or both, of any fire alarm boxes or devices in the airport fire alarm system.

17-1.5 The airport fire fighter shall demonstrate the methods available for reporting emergencies.

17-1.6 The airport fire fighter shall define the purpose and function of all alarm-receiving instruments and personnel-alerting equipment.

Chapter 18 Fire Prevention Inspections

18-1* General.

18-1.1 The airport fire fighter shall demonstrate an inspection for hazards common to airport, facilities, and processes.

18-1.2 The airport fire fighter shall identify established fire prevention rules for each facility and process.

18-1.3 The airport fire fighter shall identify the common causes of fires and their prevention.

18-1.4 The airport fire fighter shall identify requirements covering the proper storage and use of flammable liquids and gases.

Chapter 19 Personnel Safety

19-1 General.

19-1.1 The airport fire fighter shall identify safety problems including:

- (a) Jet blast, heat and hearing danger zones,
- (b) Jet engine ingestion dangers,
- (c) Propeller and rotor safety clearances,
- (d) Aircraft quick-opening flaps, speed brakes, antennas, landing gear doors, sharp leading edges, and Pitot tubes,
- (e) Aircraft radar exposure hazards.

19-1.2 The airport fire fighter shall demonstrate tech-

niques for action when trapped or disoriented in a fire situation or in a hostile environment.

19-1.3 The airport fire fighter shall define procedures to be used in electrical emergencies.

19-1.4* The fire fighter shall define and identify the symbols and signs used to designate hazardous materials.

19-1.5 The fire fighter shall define and identify the precautions to be observed and followed in hazardous material areas.

Chapter 20 Overhaul

20-1 General.

20-1.1 The fire fighter shall identify the purpose of overhaul.

20-1.2 The fire fighter shall list the procedures to follow during overhaul.

20-1.3 The fire fighter shall identify the safety procedures necessary during overhaul.

20-1.4 The airport fire fighter shall demonstrate searching for hidden fires.

20-1.5 The airport fire fighter shall demonstrate exposure of hidden fires by opening overheads, bulkheads, decks, and by pulling apart burned materials.

20-1.6 The fire fighter shall demonstrate how to separate and remove charred material from unburned material.

20-1.7 The airport fire fighter shall define duties of fire fighters left at the scene for fire surveillance.

Chapter 21 Portable Extinguishers

21-1 General.

21-1.1 The airport fire fighter shall identify the classification of types of fire as they relate to the use of portable extinguishers.

21-1.2* The airport fire fighter, given a group of differing extinguishers, shall identify the appropriate extinguishers for the various classes of fire.

21-1.3 The airport fire fighter shall define the portable extinguisher rating system.

21-1.4 The airport fire fighter shall demonstrate the use of portable fire extinguishers for each class of fire.

Chapter 22 Referenced Publications

22-1 The following documents or portions thereof are referenced within this standard and shall be considered part of the requirements of this document. The edition indicated for each reference shall be the current edition as of the date of the NFPA issuance of this document. These references shall be listed separately to facilitate updating to the latest edition by the user.

22-1.1 NFPA Publication. National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

NFPA 412-1974, *Standard for Evaluating Foam Fire Fighting Equipment on Aircraft Rescue and Fire Fighting Vehicles*.

Appendix A

This Appendix is not a part of the requirements of this NFPA document, but is included for information purposes only.

A-1-1 Where fire fighters are also utilized in structural fire fighting duties the requirements of NFPA 1001 should also apply.

A-2-1 The specialized and hazardous nature of fire fighting requires that applicants demonstrate the ability to perform, or at least demonstrate the ability to acquire, certain skills, knowledge, and attitudes.

A-2-1.1 Education. Applicants shall have graduated from high school or have obtained an equivalency certificate.

From the beginning of a fire department career an individual must be able to acquire and correctly associate significant quantities of information covering a wide variety of subject areas. Initially, training will be concentrated on development of manual skills and knowledge of the physical sciences. Continuing education will include humanities and administration, particularly if the airport fire fighter is to progress in the career ladder.

Although a considerable quantity of the knowledge will be obtained through in-service training, certain required levels of educational achievement can only be obtained through community colleges or similar programs at institutions of higher learning. Completion of high school (or an equivalency certificate) is considered a reasonable and identifiable benchmark whereby an applicant demonstrates through past performance the self-discipline and ability to acquire new knowledge necessary to fulfill the immediate and long-range training needs of a fire department career.

A-2-1.2 Age. Minimum entrance age of 18 years.

Two factors indicate the need to establish a minimum age of 18 for new applicants. First, it provides an opportunity to complete minimum educational requirements (see A-2-1.1). In addition, the nature of an airport fire fighter's job requires a high degree of motivation and

maturity due to the team work and close cooperation demanded to ensure efficiency and safety. It is recognized that evaluating motivation and maturity may not be a completely objective process; nevertheless, an applicant's behavior pattern should be sufficiently well established by age 18 to permit a reasonable assessment of interest and emotional stability necessary to carry out the duties of an airport fire fighter.

A-2-1.3 Medical and Physical Requirements. Applicants shall be required to successfully pass a rigorous medical examination and physical fitness test.

The nature of the tasks that an airport fire fighter will be called upon to perform requires an unusually high degree of physical fitness, agility, and dexterity. Airport fire fighters experience an exceptionally high rate of service-connected injuries and deaths, which is indicated by the studies revealing that fire fighting is one of the most hazardous occupations.

A-2-1.4 Background Investigation. Applicants' backgrounds, including personal, work, and criminal history, should be evaluated (within legal constraints).

An airport fire fighter will be called upon to perform a variety of duties that require a high degree of public trust and confidence. These duties include inspection of property (public and private), enforcement of codes and ordinances, personalized care of the sick or injured, and protection of valuable property. These and other duties demand a degree of integrity and honesty that may not be required in other public service positions.

A-2-3 It is recommended that a qualified physical education specialist or a medical authority be consulted for guidance regarding the administration of the physical fitness requirements.

The authority having jurisdiction should seek medical advice to allow sufficient rest time between tests.

A-2-3.1 Physical fitness is defined as an individual's cardiovascular efficiency or the ability to move oxygen through muscles and elimination of various by-products in the process. It is dependent on an ability to:

Rapidly breathe large amounts of air; forcefully deliver large volumes of blood; and effectively deliver oxygen to all parts of the body.

This ability is called aerobic capacity, and because it measures the condition of the lungs, heart, and vascular system, it is the best known index to a person's overall physical fitness, and is measured as oxygen uptake in mm/kg/min.

The hazard of the field-test method of measuring a person's aerobic capacity is the inability to constantly measure the heart rate and blood pressure. This requires a physician's approval prior to the test.

The following precautions should be adhered to:

The candidate should not take a fitness test prior to beginning an exercise program if the candidate is over 30 years of age. Be sure the candidate has had the medical examination before taking a fitness test. If over 30, it is safer to postpone the test until completion of a six-week physical fitness training program. If the above two are complied with, yet the candidate experiences extreme

fatigue, shortness of breath, light-headedness or nausea during the physical fitness test, STOP the test immediately, and contact a medical doctor. DO NOT try to repeat the test until the candidate's fitness level has been gradually improved through regular exercise as outlined by a medical doctor.

A-2-3.2 Bent-knee Sit-ups. The candidate's feet are approximately 12 to 18 in. apart and as close to the buttocks as possible. A scorer holds the feet, and the performer has fingers laced securely behind the neck and remains so throughout the test. A successful bent-knee sit-up is completed when the elbows touch the knees and then the shoulders return to the mat. One should hold the candidate's feet to the floor.

A-2-3.3 The items listed in this section are designed to measure the airport fire fighter's upper body strength. This strength is needed by the airport fire fighter to lift and pull equipment on the fireground.

A-2-3.4 The beam walk will demonstrate the individual's ability to maintain vertical balance of the body when the footing may not be sound.

A-2-3.5 The duties of emergency situations require a degree of strength and stamina and this test is designed to determine if the candidate possesses these abilities.

A-2-3.6 The candidate should be able to perform this objective without any sign of pain. Should any candidate encounter any pain during this objective, they should be subjected to a further study with careful examination from a physician reviewing the person's medical history relating to back problems.

A-3-1.1 The intent of the objective is for airport fire fighters to know the chain of command within their fire department and know the type of governing body that controls their fire department.

A-3-1.4 Information on the identification and characteristics of flammable liquids and combustible metals may be found in the following publications:

(a) *Aircraft Fire Protection and Rescue Procedures*, IFSTA 206, 2nd edition.

(b) NFPA 403-1978, *Aircraft Rescue and Fire Fighting Services at Airports and Heliports*.

(c) *Fire Protection Guide on Hazardous Materials*, NFPA, 9th edition.

(d) *Fire Protection Handbook*, NFPA, 16th edition.

A-5-1.2 Color coding and symbol systems information for aircraft piping may be found in the following publications:

(a) NFPA 402M-1984, *Manual for Aircraft Rescue and Fire Fighting Operating Procedures*.

(b) *Aircraft Fire Protection and Rescue Procedures*, IFSTA 206, 2nd edition.

A-6-2.2 Refer to manufacturer's literature, or American National Standard Z88.5-1979, Section 8.

A-6-2.4 The airport fire fighter should wear all protective clothing (while performing this objective) that would be required at a fireground situation. The breathing apparatus should include all types that would be available at the fireground as used by the department. In some mutual aid calls an airport fire fighter may have need to use the equipment of another department and should, if possible, be familiar with the operational characteristics of the breathing apparatus used in the mutual aid response area.

A-6-2.6 In training an airport fire fighter in this objective, the authority having jurisdiction may wish to substitute something for smoke that would have the same effect in demonstrating the value of protective breathing apparatus.

A-6-2.7 The intent of this objective is to assure that the airport fire fighter understands the buddy breathing system and is familiar with the manner of assisting another airport fire fighter who may, due to equipment breakdown or other emergencies, be without air.

A-7-1 The NFPA Technical Committee on Fire Fighter Professional Qualifications recommends that each fire fighter successfully complete a basic or standard first aid and CPR course (Red Cross, American Heart Association or equivalent) or possess the equivalent knowledge and skills.

A-7-1.1 The airport fire fighter should examine the victim from head to toe, indicating the areas that were most susceptible to injury and what type of symptoms he/she would be looking for in the primary survey.

A-7-1.2 The airport fire fighter would describe the process of breathing and what happens to a diaphragm and rib cage during the process.

A-7-1.4 This objective should be carried out in a rhythmic method for at least five minutes on a training manikin.

A-7-1.5 This objective should be done for five minutes on an infant manikin with the monitoring of rhythm.

A-7-1.7 The cardiopulmonary resuscitation should be done on a training manikin.

A-7-1.12 The intent of this objective is for the airport fire fighter to examine the victim in order to determine injuries that may not be obvious on the primary search. An example would be fluid from the ears, depressions of the skull, or spasm or tenderness in the abdomen.

A-7-1.25 Breathing-aid equipment includes equipment such as resuscitators, inhalators, bag masks, aspirators, and airways.

A-9-1.1 The intent of the objective is for fire fighters to actually use under realistic operational conditions any forcible-entry tool within their department and thoroughly understand the dangers involved in the use of any of these tools.

A-10-1.1 The term *salvage* is defined as those efforts taken by emergency forces to protect items from further damage.

A-10-1.2 Items to be protected should include such things as: 1. Mail; 2. Cargo; 3. Animals; 4. Electronic Flight Recorders; 5. Voice Recorders; and 6. Luggage.

A-11-1.2 If it is possible, in the area of jurisdiction for a training exercise, a department could burn a structure of some type to accomplish the Class A fire. However, realizing environmental laws and certain restrictions in areas, the size of fires recommended in this objective may have to be modified to meet local restrictions.

A-12-1.2 The types of ladders include straight wall, extension, and aerial.

A-12-1.4 The intent of the objective is for the airport fire fighter to be able to demonstrate a method of bringing an injured person down a ladder, using another airport fire fighter as the victim.

A-16-1.2 Hand signals used in aircraft fire fighting may be found in *Aircraft Fire Protection and Rescue Procedures*, IFSTA 206, 2nd edition.

A-16-1.3 See Chapter 5 of NFPA 402M.

A-16-1.10 Spillage of Fuel on Water Surfaces. It should be anticipated that the impact of the aircraft into the water might rupture fuel tanks and lines. Therefore it is likely fuel will be found floating on the surface of the water. Boats having exhausts at the waterline may present an ignition hazard if operated where this condition is present. Wind and water currents should be taken into consideration in order to deal effectively with floating fuel to keep it from moving into areas where it would be hazardous to rescue operations or initiate fire. As soon as possible, pockets of fuel should either be broken up or moved with large capacity nozzles, neutralized by covering them with foam or a special inerting material, or boomed to contain the fuel in a safe area prior to absorption, dilution, or removal.

NOTE: Preplanning with the EPA, Water Pollution Control, may provide emergency assistance during this operation.

A-17-1.1 The phonetic alphabet list may be found in *Aircraft Fire Protection and Rescue Procedures*, 2nd edition, p. 126.

A-17-1.2 Standard terminology used in airport communications may be found in *Aircraft Fire Protection and Rescue Procedures*, IFSTA, 2nd edition, p. 127.

A-18-1 The intent of this chapter is for each airport fire fighter to have an understanding of airport fire hazards, fire prevention rules, common fire causes, and flammable liquids and gases use and storage requirements, in order to contribute to safer airport operations.

A-19-1.4 The systems should include those used by the U.S. Department of Transportation, the National Fire Protection Association's Standard NFPA 704, and the International Association of Fire Chiefs. There may be

others that relate to a particular area. The fire fighter should know that there is a Chemtrec National Hazardous Material Center manned 24 hours daily and the emergency telephone number is 800-424-9300.

A-21-1.2 The intent of this objective is for the airport fire fighter to make a discriminating selection from several different types of extinguishers and to know why a Type A extinguisher may not be effective on a Type B fire or Type B extinguisher may not be too effective on a Type A fire.

Appendix B Referenced Publications

B-1 The following documents or portions thereof are referenced within this standard for informational purposes only and thus are not considered part of the requirements of this document. The edition indicated for each reference should be the current edition as of the date of the NFPA issuance of this document. These references should be listed separately to facilitate updating to the latest edition by the user.

B-1.1 NFPA Publications. National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

NFPA 402M-1984, *Manual for Aircraft Rescue and Fire Fighting Operating Procedures*

NFPA 403-1978, *Recommended Practice for Aircraft Rescue and Fire Fighting Services at Airports and Heliports*

NFPA 407-1985, *Standard for Aircraft Fuel Servicing*

NFPA 408-1985, *Standard for Aircraft Hand Fire Extinguishers*

NFPA 409-1985, *Standard on Aircraft Hangars*

NFPA 410-1980, *Standard on Aircraft Maintenance*

NFPA 412-1974, *Standard for Evaluating Foam Fire Fighting Equipment on Aircraft Rescue and Fire Fighting Vehicles*

NFPA 414-1984, *Standard for Aircraft Rescue and Fire Fighting Vehicles*

NFPA 415-1983, *Standard on Aircraft Fueling Ramp Drainage*

NFPA 416-1983, *Standard on Construction and Protection of Airport Terminal Buildings*

NFPA 417-1985, *Standard on Construction and Protection of Aircraft Loading Walkways*

NFPA 418-1979, *Standard on Roof-top Heliport Construction and Protection*

NFPA 419-1983, *Guide for Master Planning Airport Water Supply Systems for Fire Protection*

NFPA 421-1973, *Recommended Practice on Aircraft Interior Fire Protection Systems*

NFPA 422M-1984, *Manual for Aircraft Fire and Explosion Investigators*

NFPA 423-1983, *Standard for Construction and Protection of Aircraft Engine Test Facilities*

NFPA 424M-1986, *Recommended Practice for Airport/Community Emergency Planning*

NFPA 704-1985, *Standard System for the Identification of Fire Hazards of Materials*

NFPA 1001-1987, *Standard for Fire Fighter Professional Qualifications*

Fire Protection Guide on Hazardous Materials, 9th edition.

Fire Protection Handbook, 16th edition

B-1.2 IFSTA Publication. Fire Protection Publications, Oklahoma State University, Stillwater, OK 74078-9987.

IFSTA 206-1978, *Aircraft Fire Protection and Rescue Procedures*.