UNITED STATES OF AMERICA
FEDERAL AVIATION AGENCY
WASHINGTON, D. C.

Civil Air Regulations Amendment 29-4
Effective: June 1, 1961
Issued: April 17, 1961

Title 14—AERONAUTICS AND SPACE

Chapter I—Federal Aviation Agency

[Reg. Docket No. 424; Amdt. 29-4]

PART 29—PHYSICAL STANDARDS FOR AIRMEN; MEDICAL CERTIFICATES

Medical Standards

Notice was given in Draft Release No. 60-11 (25 F.R. 5567) that a proposal was under consideration to amend Part 29 of the Civil Air Regulations to provide a screening procedure for determining that bifoveal fixation and vergence-phoria relationship adequate for the safe performance of airman duties exist.

As pointed out in the draft release, existing vision standards and vision testing procedures applicable to civil airmen have been carefully reviewed by the Bureau of Aviation Medicine. The present numerical values for esophoria and exophoria are those established for the Civilian Pilot Training Program in 1939 and were made to coincide with the then military standard. These were later incorporated into Civil Air Regulations Part 29 in 1942.

The Agency experience in the application of these standards has been corroborated by reports in the medical literature which fail to establish that the performance of airman duties deteriorates as a consequence of excessive values for these tests.

Detailed study revealed that visual proficiency with respect to eye muscle balance could be established by assuring the presence of two basic attributes. These are (1) the ability to focus the image of viewed objects on the acutely sensitive fovea of both eyes simultaneously (bifoveal fixation), and (2) the presence of an adequate balance between the latent tendency of the eyes to deviate from parallel alignment and the ability to overcome this tendency (vergence-phoria relationship). Furthermore, it was found that tests for esophoria, exophoria, and hyperphoria would separate the group of applicants not having the aforementioned attributes of vision.

Interested persons have been afforded an opportunity to participate in the making of the amendment and due consideration has been given to all relevant matter presented. The majority of the comments were favorable to the proposal.

The proposals received overwhelming support, especially from the American Optometric Association; Committee on Aerospace Medicine, American Medical Association; Air Line Pilots Association; Department of Preventive Medicine, Ohio State University; Air Transport Association; and the Civil Aviation Medical Association.

The Aerospace Medical Association requested a delay in the implementation of the proposed amendment to permit further study by Association aviation ophthalmologists. However, they take the position that if the proposed amendments were implemented the option of the Civil Air Surgeon to further examine and issue certificates be changed so that the applicant will be required to take further examination and no medical certificate will be issued pending the result of such examination.

Such a substantive change in the proposal appears unnecessary for the purpose of screening the relatively few applicants requiring additional examinations. Under the provisions of the proposal the Civil Air Surgeon will have adequate authority to require the applicant to undergo further examination and, where necessary, issue a limited medical certificate pending the results of such examination.

There were no requests for public hearing.

The provisions of this amendment substitute new standards for those contained in § 29.2(a), (2), (3), and (4) and 29.3(a)(2). However, in view of the recent changes to these sections under Amendment 29-3 (25 F.R. 5567), the provisions thereof as further changed by this amendment are restated for the convenience of the user.

In consideration of the foregoing, Part 29 of the Civil Air Regulations (14 CFR Part 29) is hereby amended as follows:

1. By amending § 29.2(a) to read as follows:

§ 29.2 First Class.

(a) *Eye.* Applicant shall have:

(1) A visual acuity of at least 20/20 in each eye separately without correction: *Provided,* That if the vision in either or both eyes is not poorer than 20/50 and is brought up to 20/20 or better in each such eye by glasses, the applicant may be qualified upon condition that correcting glasses be worn while exercising the privileges of his airman certificate.

(2) Bifoveal fixation and vergence-phoria relationship sufficient to prevent a break in fusion under conditions which may reasonably occur in the performance of airman duties. Tests for these factors will not be required except in those applicants who are found to have more than one prism diopter of hyperphoria, six prism diopters of esophoria, or six prism diopters of exophoria. When the above values are exceeded, the Civil Air Surgeon may require the applicant to undergo examination by a qualified eye specialist to determine if bifoveal fixation and adequate vergence-phoria relationship exist. A medical certificate will be issued pending the results of such examination.

(3) A near vision of at least v=1.00 at 18 inches with each eye separately without the use of correcting lenses: *Provided,* That if near vision in either or both eyes is poorer than v=1.00 at 18 inches the applicant shall possess the necessary correcting lenses.

(4) Normal color vision.

(5) Normal visual fields.

(6) No acute or chronic pathological condition of either eye or adenexae which may interfere with its proper function, may progress to that degree, or may be aggravated by flying.

2. By amending § 29.3(a) to read as follows:

§ 29.3 Second Class.

(a) *Eye.* Applicant shall have:

(1) A visual acuity of a least 20/20 in each eye separately without correction: *Provided,* That if the vision in either or both eyes is not poorer than 20/50 and is brought up to 20/20 or better in each such eye by glasses, the applicant may be qualified upon condition that correcting glasses be worn while exercising the privileges of his airman certificate.

(2) Bifoveal fixation and a vergence-phoria relationship sufficient to prevent a break in fusion under conditions which may reasonably occur in the performance of airman duties. Tests for these factors will not be required except in those applicants who are found to have more than one prism diopter of hyperphoria, six prism diopters of esophoria, or six prism diopters of exophoria. When the above values are exceeded, the Civil Air surgeon may require the applicant to undergo examination by a qualified eye specialist to determine if bifoveal fixation and adequate vergence-phoria relationship exist. A medical certificate will be issued pending the results of such examination.

(3) Sufficient accommodation to pass a test prescribed by the Administrator based primarily upon ability to read official aeronautical maps.

(4) Normal fields of vision.

(5) No pathology of the eye.

(6) The ability to distinguish aviation signal red, aviation signal green, and white.

(Secs. 313(a), 601, 602, 72 Stat. 752, 775, 776; 49 U.S.C. 1354(a), 1421, 1422)

This amendment shall become effective on June 1, 1961.

Issued in Washington, D.C., on April 17, 1961.

N. E. HALABY,
Administrator.

[F.R. Doc. 61-3624; Filed, Apr. 20, 1961; 8:51 a.m.]

(As published in the Federal Register (26 F.R. 3418) on April 21, 1961)

Civil Aeronautics Manual 29

Physical Standards for Airmen; Medical Certificates

FEDERAL AVIATION AGENCY

October 1959

FEDERAL AVIATION AGENCY

E. R. QUESADA, *Administrator*

NOTE

This manual contains Civil Air Regulations Part 29, dated March 15, 1958, and Amendments 29–1 and 29–2.

As amendments and other pertinent materials pertaining to Part 29 are issued, they will be included in this manual.

NOTICE

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Physical Standards for Airmen; Medical Certificates

29.1 *Issuance of medical certificates.* A medical certificate of the appropriate class will be issued to an applicant if the Administrator or his authorized representative finds that the applicant meets the medical standards prescribed in this part. Such finding will be based upon medical examination and evaluation of the applicant's history and condition.

29.2 *First class.*

(a) *Eye.* Applicant shall have:

(1) A visual acuity of at least 20/20 in each eye separately without correction: *Provided,* That if the vision in either or both eyes is not poorer than 20/50 and is brought up to 20/20 or better in each such eye by glasses, the applicant may be qualified upon condition that correcting glasses be worn while exercising the privileges of his airman certificate.

(2) An average depth perception of 30 millimeters or less on a prescribed depth perception apparatus, with or without correction: *Provided,* That if the depth perception is greater than 30 millimeters without correction, and is corrected to at least 30 millimeters average by glasses, the applicant may be qualified upon condition that such glasses be worn while exercising the privileges of his airman certificate.

(3) No diplopia in any meridian within 35 degrees from the point of visual fixation.

(4) Not more than one diopter of hyperphoria in either eye.

(5) Not more than 10 diopters of esophoria.

(6) Not more than 5 diopters of exophoria.

(7) An abduction of not less than 3 diopters nor more than 15 diopters.

(8) An adduction of 6 or more diopters.

(9) A near vision of at least $v=1.00$ at 18 inches with each eye separately without the use of correcting lenses: *Provided,* That if near vision in either or both eyes is poorer than $v=1.00$ at 18 inches the applicant shall possess the necessary correcting lenses.

(10) Normal color vision.

(11) Normal visual fields.

(12) No acute or chronic pathological condition of either eye or adenexae which may interfere with its proper function, may progress to that degree, or may be aggravated by flying.

(b) *Ear, nose, throat, and equilibrium.*

(1) Applicant shall be able to hear the whispered voice at 8 feet with each ear separately; shall have no acute or chronic disease of the middle or internal ear; no disease of the mastoid; no unhealed (unclosed) perforations of the ear drum; no disease or malformation of the nose or throat which may interfere with or be aggravated by flying; and no disturbance in equilibrium.

(2) If the hearing acuity for the whispered voice is less than 20 feet in either ear the applicant shall possess a hearing acuity of at least 50 percent of normal in each ear throughout the effective speech and radio range as demonstrated by a standard audiometer.

(c) *General medical condition.*

(1) An established medical history or clinical diagnosis of the following conditions shall be disqualifying: (i) Diabetes mellitus which requires insulin or other hypoglycemic drug for control, (ii) myocardial infarction, or (iii) angina pectoris or other evidence of coronary heart disease which the Civil Air Surgeon finds may reasonably be expected to lead to myocardial infarction.

(2) An applicant shall be disqualified if he has any other organic, functional or structural disease, defect or limitation which the Civil Air Surgeon finds either (i) renders the applicant unable safely to per-

form the duties or to exercise the privileges of the airman certificate held or sought, or (ii) may reasonably be expected to result within two years from such finding in a condition which would render the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought. Such findings will be based on the case history and appropriate professionally qualified medical judgment related to the condition involved.

(3) Unless the adjusted maximum readings apply, applicant's reclining blood pressure shall not exceed the maximum readings for his age group, as indicated in the table in this subparagraph. The adjusted maximum readings shall apply to any applicant, age 30 years or more, whose reclining blood pressure exceeds the maximum readings for his age group and whose cardiac and kidney conditions, after complete cardiovascular examination, are shown to be normal.

Age group	Maximum readings (reclining blood pressure in mm.)		Adjusted maximum readings (reclining blood pressure in mm.)	
	Systolic	Diastolic	Systolic	Diastolic
20–29	140	88		
30–39	145	92	155	98
40–49	155	96	165	100
50 and over	160	98	170	100

(4) Applicants 40 years of age or over shall demonstrate a degree of circulatory efficiency compatible with the safe operation of aircraft at high altitudes.

(d) *Nervous system.*

(1) An established medical history or clinical diagnosis of the following conditions shall be disqualifying: (i) A character or behavior disorder which is sufficiently severe to have repeatedly manifested itself by overt acts, (ii) a psychotic disorder, (iii) chronic alcoholism, (iv) drug addiction, (v) epilepsy, or (vi) a disturbance of consciousness without satisfactory medical explanation of the cause.

(2) An applicant shall be disqualified if he has any other disease of the nervous system, mental abnormality, or psychoneurotic disorder which the Civil Air Surgeon finds either (i) renders the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought, or (ii) may reasonably be expected to result within two years from such finding in a condition which would render the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought. Such findings will be based on the case history and appropriate professionally qualified medical judgment related to the condition involved.

(e) *Heart.*

(1) Applicants between 35 years of age and 40 years of age, on the first examination following age 35, shall demonstrate by electrocardiographic examination an absence of myocardial infarction.

(2) Applicants 40 years of age or over shall demonstrate annually by electrocardiographic examination an absence of myocardial infarction.

NOTE: An electrocardiagram accomplished according to acceptable standards and techniques, and accomplished within the 90 days immediately preceding the physical examination for a first class medical certificate, will be accepted at the time of the physical examination as meeting this requirement.

29.3 *Second class.*

(a) *Eye.* Applicant shall have:

(1) A visual acuity of at least 20/20 in each eye separately without correction: *Provided,* That if the vision in either or both eyes is not poorer than 20/50 and is brought up to 20/20 or better in each such eye by glasses, the applicant may be qualified upon condition that correcting glasses be worn while exercising the privileges of his airman certificate.

(2) An average depth perception of 30 millimeters or less on a prescribed depth perception apparatus, with or without correction: *Provided,* That if the depth perception is greater than 30 millimeters without correction, and is corrected to at least 30 millimeters average by glasses, the applicant may be qualified upon condition that such glasses

be worn while exercising the privileges of his airman certificate.

(3) No diplopia in any meridian within 35 degrees from the point of visual fixation.

(4) Not more than one diopter of hyperphoria.

(5) Properly balanced eye muscles with an abduction of 3 diopters or more, and adduction of 6 diopters or more.

(6) Sufficient accommodation to pass a test prescribed by the Administrator based primarily upon ability to read official aeronautical maps.

(7) Normal fields of vision.

(8) No pathology of the eye.

(9) The ability to distinguish aviation signal red, aviation signal green, and white.

(b) *Ear, nose, throat, and equilibrium.* Applicant shall be able to hear the whispered voice at 8 feet with each ear separately; shall have no acute or chronic disease of the middle or internal ear; no disease of the mastoid; no unhealed (unclosed) perforations of the ear drum; no disease or malformation of the nose or throat which may interfere with or be aggravated by flying; and no disturbance in equilibrium.

(c) *General medical condition.*

(1) An established medical history or clinical diagnosis of the following conditions shall be disqualifying: (i) Diabetes mellitus which requires insulin or other hypoglycemic drug for control, (ii) myocardial infarction, or (iii) angina pectoris or other evidence of coronary heart disease which the Civil Air Surgeon finds may reasonably be expected to lead to myocardial infarction.

(2) An applicant shall be disqualified if he has any other organic, functional or structural disease, defect or limitation which the Civil Air Surgeon finds either (i) renders the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought, or (ii) may reasonably be expected to result within two years from such finding in a condition which would render the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought. Such findings will be based on the case history and appropriate professionally qualified medical judgment related to the condition involved.

(d) *Nervous system.*

(1) An established medical history or clinical diagnosis of the following conditions shall be disqualifying: (i) A character or behavior disorder which is sufficiently severe to have repeatedly manifested itself by overt acts, (ii) a psychotic disorder, (iii) chronic alcoholism, (iv) drug addiction, (v) epilepsy, or (vi) a disturbance of consciousness without satisfactory medical explanation of the cause.

(2) An applicant shall be disqualified if he has any other disease of the nervous system, mental abnormality, or psychoneurotic disorder which the Civil Air Surgeon finds either (i) renders the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought, or (ii) may reasonably be expected to result within two years from such finding in a condition which would render the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought. Such findings will be based on the case history and appropriate professionally qualified medical judgment related to the condition involved.

29.4 *Third class.*

(a) *Eye.* Applicant shall have:

(1) A visual acuity of at least 20/50 in each eye separately without correction: *Provided,* That if the vision in either or both eyes is poorer than 20/50 and is brought up to 20/30 or better in each such eye by glasses, the applicant may be qualified upon condition that such glasses be worn while exercising the privileges of his airman certificate.

(2) No serious pathology of the eye.

(3) The ability to distinguish aviation signal red, aviation signal green, and white.

(b) *Ear, nose, throat, and equilibrium.* Applicant shall be able to hear the whispered voice at 3 feet; shall have no acute or chronic

disease of the internal ear, no disease or malformation of the nose or throat which may interfere with or be aggravated by flying, and no disturbance in equilibrium.

(c) *General medical condition.*

(1) An established medical history or clinical diagnosis of the following conditions shall be disqualifying: (i) Diabetes mellitus which requires insulin or other hypoglycemic drug for control, (ii) myocardial infarction, or (iii) angina pectoris or other evidence of coronary heart disease which the Civil Air Surgeon finds may reasonably be expected to lead to myocardial infarction.

(2) An applicant shall be disqualified if he has any other organic, functional or structural disease, defect or limitation which the Civil Air Surgeon finds either (i) renders the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought, or (ii) may reasonably be expected to result within two years from such finding in a condition which would render the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought. Such findings will be based on the case history and appropriate professionally qualified medical judgment related to the condition involved.

(d) *Nervous system.*

(1) An established medical history or clinical diagnosis of the following conditions shall be disqualifying: (i) A character or behavior disorder which is sufficiently severe to have repeatedly manifested itself by overt acts, (ii) a psychotic disorder, (iii) chronic alcoholism, (iv) drug addiction, (v) epilepsy, or (vi) a disturbance of consciousness without satisfactory medical explanation of the cause.

(2) An applicant shall be disqualified if he has any other disease of the nervous system, mental abnormality, or psychoneurotic disorder which the Civil Air Surgeon finds either (i) renders the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought, or (ii) may reasonably be expected to result within two years from such finding in a condition which would render the applicant unable safely to perform the duties or to exercise the privileges of the airman certificate held or sought. Such findings will be based on the case history and appropriate professionally qualified medical judgment related to the condition involved.

29.5 *Medical deficiencies.*

At the discretion of the Civil Air Surgeon, a medical certificate of the appropriate class may be issued to an applicant who does not meet the medical standards in this part, except an applicant who is disqualified under the respective paragraphs (c)(1) and (d)(1) of sections 29.2, 29.3 and 29.4, if the applicant demonstrates to the satisfaction of the Civil Air Surgeon by operational experience, special practical or flight testing or as may otherwise be required, that he can carry out the airman duties appropriate to the airman certificate held, applied for or issued in a manner which would not endanger safety in air commerce during the period of validity of such medical certificate. The need for any operational limitations or limitation on the duration of the medical certificate designed to achieve safety will be determined by the Civil Air Surgeon and will be specified on the respective airman or medical certificate held or issued. An applicant who has taken a practical or flight test for issuance of a medical certificate under this section shall not be required to retake such practical or flight test during subsequent physical examinations, unless, in the opinion of the Civil Air Surgeon, the individual's physical deficiency has become sufficiently more pronounced to require such additional tests.

U. S. GOVERNMENT PRINTING OFFICE : 1959 O - 516725

4-243

UNITED STATES OF AMERICA
CIVIL AERONAUTICS BOARD
WASHINGTON, D. C.

Civil Air Regulations Amendment 29-3
Effective: June 1, 1945
Adopted: April 6, 1945

PHYSICAL STANDARDS FOR AIRMEN - THIRD CLASS

Effective June 1, 1945, § 29.12 of the Civil Air Regulations is amended by repealing subparagraphs (2) and (3) of paragraph (a).

By the Civil Aeronautics Board:

/s/ *Fred A. Toombs*

Fred A. Toombs
Secretary

(SEAL)

Part 29 last printed June 1, 1942.