FEDERAL AVIATION AGENCY
FLIGHT STANDARDS SERVICE
Washington 25, D. C.

October 29, 1962

REGULATIONS OF THE ADMINISTRATOR DRAFT RELEASE NO. 62-46

SUBJECT: Technical Standard Order C72 "Individual Flotation Devices"

The Flight Standards Service of the Federal Aviation Agency has under consideration an amendment to Part 514 of the Regulations of the Administrator to add a new Technical Standard Order TSO-C72 "Individual Flotation Devices". The reasons therefor are set forth in the explanatory statement of the attached proposal which is being published in the Federal Register as a notice of proposed rule making.

The Flight Standards Service desires that all persons who will be affected by the requirements of the proposal be fully informed as to its effect upon them and is therefore circulating copies in order to afford interested persons ample opportunity to submit comments as they may desire.

Because of the large number of comments which we anticipate receiving in response to this draft release, we will be unable to acknowledge receipt of each reply. However, you may be assured that all comment will be given careful consideration.

It should be noted that comments should be submitted, preferably in duplicate, to the Docket Section of the Federal Aviation Agency, and in order to insure consideration must be received on or before December 24, 1962.

George S. Pickett

Director
Flight Standards Service

FEDERAL AVIATION AGENCY

FLIGHT STANDARDS SERVICE

(14 CFR 514)

[Regulatory Docket No. 725; Draft Release No. 62-467]

TECHNICAL STANDARD ORDERS FOR AIRCRAFT MATERIALS PARTS AND APPLIANCES

NOTICE OF PROPOSED RULE MAKING

Pursuant to the authority delegated to me by the Administrator (14 CFR 405) notice is hereby given that the Federal Aviation Agency has under consideration a proposal to amend Part 514 of the Regulations of the Administrator by adopting a new Technical Standard Order. This Technical Standard Order will establish minimum performance standards for individual flotation devices for use on civil aircraft of the United States.

A previous notice of proposed rule making setting forth minimum standards for individual flotation devices was published on May 2, 1961, (26 F.R. 3779). In response to such notice, numerous changes to the proposed standard were recommended by certain operators and a request for clarification was made by a manufacturer. The Agency considers that certain of the recommended changes have merit and has prepared a revised Standard incorporating such recommendations. It is believed that this revised standard provides an adequate and uniform basis for the approval of individual flotation devices which would meet the requirements of section 4b.647 of the Civil Air Regulation for an approved flotation means.

In view of the fact that this revised Standard contains numerous substantive changes as well as certain clarifications, it is being set forth in a new notice of proposed rule making and the notice of proposed rule making published in 26 F.R. 3779 is hereby withdrawn.

Interested persons may participate in the making of the proposed rule by submitting such written data, views or arguments as they may desire. Communications should be submitted in duplicate to the Docket Section of the Federal Aviation Agency, Room A-103, 1711 New York Avenue, N.W., Washington 25, D. C. All communications received on or before December 24, 1962, will be considered by the Administrator before taking action on the proposed rule. The proposals contained in this notice may be changed in light of comments received. All comments submitted will be available in the Docket Section for examination by interested persons at any time.

This amendment is proposed under the authority of Sections 313(a) and 601 of the Federal Aviation Act of 1958 (72 Stat. 752, 775; 49 U.S.C. 1354(a), 1421).

In consideration of the foregoing it is proposed to amend Part 514 as follows:

By adding the following section 514.78:

§ 514.78 Individual flotation devices - TSO-C72--(a) Applicability--Minimum performance standards. Minimum performance standards are hereby established for individual flotation devices for use on civil aircraft of the United States. New models of individual flotation devices manufactured on or after the effective date of this section shall meet the standards specified in the Federal Aviation Agency Standard, "Individual Flotation Devices", 1/ dated September 7, 1962.

(b) Marking. The markings specified in § 514.3(d) shall be shown except that the weight need not be included.

(c) Data requirements. In addition to the data specified in § 514.2, the manufacturer shall furnish six copies each, except where noted, of the following to the Chief, Engineering and Manufacturing Branch, Flight Standards Division, Federal Aviation Agency, in the region in which the manufacturer is located:

(i) Descriptive information on the device;

(ii) The manufacturer's equipment operating instructions and limitations;

(iii) The applicable installation instructions, (Indicate *any restrictions or other conditions pertinent to installation*);

1/ Copies may be obtained upon request addressed to Publishing and Graphics Branch, Inquiry Section, MS-158, Federal Aviation Agency, Washington 25, D. C.

(iv) One copy of the manufacturer's test reports and

(v) One copy of the manufacturer's special cleaning and maintenance instructions.

Acting Director
Flight Standards Service

Issued in Washington, D. C., on OCT 29 1962, 1962.

September 7, 1962

Federal Aviation Agency Standard For Individual Flotation Devices

1.0 Purpose - To specify minimum requirements for individual flotation devices (other than life jackets as covered in TSO-C13) intended for use in civil aircraft engaged in operations over water not farther than 50 miles from land.

2.0 Scope - This standard covers individual flotation devices which are intended to be provided in airplanes for use of each occupant whenever such devices are permitted by Civil Air Regulations to be installed in lieu of life preservers. Such devices are intended to be installed within easy reach of the occupants while seated and shall be readily removable. Dress covers used to envelope flotation devices are not considered to be a part of the device itself.

2.1 Types and Description of Devices - This standard provides for the following two categories of individual flotation devices:

(a) Inflatable types (compressed gas inflation)
(b) Noninflatable types

2.1.1 Description of Inflatable Types - Inflation shall be accomplished by the discharge of compressed gas from a gas cartridge. The gas cartridge shall be integral with the device. The gas cartridge shall be capable of maintaining 100 percent tightness throughout the service life of the device. The gas cartridge shall be activated by a means readily accessible and clearly marked for its intended purpose. Additionally, a means for oral inflation shall be provided and shall be built into the device. This alternate method of inflation shall enable the user to readily fill the gas container orally in the event of malfunction of the gas cartridge.

2.1.2 Description of Noninflatable Types - Seat cushions, head rests, arm rests, pillows or similar aircraft equipment are eligible as flotation devices under this standard provided they fulfill minimum requirements for safety and performance. Compression through extended service use, perspiration and periodic cleaning shall not reduce the buoyancy characteristics of these devices below the minimum level prescribed in this standard.

2.2 Instructions for Use - Where the design features of this device relative to its purpose and proper use are not obvious to the uninitiated user, clearly worded instructions shall be provided thereon. These instructions shall be visible under conditions of dim cabin lighting.

3.0 Definitions - The following are definitions of terms used throughout the standard.

(a) Buoyancy - The amount of weight a device can support in fresh water at 85°F (air which may be entrapped in dress covers or envelopes shall be excluded from buoyancy consideration).

(b) CO_2 - Carbon dioxide.

(c) Flame Resistant - Not susceptible to combustion to the point of propagating a flame beyond safe limits after the ignition source is removed.

4.0 General Requirements

4.0.1 Materials and Processes - Materials used in the finished product shall be of such quality which experience and tests have demonstrated to be suitable for the use intended throughout the service life of the device. The materials and processes shall conform to specifications selected or prepared by the manufacturer which will insure that the performance, strength and durability incorporated in the prototype are continued or exceeded in subsequently produced articles.

4.0.2 Fungus Protection - Materials used in the finished product shall contain no nutrient which will support fungus growth unless such materials shall be suitably treated to prevent such growth.

4.0.3 Corrosion Protection - Metallic parts exposed to the atmosphere shall be corrosion resistant or protected against corrosion.

4.0.4 Flame Resistance - All materials used in the device including any covering shall be flame resistant.

4.0.5 Temperature Range - Materials used in the construction of the device shall be suitable for the intended purpose following extended exposures through a range of operating temperatures from -40°F to +140°F.

4.1 Design and Construction

4.1.1 General - The design of the device, the inflation means if provided and straps or other accessories provided for the purpose of donning by the user shall be simple and obvious thereby making its purpose and actual use immediately evident to the user.

4.1.2 Miscellaneous Design Features - The device shall be adaptable for children as well as adults. It shall have features which enable the user to firmly retain it when jumping into water from a height of at least five feet. It shall be easily retained when wet. It shall possess no features or characteristics of a nature which will tend to upset and support the wearer in a face down position when unconscious or immobilized. Attachment straps shall not pass between the user's legs for retention or restrict breathing or blood circulation.

5.0 Performance Characteristics

5.0.1 Buoyancy - The device shall provide not less than 14 pounds of buoyancy in fresh water at 85°F for a period of eight hours. For noninflatable types allowance shall be made so that the effects of compression through extended service use shall not reduce buoyancy below the minimum required.

5.0.2 Time to Render Functional - The device shall be capable of being removed from storage, inflated (if required) and donned by the wearer in a period of not over 12 seconds.

5.0.3 Function Under Temperature Limits - The device shall be functional within the temperature limitations of -40°F to +140°F.

6.0 Standard Test Procedures

6.0.1 Salt Spray Test Solution - The salt used shall be sodium chloride or equivalent containing on the dry basis not more than 0.1 percent of sodium iodide and not more than 0.2 percent of impurities. The solution shall be prepared by dissolving 20±2 parts by weight of salt in 80 parts by weight of distilled or other water containing not more than 200 parts per million of total solids. The solution shall be kept free from solids by filtration, decantation, or any other suitable means. The solution shall be adjusted to be maintained at a specific gravity of from 1.126 to 1.157 and a PH of between 6.5 and 7.2 when measured at a temperature in the exposure zone maintained at 95°F.

6.0.2 Flame Resistance

Standard Tests - Three specimens approximately four inches wide and 14 inches long should be tested. Each specimen should be clamped in a metal frame so that the two long edges and one end are held securely. The frame should be such that the exposed area of the specimen is at least two inches wide and 13 inches long with the free end at least ½ inch from the end of the frame for ignition purposes. In the case of fabrics, the direction of the weave corresponding to the most critical burn rate should be parallel to the 14-inch dimension. A minimum of 10 inches of the specimen should be used for timing purposes, and approximately 1½ inches should burn before the burning front reaches the timing zone. The specimen should be long enough so that the timing is stopped at least one inch before the burning front reaches the end of the exposed area.

The specimens should be supported horizontally and tested in draft free conditions. The surface that will be exposed when installed in the aircraft should face down for the test. The specimens should be ignited by a Bunsen or Tirrell burner. To be acceptable, the average burn rate of the three specimens must not exceed four inches per minute. Alternatively, if the specimens do not support combustion after the ignition flame is applied for 15 seconds or if the flame extinguishes itself and subsequent burning without a flame does not extend into the undamaged areas, the material is also acceptable.

7.0 Test Requirements

7.0.1 Buoyancy Testing - Tests shall be performed to substantiate that the device will provide the minimum buoyancy specified in section 5.0.1.

7.0.2 Salt Spray Testing - All metallic operating parts shall be placed in an enclosed chamber and sprayed with an atomized salt solution for a period of 24 hours. The solution shall be atomized in the chamber at a rate of three quarts per 10 cubic feet of chamber volume per 24-hour period. At the end of the test period, it shall be demonstrated that the parts operate properly.

7.0.3 Flame Resistance Testing - Tests shall be performed on nonmetallic materials in accordance with section 6.0.2 to substantiate adequate flame resistant properties.

7.0.4 Extreme Temperature Testing - Tests shall be performed to demonstrate that the device is operable throughout the temperature range specified in paragraph 5.0.3. In performing these tests, pre-conditioning of test specimens shall be accomplished to simulate conditions of immediate use of the device following an aircraft takeoff.

NOTE: An acceptable procedure for pre-conditioning may involve storage of the device for 8 hours at the extreme temperatures specified followed by exposure to room temperature conditions for a period of time not to exceed 10 minutes.