

Title 14—AERONAUTICS AND SPACE

Chapter I—Federal Aviation Agency

[Docket No. 1457, Amdts. 91-1, 101-1]

PART 91—GENERAL OPERATING AND FLIGHT RULES [NEW]

PART 101—MOORED BALLOONS, KITES, UNMANNED ROCKETS AND UNMANNED FREE BALLOONS [NEW]

Miscellaneous Amendments

On November 1, 1962, notice was given in Draft Release 62-45 (27 F.R. 10656) that the Federal Aviation Agency had under consideration a proposal to amend Part 48 of the Civil Air Regulations to include regulations governing the operation of unmanned free balloons. The notice also proposed to amend the scope of Part 60 to exclude unmanned free balloons from the air traffic rules contained therein.

Regulatory action, as proposed, is required to provide the necessary compatibility between unmanned free balloon operations and other airspace activities. It is also necessary to provide for the protection of persons and property on the ground that are not associated with the operation of unmanned free balloons.

Eleven comments were received in response to the draft release. The National Aeronautics and Space Administration, the Air Line Pilots Association, the National Aviation Trades Association, the University of Minnesota, the Aircraft Owners and Pilots Association, and the National Center for Atmospheric Research endorsed the proposal as presented. The remainder of the comments generally supported the proposal but recommended certain changes. For continuity these recommendations will be considered in the sequence of the proposed rule.

The Department of the Army recommended that the term "size/weight ratio" be amplified to state more clearly how this ratio is computed. Therefore, that portion of the rule is modified; first, by reversing the term to read "weight/size" to more clearly show that it is the total weight of the payload package applied to the area of the smallest surface of such package; second, by adding a statement as to how the exact weight/size ratio can be determined.

One comment stated that the proposed regulation did not allow an operation to be conducted through a thin transparent cirrus cloud condition even though all other operating limitations were satisfied. Accordingly, it was recommended that there be provision for operations when such a cloud condition exists. The weather requirements adopted herein are necessary precautions to ensure that the balloon is operated in a manner that makes it easily seen and avoided by airplanes. Furthermore, since it is incumbent on the pilot of an airplane to see and avoid an unmanned free balloon by

giving it right-of-way, a modification in the manner suggested would nullify a major safety objective to make balloon operations compatible with those of other airspace users. Therefore, no change is made in the operating limitations regarding cloud coverage and horizontal visibility.

One comment indicated a possible misconception regarding the lighting requirement during night operations. This requirement for lighting applies to the entire balloon assembly and not just to the balloon envelope. To eliminate any doubt, that portion of the rule is modified to clearly state that the requirement to light the balloon also applies to the entire balloon assembly, whether operated as one unit or separated during the operation.

The National Pilots Association recommended that all trailing antennas be marked with colored pennants or streamers since contact with the antenna by a small aircraft could produce an adverse effect if the antenna became entangled in the propeller. A light weight antenna that would be broken by a force of less than 50 pounds, which the proposal had exempted from such marking, is not suited for such attachments. A pennant or streamer attached to a light weight antenna has the tendency to float back up into the antenna and become entangled with it. This condition could nullify the purpose of the antenna, which is to supply altitude and D/F information to the balloon operator who, in turn, forwards the position and altitude to air traffic control. On this basis, no change is being made to that section of the rule.

Two other comments contended that marking an antenna so as to be visible for a minimum of one mile was inadequate. To increase this minimum, it would be necessary to require the use of a larger pennant or streamer. This could be a most difficult requirement for the balloon operator to meet and would generate the same previously mentioned nullifying effect on the use of the antenna. Therefore, no change is made to that section of the rule.

The Department of the Air Force and the Air Transport Association pointed out that the proposal did not require the suspension system to be marked in any way. In many cases it is not necessary to require by rule that the suspension system be marked because the plastic balloon bubble with its reflective surface is recognizable long before the suspension system would be seen. Additionally, a balloon suspension system of one or more open parachutes is already well marked and may be easily recognized since they normally employ high conspicuity colors such as aviation surface orange and white. We have, however, modified the rule to require that suspension systems, other than highly conspicuously colored open parachutes, exceeding 50 feet in length must be marked with colored pennants or streamers or alternate bands of high conspicuity colors. As discussed previously, in many cases it would be technically difficult to incorporate markings that would make a balloon subsystem easily recognizable

much beyond one mile. Therefore, in addition to providing notice to airmen information about programmed balloon flights, the Agency will pursue an educational program by a continual reminder in the Airman's Guide and other aeronautical publications that flight below an unmanned free balloon should be avoided. In this reminder, all pilots will be advised that these balloons may have suspension devices and trailing antennas suspended beneath them that might be invisible until the aircraft is close to the balloon. This same type of notice has proven successful in the past by reminding all pilots operating in coastal waters about airships that might have invisible cables suspended beneath them.

The U.S. Air Force and the Air Transport Association recommended that unmanned free balloons, while within positive control areas, be equipped with a functioning radar beacon transponder that would permit radar observation of the balloon by air traffic control. When Draft Release 62-45 was published, airborne radar beacon equipment was not considered readily adaptable to unmanned free balloons due to its weight and cost. In the meantime, a number of unmanned free balloons have been operated successfully utilizing beacon transponder equipment. These operations indicate that radar beacon equipment is adaptable for use on many unmanned free balloons. This equipment will undoubtedly be even more suitable when it is designed primarily for balloons with the view towards reduced weight, lower costs, and increased availability. In recognition of these matters, the Agency will issue a notice of proposed rule making to require a functioning radar beacon transponder on certain unmanned free balloons. Additionally, the use of such equipment may lend credence to a modification of certain of the weather requirements discussed earlier. During the development stages of the new notice, following the adoption of the rule contained herein, coordination with manufacturers of radar beacon equipment, balloon operators and other segments of the public will be conducted to obtain all possible opinions, recommendations, and reactions.

In view of the upward expansion of the positive control areas, all reference in the balloon position and notice requirements has been changed from 44,000 feet to 60,000 feet.

In consideration of the foregoing, Subchapter F of Chapter I of Title 14 of the Code of Federal Regulations is amended as follows:

1. By amending § 91.1(a) to read as follows:

§ 91.1 Applicability.

(a) Except as provided in paragraph (b) of this section, this part prescribes rules governing the operation of aircraft (other than moored balloons, kites, unmanned rockets, and unmanned free balloons) within the United States.

2. By amending the title of Part 101 [New] to read as set forth above.

3. By amending § 101.1(a) to read as follows:

§ 101.1 Applicability.

(a) This part prescribes rules governing the operation in the United States, of the following:

(1) Any balloon that is moored to the surface of the earth or an object thereon and that has a diameter of more than six feet or a gas capacity of more than 115 cubic feet.

(2) Any kite that weighs more than five pounds and is intended to be flown at the end of a rope or cable.

(3) Any unmanned rocket except:

(i) Aerial firework displays; and

(ii) Model rockets:

(a) Using not more than four ounces of propellant;

(b) Using a slow-burning propellant;

(c) Made of paper, wood, or breakable plastic, containing no substantial metal parts and weighing not more than 16 ounces, including the propellant; and

(d) Operated in a manner that does not create a hazard to persons, property, or other aircraft.

(4) Any unmanned free balloon that:

(i) Carries a payload package that weighs more than four pounds and has a weight/size ratio of more than three ounces per square inch on any surface of the package, determined by dividing the total weight in ounces of the payload package by the area in square inches of its smallest surface;

(ii) Carries a payload package that weighs more than six pounds;

(iii) Carries a payload, of two or more packages, that weighs more than 12 pounds; or

(iv) Uses a rope or other device for suspension of the payload that requires an impact force of more than 50 pounds to separate the suspended payload from the balloon.

4. By amending § 101.5 to read as follows:

§ 101.5 Operations in prohibited or restricted areas.

No person may operate a moored balloon, kite, unmanned rocket, or unmanned free balloon in a prohibited or restricted area unless he has permission from the using or controlling agency, as appropriate.

5. By adding the following new subpart at the end of Part 101:

Subpart D—Unmanned Free Balloons

Sec.

101.31 Applicability.

101.33 Operating limitations.

101.35 Equipment and marking requirements.

101.37 Notice requirements.

101.39 Balloon position reports.

AUTHORITY: §§ 101.31 to 101.39 issued under sec. 307, 313a of Federal Aviation Act of 1958, 49 U.S.C. 1348 and 1354.

§ 101.31 Applicability.

This subpart applies to the operation of unmanned free balloons. However, a person operating an unmanned free balloon within a restricted area must comply only with § 101.33 (d) and (e) and with any additional limitations that are imposed by the using or controlling agency, as appropriate.

§ 101.33 Operating limitations.

No person may operate an unmanned free balloon—

(a) Unless otherwise authorized by ATC, in a control zone below 2,000 feet above the surface, or in an airport traffic area;

(b) At any altitude where there are clouds or obscuring phenomena of more than five-tenths coverage;

(c) At any altitude below 60,000 feet standard pressure altitude where the horizontal visibility is less than five miles;

(d) During the first 1,000 feet of ascent, over a congested area of a city, town, or settlement or an open-air assembly of persons not associated with the operation; or

(e) In such a manner that impact of the balloon, or part thereof including its payload, with the surface creates a hazard to persons or property not associated with the operation.

§ 101.35 Equipment and marking requirements.

(a) No person may operate an unmanned free balloon unless it contains a barometric, timed, radio-controlled, or similar termination device and that device is activated if the weather conditions are less than those prescribed for operation under this subpart, or if a malfunction or other reasons make further operation hazardous to other air traffic or to persons or property on the surface.

(b) No person may operate an unmanned free balloon below 60,000 feet standard pressure altitude during the night (as corrected to the altitude of operation) unless the balloon and its attachments and payload, whether or not they become separated during the operation, are lighted so as to be visible for at least five miles.

(c) No person may operate an unmanned free balloon that is equipped with a trailing antenna that requires an impact force of more than 50 pounds to break it at any point, unless the antenna has colored pennants or streamers that are attached at not more than 50-foot intervals and that are visible for at least one mile.

(d) No person may operate during the day an unmanned free balloon that is equipped with a suspension device (other than a highly conspicuously colored open parachute) more than 50 feet long, unless the suspension device is colored in alternate bands of high conspicuity colors or has colored pennants or streamers attached which are visible for at least one mile.

§ 101.37 Notice requirements.

(a) *Prelaunch notice:* Except as provided in paragraph (b) of this section, no person may operate an unmanned free balloon unless, within six to 24 hours before beginning the operation, he gives the following information to the FAA ATC facility that is nearest to the place of intended operation:

(1) The balloon identification.

(2) The estimated date and time of launching, amended as necessary to remain within plus or minus 30 minutes.

(3) The location of the launching site.

(4) The cruising altitude.

(5) The forecast trajectory and estimated time to cruising altitude or 60,000 feet standard pressure altitude, whichever is lower.

(6) The length and diameter of the balloon, length of the suspension device, weight of the payload, and length of the trailing antenna.

(7) The duration of flight.

(8) The forecast time and location of impact with the surface of the earth.

(b) For solar or cosmic disturbance investigations involving a critical time element, the information in paragraph (a) of this section shall be given within 30 minutes to 24 hours before beginning the operation.

(c) *Cancellation notice:* If the operation is canceled, the person who intended to conduct the operation shall immediately notify the nearest FAA ATC facility.

(d) *Launch notice:* Each person operating an unmanned free balloon shall notify the nearest FAA or military ATC facility of the launch time immediately after the balloon is launched.

§ 101.39 Balloon position reports.

(a) Each person operating an unmanned free balloon shall:

(1) Unless ATC requires otherwise, monitor the course of the balloon and record its position at least every two hours; and

(2) Forward any balloon position reports requested by ATC.

(b) One hour before beginning descent, each person operating an unmanned free balloon shall forward to the nearest FAA ATC facility the following information regarding the balloon:

(1) The current geographical position.

(2) The altitude.

(3) The forecast time of penetration of 60,000 feet standard pressure altitude (if applicable).

(4) The forecast trajectory for the balance of the flight.

(5) The forecast time and location of impact with the surface of the earth.

(c) If a balloon position report is not recorded for any two hour period of flight, the person operating an unmanned free balloon shall immediately notify the nearest FAA ATC facility. The notice shall include the last recorded position and any revision of the forecast trajectory. The nearest FAA ATC facility shall be notified immediately when tracking of the balloon is re-established.

(d) Each person operating an unmanned free balloon shall notify the nearest FAA ATC facility when the operation is ended.

This amendment is made under the authority of sections 307 and 313(a) of the Federal Aviation Act of 1958 (49 U.S.C. 1348 and 1354).

This amendment becomes effective on April 3, 1964.

Issued in Washington, D.C., on December 26, 1963.

N. E. HALABY,
Administrator.

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