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

SEP 12 1955

CAA Library

Civil Air Regulations Amendment 40- 18
Effective: September 1, 1955
Adopted: August 30, 1955

SCHEDULED INTERSTATE AIR CARRIER CERTIFICATION AND OPERATION RULES

CRASH AX AND CHOP MARK REQUIREMENTS

Section 40.173 (d) of Part 40 of the Civil Air Regulations requires that "All airplanes shall be equipped with at least one crash ax, and if accommodations are provided for more than 30 persons including the crew airplanes shall be equipped with at least two crash axes. This equipment shall be stowed in readily accessible locations: Provided, That the carriage of a second crash ax shall not be mandatory prior to September 1, 1955."

Section 40.178 (b) requires that "The exterior areas of the fuselage of an airplane shall be marked to indicate the location of mechanisms of access and those areas suitable for cutting to facilitate the escape and rescue of occupants in the event of an accident: Provided, That marking of areas suitable for cutting need not be applied prior to September 1, 1955." Marks indicating areas suitable for cutting are commonly known as "chop marks."

During 1954 the Board received proposals from certain air carriers for the elimination of the requirement for a second aircraft ax and the requirement for the marking of areas suitable for cutting. With respect to the aircraft ax requirement, the charge was made that the necessity for the second ax as a matter of Federal regulation has never been justified. With respect to the requirement for chop marks, it was argued that airplane fuselages, particularly those of modern pressurized airplanes, are so strongly resistant to chopping or cutting by means of hand tools as to render questionable the justification for this requirement. The Board's attention was also drawn to the fact that Part 4b of the Civil Air Regulations contains a requirement for external means of access on all emergency exits, and that the existence of chop marks may induce rescue personnel to engage in fruitless chopping or cutting when expeditious means of access are readily available. As a consequence of the foregoing and in response to a formal request of the Air Transport Association, the Board extended the effective dates of the requirements for the second ax and for chop marks until September 1, 1955, the current effective date, in order to permit reinvestigation of these provisions.

The Board examined in detail the safety record of civil operations and found that some use of an aircraft ax has been made as a result of which safety was clearly benefited. However, no record exists of the use of an aircraft ax in any air carrier accident, nor does any record exist in which two aircraft axes have been used during actual operations. In

fact, no record has been found of any situation involving a combination of circumstances in which the carriage of two aircraft axes would have been beneficial. On the basis of this study, therefore, it appeared that the probability that a need for two aircraft axes will arise in air carrier operations is so extremely remote as to render questionable the justification for such a requirement in the Civil Air Regulations.

A review was also accomplished in order to determine whether the presence of chop marks had in any way contributed to the safety of aircraft operations. Our investigation of civil and military records reveals no indication that the presence of chop marks has in any way served to facilitate the rescue of personnel, notwithstanding the extensive use made of chop marks for the past 15 years. Various experiments have been conducted showing that chopping or cutting of aircraft fuselages is at best very difficult and time consuming. It became clear that where external means for opening emergency exits are available, these should be used in lieu of attempts at forcible entry. Even where external means for opening emergency exits are not available, it appeared that attempts at forcible entry through such exits would be more fruitful than chopping through other areas of the fuselage. Accordingly, it was concluded that all emergency exits should be clearly identifiable as such from the outside and, where appropriate, suitable markings should be applied to indicate the method of operation of mechanisms of access. In the case of emergency exits which are not operable from the outside, it appeared that, because of differences in design between aircraft, instructions should be added indicating the most suitable procedure for forcible entry through such exits.

In view of the foregoing, a notice of proposed rule making was circulated as Civil Air RegulationsDraft Release No. 55-8 (20 F.R. 1742) proposing the amendment of the pertinent sections of Part 40. This notice proposed the deletion of the requirement for the second aircraft ax. It also proposed the deletion of the requirements for chop marks and in lieu thereof proposed to require the addition of external markings on emergency exits to facilitate access into the aircraft. In the case of emergency exits which are operable from the outside, these markings were to be in the form of instructions concerning the operation of mechanisms of access. In the case of emergency exits which are not operable from the outside, the markings were to be in the form of instructions to facilitate forcible entry.

Comments received in response to this draft release indicated some opposition to the deletion of the requirements for the second ax and the chop marks; however, no justification was presented in support of these requirements. Accordingly, the Board concludes that these requirements should be deleted.

Opposition was also expressed concerning the requirement to include instructions for forcible entry at emergency exits which are not operable from the outside. The Air Transport Association, the Flight Safety Foundation, and the National Fire Protection Association concurred in the

view that it is impossible, at this time, to envisage instructions concerning forcible entry which would be useful in facilitating rescue efforts. It was argued that the limitations of language are such that it would be difficult to avoid instructions, the length and complexity of which would defeat the objective sought, unless a system of universal symbols, not currently in existence, is developed. It was suggested, furthermore, that an educational program designed to acquaint rescue personnel with the peculiarity of design of various emergency exits would be far more profitable than the requirements proposed in Draft Release 55-8. The Board is of the view that these comments have merit. We are not satisfied, however, that our investigation of the feasibility of marking aircraft to facilitate forcible entry should be abandoned although it appears advisable to determine whether symbolic instructions are necessary to achieve this end. Meanwhile, the Board is of the view that programs looking toward the further indoctrination of aircraft rescue personnel should be prosecuted as vigorously as practicable.

The Board concludes that the substance of the amendments proposed in Draft Release 55-8 should be adopted at this time except with respect to the requirement for instructions for forcible entry. We are amending Part 40, therefore, to require that all emergency exits shall be clearly identifiable as such from the outside. Emergency exits which are operable from the outside should also be marked to indicate the method of opening. These latter markings may be used, where appropriate, to identify the emergency exits themselves. The Board anticipates that emergency exits which are not operable from the outside may be identified by such means as the words EMERGENCY EXIT or conventional corner markings.

Interested persons have been afforded an opportunity to participate in the making of these rules, and due consideration has been given to all relevant matter presented. Since this amendment contains rules which either impose no additional burden on any person or need not be complied with for at least four months, it may be made effective without prior notice.

In consideration of the foregoing, the Civil Aeronautics Board hereby amends Part 40 of the Civil Air Regulations (14 CFR Part 40, as amended) effective September 1, 1955:

1. By amending § 40.173 (d) to read as follows:

40.173 Emergency equipment for all operations * * *

(d) Crash ax: All airplanes shall be equipped with at least one crash ax.

2. By amending § 40.178 (b) to read as follows:

40.178 Exit and evacuation markings for all operations * * *

(b) Effective January 1, 1956, exterior surfaces of the airplane shall be marked to identify clearly all required emergency exits. When such exits are operable from the outside, markings shall consist of or include information indicating the method of opening.

(Sec. 205 (a), 52 Stat. 984; 49 U.S.C. 425 (a). Interpret or apply secs. 601, 604, 605, 52 Stat. 1007, 1010, as amended; 49 U.S.C. 551, 554, 555)

By the Civil Aeronautics Board:

/s/ M. C. Mulligan

M. C. Mulligan
Secretary

(SEAL)

This is the eighteenth amendment to Part 40, which became effective April 1, 1954.