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

Civil Air Regulations Amendment 43-7
Effective: August 23, 1957
Adopted: July 19, 1957

GENERAL OPERATION RULES

VARIATION OF AIRCRAFT MAXIMUM
WEIGHTS WITH ALTITUDE

It has been brought to the attention of the Civil Aeronautics Board that difficulty has been encountered in the interpretation of the Civil Air Regulations with respect to the provisions concerning variation of aircraft maximum weights with altitude for transport category airplanes. In order to clarify the Board's intention in this matter, this amendment to Part 43 of the Civil Air Regulations is being promulgated.

The presently effective certification regulations applicable to transport category airplanes, contained in Part 4b of the Civil Air Regulations, require the determination of the maximum certificated weights. The provisions of this part permit, at the option of the applicant for type certification, the establishment of different maximum weights for the airplane at each altitude and for each practicably separable operating condition; e.g., take-off, en route, and landing. In addition, the applicant is permitted to elect the altitudes at which maximum weights are to be established. In other words, the applicant may request certification of an airplane at sea level only or up to any altitude he might choose. If the applicant chooses a high airport elevation for certification, he may vary the maximum weights of the airplane for the various airport elevations between sea level and the highest airport elevation or he may establish the maximum weights for one airport elevation and use those weights for all airport elevations below the one selected. For example, if the airplane will be operated out of airports at elevations of 5,000 feet or less, the airplane's maximum take-off and landing weights will be determined for an altitude of 5,000 feet and those weights will be used for all operations; or, on the other hand, the weight can be varied for intermediary airport elevations since this usually results in higher maximum weights for lower airport elevations.

In addition to the aforementioned certification requirements, Part 4b requires that an Airplane Flight Manual be prepared by the applicant. The regulations applicable to this Airplane Flight Manual require that the weight limitations determined in accordance with that part be listed as operating limitations of the airplane. Therefore, if the applicant chooses to vary the weight of the airplane with altitude, this variation becomes an operating limitation on the airplane. Accordingly, if he chooses to certificate the airplane at sea level only, the airplane would be limited to operations out of and into sea level airports. Similarly, if the applicant certificates the airplane for an airport elevation of 5,000 feet, the airplane would be limited to operations out of and into airports at elevations of 5,000 feet or less and if, in addition, he does not choose to vary the airplane's weight with altitude, the weights established for 5,000 feet would be applicable for all airports up to the 5,000-foot elevation. If, however, the applicant chooses to vary the weight with altitude, the airplane weight limitation at a particular airport would depend on the airport elevation.

Presently effective provisions of Parts 40, 41, and 42 of the Civil Air Regulations prohibit take-offs and landings of large transport category airplanes in passenger service at airports with elevations outside the altitude range for which maximum take-off and landing weights have been determined, and, further, provide that the weight of the airplane at take-off and landing shall not exceed the authorized maximum take-off and landing weights for the elevation of the airport at which the take-off or landing is made. This provision in Parts 40, 41, and 42 was specifically included in the text for passenger-carrying airplanes for the convenience of the operator since these airplanes are subject to performance operating limitations which are applicable over and above the certification limitations required by Part 4b. It became evident that singling out air carrier passenger service gave the erroneous impression to some operators that non-air-carrier and cargo service were not subject even to the certification limitations.

The intent of Draft Release No. 55-29 was to correct this impression by indicating directly that the certification limitations of Part 4b are applicable to all airplanes certificated in accordance with the transport category performance requirements, irrespective of the type of operation involved.

With respect to cargo operations under Parts 40 and 41, it should be noted that they may be conducted in accordance with provisions established by the Administrator under Part 42. Under Part 42, the Administrator has developed Civil Aeronautics Manual material applicable to transport category airplanes in cargo operations which prohibits the weight of the airplane at take-off from exceeding the authorized maximum take-off weight for the elevation of the airport from which the take-off is made. Therefore, when cargo operations are conducted under Part 42 the same take-off limitations apply as apply to passenger-carrying airplanes.

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The Board has adopted Special Civil Air Regulations applicable to C-46, DC-3, and L-18 airplanes. Special Civil Air Regulation No. SR-406C requires that the C-46 airplane in passenger service be re-certificated under the provisions of Part 4b of the Civil Air Regulations by a date certain. Special Civil Air Regulation No. SR-407, applicable to the DC-3 and L-18, permits the maximum certificated weights for these airplanes to be increased if the performance requirements of either Part 4a or Part 4b are complied with. The provisions of Part 4a permit certification with sea level data only. This limitation of Part 4a with respect to sea level data has led to additional confusion when an airplane so certificated is operated in accordance with Part 43. It was the Board's intention that, if operators of DC-3 or L-18 airplanes re-certificate their airplanes in accordance with the provisions of Special Civil Air Regulation No. SR-407, the operating limitations contained in the Airplane Flight Manual would establish the weights for the airplane after the re-certification since under the provisions of Part 43 it is required that all airplanes be operated in accordance with the limitations contained in the Airplane Flight Manual.

It was proposed in a notice of proposed rule making published in the Federal Register (20 F.R. 9312) and circulated to the industry as Civil Air Regulations Draft Release No. 55-29 to amend the present operating regulations to prohibit all transport category airplanes certificated under the provisions of Part 4a or Part 4b, or re-certificated in accordance with SR-406C or SR-407, from operating at altitudes exceeding the altitude for which maximum certificated weights have been established.

It was apparent from the comments received on Draft Release No. 55-29 that misinterpretation of the regulations was even more widespread than previously believed. Accordingly, supplemental notice was given in the Federal Register (21 F.R. 1667) and circulated to the industry as Civil Air Regulations Draft Release No. 56-8 that a public discussion would be of constructive assistance to a more general understanding of the problems involved.

Pursuant to the supplemental notice, a meeting was held to discuss this subject on April 12, 1956, in Washington, D. C. Since most of the confusion with respect to this subject stems from operations involving DC-3 and L-18 type airplanes, participants in this meeting were predominantly operators of such airplanes. In explanation of the Board's proposal, it was pointed out that Special Civil Air Regulation No. SR-407 contains a provision which permits an increase in the maximum certificated weight in accordance with the transport category provisions contained in Part 4a or Part 4b; and that SR-407 includes a note indicating that the application of transport category performance requirements usually results in establishment of maximum certificated weights which vary with altitude. Therefore, if an operator requested and received approval under SR-407 for an increase in take-off weight, such weight would decrease as the elevation of the airport increases from which the operation is conducted. To clarify the situation as it pertains to the variation-of-weights-with-altitude requirements for all transport category airplanes, Part 43 is being amended by limiting operations to airport elevations where the weight has been determined and requiring that the airplane at take-off and landing shall not exceed the authorized maximum take-off and landing weights established for the altitude.

Interested persons have been afforded an opportunity to participate in the making of this amendment and due consideration has been given to all relevant matter presented.

In consideration of the foregoing, the Civil Aeronautics Board hereby amends Part 43 of the Civil Air Regulations (14 CFR Part 43, as amended) effective August 23, 1957.

By adding a new § 43.11 to read as follows:

43.11 Transport category airplane weight limitations.

(a) No transport category airplane or airplane certificated in accordance with the transport category performance requirements shall be taken off from any airport located at an elevation outside of the altitude range for which maximum take-off weights have been determined, and no airplane shall depart for an airport of intended destination or have any airport specified as an alternate which is located at an elevation outside of the altitude range for which maximum landing weights have been determined.

(b) The weight of the airplane at take-off shall not exceed the authorized maximum take-off weight for the elevation of the airport from which the take-off is to be made.

(c) The weight at take-off shall be such that, allowing for normal consumption of fuel and oil in flight to the airport of intended destination, the weight on arrival will not exceed the authorized maximum landing weight for the elevation of such airport

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

By the Civil Aeronautics Board:

/s/ M. C. Mulligan

M. C. Mulligan
Secretary

(SEAL)

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