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

Civil Air Regulations Amendment 40-14
Effective: May 9, 1955
Adopted: May 9, 1955

SCHEDULED INTERSTATE AIR CARRIER CERTIFICATION AND OPERATION RULES

EN ROUTE PERFORMANCE OPERATING LIMITATIONS

Currently effective § 40.74, pertaining to the transport category one-engine-inoperative en route performance operating limitations, provides that the airplane weight at take-off shall be such that, in the event of an engine failure at any point along the route, the airplane can meet a prescribed rate of climb at an altitude at least 1,000 feet above the elevation of the highest ground or obstruction within 10 miles on either side of the intended track. This amendment provides an alternative to this performance operating limitation under which, upon approval by the Administrator of Civil Aeronautics, a so-called "drift-down" procedure may be used. For some time a similar alternative has been permitted for the operation of nontransport category airplanes with no adverse effect on safety. The Board, therefore, considers that a properly planned and executed drift-down procedure would not jeopardize the safety of operation of transport category airplanes.

The Board is of the view that experience during recent years demonstrates that the jettisoning of fuel may be accomplished safely when adequate indoctrination of flight crew and other necessary precautions are provided. Accordingly, there is included a provision whereby fuel jettisoning may be used in showing compliance with this requirement if proper safeguards are taken.

Although consideration has been given to the inclusion of certain operational variables such as the incidence of downdrafts, turbulence, and icing conditions in the approval of drift-down procedures, the Board is of the view that these conditions are not sufficiently definitive and do not establish a clear criterion against which a particular drift-down procedure may be examined. They are, therefore, not included in this regulation. On the other hand, temperature and wind are measurable quantities which can be forecast with reasonable accuracy. Accordingly, the Board is of the view that account should be taken of temperature and wind. However, in order to avoid placing an undue burden upon the air carrier in accounting for these conditions, this regulation permits the use of "declared" values or other such approved assumptions with respect to their probable magnitude.

Inasmuch as this regulation prescribes an operational procedure to be used in lieu of compliance with specific performance limitations, the Board has decided that the lateral and vertical clearances should be more nearly related to operating limitations generally in effect. Since minimum flight altitudes are normally predicated on a 5-mile lateral clearance, this value is also used in drift-down procedures. However, since a vertical clearance of 2,000 feet is normally required in mountainous terrain and since terrain elevations which are critical from the standpoint of the performance operating limitations are found only in mountainous areas, the Board believes it logical to apply a 2,000-foot terrain clearance provision in this requirement.

In order that a flight with one engine inoperative not be complicated unduly by navigational problems, the Board believes that the drift-down procedure normally should be related clearly to an approved radio navigational fix. The procedure will be so established that on either side of the governing fix a definite course will be prescribed to an alternate airport. In order to insure that these airports will, in fact, be usable under such circumstances, the Board is applying the same requirements for initial dispatch as are required currently with respect to any other alternate airport.

Although this amendment does not limit the application of a drift-down procedure to airplanes possessing reciprocating engines, the Board intends to continue its consideration of the special problems which may be raised by the introduction of turbine engines and, specifically, will consider whether any different conclusions need be reached with respect to the application of "drift down" to turbine-powered airplanes.

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. Since this regulation imposes no additional burden on any person, it may be made effective without prior notice.

COMM-DC-11026

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 May 9, 1955.

By amending § 40.74 to read as follows:

40.74 En route limitations; one engine inoperative.

(a) No airplane shall be taken off at a weight in excess of that which would permit a rate of climb (expressed in feet per minute), with one engine inoperative, of at least $\left(0.06 - \frac{0.08}{N}\right) V_{s_o}^2$ (when N is the number of engines installed and V_{s_o} is expressed in miles per hour) at an altitude of at least 1,000 feet above the elevation of the highest ground or obstruction within 10 miles on either side of the intended track, except that for transport category airplanes certificated under Part 4a of this subchapter, the rate of climb shall be $0.02\ V_{s_o}^2$.

(b) As an alternative to the provisions of paragraph (a) of this section, an air carrier may utilize an approved procedure whereby its airplanes are operated at an all-engine-operating altitude such that in the event of an engine failure the airplane can continue flight to an alternate airport where a landing can be made in accordance with the provisions of § 40.78, the flight path clearing all terrain and obstructions along the route within 5 miles on either side of the intended track by at least 2,000 feet. In addition, if such a procedure is utilized, subparagraphs (1) through (6) shall be complied with:

(1) The rate of climb (as presented in the Airplane Flight Manual for the appropriate weight and altitude) used in calculating the airplane's flight path shall be diminished by an amount, in feet per minute, equal to $\left(0.06 - \frac{0.08}{N}\right) V_{s_o}^2$ (when N is the number of engines installed and V_{s_o} is expressed in miles per hour) for airplanes certificated under Part 4b of this subchapter and by $0.02\ V_{s_o}^2$ for airplanes certificated under Part 4a of this subchapter.

(2) The all-engine-operating altitude shall be such that, in the event the critical engine becomes inoperative at any point along the route, the flight will be capable of proceeding to a predetermined alternate airport by use of this procedure. For the purpose of determining the take-off weight, the airplane shall be assumed to pass over the critical obstruction following engine failure at a point no closer to the critical obstruction than the nearest approved radio navigational fix: Provided, That the Administrator may authorize a procedure established on a different basis where adequate operational safeguards are found to exist.

(3) The airplane shall meet the provisions of paragraph (a) of this section at 1,000 feet above the airport used as an alternate in this procedure.

(4) The procedure shall include an approved method of accounting for winds and temperatures which would otherwise adversely affect the flight path.

(5) In complying with this procedure fuel jettisoning shall be permitted if the Administrator finds that the air carrier has an adequate training program, proper instructions are given to the flight crew, and all other precautions are taken to insure a safe procedure.

(6) The alternate airport shall be specified in the dispatch release and shall meet the provisions of § 40.390.

(c) For the purposes of this section it shall be assumed that the weight of the airplane as it proceeds along its intended track is progressively reduced by normal consumption of fuel and oil.

(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)

Adams, Vice Chairman, dissenting.

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