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

Civil Air Regulations Amendment 41-9
Effective: November 23, 1953
Adopted: November 23, 1953

FUEL QUANTITY INDICATORS

Section 41.25 (k) of the Civil Air Regulations requires that fuel quantity indicators, in serviceable condition, indicating the amount of fuel in each tank, be provided in aircraft used in scheduled air carrier operations outside the continental limits of the United States. This requirement had been based upon the premise that there exists no suitable alternative means by which the quantity of fuel available in each fuel tank may be determined. An aircraft without such fuel indicators or with an inoperative fuel indicator would not be permitted to initiate a flight under Part 41. In the event a fuel quantity indicator becomes inoperative in flight during night or instrument operation the pilot in command must either land at the nearest suitable landing area or at the next point of intended landing, whichever in his opinion is the safer procedure. Thereafter, the flight may not be redispatched until the fuel quantity indicator is returned to a serviceable condition.

A recent revision of Part 40 of the Civil Air Regulations has been adopted by the Board which provides greater flexibility than heretofore experienced by air carriers in the continuation of flight with required equipment inoperative. These provisions contemplate that a flight may continue to a scheduled terminus under conditions which are to be laid down in the air carrier manual. Revised Part 40 also authorizes the Administrator to permit continuation of flight beyond a scheduled terminus under certain conditions in which the safety of flight operations will not be jeopardized.

The Board intends that a proposal to amend the instrument and equipment requirements of Part 41 to conform to the provisions of revised Part 40 be included in the general revision of Part 41 which will be circulated in the near future. Meanwhile, however, the Board's attention has been drawn to the fact that section 41.25 (k) relating to fuel quantity indicators has been creating undue hardship for certain U. S. Flag Carriers. Certain fuel indicating systems installed in modern aircraft are highly complex and involve the use of electronic components, the repair of which may be accomplished only by skilled maintenance personnel. Situations have occurred in which flights have been canceled or delayed for considerable periods of time because of the difficulty in obtaining maintenance service for these components. This situation is reported to have resulted in serious economic penalty to the carriers involved as well as inconvenience to the passengers.

A proposal to amend section 41.25 (k) has previously been circulated and comment resulting from this circulation indicates that suitable alternative means may be provided by an air carrier in lieu of an operative fuel quantity indicator for the purpose of permitting an aircraft to be flown to the "nearest point where repairs or replacements can be made." Such alternative means will require the use of a fuel flow meter. These devices are of relatively simple design and assure greater reliability than some fuel quantity indicators. Fuel flow meters, however, are designed to indicate fuel consumption of an aircraft engine at any given moment. To determine accurately total fuel quantity used over an extended period of time, continuous reference to the instrument or a number of references of sufficient frequency must be made. So long as a member of the flight crew additional to the two pilots is carried, the Board believes that the use of fuel flow meters in lieu of a fuel quantity indicator on a temporary basis would be adequate for safe operation. The Board does not, at this time, intend to prejudice the question as to whether alternative means of indicating fuel quantity may be safely employed when an additional member of the flight crew is not available. However, we are of the opinion that adequate relief will be furnished by the imposition of such a condition until the more far reaching aspects of the question of a continuation of flight with required equipment inoperative is considered in conjunction with the revision of Part 41.

A recommendation has been made to the Board that a further condition be applied which would require the air carrier to include in the appropriate air carrier manual detailed procedure for the guidance of its personnel in the event required equipment becomes inoperative. However, such procedures were intended to be included in the provisions of section 41.120 which states that "The air carrier shall prepare and maintain a manual for the use and guidance of operations personnel which contains full information necessary to guide flight and ground personnel in the conduct of flight operations and to inform such personnel regarding their duties and responsibilities . . . ." The Board expects, therefore, that the air carrier will insure the inclusion of adequate information to enable its personnel to determine under what circumstances an alternative means may be used in the event fuel quantity indicators become unserviceable en route.

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

In consideration of the foregoing, the Civil Aeronautics Board hereby amends section 41.25 of Part 41 of the Civil Air Regulations (14 CFR, Part 41) as follows, effective immediately:

1. By deleting paragraph (k) thereof and substituting therefor the following:

(k) Fuel quantity indicators indicating the amount of fuel in each tank to be used for the remainder of the flight, or, in the case of aircraft having a third flight crew member assigned as a member of the operating crew, an alternate means approved by the Administrator for determining the amount of fuel in each tank.

(Sec. 205(a), 52 Stat. 984; 49 U.S.C. 425(a). Interpret or apply §§601, 604, 52 Stat. 1007, 1010; 49 U.S.C. 551, 554; 62 Stat. 1216)

By the Civil Aeronautics Board:

/s/ M. C. Mulligan

M. C. Mulligan
Secretary

(SEAL)