

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

FOR RELEASE: 6:30 P.M., E.D.S.T., JUNE 1, 1975

ISSUED: June 1, 1975

Forwarded to:

Mr. Edward W. Stimpson
President
General Aviation Manufacturers
Association
1025 Connecticut Avenue, N. W.
Washington, D. C. 20036

SAFETY RECOMMENDATION(S)

A-75-47 thru 49

The National Transportation Safety Board has reviewed GAMA's "Specification for Pilots Operating Handbook." Achievement of the specification's objectives will result in a number of collateral safety benefits. The Safety Board has, in this regard, several recommendations which it believes will further enhance the accident prevention potential of this document. These stem from a recent review of a fatal takeoff accident which occurred at high density altitude and involved "inadequate preflight preparation and/or planning," "premature liftoff," and "improperly loaded aircraft" (overweight).

Flight operations at high density altitude require that pilots be thoroughly familiar with the operating and performance limitations of their particular airplane. This is especially true in connection with takeoff performance because of the increased runway required, obstacle clearance considerations, and operational techniques critically related to this flight phase. With a properly loaded and appropriately configured airplane, the pilot must accurately determine the takeoff distance, both in regard to ground roll (runway surface) and obstacle clearance (runway surface and/or clearway), set the engine fuel mixture, and adhere to the recommended liftoff and climb airspeeds.

The airplane performance section of the new GAMA specification clearly provides for all the aforementioned takeoff parameters directly, except fuel mixture leaning. The Board believes that any applicable leaning requirements or procedures should be placed directly on the takeoff data charts or tables.

If, for example, takeoff performance is based on 100 percent of the power available, proper leaning of the fuel mixture is absolutely essential in order to realize predicted "marginal" performance at high altitudes. Excessive leaning, on the other hand, could result in takeoff power levels significantly below those available with even a full rich mixture. Therefore, if predicted performance is critically dependent on fuel mixture leaning, the leaning procedure itself must be safe, simple, and reliable.

In addition, available takeoff performance at high altitudes is very sensitive to, and severely reduced by, even small increases in gross weight or center of gravity beyond certificated limits. If predicted performance at full gross weight is already marginal, then exceeding this weight would be intolerable. The combined adverse effects of an overweight airplane and high density altitude on takeoff performance make this situation uniquely dangerous. Therefore, in order to prompt more thorough preflight preparation and planning, an appropriate precautionary note should also be placed on the takeoff data charts or tables relating to these critical items.

Finally, in connection with climb performance, the Board noted that the only climb airspeed specified in the new GAMA specification was that for best rate of climb. Based on our accident experience, it is believed that marginal climb performance under high altitude-high temperature conditions, coupled with obstacle clearance requirements, makes specification of the airspeed for best angle of climb essential if it is significantly different than the airspeed for best climb rate.

In view of the above, the Safety Board recommends that the General Aviation Manufacturers Association:

Supplement the performance section of the current GAMA "Specification for Pilots Operating Handbook" by

1. Specifying on takeoff distance charts or tables, where applicable, fuel mixture leaning requirements and procedures.
2. Specifying a precautionary note on takeoff distance charts or tables indicating the importance, particularly at the higher altitudes and temperatures, of complying with certificated gross weight and center of gravity limitations.

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3. Specifying that climb-airspeed data include the indicated airspeed necessary to achieve an airplane's best angle of climb.

Personnel from our Bureau of Aviation Safety will be made available in the event that any further information or assistance is required. We would appreciate being advised of any actions you may initiate in response to our recommendation.

REED, Chairman, McADAMS, THAYER, BURGESS, and HALEY, Members, concurred in the above recommendations.


By: John H. Reed
Chairman

THESE RECOMMENDATIONS WILL BE RELEASED TO THE PUBLIC ON THE ISSUE DATE SHOWN ABOVE. NO PUBLIC DISSEMINATION OF THIS DOCUMENT SHOULD BE MADE PRIOR TO THAT DATE.