

FEB 19 1963

FEDERAL AVIATION AGENCY
CENTRAL REGION
4825 Troost Avenue
Kansas City 10, Missouri

February 15, 1963



REC-117
FEB 18 1963
BEECH AIRCRAFT

Beech Aircraft Corporation
Wichita 1, Kansas

Attention: Chester A. Rembleske
Chief Administrative Engineer

Gentlemen:

Enclosed are the revised Special Flight Conditions for your Model 65-90T airplane. These conditions are in agreement with the decisions reached during your recent visit to this office.

All items remain as previously written except for Item 3.85(b). This item has been re-written to correspond to the minimum requirements of CAR 3.85(b) with the turbine engines installed. We believe this to be in agreement with the meeting here in Kansas City.

Sincerely,

Harold H. Hermes
for Walter J. O'Toole
Chief, Engineering and
Manufacturing Branch

Enclosure

bc: V. H. Adamson
D. E. Burleigh
C. J. Lagerquist
J. C. Wilson
E. Utter
L. F. Monts
O. W. Scott
V. L. Razak
J. T. Calhoun
S. C. Tuttle
Designee Office /

February 15, 1963

CAR Ref.

- 3.82 Definition of Stalling Speeds. In addition to the present requirements, the stall speeds shall not be less than those which would be obtained at zero thrust.
- 3.84 Take-off. In addition to the present requirements, the speed at a height of 50 feet above the level take-off surface shall not be less than the speed at which compliance with CAR 3.85(a) is shown.
- 3.85(a) Normal Climb. In addition to the present requirement at standard temperature it shall be necessary to meet a steady angle of climb of at least 1:25 at standard temperature plus 40°F at a pressure altitude of 5000 feet.
- 3.85(b) Inoperative Engine Climb. In addition to the present requirement of CAR 3.85(b) the following shall apply.
- "The climb performance capability in terms of 'Gradient of Climb' shall be determined for all combinations of weight, altitude, and ambient temperatures. For takeoffs at altitudes of 5000 feet and below, the maximum takeoff weight shall be limited to that which provides a minimum steady gradient at 5000 feet of:
- 1.2% (or a gradient equal to $.02V_{SO2}$, if greater) with an existing ambient temperature at 5000 ft. of 41°F.
 - 0.6% (or a gradient equal to $.01V_{SO2}$, if greater) with an ambient temperature at 5000 feet of 81°F.
 - The variation in the minimum climb gradients of (a) and (b) above shall vary linearly between 41°F and 81°F. This variation in minimum gradient of climb shall apply to the maximum operational temperature approved for the airplane.
- The applicant shall provide sufficient information in the airplane flight manual so that the above requirements can be met.
- 3.85(c) Balked Landing Climb. In addition to meeting the present requirement at standard temperature it shall be necessary to show that the steady climb performance shall not be less than zero at standard temperature plus 40°F at a pressure altitude of 5000 feet, and with a climb speed not in excess of 1.4 V_{SO} .

CFR Ref.

3.85

Landing.

- a. In addition to meeting the present requirements, the landing distances shall be obtained in accordance with procedures established by the applicant. Such procedures shall include all changes in the airplane configuration, i.e. power, speed, drag devices, etc. Allowances shall be made for time delays in the execution of the procedures as may be reasonably expected to occur during service.
- b. Add the following to the present requirements:
"In addition to, or in lieu of wheel brakes, the use of other braking means shall be acceptable in determining the landing distances, provided such braking means shall have been proven to be safe and reliable."
- c. If the characteristics of a device (e.g. the propellers) dependent upon operation of any of the engines noticeably increase the landing distances when the landing is made with an engine inoperative, the landing distance shall be determined with the critical engine inoperative.

- 3.109(a) (1) } Longitudinal Control and Lateral & Directional Control
- 3.109(c) } In lieu of present requirements regarding maximum con-
- 3.110(a) (1) } tinuous power:
- 3.110(b) (2) } "Maximum continuous power selected by the applicant as an operating limitation for use during climb." (See 3.744)
- 3.112(a) (1) Trim Requirements. In lieu of present requirement;
"Lateral and directional trim in level flight at a speed of $0.9V_H$ or V_{MO} , if lower."
- 3.112(a) (2) (i) In lieu of present requirement: "During a climb with maximum continuous power as selected by the applicant as an operating limitation at a speed between V_X and $1.4 V_{S1}$,"
- 3.112(a) (2) (iii) In lieu of present requirement: "During level flight at any speed from $0.9 V_H$ or V_{MO} if lower, to V_X or $1.4 V_{S1}$ with landing gear and wing flaps retracted."
- 3.112(b) (1) In lieu of present requirements: "The other engine operating at maximum continuous power as selected by the applicant as an operating limitation."

CAR Ref.

3.114(b) Static Longitudinal Stability. Add the following to present CAR 3.114(b): "Except for showing compliance with CAR 3.115(c) the airspeed shall return to $\pm 5\%$ or ± 10 knots, whichever is less."

3.115(b) (4) & (5) Climb Stability. In lieu of present requirements: "Maximum power selected by the applicant as an operating limitation for use during climb (See 3.744) at the best rate of climb speed except that the speed need not be less than $1.4 V_{S1}$."

3.115(c) (1) Cruise Stability. In lieu of present requirement: "The stick force curve shall have a stable slope for a speed range of ± 50 knots from the trim speed except that the speeds need not exceed V_{FC}/M_{FC} or $1.4 V_{S1}$. This speed range shall be considered to begin at the outer extremes of the friction band and the stick force shall not exceed 50 pounds with:

- (i) Landing gear retracted.
- (ii) Wing Flaps retracted.
- (iii) Maximum cruising power as selected by the applicant as an operating limitation except that the power need not exceed that required at V_{MO}/M_{MO} .
- (iv) Maximum takeoff weight.
- (v) The airplane trimmed for level flight with the power specified in sub-paragraph (iii) of this paragraph."

3.739 & 3.740 Maximum Operating Limit Speed V_{MO}/M_{MO} . In lieu of the present requirement: "The maximum operating limit speed V_{MO}/M_{MO} as established by the applicant is the speed which shall not be deliberately exceeded in any regime of flight except where a higher speed is authorized for flight tests (Maximum speed for flight characteristics V_{FC}/M_{FC}) which lies at least midway between V_{MO}/M_{MO} and V_D/M_D or V_{DF} ."

- a. The maximum operating limit speed shall not exceed the design cruising speed V_C and shall be sufficiently below V_D/M_D or V_{DF}/M_{DF} to make it highly improbable that the latter speeds will be inadvertently exceeded in flight.
- b. The speed V_{MO}/M_{MO} shall not exceed $0.8 V_D/M_D$ or $0.8 V_{DF}/M_{DF}$ unless flight demonstrations involving upsets as specified by the Administrator, indicate a lower speed margin will not result in speeds exceeding V_D/M_D or V_{DF}/M_{DF} . Atmospheric variations, horizontal gusts, system and equipment errors, and airframe production variations shall be taken into account.

CAR Ref.

3.745 Maximum Operating Altitude. In addition to the present operating limitations, the following special condition will apply: "A maximum operating altitude to which operation is permitted as limited by flight, structural, powerplant, functional, or equipment characteristics."

3.757 Airspeed Indicator: In lieu of the present requirements, the following shall apply:

- (a) (1) The maximum operating speed, V_{MO}/M_{MO} - a radial red line (See Special Condition 3.739 and 3.740).
- (a) (2) Delete
- (a) (3) The normal operating range - a green arc with the lower limit at V_{S1} as determined in Section 82 and Special Condition Section 82 with maximum weight, landing gear and wing flaps retracted, and the upper limit at the maximum operating speed, V_{MO}/M_{MO} .
- (b) When the maximum operating speed varies with altitude means shall be provided which will indicate the appropriate limitations to the pilot throughout the operating altitude range.