RECORD OF COMMUNICATION

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Air Safety Investigator
Western Pacific Region

Date: April 12, 2012
Person Contacted: Ernie Hall (Hawker Beechcraft Air Safety)
NTSB Accident Number: WPR10FA448

Narrative: The following information was provided in an email sent by Mr. Hall to the NTSB (in response to an NTSB query) on this date:

- NTSB question:
  - The airspeed indicators (ASIs) were not required to have the blue & red radial lines for single engine ops.

- HBC comment:
  - According to the certification regulation at the time this airplane was certified the following was the guidelines:

    CAR 3.756 and 3.757 regulated the instrument markings.

    § 3.756 Instrument markings. The instruments listed in §§ 3.757-3.761 shall have the following limitations marked thereon. When these markings are placed on the cover glass of the instrument, adequate provision shall be made to maintain the correct alignment of the glass cover with the face of the dial. All arcs and lines shall be of sufficient width and so located as to be clearly and easily visible to the pilot.

    Note: CAR 3 Amendment 3-5 changed 3.757(a) from “True indicated” to “Calibrated air speed”.

    § 3.757 Air-speed indicator.
    (a) Calibrated air speed shall be used:
    (1) The never-exceed speed, Vne—a radial red line (see § 3.739).
    (2) The caution range—a yellow arc extending from the red line in (1) above to the upper limit of the green arc specified in (3) below.

(3) The normal operating range—a green arc with the lower limit at Vs1, as determined in § 3.82 with maximum weight, landing gear and wing flaps retracted, and the upper limit at the maximum structural cruising speed established in § 3.740.
(4) The flap operating range—a white arc with the lower limit at Vso as determined in § 3.82 at the maximum weight, and the upper limit at the flaps-extended speed in § 3.742.
(b) When the never-exceed and maximum structural cruising speeds vary with altitude, means shall be provided which will indicate the appropriate limitations to the pilot throughout the operating altitude range.

CAR 3.111 covers minimum control speed but does not address instrument markings.

§ 3.111 Minimum control speed (Vmc).
(a) A minimum speed shall be determined under the conditions specified below, such that when any one engine is suddenly made inoperative at that speed, it shall be possible to recover control of the airplane, with the one engine still inoperative, and to maintain it in straight flight at that speed, either with zero yaw or, at the option of the applicant, with a bank not in excess of 5 degrees. Such speed shall not exceed 1.3 Vs1, with:
(1) Take-off or maximum available power on all engines,
(2) Rearmost center of gravity,
(3) Flaps in take-off position,
(4) Landing gear retracted.
(b) In demonstrating this minimum speed, the rudder force required to maintain it shall not exceed forces specified in § 3.106, nor shall it be necessary to throttle the remaining engines. During recovery the airplane shall not assume any dangerous attitude, nor shall it require exceptional skill, strength, or alertness on the part of the pilot to prevent a change of heading in excess of 20 degrees before recovery is complete.

- NTSB question:
  - Any FAA-mandated or -suggested guidance to tell owners to retroactively put such markings (if the data even appeared in POH/AFM etc) on their ASIs for older airplanes.

- HBC comment:
  - At this time, a search through HBC database pertaining to service bulletins, model and safety communiques, service instructions, and customer service letters revealed no such documentation.

Additional information:
The Model 65 Landplane, Airplane Flight Manual, part number 65-001021-29, dated April 6, 1970, Section 1. Limitations, Item: J – Placards, sixth paragraph, it states, on the instrument panel: “AIRSPEED LIMITATIONS, MAX, GEAR EXTENDED (NOR.) ---180 MPH (156 KNOTS)

MAX, GEAR RETRACT ---150 MPH (130 KNOTS) MIN. SINGLE ENGINE CONTROL ---95 MPH (83 KNOTS) MAXIMUM MANEUVERING ---195 MPH (169 KNOTS)."

In the same manual but in Section III - Performance, page 6, second to last paragraph under ITEM, it states, "Single engine climb (ft/min) maximum continuous power, gear and flaps up. Prop feathered on inoperative engine. Best rate of climb speed: 117 mph (101.5 kts) TIAS at S.L. Reduce 1.5 mph per 2000 ft increase in altitude.

The Beechcraft Queen Air Model 65 (Serials LC-81 thru LC-162) Owner's Manual part number 65-001021-27, dated September 15, 1961, Revision A5, Revised: June 13, 1975, Section III – Performance Specifications and Limitations, Climb Speeds, Paragraph - Single Engine, states the best rate of climb speed at Sea Level, Clean (Maximum continuous power, 3,200 rpm) as 102 kts/117 mph, the minimum control speed as 83 kts/95 mph, and the safe single engine speed as 92 kts/105 mph.

In the same manual but Section VI – Operational Data, page 6-10 & 6-11, this section provides charts for a single engine climb performance and single engine emergency rate of climb.

A review of the applicable airplane Illustrated Parts Catalog, company and vendor drawings, and beech specifications of the applicable airplane airspeed indicator, they revealed no requirement of the blue radial. The only red radial required on the indicator was for never-exceed speed limit.