

**Aviation Safety Investigation Report
198900830**

Beechcraft Queen Air A65-A2

2 October 1989

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pilot, remained activated until after the landing. The warning system did not self-cancel after the fire abated. The aural warning system was found to be inaudible at high power settings and due to the ambient light conditions prevailing during the take-off into bright sun and glare, the steady red fire warning light was not noticed by the pilot. Approved check lists did not include a check of the fire warning system as part of the emergency procedures cockpit drill.

Significant Factors:

The following factors were considered relevant to the development of the accident

1. Defective techniques used during cylinder assembly maintenance and inspection.
2. Cockpit visual fire warning system for the engine bay operated, but was not evident to the pilot under the ambient light conditions.
3. Aural fire warning could not be heard at high power setting.
4. Aural fire warning bell was not connected to audio system.
5. Aircraft emergency procedures check list did not specify pilot monitoring of fire system following engine failure.

Reccomendations:

1. That the Civil Aviation Authority give consideration to: Improving surveillance of maintenance organisations where cylinder heads and barrels are separated by heat treatment with particular emphasis on:- a) techniques used in the control of heat processes during strip down and reassembly procedures such that temperatures attained do not cause softening of the alloy, and b) reminding maintenance personnel of the necessity to maintain due care during the disassembly and reassembly stages of cylinder overhauls where heating is required, and c) achievement of sound inspection techniques and practices.
2. Ensuring that general aviation aircraft equipped with on-board fire detection and extinguisher systems are able to provide the pilot with such vital information concerning an in-flight engine fire by:-
 - a) changing any steady fire warning light/s to a flashing red indication;
 - b) ensuring that such red fire warning light/s are ergonomically placed in the pilot field of vision to permit immediate recognition of activation;
 - c) ensuring that where an aural fire warning system is incorporated, the minimum volume be adjusted such that it be audible under all power settings with and without noise suppressing headsets;
 - d) conducting a study of the feasibility of incorporating an aural fire warning alarm for reproduction through the cockpit audio system; and
 - e) amending emergency procedure check lists to incorporate a check of the fire alarm system where fitted.