Aviation Safety Investigation Report 198903757

Beechcraft 58

21 March 1989

Readers are advised that the Australian Transport Safety Bureau investigates for the sole purpose of enhancing transport safety. Consequently, Bureau reports are confined to matters of safety significance and may be misleading if used for any other purposes.

Investigations commenced on or before 30 June 2003, including the publication of reports as a result of those investigations, are authorised by the CEO of the Bureau in accordance with Part 2A of the Air Navigation Act 1920.

Investigations commenced after 1 July 2003, including the publication of reports as a result of those investigations, are authorised by the CEO of the Bureau in accordance with the Transport Safety Investigation Act 2003 (TSI Act). Reports released under the TSI Act are not admissible as evidence in any civil or criminal proceedings.

NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.

Occurrence Number: 198903757 **Occurrence Type:** Accident
Location: Archerfield QLD
Date: 21 March 1989 **Time:** 918
Highest Injury Level: Nil
Injuries:

	Fatal	Serious	Minor	None
Crew	0	0	1	1
Ground	0	0	0	-
Passenger	0	0	0	2
Total	**0**	**0**	**0**	**3**

Aircraft Details: Beechcraft 58
Registration: VH-DTU
Serial Number: TH 972
Operation Type: Charter
Damage Level: Substantial
Departure Point: Clermont QLD
Departure Time: 0603
Destination: Brisbane QLD

Approved for Release: 4th October 1989

Circumstances:

The pilot had recently been employed by the operator. As he had not flown the aircraft type for some time he was given a check flight a few days before the accident. The need to check the main landing gear uplock rollers was emphasised then and the pilot was aware of the need for this check in any case. His preflight inspection before the accident flight included a check of the uplock rollers. His method of checking the rollers was to approach the landing gear from the front of the wing, move the downlock out of the way with his thumb and rotate the roller using his index finger. The flight was normal until gear was selected down on final approach to runway 14 at Brisbane. Approach flap (15 degrees) had been selected prior to this. When he did not obtain a gear down indication (three green lights) he made a missed approach to check the problem, retracting the gear and flap in the process. Flap was later selected prior to lowering the gear but the pilot found that the flap would not extend. Further attempts were made to lower the landing gear but a gear down indication could not be obtained. The pilot advised that he would land wheels up and he was instructed to fly to Archerfield for this landing. Before landing at Archerfield he received advice on ways to try to get the gear down from the engineers who normally maintain the aircraft. This included pulling positive and negative "g" while selecting the gear down. The aircraft was eventually landed wheels up at Archerfield. Later in the day the aircraft was lifted by crane and transported on a semi-trailer to a hangar. The aircraft was placed on jacks before any attempt to lower the gear was made. Examination of the left main landing gear indicated that the uplock roller was seized. Moisture had penetrated into the roller initiating corrosion and degrading the grease. Periodic regreasing had not been sufficient to displace the mixture of old grease, moisture and corrosion products. The rigging of the left landing gear could not be checked due to fracture of the operating rod. During the investigation it was learned that, with failure of the gear to extend due to the uplock not releasing, further attempts to extend the gear would be futile if the gear system was in either the gear up or gear down positions. A

wire cable connecting the locks to the gearbox is under tension when the gear is either up or down. As a result the gear leg can not be moved.

Significant Factors:

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

1. Moisture, probably deflected water from wet runways, had penetrated into the roller.

2. Inadequate maintenance (greasing) by maintenance personnel.

3. Left main gear uplock roller seized which resulted in the left maingear failing to extend.

4. Inadequate Flight Manual information on methods of emergency gear extension. DISCUSSION Design of the landing gear system used in Beech 58 and related Beech aircraft is such that if one main gear leg fails to extend on one occasion, the actuating rod will fail and disconnect the leg from the operating mechanism. In such circumstances, any cycling of the gear will increase the chances of causing further damage to the aircraft. Also, any attempts to lower the faulty gear leg will most probably be ineffectual if the gear system is in either the up or the down position. Maximum opportunity for emergency gear extension is provided when the gear operating mechanism is positioned at about mid-cycle. In this position the cable operating the gear uplock and downlock is under no tension and the uplock is able to be retracted from its jammed position should the aircraft manoeuvres reduce the load on the uplock. Once the gear is free it should fall to the extended position under gravity and the operating system can then be moved to down in order to lock the landing gear legs down. During the repair of this aircraft it was found that the maintenance organization had rigged the landing gear system without the landing gear leg fully assembled (there were no wheel or brake unit attached). This resulted in the rigging being out of limits when the extra weight was added. The maintenance manual does not explicitly require that the gear legs be fully assembled during rigging, however, the understanding is that the aircraft is wheeled in to position prior to being jacked up for rigging.

Reccomendations:

1. The existing unsealed roller be required to be replaced by a sealed roller.

2. That details of the Beechcraft Baron type landing gear system and the steps to be taken by pilots in the event of a failure of the gear to retract or extend be incorporated in the aircraft flight manual or pilot operating manual.

3. That maintenance organizations be reminded of the need to have aircraft fully assembled when conducting rigging checks unless the manuals specify otherwise.