No: 1/86 **Ref: EW/G85/10/06**

Aircraft type and registration:	Cessna 172 G-BEUX (light single engined fixed wing aircraft)	
Year of Manufacture:	1977	
Date and time (GMT):	22 October 1985 at 1315 hrs	
Location:	Near Inskip, Lancashire	
Type of flight:	Instruction/Training	
Persons on board:	Crew — 2	Passengers — 1
Injuries:	Crew — None	Passengers — None
Nature of damage:	Flap retraction cable failed	
Commander's Licence:	Private Pilot's Licence	
Commander's Age:	34 years	
Commander's Total Flying Experience:	520 hrs (of which 50 were on type)	
Information Source:	Aircraft Accident Report Form submitted by the pilot.	

The aircraft was being used for a pilot conversion detail, and after some general handling at an altitude of about 4,500 feet the aircraft was climbed to 4,700 feet for the instructor to demonstrate a full flap approach and overshoot.

The instructor reduced the aircraft's speed to 85 kt (flap limiting speed) and then deployed the flaps in 10° stages to 40° (full) flap, reducing speed to 65 kt, retrimmming at every stage. Full power was applied to initiate the overshoot at about 4,300 feet and the flaps were retracted in 10° stages again retrimming at every stage.

On selection of "Flap Up" from the 10° position a loud bang was heard, and the aircraft rolled to the right. The instructor had to apply full left aileron and rudder and close the throttle to arrest the roll. Having regained a wing level attitude he observed that the left flap was fully deployed. Despite repeated attempts he was unable to lower the right flap and restore symmetry. He then advised Warton (the nearest airfield) that he had to make an immediate landing. During the descent he found that he could control the rate to 300 feet per minute by maintaining 65 kt with 1600 rpm using full left aileron and 3/4 left rudder; increasing power above 1600 rpm caused the aircraft to roll to the right.

Despite the handling difficulty, a successful landing was made at Warton without damage to the aircraft. Although the flap selector was still set at "Full Flap" the right flap remained fully up and the circuit breaker had not "popped".

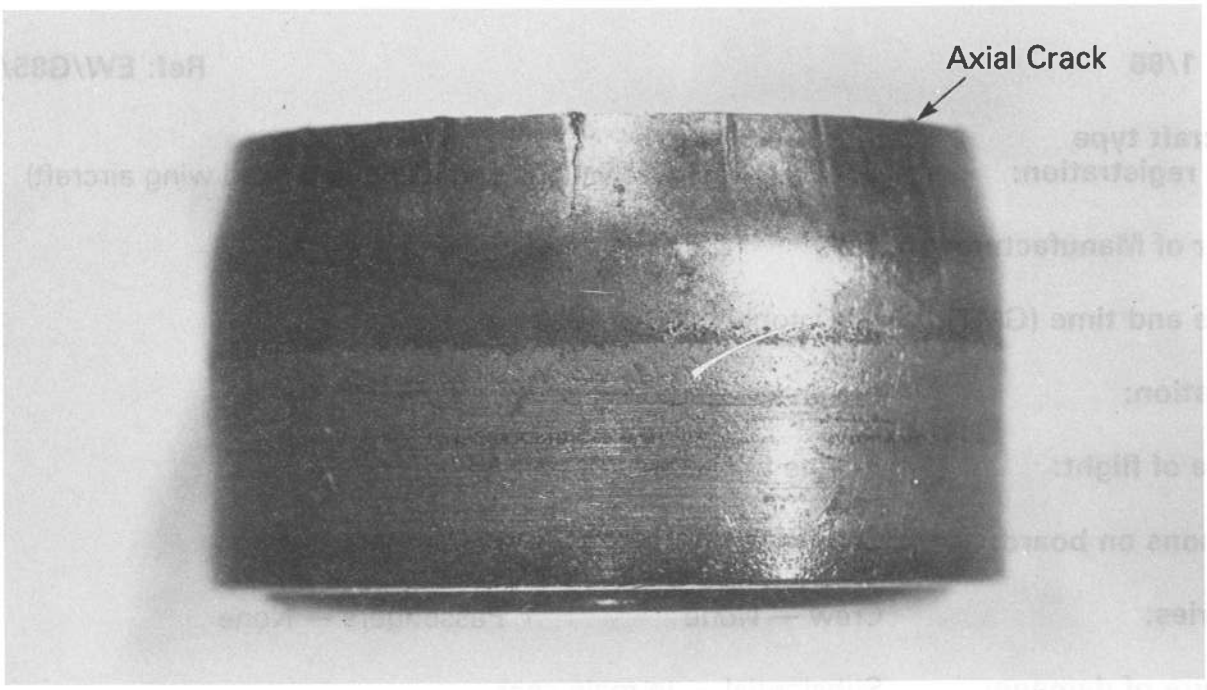
After the aircraft had landed, initial inspection showed that the flap up cable, connecting the two flap drive quadrants in the wings, was broken, and this cable was withdrawn. Afterwards it was found that the right flap operated normally.

Subsequent examination revealed that the roller bearing assembly (Part No 0523420) on the port outboard aft flap attachment had broken up due to fatigue. This had resulted in severe wear of the

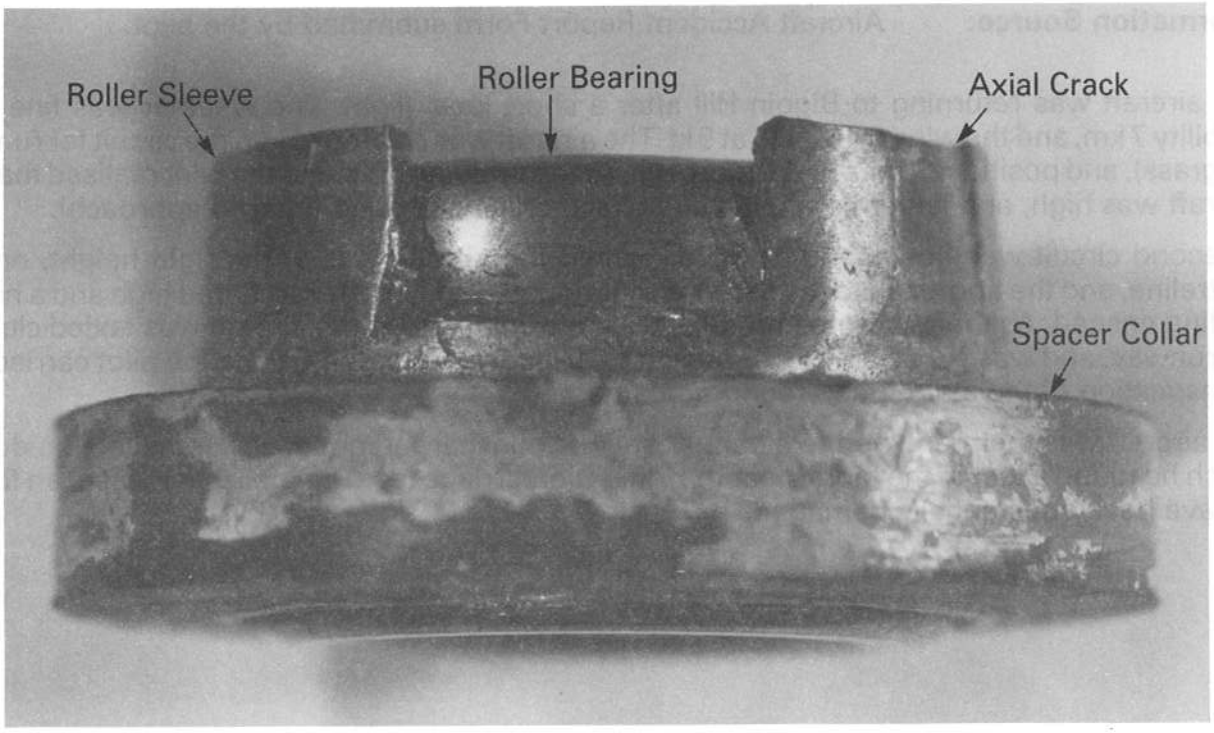
upper lip of flap track slot and ultimately in segments of the roller sleeve breaking off and jamming between the roller and slot. This jamming resulted in overload failure of the "Flap Up" drive cable to the port flap which was then left free to be blown back to the "Full Flap" position.

Examination of the matching roller assembly from the starboard flap of this aircraft showed that it was also in the process of breaking up.

It has not been determined why it was possible to lower the starboard flap (which is directly driven by the motor) after failure of the port flap drive cable.



1. Roller Assembly Pt No 0523420 from Starboard Flap.
   Showing axial fatigue cracks and reduction of diameter.



2. Roller Assembly from Port Flap with nylon spacer collar fitted
   (Pt No 1220114-2). Showing loss of segment of sleeve between axial cracks.