

ATR 72-202, G-BXYV

AAIB Bulletin No: 7/2001 **Ref:** EW/G2000/12/02 **Category:** 1.1

INCIDENT

Aircraft Type and Registration: ATR 72-202, G-BXYV

No & Type of Engines: 2 Pratt & Whitney PW-124B turboprop engines

Year of Manufacture: 1992

Date & Time (UTC): 8 December 2000 at 1253 hrs

Location: Newcastle

Type of Flight: Public Transport

Persons on Board: Crew - 4 - Passengers - 26

Injuries: Crew - None - Passengers - None

Nature of Damage: Fire damage to insulation blanket, wiring loom and elevator control cable

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: 51 years

Commander's Flying Experience: 5,699 hours (of which 718 were on type)
Last 90 days - 122 hours
Last 28 days - 42 hours

Information Source: Aircraft Accident Report Form submitted by the operator and AAIB enquiries

The aircraft was engaged on a public transport flight from Newcastle to Stansted with 26 passengers and 4 crew on board. During taxi-out prior to departure the crew experienced what they believed to be an elevator pitch disconnect, immediately followed by loss of the green system hydraulic pump which provides power for the landing gear and brakes. The aircraft was returned to the stand.

Subsequent examination

Subsequent inspection of the green system hydraulic pump, which is powered by 3 phase alternating current, showed that the electrical supply loom (reference 2P) had been 'chafing' against the right elevator control cable (part number 13S27381310-000/A00) between fuselage frames 28 and 29. The insulation on the hydraulic pump power supply cables had worn through as a result of the abrasion, allowing their conductors to short-circuit onto the elevator control cable. This had

tripped the circuit breaker for the hydraulic pump electrical supply and the associated localised thermal damage to the elevator control cable had caused it to break. The heat generated by the shorting/arcing had also initiated a small fire in the adjacent insulation blanket, but this self-extinguished without damaging any other adjacent systems or components. It should be noted that the elevator cable system is duplicated, with the cables from the duplicate systems connecting at the elevator

The electrical cable loom 2P was generally retained along its length with cable clips of a size to hold the loom securely, however at frame 28 where the loom changed direction through 90 degrees, the 'p' clip was found to be too large to securely retain the loom. This had allowed the electrical supply cables to come into contact with the right elevator control cable. The 'p' clip part number NSA 935807-20 was checked against the Illustrated Parts Catalogue (IPC) and found to be correct to specification.

Remedial action

In order to return the aircraft to service, the damaged area of the 3 phase power supply cable was removed by replacing the affected cable length between existing splices, and both elevator control cables in the affected area were replaced. In addition, as an interim measure the operator's maintenance engineers wrapped the loom, at the 'p' clip, in electrical tape to increase its diameter so that it would be better secured by the clip.

Safety action

A fleet check was carried out by the three UK operators of ATR 72 aircraft. The manufacturer advised that ATR 42 and ATR 72 aircraft with modification 3719 embodied were not affected. The problem was related to the exact orientation of the 'p' clip, in addition to its size. During the fleet check, it was found that two other aircraft had 'p' clips at the same position which were -16 size, smaller than that specified in the IPC, and which correctly secured the loom. It was believed that these had been installed at manufacture. The manufacturer stated that the clip size had been incorrectly identified in the ATR 42-300 and 72-300 series IPCs, but was correctly stated in 42-500 and 72-500 IPCs.

ATR All Operators Message AOM 72/01/001 and mandatory Service Bulletin SB ATR72-92-1004, which is applicable to -100, -200 and -210 series aircraft, was issued on 26 January 2001 and supported by an Airworthiness Directive (AD) issued by the French Directorate Generale de l'Aviation Civile (DGAC) on 7 February 2001, with accomplishment required before 2 March 2001. The Service Bulletin called for inspection, the replacement of damaged looms or cables, the fitting of a -16 sized clip, and the re-orientation of the clip through 180 degrees to increase the clearance from the elevator control cables.