

Boeing 747-136, G-AWNF

AAIB Bulletin No: 1/2000 **Ref: EW/G99/08/23** **Category: 1.1**

Aircraft Type and Registration: Boeing 747-136, G-AWNF

No & Type of Engines: 4 JT9D-7 turbofan engines

Year of Manufacture: 1970

Date & Time (UTC): 22 August 1999 at 0600 hrs

Location: In Flight BA 202 at 54° N 020° W

Type of Flight: Public Transport (Passenger)

Persons on Board: Crew - Not known - Passengers - Not known

Injuries: Crew - N/A - Passengers - N/A

Nature of Damage: None

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: 45 years

Commander's Flying Experience: 11,420 hours (of which 541 were on type)
Last 90 days - 222 hours
Last 28 days - 85 hours

Information Source: Aircraft Accident Report Form submitted by the pilot

Approaching a waypoint at 54°N 020°W, the flight crew carried out all the relevant company drills, but the aircraft did not turn onto the next track towards 54° N 015° W as expected. All of the navigation selections were double checked and found normal except that the Flight Director was displaying a fly left demand. Heading mode was selected but this had no effect. The autopilot was disengaged, but the roll flight controls were 'seized solid'. The checklist was referred to, and extreme force was used to free the roll controls. ATC were advised of the situation and that the aircraft was 10 nm south of track but regaining the intended track. Control appeared normal for a time but the problem re-occurred approaching the English coast. The same drill as before was carried out, and the captain requested a lower level as he suspected ice on the control runs.

The problem persisted and began to get worse as the roll controls became more difficult to move. It seemed that a total freeze of roll control was imminent, and ATC were informed, followed by a PAN to London ATC. London ATC were advised of the problem and were most helpful in directing the aircraft straight in to Heathrow. At 11,000 feet the problem seemed to ease, but the captain elected to continue with the PAN in case the improvement was temporary. A normal landing was made.

After landing, about 2 gallons of water was drained from the area between the canted pressure deck and the top surface of the wing centre section where it had apparently frozen and jammed the aileron cables. The water had entered the area from a leak from one of the galley drains, which had seeped under the floor and accumulated forming ice at altitude. The leak was repaired, the cables sprayed with a water displacement fluid and re-greased and the floor resealed. A similar incident had occurred on G-AWNF just five days earlier, on 17 August 1999, when the aircraft had departed after heavy rain which was thought to have accumulated on the canted pressure deck and so the drains were cleared.

The problem of water accumulation in this area has been experienced on 14 previous occasions by the operator, and has been addressed by Boeing, who issued a Service Bulletin (SB), Boeing SB 747-51 2044 (Revision 1). The service bulletin was used by the operator to develop an engineering order, which installed more drains than the SB required. The engineering order was embodied on all of the company B747-200s by mid-1998, and is expected to be completed on later aircraft by July 2001 to allow for the latest delivery B747-400 aircraft. The operator decided not to embody the engineering order on their B747-136 aircraft as their retirement was anticipated.