

ATR72-202, G-BWDA

AAIB Bulletin No: 8/2004	Ref: EW/G2003/11/22	Category: 1.1
INCIDENT		
Aircraft Type and Registration:	ATR72-202, G-BWDA	
No & Type of Engines:	2 Pratt & Whitney Canada PW124B turboprop engines	
Year of Manufacture:	1995	
Date & Time (UTC):	29 November 2003 at 1210 hrs	
Location:	In cruise overhead Southampton, Hampshire	
Type of Flight:	Public Transport (Passenger)	
Persons on Board:	Crew - 4	Passengers - 13
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Nil	
Commander's Licence:	Airline Transport Pilot's Licence	
Commander's Age:	55 years	
Commander's Flying Experience:	11,980 hours (of which 3,640 were on type)	
	Last 90 days - 141 hours	
	Last 28 days - 21 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

The aircraft was subjected to severe airframe icing whilst in the descent from FL150 to FL130. In accordance with checklist procedures an immediate descent was initiated and the autopilot was disconnected. The aircraft entered several short-term uncommanded manoeuvres before full manual control was restored. The flight was continued and the aircraft landed at Stansted without further incident. Inappropriate post-flight incident reporting action and aircraft inspection resulted in not only the loss of valuable recorded data of the event and a lack of company management awareness but also the continued use of an aircraft with a serviceability status not confirmed by an appropriate engineering inspection.

History of flight

The aircraft was between Guernsey and Southampton in the cruise at FL150 in IMC with the anti-ice and de-icing systems selected ON. There was little ice accretion at this level. Following ATC instructions to descend to FL130 however, the crew observed the airspeed slowly decaying towards 200 kt with cruise power selected. This was approximately 30 kt less than would normally have been expected. The crew also noticed two inches of ice on the icing probe and a thin coating of ice on the forward side windows. This is classified as severe icing and an immediate descent was requested and the autopilot disengaged in accordance with checklist procedures. On autopilot disconnection, the aircraft rolled to the left through 40°, yawed to the left and pitched 10° nose up. The first officer, who was the handling pilot, applied corrective inputs including the application of full right rudder. The aircraft initially responded in the correct manner but with the wings now level and control column pushed forward, the aircraft pitched up and down twice before control was regained. The first officer reported that the controls felt extremely heavy and he had difficulty in following the flight director commands. The descent was continued and as the speed increased to near maximum the aircraft became more controllable. At FL60 the ice accumulation cleared asymmetrically from the wings causing a short term yet significant yaw before complete stability was restored. The flight continued and the aircraft landed at Stansted without further incident.

Post flight reporting

After landing the commander carried out a visual inspection of the aircraft which appeared normal. He decided not to write anything regarding the incident in the aircraft's technical log and, after a normal 'turnround', flew the aircraft on its scheduled service back to the company home base of Guernsey. After landing he mentioned the incident to a line engineer who completed his own visual inspection. The loss of control and raising of a Mandatory Occurrence Report (MOR) was recorded on the company voyage report but the commander stated that he was not aware whether a technical log entry was also required. The incident occurred on a Saturday afternoon and the commander completed the MOR at home the following day. He then delivered it to company Flight Operations in Guernsey the following day; Bank Holiday Monday. The Director of Engineering received the report on Tuesday but was unable to discuss the matter with either the Flight Operations Director or the relevant Fleet Manager as they were both flying that day. He passed the MOR to the airline's contracted engineering company who completed their section of the report. At this stage the subject of removing the Digital Flight Data Recorder (DFDR) was considered but discounted for it was believed that the incident data would by then have been overwritten due to the number of intervening flights since the occurrence. The completed MOR was sent by post to the Safety Data Department of the CAA where it was received on the 5 December 2003, six days after the incident.

MOR procedure

The procedure for processing MORs was detailed in the company's Operations Manual Part A. This required the pilot to *'complete MOR forms as required and pass to Operations'*. 'Operations', in this context, was understood to be the company headquarters in Alderney, which is manned whenever company aircraft are flying. It then became the responsibility of the Operations Manager to *'submit to the CAA those reports which in his opinion qualify for the purpose'* and to do this *'within 72 hours of the occurrence coming to the knowledge of the person making the report'*. Flight operations at Guernsey was not manned at the weekends or outside normal office hours and the airline did not roster a duty manager during the unmanned periods. All company aircraft however, carried a mobile telephone that contained the company directors' and fleet managers' telephone numbers should further assistance be required. There was no advice in the Operations Manual detailing when data from an aircraft's DFDR should be preserved.

CAP 382, The Mandatory Occurrence Reporting Scheme, paragraph 6.1.4 requires reports to be *'dispatched within 96 hours of the event, unless exceptional circumstances prevent this'*. Paragraph 11.2 states that *'the ANO' (Air Navigation Order) 'requires that operators retain the data from an*

FDR' (Flight Data Recorder) 'which is relevant to a reportable occurrence for a period of 14 days from the date of the occurrence'.

Training

The company discusses icing issues and conducts simulator training involving icing events during a pilot's periodic Operator's Proficiency Check (OPC). The commander had completed his previous OPC on 8 September 2003. This had included an 'icing awareness course', conducted by ATR, and additional classroom and simulator training.

Analysis

The aircraft was inadvertently flown into an area where the in-flight meteorological conditions resulted in severe airframe icing. The significant reduction in aircraft performance and visual identification of the conditions by the crew confirmed this. Flight in these conditions is contrary to those specified within the ATR72's certified flight envelope. The Flight Manual however, details procedures to recognise and escape from this condition and these were correctly actioned by the crew.

The uncommanded roll, yaw and pitch oscillations, although in all probability brought about by disruption of the airflow over the control surfaces due to ice accumulation, cannot be explained with absolute certainty. DFDR information, had it been preserved, may have provided the data to confirm this assumption. Furthermore, the lack of DFDR information prevented the aircraft manufacturer from carrying out further analysis and consequently their knowledge base of events of this nature was deprived of potentially beneficial additional data.

Knowing that the aircraft had been subjected to a severe icing encounter, the commander assumed that this was the only reason for the in-flight temporary loss of control. He therefore decided that a visual external inspection of the aircraft was all that was required to confirm the aircraft's serviceability prior to operating the return scheduled passenger flight to Guernsey. It is surprising that, having temporarily lost control of the aircraft in severe icing, a condition particularly hazardous to the ATR72, the commander did not enter details of the incident in the aircraft's technical log after landing, ensure that the aircraft was thoroughly inspected by a qualified engineer or seek to inform the company management. The commander did not strictly comply with the company MOR reporting policy in that he delivered the report to Flight Operations in Guernsey rather than the manned Alderney Operations. However, an element of ambiguity in the use of the term 'operations' within the Operations Manual Part A may account for this, particularly as the commander was relatively new to the company. It is likely that had the MOR been delivered to Alderney Operations, subsequent company procedures may have prevented the loss of DFDR data.

Company reporting procedures, current at the time of the incident, stated that MORs should be dispatched within 72 hours of the occurrence. They did not however, mention the requirement to consider retaining data from the DFDR. The company also had no procedure requiring aircraft technical log annotation following the raising of an MOR and no formal management contact procedure that would have brought the occurrence to the attention of the airline managers. Some managers were contactable at the time but this arrangement was informal; there being no requirement to nominate a rostered 'duty manager'.

Follow up action

Ten days after this incident the airline's contracted engineering company issued Production Alert No 014 titled 'Flight Incidents that result in MOR action'. The alert, displayed on staff notice boards, highlights the requirement to consider removal of the aircraft's FDR following an MOR incident.

On 23 December 2003, the Flight Operations Director issued Flying Staff Instruction G04/2003. This requires any MOR to be *'written and faxed to Operations no later than the end of the Captain's duty*

period'. Operations are then to 'contact the appropriate member of management immediately for guidance as to further action to be taken'.

The company has since issued AL16 to the Operations Manual Part A containing significant changes to their accident/incident reporting procedures. Section 11.4.4 'ASR Reporting Procedures', incorporates the above Flying Staff Instruction (G04/2003). Section 11.6.1 'Serious Incident - Definition' also states that *'If the crew or engineers attending the incident know or suspect that an incident may be classified as 'serious' they should ensure that any FDR or CVR, is disabled after shutdown to prevent any relevant data being overwritten when power is re-applied to the aeroplane.'*

The company has also introduced a more formalised management contact procedure. Whenever an incident occurs, the operations staff at Alderney now have a fleet dependant list of managers to contact in a cascading order of priority.