

Follow-up Action on Occurrence Report

ACCIDENT TO SHORTS SD3-60, G-BNMT, NEAR EDINBURGH AIRPORT ON 27 FEBRUARY 2001

(AIRCRAFT CRASHED INTO THE SEA AFTER A DOUBLE ENGINE FAILURE)

CAA FACTOR NUMBER : F10/2003
FACTOR PUBLICATION DATE : 25 April 2003
OPERATOR : Loganair
CAA OCCURRENCE NUMBER : 2001/01265
AAIB REPORT : AAR 2/2003

SYNOPSIS

(From AAIB Report)

The aircraft landed at Edinburgh Airport from its previous flight at 0003 hrs on 27 February 2001. The weather conditions, recorded in the 0002 hrs SPECIAL report, were as follows:- Surface wind 040deg/22 gusting 36 kt, visibility 5,000 metres, light ice pellets, scattered cloud at 900 feet, broken cloud at 1,200 feet, temperature +1deg C/dewpoint 0degC and QNH 992 mb.

The aircraft was taxied to and parked on Stand 31, on a heading of 035degM. The inbound crew reported that there were no abnormalities observed or technical defects on the aircraft. They supervised the refuelling of the aircraft to a final load of 3,000lbs (1,360 kg) before leaving the aircraft. Edinburgh Airport was not a main operating base for the airline and thereby flight crews were responsible for normal aircraft turnround procedures.

The aircraft was scheduled to depart Edinburgh at 0040 hrs with a different operating crew. This second crew arrived at the aircraft at about 0030 hrs. The aircraft required de-icing before departure but they were advised that there would be a delay of several hours before equipment would be available. In the interim they returned to the crew room. At 0210 hrs the airport closed as a result of the severe weather. At 0600 hrs this second crew were advised that the airport was not likely to reopen for several hours and so they returned to the aircraft to ensure it was secure before going off duty. At this time they fitted propeller straps to each engine and also put on the pitot head covers. Engine air intake bungs were not available for the crew to fit to the aircraft. The aircraft had not been de-iced.

The overnight weather conditions comprised a sustained strong north easterly wind, with a maximum recorded speed of 43 kt. Light or moderate snow fall occurred until 0952 hrs. There was no further snowfall after this time and by 1500hrs the weather conditions were :- Surface wind 030deg/15kts, visibility 10km, scattered cloud at 4,000 feet, broken cloud at 7,000 feet, temperature +2degC and dew point -3degC.

The pilots that were aboard the aircraft on the accident flight reported for duty at Glasgow Airport at 0810 hrs on 27 February 2001, for a planned flight to Islay departing at 0910 hrs. As a result of adverse weather conditions, that flight was cancelled and they were rescheduled to carry out the single sector flight delayed from 0040 hrs from Edinburgh to Belfast. Surface travel from Glasgow to Edinburgh was impossible due to adverse road conditions, so as soon as Edinburgh Airport re-opened at 1130 hrs, the crew were positioned to Edinburgh as passengers on another company aircraft.

On their arrival at Edinburgh the crew went out to G-BNMT. There was no record of their activities there, but at 1503 hrs they requested clearance to start engines. Start clearance was obtained and then, at 1512 hrs, the crew advised Air Traffic Control (ATC) they were shutting down due to a technical problem. During this period the right engine had been observed to start and stop several times.

The crew returned to the terminal and contacted their company at Glasgow to ask for engineering assistance. They indicated that the right engine driven generator would not come on line. A company avionics/instrument engineer was in transit through Edinburgh Airport. He was contacted by the Line Maintenance Controller at Glasgow and asked to assist the crew. He carried out trouble shooting with advice from the Maintenance Controller. This action involved transposing the connections to the Generator Control Protection Units and required the crew to start and run both engines for approximately 15 minutes. The connections were then returned to their original positions. Thereafter, the crew carried out a second engine run of similar duration, again at the engineer's request. The original fault could not be reproduced. A ground power unit was not available, so the engine starts were carried out using aircraft battery power.

The commander then requested that the engineer check the engine oil contents. He also asked him to confirm that the upper surfaces of the aircraft were free from ice and snow. The engineer noted that the oil levels were such that replenishment was not required and the only airframe contamination was a small slush deposit on the windscreen. This was cleared by the engineer. Both engines were then restarted after which the aircraft remained on stand with the engines running for about another 20 minutes.

At 1710 hrs the first officer requested taxi clearance. After a short delay the aircraft powered back off stand and taxied to depart from Runway 06. While taxiing, as part of the first flight of the day engine checks, the crew carried out an Autofeather test, during which the automatic operation of the engine anti-icing vanes to fully deploy and return was also observed. The commander briefed the first officer that after takeoff they would recycle the landing gear once to ensure that it was free of snow and slush.

The aircraft was cleared for a Talla (TLA) 5D Standard Instrument Departure (SID). The commander was the designated handling pilot. He carried out a normal takeoff which was followed by the landing gear being cycled up and down once, before its final retraction. A reduction to climb power was made at 1,200 feet amsl. The commander then called for the after take-off checks to be completed. When the 'Stall Warning Heaters' item was reached, he requested that the first officer put on all the anti-icing systems. At this time the aircraft was handed over from Edinburgh Tower to Scottish ATCC (ScATCC), which was acknowledged by the first officer. With the aircraft at 2,200 feet amsl, the first officer then selected the anti-icing systems 'ON' while the commander selected the new radio frequency. Four seconds after the selection of each anti-icing vane switch, the torque on the corresponding engine reduced rapidly to zero. The commander quickly observed that the aircraft had suffered a double engine failure and advised the first officer. The first officer broadcast a MAYDAY call as the initial call on the ScATCC frequency as follows:- "MAYDAY MAYDAY MAYDAY THIS IS LOGAN SIX SEVEN ZERO ALPHA WE'VE HAD A DOUBLE ENGINE FAILURE REPEAT A DOUBLE ENGINE FAILURE".

The ScATCC controller responded to the MAYDAY call passing the crew position and heading information. The first officer asked the controller to repeat the message but this transmission from the aircraft was truncated. The commander continued to fly the aircraft, initiating a descent while allowing the airspeed to reduce to 110kt and turning the aircraft to the right towards the coastline. The rate of descent stabilised at 2,800 feet per minute and he realised that the aircraft would have to be ditched in the water. The first officer attempted to make a further call to ScATCC advising that the aircraft was ditching, but this was not received. As the aircraft descended close to the water surface, the commander gradually increased the pitch attitude of the aircraft and correspondingly reduced the speed. The aircraft impacted the water in a 6.8deg nose up attitude at an airspeed of 86kt on a heading of 109degM. It came to rest on the sea bottom in a nose down attitude with the forward section of the fuselage submerged, 65 metres offshore, in a water depth of about six metres.

FOLLOW UP ACTION

The four Safety Recommendations made by the AAIB following their investigations are reproduced below, together with the CAA's responses.

Recommendation 2001-39

The CAA requires the manufacturer to advise all operators of the possibility of snow accumulation in the engine air intakes when parked, subsequently resulting in engine failures. Further to advise that such a failure may be precipitated by a change on intake conditions resulting from the activation of the anti-ice vanes.

CAA Response

The CAA accepts this Recommendation. The CAA has required the aircraft manufacturer to advise all operators of the possibility of snow accumulation in the engine air intakes when parked, subsequently resulting in engine failures. The aircraft manufacturer has been required further to advise all operators that such a failure may be precipitated by a change of intake conditions resulting from the activation of the anti-ice vanes. An All Operators' Message was issued by the aircraft manufacturer on 7 March 2001. Earlier on that same date, the CAA alerted UK operators of SD3.60 and 3.30 aircraft to the content of the Safety Recommendation. The CAA will give further consideration to a range of broader issues raised by the Safety Recommendation. Target date for completion of an initial review: 31 March 2001.

Note: The CAA responded to the AAIB on 9 March 2001. On 20 October 2001 FODCOM 17/2001 was published.

CAA Status - Closed

Recommendation 2002-39

It is recommended that the CAA publish information to educate flight crews as to the potential hazards associated with ice, snow or slush accretion in areas of the engine intakes which are not externally visible and highlight the necessity to conduct appropriate detailed inspections when such conditions are suspected. Such information should then be promulgated widely through the industry.

CAA Response

The CAA accepts this Recommendation.

The CAA will, by means of a Flight Operations Department Communication (FODCOM), publish information to educate flight crews as to the potential hazards associated with ice, snow or slush accretion in areas of engine intakes that are not externally visible. The FODCOM will also highlight the necessity to follow basic airmanship principles and ensure that, where there is any possibility of ice accretion or snow build up on the aircraft, that inspection of the engine intakes takes place as part of the pre-flight inspection. A recommendation that Operators ensure that this information is brought to the attention of all their flight crew will be included. This FODCOM will be published as part of the CAA's 'Winter Awareness' initiative in October 2003.

CAA Status - Open

Recommendation 2002-40

It is recommended that Bombardier Aerospace (Short Brothers Ltd) review the following, with regard to the potential for a double engine failure:

- a) The Emergency Checklist, with a view to establishing a procedure for a rapid engine relight.
- b) The provision of an Auto-ignition system, or suitable crew procedures to ensure that the Ignition systems are activated prior to the operation of intake anti-icing systems.

CAA Response

This Recommendation is not addressed to the CAA.

CAA Status - Closed

Recommendation 2002-41

It is recommended that the CAA ensures that its safety oversight programme of AOC Holders includes processes to check that operators have made suitable arrangements to provide flight crews with all necessary equipment to carry out all procedures specified in the relevant Operations Manuals.

CAA Response

The CAA accepts this Recommendation.

The Flight Operations Department of the CAA has recently completed a review of its AOC oversight methodology to seek to improve the robust processes that have been in place for many years. Enhancements were introduced in November 2002. These included processes to check that operators have made suitable arrangements to provide flight crews with all necessary equipment to carry out all procedures specified in the relevant Operations Manuals.

CAA Status - Closed