
Sick crew, Fokker 100, G-UKFF, 7 April 1996

Micro-summary: During climb, adverse physiological effects on this F-28 prompted a return to origin.

Event Date: 1996-04-07 at 1700 UTC

Investigative Body: Aircraft Accident Investigation Board (AAIB), United Kingdom

Investigative Body's Web Site: <http://www.aaib.dft.gov/uk/>

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Fokker 100, G-UKFF, 7 April 1996

AAIB Bulletin No: 9/96 Ref: EW/C96/4/3 Category: 1.1

Aircraft Type and Registration: Fokker 100, G-UKFF

No & Type of Engines: 2 Rolls-Royce Tay 620-15 turbofan engines

Year of Manufacture: 1989

Date & Time (UTC): 7 April 1996 at 1700 hrs

Location: Overhead Dover, Kent

Type of Flight: Public Transport

Persons on Board: Crew - 7 Passengers - 37

Injuries: Crew - None Passengers - None

Nature of Damage: None

Commander's Licence: Airline Transport Pilot's Licence

Commander's Age: Not applicable

Commander's Flying Experience: Not applicable

Information Source:

AAIB Field Investigation

On departure from Stansted the aircraft climbed to and maintained FL 070 during a Standard Instrument Departure towards Dover. The aircraft was eventually cleared for a further climb and at approximately FL 085 all of the cabin crew reported feeling unwell through what appeared to be a 'lack of oxygen and/or adverse fumes'. The commander declared an emergency and returned to Stansted with all the crew on oxygen. The descent and approach were normal and the aircraft landed without further incident.

During passenger disembarkation the cabin crew remained on oxygen. An engineer present at the aircraft when the doors were opened reported that the air in the cabin was extremely hot, stuffy and stale. Later the crew were taken to hospital for further investigation. The hospital informed the commander that the crew had ingested 'something abnormal' and three crew members had to remain on oxygen for a further hour.

Concluding his post incident report, the commander stated that at FL 070 the aircraft was in the base of a layer of cloud and was close to an area of the Thames Estuary where there are industrial discharges to atmosphere.

Follow up action by the operator

The operator withdrew the aircraft from service after the event, and the aircraft manufacturer was consulted. On their advice the air conditioning system was inspected, ground pressurisation tests were carried out, and the aircraft air tested for over one hour with no abnormalities apparent. Air sampling tests, with a certified and calibrated gas analysis machine, were also carried out. The system functioned normally and the aircraft was returned to service.

The aircraft flew for a further two days without incident. On the 10 April 1996, however, the In-Flight Supervisor and her companion in the forward galley both reported feeling unwell. The flight continued to its destination and both crew members recovered sufficiently to operate the return service but suffered from headaches on their return.

The aircraft was removed from service from a further 24 hours and on the manufacturers advice the company dismantled the entire air conditioning system and examined it for contamination. To eliminate the possibility that the air analysis machine was faulty a 'Livingston Gas Analyser' was obtained and full ground and air tests were carried out. The air test was flown to see whether the conditions of the first problem flight could be reproduced by following the same route, heights and speeds and with the same galley service (passengers were not on board). The air conditioning packs were operated through their full range in both auto and manual modes. No problems were encountered with the system or detected by the analysis machine. In fact the air quality was found to be at its poorest on the ramp improving throughout the flight. (Carbon Monoxide levels measured on the ramp were 7 parts per million (ppm) - normal safe maximum level is 50 ppm).

With no faults found or contamination evident the operator concluded that on the first occasion the crew appear to have encountered a 'random environmental hazard' with possible exposure to toxic atmospheric pollution. Investigations following the second event are continuing but the

company are confident that their exhaustive trials have eliminated all technical possibilities of a recurrence.

The operator also recognises that the F100 air conditioning system is susceptible to incidents of this nature and have issued their pilots and cabin crew with guidelines on 'cabin temperature and air quality procedures' to obtain the best the performance from the system.

Air conditioning system (type specification)

The F100 type specification for the air conditioning system states, along with other details, that the system shall supply an adequate quantity of air to the pressurised area of the fuselage for ventilation, pressurisation and temperature control. Conditioned air shall be derived from the bleed air system via two air conditioning units and the recirculation system shall form part of that system. The conditioned air shall not be contaminated by smoke or fumes. Each air conditioning unit shall be capable of supplying a fresh air flow of 22.5 kg/min (50 lb/min) during initial climb from sea level. With any number of passengers up to the maximum permitted by the standard layout, the air conditioning system shall be capable of supplying typically 20 cu ft/min of air per occupant at normal climb and cruise; 50% of the air shall be fresh.

Related incidents

Five similar occurrences have been notified to the Safety Regulation Group of the CAA since January 1994 but there is no clear link between the events. In one case de-icing fluid was thought to have been ingested by the APU inlet duct. A more recent report from another operator has drawn attention to the hazardous nature of a liquid cleaner for use on toilet bowls which was being misused to clean the galley area. The Safety Data Sheet for "CeeBee Honey Bee Freshener 50" states that 'inhalation of the product may have the following effects; light headedness, headache and nausea'. Other warnings are that 'the product may give rise to toxic fumes of nitrogen oxides, because of strong perfume keep away from foodstuffs, decomposes when heated to liberate Hydrogen Chloride, and it is irritating to eyes and skin.' Such misuse of this cleaning fluid is apparently widespread and the CAA have been invited to alert all operators to the potential hazard arising from such misuse.