

SERIOUS INCIDENT

Aircraft Type and Registration:	Airbus A320-214, G-EZWM
No & Type of Engines:	2 CFM56-5B4/3 turbofan engines
Year of Manufacture:	2013 (Serial no: 5739)
Date & Time (UTC):	28 August 2014 at 0537 hrs
Location:	In climb over Oxfordshire
Type of Flight:	Commercial Air Transport (Passenger)
Persons on Board:	Crew - 6 Passengers - 157
Injuries:	Crew - None Passengers - None
Nature of Damage:	Static inverter overheated
Commander's Licence:	Airline Transport Pilot's Licence
Commander's Age:	52 years
Commander's Flying Experience:	13,976 hours (of which 5,641 were on type) Last 90 days - 183 hours Last 28 days - 35 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot and subsequent enquiries by the AAIB

Synopsis

During the en-route climb, the caption AVIONICS SMOKE was displayed on the Electronic Centralised Aircraft Monitoring (ECAM) display and the crew could see smoke emanating from the right side of the centre console inside the co-pilot's footwell. The aircraft diverted to London Gatwick Airport and, during the descent, the smoke stopped. It landed without further incident.

It was found that a component in a static inverter, powering electrical outlet sockets in the cockpit, had overheated.

History of the flight

The aircraft was on a flight from Liverpool to Naples. Passing FL320 in the climb, the co-pilot reported an odd odour. The commander said that he could not smell anything unusual but checked the galley area on the CCTV camera to see if the cabin crew were cooking anything which might account for the smell. As he pressed the interphone button to talk to the cabin manager, the commander saw smoke rising from the right of the centre console next to the co-pilot's knee. He told the cabin manager he would ring her back and both flight crew donned their oxygen masks.

The ECAM display AVIONICS SMOKE caption then appeared. Simultaneously, an amber SMOKE light illuminated on the GEN 1 LINE pushbutton and a FAULT caption appeared on the BLOWER

and EXTRACT pushbuttons. (Note: the ECAM caption and the lights will all appear if smoke is detected in the avionics ventilation duct.) The caption and lights extinguished after about a minute but the visible smoke continued and the crew made a PAN call, commencing a descent and initiating the Quick Reference Handbook (QRH) AVIONICS SMOKE drills. The commander decided that he would hand control of the aircraft and responsibility for communications to the co-pilot whilst he continued with the QRH drills, the cabin crew and passenger briefing and reprogramming the Flight Management Guidance Computer for a diversion to London Gatwick Airport.

During the descent, the smoke appeared to stop and the aircraft landed on Runway 26L at London Gatwick without further incident. It was met by the Airport Fire Service (AFS), who escorted the aircraft to a remote stand where the passengers were disembarked using stairs. After engine shutdown, the crew removed their oxygen masks and the AFS scanned the aircraft for 'hot spots' using a thermal imaging camera but found none.

Further investigation by technicians found that a static inverter, part number 1-002-0102-1830/2A350-1AS-1830, located in the avionics bay, had signs of severe overheating (Figure 1). It was replaced and, after further testing, the aircraft returned to service. The function of the inverter is to supply 115VAC and 60 Hz power to a utility socket in the cockpit so that domestic equipment, such as computer laptops and tablets, can be plugged in. It does not form part of the racked avionics but is a stand-alone unit mounted below the co-pilot's footwell floor to the right of the centre console. The floor is not sealed to prevent fumes from the avionics bay entering the cockpit. The inverter was standard equipment on aircraft manufactured after serial number 2700.

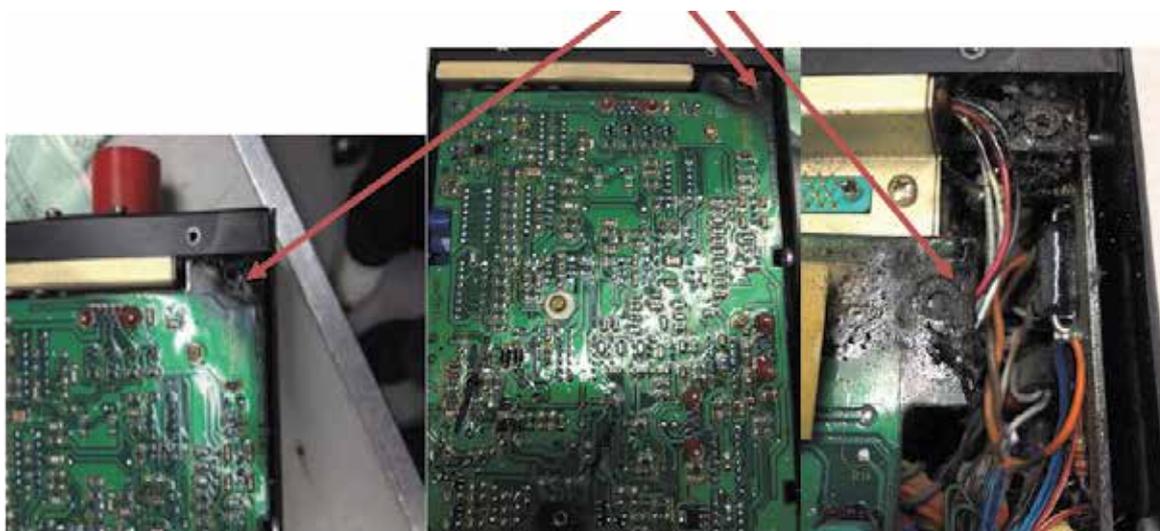


Figure 1

Burn marks on the PCB of the static inverter

The inverter was returned to its manufacturer for examination. They reported that the damage centred on a capacitor, C306, which had been destroyed by overheating (Figure 2). The damage precluded establishing the precise reason for its failure, although tests on

another unit indicated that the capacitor was operating well within its allowable working temperatures. The manufacturer also examined the reliability and failure rates of the inverter and they were found to be acceptable. They consider this failure was an isolated incident but advise that they will monitor the reliability of the static invertors.

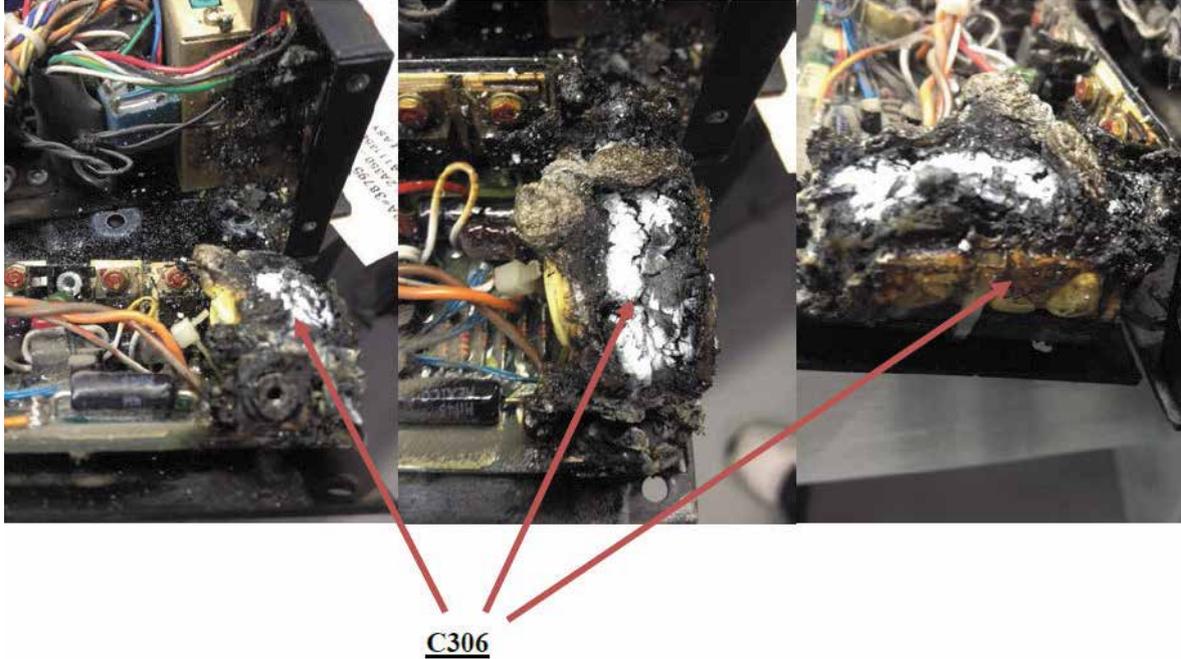


Figure 2
Overheated capacitor C306