For the reasons set out in the background section, the CASA delegate whose signature appears below issues the following Airworthiness Directive (AD) under subregulation 39.001(1) of CASR 1998. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct the unsafe condition) be taken in relation to the aircraft or aeronautical product mentioned in the applicability section: (a) in the circumstances mentioned in the requirement section; and (b) in accordance with the instructions set out in the requirement section; and (c) at the time mentioned in the compliance section.

General Electric Turbine Engines - CF6 Series

**AD/CF6/58**

**Electronic Control Unit Software**

**8/2005**

**Applicability:** CF6-80E1 series turbofan engines with electronic control unit (ECU) part numbers (P/N) 1799M99P12, 1851M74P05, 1851M80P05 and 1960M84P03 or earlier installed.

CF6-80E1A4/B engines with ECU's that already have software version E.1.N installed are not affected by this Directive and no further action is required.

*Note 1:* This series of engines are known to be installed on, but not limited to, Airbus A330 series aeroplanes.

**Requirement:**

1. Unless already accomplished, upload improved software version E.1.N. in accordance with the Accomplishment Instructions of either of GE Aircraft Engines CF6-80E1 Service Bulletin (SB) 73-0070, dated 22 June 2004, or SB 73-0070, Revision 01, dated 21 March 2005.

2. An ECU that has a software version earlier than E.1.N may not be installed onto any engine as a replacement spare.

*Note 2:* FAA AD 2005-10-16 Amdt 39-14093 refers.

**Compliance:**

For Requirement 1 - At next ECU exposure after the effective date of this Directive.

*Note 3:* For the purposes of this Directive, the next ECU exposure is defined as the next removal of the ECU for repair or the next engine shop visit, whichever occurs earlier.

For Requirement 2 - After the effective date of this Directive.

This Airworthiness Directive becomes effective on 4 August 2005.
Background: In June 2003, a CF6-80E1 engine experienced an uncommanded acceleration and did not respond to throttle commands during cruise. The pilot shut down the engine by switching off the master lever. GE investigated the uncommanded acceleration and confirmed that failure of the ECU DIU caused the event. This failure corrupted all the digital interfaces with the aeroplane, ECU pressure subsystem, and opposite ECU channel. The ECU used a default ambient pressure value, which scheduled fuel flow to a higher than intended value. In addition, the DIU failure corrupted the channel-health and channel-activity data communication between channels and allowed the failed channel to remain active while the healthy channel became active. The existing ECU software logic did not detect and record the DIU fault and did not ensure control of the engine by the healthy channel. Failure of the DIU, if not detected, could result in an uncommanded engine acceleration to the overspeed limit, without response to throttle commands. The aeroplane may then experience asymmetric thrust.

This Directive requires the installing of improved software for the ECU and is issued to prevent an undetected failure of the ECU DIU.

James Coyne
Delegate of the Civil Aviation Safety Authority

24 June 2005