AIRWORTHINESS DIRECTIVE

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.

Rolls Royce Turbine Engines - Tay Series

AD/TAY/16 Engine Electronic Controller - Inspection/Replacement 11/2006

Applicability: All TAY611-8C engines, all serial numbers, if equipped with Engine Electronic Controller (EEC), part number (P/N) TEEC200004AE.

Note 1: These engines are known to be installed on Gulfstream GIV-X aircraft.

Requirement:

1. Electrically check the two transorbs of the EEC on at least one engine of the aircraft in accordance with the instructions of Rolls-Royce Deutschland Alert Service Bulletin (ASB) TAY-73-A1703 dated 11 August 2006 or later EASA approved revision.

2. If, as a result of the Requirement 1 check, an EEC is found to be damaged, replace the EEC with an undamaged unit in accordance with the instructions of ASB TAY-73-A1703 or later EASA approved revision taking into account the following conditions:

    a. If no replacement EEC is available, electrically check the two transorbs of the EEC installed on the other engine of the aircraft in accordance with the instructions of ASB TAY-73-A1703 or later EASA approved revision.

    b. If this EEC is also found to be damaged, at least one damaged EEC must be replaced in accordance with the instructions of ASB TAY-73-A1703 or later EASA approved revision.

3. Repeat the Requirement 2 inspection in accordance with the instructions of ASB TAY-73-A1703 or later EASA approved revision.

Note 2: When the aircraft has been modified in accordance with Gulfstream Aircraft Service Change 036, only one single (repeat) inspection is required to establish that at least one EEC is undamaged. If so, the periodic inspections are not required, or may be discontinued, as applicable.

Note 3: EASA AD 2006-0268-E refers.

Compliance: For Requirement 1 - Within 300 flight hours time in service (TIS) after the effective date of this Directive.

For Requirement 2 - Before next flight after the Requirement 1 check.

Rolls Royce Turbine Engines - Tay Series

AD/TAY/16 (continued)

For Requirement 3 - At intervals not to exceed 500 hours TIS.

This Airworthiness Directive becomes effective on 26 October 2006.

Background: Some EECs, returned from in-service to the manufacturer, had damaged transorbs. A transorb is a diode type device in the EEC connect module that protects the EEC from the effects of lightning strikes by conducting the current to the ground. A damaged transorb may compromise the EECs ability to protect circuits from damage during a lightning strike event. Investigation has shown that the transorbs could be damaged due to an inadequate bonding between the aircraft and the engine.

As the EEC aircraft power supply 0 Volt return line is clamped to the engine through a transorb while it is bonded to the aircraft, a difference in potential between the engine and the aircraft could result in a transorb damage. To prevent this, an additional bonding lead must be installed between the aircraft and the engine. In addition, all EEC units need to be electrically checked to find out if any transorb is damaged.

The purpose of this Directive is to establish that at least one engine installed on an aircraft has an EEC installed with undamaged transorbs. Rolls-Royce Deutschland Alert Service Bulletin TAY-73-A1703 describes the electrical check of two transorbs of the EEC on one engine of the aircraft.

James Coyne
Delegate of the Civil Aviation Safety Authority

15 September 2006