EASA Safety Information Bulletin

SIB No.: **2012-19R1**
Issued: **09 January 2013**

Subject: **Uncommanded Engine In-Flight Shutdown triggered by the Tachometer Box**

Reason for revision: Since issuance of this SIB, Eurocopter Deutschland (ECD) developed modification K-2725 (ECD Service Bulletin (SB) MBB-BK117-C-2-80-001 for helicopters in service) for the MBB-BK117 C-2 helicopters, which installs an improved support for the tachometer box for reduction of the vibration level. Installation of this support increases the reliability of the tachometer box.
This SIB is revised to recommend, for the affected helicopters, incorporation of this modification.

Ref. Publication: Turboméca SB 292 77 0369
ECD SB MBB-BK117-C-2-80-001

Applicability: Turboméca ARRIEL 1E2 and ARRIEL 1S1 engines.
These engines are known to be installed on, but not limited to Eurocopter Deutschland MBB-BK 117 C-1 and C-2 helicopters, and Sikorsky S-76A and S-76C series helicopters.

Description: There have been four reported cases of uncommanded In-Flight Shutdown (IFSD) on ARRIEL 1E2 engines, due to untimely activation of the tachometer box shut-off system.

The affected tachometer box contains the functions of monitoring and shutting down the engine through activation of an electro-valve in case of:
- Simultaneous Loss of Power Turbine Sensors (STL), or
- Power Turbine (PT) Overspeed.

The STL function is intended to detect a simultaneous loss of PT sensors in order to prevent subsequent failures.
The PT Overspeed function is intended to detect a PT overspeed in order to prevent subsequent PT blade separation.

In absence of the STL and PT overspeed functions, the ultimate protection against release of engine high energy debris is ensured through blade shielding.

In the four reported cases, it is believed that the tachometer box untimely triggered the STL function, due to one or both of the following conditions:

- Excessive vibration of the box in certain flight conditions, originated from the helicopter, particularly on the tachometer box position n°1.
- Incorrect coating application process on the production line of one component on a tachometer box card.

Prompted by these findings, Turboméca developed modification TU369 for ARRIEL 1E2 and ARRIEL 1S1 engines (to be embodied in service with Turboméca SB 292 77 0369) to de-activate the STL function on the tachometer box, while the PT overspeed function is maintained. By eliminating the STL function, this modification should therefore mitigate the risk of uncommanded engine IFSD.

At this time, the safety concern described in this SIB is not considered to be an unsafe condition that would warrant Airworthiness Directive (AD) action under Commission Regulation (EU) No 748/2012, Part 21.A.3B.

Recommendation(s): Affected operators are recommended to incorporate Turboméca modification TU369 in accordance with the instructions of Turboméca SB 292 77 0369 and, as applicable to the affected helicopter, ECD modification K-2725 in accordance with the instructions of ECD SB MBB-BK117 C-2-80-001.

Contact: For further information, contact the Safety Information Section, Executive Directorate, EASA. E-mail: ADs@easa.europa.eu.