



EASA Safety Information Notice

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Subject: TURBOMECA MAKILA 1A and 1A1 Turboshaft Engines – manufacturing problem concerning Engine Control Unit (ECU) Comparator / Selector (CS) boards incorporating modification TU250

Ref. Publications: TURBOMECA Mandatory Service Bulletins (MSB) 298 73 0809 and 298 73 0810.

Introduction: MAKILA 1A and 1A1 ECUs incorporate a backup control law that fixes N1 (gas generator speed) at 65% when at least two of the three N2 (power turbine speed) signals are lost. The intent is to limit the maximum speed attainable by the power turbine in the event of a failure of the shaft between the engine and the main gearbox that could result in collateral damage to the N2 speed probes.

Several occurrences of 65% N1 backup activation remain unexplained despite detailed investigation. It is postulated that the events may have been due to corruption of the engine N2 speed signals by short perturbations, for example by EMI. This constituted a potential hazardous condition in cases where both engines on the same helicopter were simultaneously affected.

To counter this threat, TURBOMECA introduced modification TU250, which affects the CS board in the ECU and allows recovery from the 65% backup mode if the loss of N2 speed signals is determined to be temporary. Incorporation of modification TU250 is mandated by EASA AD 2007-0144.

The installation of TU250 CS boards, however, has resulted in a few occurrences of erratic engine behaviour, in the form of unexpected N1 variations and/or illumination of the "GOV" warning light. The preliminary conclusions from an investigation by TURBOMECA are that these malfunctions are due to a lapse of quality control in the varnishing process applied to the boards, and that only boards in a specific serial number range are affected.

TURBOMECA has addressed this latest concern in two steps which provide first a near-term and then a long-term solution. The two steps are described in the referenced MSB, the content of which was agreed by EASA.

The first step, described in MSB 298 73 0809, recommends that no helicopter have CS boards from the suspect population in both engines (all the affected engines are installed in twin-engine helicopters). Boards with more than 200 hours of trouble-free operation are exempt because service experience has shown that the malfunctions potentially induced by this manufacturing discrepancy are most likely to occur early in the lives of the boards. To further alleviate supply problems, replacement of a suspect

TU250 CS board with a pre-TU250 board is permitted, provided that both engines in the same helicopter do not have pre-TU250 boards.

The second step, described in MSB 298 73 0810, recommends that ultimately all TU250 CS boards in the suspect serial number range, regardless of time in operation, be replaced with TU250 boards outside this serial number range.

It should be noted that the provisions of EASA AD 2007-0144 (incorporation of modification TU250) still apply.

Applicability:

MAKILA 1A and MAKILA 1A1 turboshaft engines, all serial numbers, having ECUs equipped with TU250 CS boards with serial numbers in the range 241 EL to 1192 EL.

These engines are installed on, but not limited to, EUROCOPTER (formerly Eurocopter France) AS 332 B, AS 332 B1, AS 332 C, AS 332 C1, AS 332 L and AS 332 L1 helicopters.

Recommendation: This Safety Information Notice is for information only.

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