EASA	AIRWORTHINESS DIRECTIVE
	AD No.: 2010-0161 **Date: 03 August 2010** Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) No 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation

This AD is issued in accordance with EC 1702/2003, Part 21A.3B. In accordance with EC 2042/2003 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an AD applies, except in accordance with the requirements of that AD unless otherwise specified by the Agency [EC 2042/2003 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].

Type Approval Holder's Name :	**Type/Model designation(s) :**
Turboméca	TM 333 series turboshaft engines

TCDS Number :	EASA.E.030
Foreign AD :	Not applicable
Supersedure :	None

ATA 72	**Engine – Maintenance Manual – Airworthiness Limitation Section Update**
Manufacturer(s):	Turboméca S.A.
Applicability:	TM 333 2B2 turboshaft engines, all serial numbers. These engines are known to be installed on, but not limited to, Hindustan Aeronautics Limited "Dhruv" (ALH) helicopters.
Reason:	Post certification assessment of the TM 333 2B2 oil cooling fan unit has shown that in case of failure of the oil cooling unit fan the debris may not be contained by the oil cooling fan casing. Although the oil cooling unit fan has a significant margin to burst and crack initiation, it needs to be classified as a Critical Part, life-limited, and its life needs to be recorded in the Airworthiness Limitation Section (ALS) of the Engine Maintenance Manual (MM). The updated life assessment of the TM 333 2B2 oil cooling unit fan requires the introduction of a life limit of 6 000 power turbine cycles on the fan in order to maintain its integrity. In addition, the maximum authorised transient power turbine (N2) speed has been exceeded several times in service, on some TM 333 2B2 engines on HAL Dhruv helicopters. These over-speeds must be taken into account in the cycle counting applicable to the power turbine disc and to the oil cooling fan. Moreover, the Airworthiness Limitation Sections (ALS) of the TM 333 2B2 MM and Overhaul Manual (OM) has to be modified in order to: - Improve the cycle counting and overhaul process applied to TM 333

	2B2 engine critical life-limited parts - Maintain the One Engine Inoperative (OEI) ratings power availability, following an update of TM 333 2B2 engine safety analysis. Exceeding the approved life limit of the TM 333 2B2 engine critical life-limited parts, among which the power turbine disc and the oil cooling unit fan, could result in a disc burst with uncontained high energy debris. Non-availability of OEI rating may result in an unsafe condition for the aircraft. For the reasons described above, this AD requires the implementation of these new maintenance and overhaul tasks in the ALS of the TM 333 2B2 MM and in the OM.
Effective Date:	17 August 2010
Required Action(s) and Compliance Time(s):	Required as indicated, unless accomplished previously: Within the compliance times defined in Table 1 of this AD, comply with all applicable maintenance requirements and associated airworthiness limitations specified in Table 1 of this AD.

Table 1

Action	Compliance Time
(1.1) Introduce the oil cooling unit fan as life-limited part in the engine log book as instructed by *Ref [2]* and *Ref [3]*	Upon accumulating 50 flight hours after the effective date of this AD, or upon first return to an approved Repair Center, whichever comes first
(1.2) If condition of *Ref [1]* Par. 2.B.(2)(d)2.3 are met, discard the fan and install a new one	Upon first return to an approved Repair Center
(1.3) Update the number of power turbine cycles in case of power turbine over-speed above 107% N2, including for the oil cooling unit fan, as instructed by *Ref [2]*	Upon accumulating 50 flight hours after the effective date of this AD, or upon first return to an approved Repair Center, whichever comes first
(1.4) Perform the counting/recording of cycles as instructed by *Ref [3]*	Upon accumulating 50 flight hours after the effective date of this AD
(1.5) Perform the overhaul/inspection of the TM 333 2B2 engine life-limited parts as instructed by *Ref [3]*	Upon accumulating 50 flight hours after the effective date of this AD, or upon first return to an approved Repair Center, whichever comes first
(1.6) Perform the maintenance tasks “Do a test of P0 consistency” and “Do a test of T1 consistency” as instructed by *Ref [3]*, and continue to perform these maintenance tasks with a 25 hours periodicity	Upon accumulating 50 flight hours after the effective date of this AD
(1.7) Perform the maintenance task	Upon accumulating 100 flight

	"Select OEI limit", as instructed by *Ref [3]*, and continue to perform this maintenance task with a 100 hours periodicity	hours after the effective date of this AD
	(1.8) In case of : - engine cumulated operating time of 12 min or more at 2-min OEI rating, or - gas generator over-speed in twin engine mode, or - engine shutdown due to power turbine over-speed, remove the TM 333 2B2 engine as instructed by *Ref [3]* and carry out the engine overhaul as instructed by *Ref [4]*	Upon accumulating 50 flight hours after the effective date of this AD, or upon first return to an approved Repair Center, whichever comes first
	(2) After the effective date of this AD, do not install a TM 333 2B2 engine unless in compliance with the requirements of this AD.	
Ref. Publications:	Turboméca Mandatory Service Bulletin (MSB) A333 73 0809 version A, dated 09 July 2010: Ref [1]. Turboméca Mandatory Service Bulletin (MSB) A333 73 0811 version A, dated 05 July 2010: Ref [2]. TM 333 2B2 Maintenance Manual X 333 H8 450 2 Update 17 AIRWORTHINESS LIMITATION SECTION TASK 05-10-00-150-801-A01 AUTHORIZED IN-SERVICE LIFE LIMITS, COUNTING/RECORDING OF CYCLES and TABLE OF MANDATORY MAINTENANCE TASKS: Ref [3]. TM 333 2B2 Overhaul Manual X 333 H8 500 2 Update 14 AIRWORTHINESS LIMITATION SECTION TASK 05-10-00-150-801-A01 AUTHORIZED IN-SERVICE LIFE LIMITS, COUNTING/RECORDING OF CYCLES and TABLE OF MANDATORY MAINTENANCE TASKS: Ref [4]. The use of later approved revisions of this document is acceptable for compliance with the requirements of this AD.	
Remarks :	1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD. 2. The required actions and the risk allowance have granted the issuance of a Final AD with Request for Comments, postponing the public consultation process after publication. 3. Inquiries regarding this AD should be referred to the Airworthiness Directives, Safety Management & Research Section, Certification Directorate, EASA. E-mail: ADs@easa.europa.eu. 4. For any question concerning the technical content of the requirements in this AD, please contact: Turboméca Operator Support & Sales TM 333 40220 Tarnos – France Phone: +33 (0)5 59 74 44 95; Fax: +33 (0)5 59 74 45 16 or contact your nearest technical representative at www.turbomeca-support.com	