EASA	AIRWORTHINESS DIRECTIVE
	AD No.: 2010-0273R1 **Date: 16 February 2011** 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	ARRIEL 1 series turboshaft engines

TCDS Number :	EASA.E.073
Foreign AD :	Not applicable
Revision:	This AD revises EASA AD 2010-0273 dated 22 December 2010 which superseded EASA AD 2010-0118 dated 18 June 2010.

ATA 72	**Engine – Module M03 (Gas Generator) – Second Stage Turbine Nozzle Guide Vane – Inspection/Replacement**
Manufacturer(s):	Turboméca S.A.
Applicability:	Arriel 1B turboshaft engines, if modified by TU76 or TU202, and not modified by TU148, and fitted with repaired second stage Nozzle Guide Vane. These engines are known to be installed on, but not limited to Eurocopter AS350 series helicopters.
Reason:	During quality inspections in repair centre some 2nd stage Nozzle Guide Vanes (NGVs) to be installed on pre-TU148 standard Arriel 1B were found not conforming to the definition. The affected parts had been repaired and were found drilled on the rear flange instead of the front flange. This configuration corresponds to 2nd stage Turbine NGVs to be installed on post-TU148 standard Arriel 1B engines. This non compliance may only be found on post-TU76 standard 2nd stage Turbine NGVs (i.e. with flexible hub). This non compliance would increase hot gas ingestion and generate an increase of temperature in the Gas Generator (GG) turbine rotor, potentially resulting in turbine damage and an uncommanded in-flight shutdown. On a single-engine helicopter, this could ultimately lead to an emergency autorotation landing. To detect and correct this unsafe condition, EASA AD 2010-0118 required accomplishing a daily check of the engine. Furthermore, it required contacting Turboméca for checking applicability and, if necessary, to

	inspect the 2nd stage Turbine NGVs. If non serviceable parts were found, it required replacement with serviceable ones. It was previously known that modification TU202 was applicable only if TU76 was applied. However since issuance of EASA AD 2010-0118, it was found that some engines modified by TU202 did not explicitly have TU76 recorded on their log cards. Therefore these engines were wrongly excluded from the applicability of EASA AD 2010-0118, but they may also contain repaired 2nd stage Turbine NGVs affected by the same condition. As a result, EASA AD 2010-0273 extended the applicability of EASA AD 2010-0118 to pre-TU148 and post TU-202 Arriel 1B engines. This AD is revised to clarify the intent of paragraph (6) of the "Required Actions and Compliance Time(s)" of the AD.
Effective Date:	Revision 1: 02 March 2011 Original issue: 05 January 2011
Required Action(s) and Compliance Time(s):	Required as indicated, unless accomplished previously: (1) Starting from 05 January 2011 [Effective Date of EASA AD 2010-0273], perform a daily check (after last flight of the day) of the free rotation of the gas generator, the autorotation time and the absence of noise in accordance with Par. 2.B(1)(a)3 of MSB A292 72 0829 version B and applicable Arriel 1B Maintenance Manual tasks 71-02-09-760-801 and 05-20-01-200-801. If during any of these daily checks, any finding is identified in accordance with Par. 2.B(1)(a)3 of MSB A292 72 0829 version B, no further engine operation is allowed. (2) Within 7 days after 05 January 2011 [Effective Date of EASA AD 2010-0273], send to Turboméca a copy of module M03 log card and identification sheet of the engine in accordance with the Mandatory Service Bulletin (MSB) A292 72 0829 version B. (3) If Turboméca confirm that MSB A292 72 0829 version B is **not** applicable to the engine, no further action is required for compliance with the requirements of this AD. (4) If Turboméca confirm that MSB A292 72 0829 version B is applicable to the engine, within the compliance times indicated in table 1 of this AD, inspect the 2nd stage Turbine NGVs.

Table 1:

GG 1st and/or 2nd Stage Turbine Accumulated GG cycles on 05 January 2011 [Effective Date of EASA AD 2010-0273]:	Compliance time: (1st or 2nd Stage Turbine Accumulated GG cycles)
Less than 1 200 (1st and 2nd Stage Turbine)	Upon accumulating 1500 total GG cycles
Equal or more than 1 200, and less than 1800 (1st or 2nd Stage Turbine)	- Upon accumulating 300 GG cycles after 05 January 2011 [Effective Date of EASA AD 2010-0273], *or* - within 6 months after 05 January 2011 [Effective Date of EASA AD 2010-0273], *whichever occurs first*
Equal or more than 1 800, and less than 2 400 (1st or 2nd Stage Turbine)	- Upon accumulating 200 GG cycles after 05 January 2011 [Effective Date of EASA AD 2010-0273], *or* - within 4 months after 05 January 2011 [Effective Date of EASA AD 2010-0273], *whichever occurs first*
Equal or more than 2 400, and	- Upon accumulating 100 GG cycles

	<table><tr><td>less than 3 000 (1st or 2nd Stage Turbine)</td><td>after 05 January 2011 [Effective Date of EASA AD 2010-0273], *or* - Upon accumulating 3000 GG cycles on 1st or 2nd Stage Turbine, *or* - within 2 months 05 January 2011 [Effective Date of EASA AD 2010-0273], *whichever occurs first*</td></tr><tr><td>More than 3 000 (1st or 2nd Stage Turbine)</td><td>Before next flight</td></tr></table> Note 1: The life limit of the “monobloc” Gas Generator 2nd stage turbine wheels affected by this AD is 3 000 cycles. (5) If during any inspection required by paragraph (4) of this AD, the 2nd stage Turbine NGVs are found to be not compliant, before next flight, replace the affected Module M03 with a serviceable one, in accordance with Paragraph 2.B of MSB A292 72 0829 version B. (6) After 05 January 2011 [Effective Date of EASA AD 2010-0273], do not install a Module 03 with configuration post-TU76 and pre-TU148 M03 **and** do not install a Module 03 with configuration post-TU202 and pre-TU148 M03, unless in compliance with the requirements of this AD. (7) Replacement of Module M03 with a serviceable one constitutes a terminating action for the requirements of this AD.
Ref. Publications:	Turboméca Mandatory Service Bulletin (MSB) A292 72 0829 version B, dated 13 December 2010; Arriel 1B Maintenance Manual X 292 65 452 1 / X 292 65 452 2 (French Version / English Version) The use of later approved revisions of these documents 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. Enquiries 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, S.A., ARRIEL 1 Customer Support, 40220 TARNOS, FRANCE. Fax: +33 5 59 74 45 15 or contact your nearest technical representative at www.turbomeca-support.com