

EASA	NOTIFICATION OF A PROPOSAL TO ISSUE AN AIRWORTHINESS DIRECTIVE
	PAD No.: 09-096 Date: 31 July 2009 Note: This Proposed Airworthiness Directive (PAD) 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.
In accordance with the EASA Continuing Airworthiness Procedures, the Executive Director is proposing the issuance / cancellation of an EASA Airworthiness Directive (AD), applicable to the aeronautical product(s) identified below. All interested persons may send their comments, referencing the PAD Number above, to the e-mail address specified in the 'Remarks' section, prior to the consultation closing date indicated.	
Type Approval Holder's Name : TURBOMECA	Type/Model designation(s) : Arriel 1 series turboshaft engines
TCDS Number : EASA.E.073	
Foreign AD : Not applicable	
Supersedure: This AD supersedes EASA AD 2007-0018R1, dated 14 August 2007.	
ATA 72	Engine – Gas Generator 2nd Stage Turbine – Inspection / Replacement
Manufacturer(s):	Turboméca
Applicability:	all ARRIEL 1B post-mod TU 148, ARRIEL 1D, ARRIEL 1D1 and ARRIEL 1S1 turboshaft engines, not modified with Turboméca modification TU347 [Introduced by Service Bulletin (SB) 292 72 0347 – Installation of turbine Part Number (P/N) 0 292 25 039 0] These engines are known to be installed on, but not limited to, the following helicopters: Eurocopter AS 350 B/BA/BB/B1/B2 and Sikorsky S-76A+/A++/C.
Reason:	Several cases of release of gas generator 2nd stage turbine blade occurred in service, with full containment of debris. These events resulted in an uncommanded In-Flight Shut Down (IFSD) of the engine. While awaiting terminating actions, it was decided to implement mandatory check and replacement of the turbine in order to reduce the probability of uncommanded engine IFSD. EASA AD 2007-0018 retained the requirements of previous DGAC AD F-2004-047 and included changes with regard to ARRIEL 1B engines only. Reduction of the turbine blade life limit from 6 000 hours to 3 000 hours was taken as a precaution measure following additional events. EASA AD 2007-0018R1 reduced the original AD applicability following introduction of a new Turbine P/N 0 292 25 039 0 available for all Arriel 1 engine models through Turboméca Modification TU347 or SB 292 72 0347. This new Turbine

	incorporates improvements that are the terminating action for this AD. Therefore inspections and replacement requirements were deleted for engines equipped with the new Turbine P/N 0 292 25 039 0. Since the issuance of EASA AD 2007-0018R1 new cases of release of gas generator 2nd stage turbine blade have occurred at lower blade service lives compared to previous events. This AD supersedes AD 2007-0018R1 by lowering some inspection thresholds and repetitive intervals, lowering the life limits of the 2nd stage turbine blades, and lowering replacement thresholds of the 2nd stage turbine disks and blades, for single-engine applications.
Effective Date:	[TBD: 14 days after final AD issue date]
Required Action(s) and Compliance Time(s):	Required as indicated, unless accomplished previously: 1. Inspections: Once the 2nd stage turbine has accumulated 1 200 Engine Flight Hours (EFH) or 3 500 cycles since new or since inspection in a repair centre: - Do checks in accordance with the following tables and associated Turboméca Mandatory Service Bulletins (MSBs): Table 1.a: 2nd Stage Turbine Inspection Requirements and Table 1.b: Acceptability of checks performed in accordance with previous and latest MSBs Attention should be paid to engine configurations, conditions, actions, compliance time and repetitive intervals. 2. Life Limits of the 2nd Stage Turbine Blades: The life limits of the 2nd stage turbine blades must be set to the values provided in: Table 2: Life Limits of the 2nd Stage Turbine Blades 3. Replacement of the 2nd Stage Turbine Disk and Blades: The replacement requirements for the 2nd Stage Turbine Disk and Blades are provided in: Table 3: 2nd Stage Turbine Replacement Requirements <u>Notes:</u> - Inspection intervals and replacement requirements for Arriel 1S1 engines are unchanged compared to the requirements of AD 2007-0018R1. - Inspection requirements, 2nd stage turbine Blade life limits and turbine replacement requirements do not apply to post TU-347 turbine, which is the terminating action of this AD. - The referenced tables can found in the Appendix of this AD (page 4 & 5).
Ref. Publications:	Turboméca Mandatory Service Bulletins (MSBs) A292 72 0807 Version D, dated 24 July 2009 A292 72 0810 Version C, dated 24 July 2009 The use of later approved revisions of these documents is acceptable for compliance with the requirements of this AD.
Remarks :	1. This Proposed AD will be closed for consultation on 28 August 2009.

	2. Enquiries regarding this PAD should be referred to the Airworthiness Directives, Safety Management & Research Section, Certification Directorate, EASA. E-mail ADs@easa.europa.eu. 3. For any questions concerning the technical content of the requirements in this PAD, 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
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Table 1.a: 2nd Stage Turbine Inspection Requirements

Once the 2nd stage turbine has accumulated 1 200 EFH or 3 500 cycles since new or since inspection in a repair centre:

Configuration	Condition	Action	Compliance Time	Repetitive Interval (Not to Exceed)
Arriel 1B, Arriel 1D, Arriel 1D1	If no check has been previously done or if the blades have been in operation for more than 100 EFH since a check according to relevant MSB ⁽¹⁾	Do a check of the relative position of the 2 nd stage turbine blades, in accordance with MSB A292 72 0807 Version D, Par. 2B(1)(a)&(b) or 2B(2)(a)	Within 50 EFH	Every 150 EFH, until installation of an inspected pre-TU347 turbine fitted with new blades, or a post-TU347 turbine
	If the blades have been in operation for less than 100 EFH since a check done according to relevant MSB ⁽¹⁾		Within 150 EFH since the last check	
Arriel 1S1	If no check has been previously done or if the blades have been in operation for more than 100 EFH since a check according to relevant MSB ⁽²⁾	Do a check of the relative position of the 2 nd stage turbine blades, in accordance with MSB A292 72 0810 Version C, Par. 2B(1)(a)&(b) or 2B(2)(a),(b)&(c)	Within 50 EFH	Every 150 EFH, until installation of an inspected pre-TU347 turbine fitted with new blades, or a post-TU347 turbine
	If the blades have been in operation for less than 100 EFH since a check done according to relevant MSB ⁽²⁾		Within 150 EFH since the last check	

Notes:

⁽¹⁾&⁽²⁾:Refer to Table 1.b

EFH = Engine Flight Hours

Table 1.b: Acceptability of checks performed in accordance with previous and latest MSBs

Note	Variant	Previous MSBs	Latest MSBs
⁽¹⁾	Arriel 1B	MSB A292 72 0263 (Initial Issue to Update 5), or MSB A292 72 0807 (Version A to Version C)	MSB A292 72 0807 Version D
⁽¹⁾	Arriel 1D, Arriel 1D1	MSB A292 72 0263 (Initial Issue to Update 5), or MSB A292 72 0808 (Initial Issue to Update 1), or MSB A292 72 0809 (Version A to Version D)	
⁽²⁾	Arriel 1S1	MSB A292 72 0263 (Initial Issue to Update 5), or MSB A292 72 0810 (Version A to Version B)	MSB A292 72 0810 Version C

Table 2: Life Limits of the 2nd Stage Turbine Blades

Configuration	2 nd Stage Turbine Blade Life Limit
Arriel 1B, Arriel 1D, Arriel 1D1	1200 hours

Table 3: 2nd Stage Turbine Replacement Requirements

Configuration	Condition	Action	Compliance Time	Repetitive Interval (Not to Exceed)
Arriel 1B	Engines with 2 nd stage turbines blades having accumulated more than 3 000 EFH since new, or 2 nd stage turbine disk having accumulated more than 2 200 EFH since new or inspection <i>whichever comes first</i>	Replace the 2 nd stage turbine disk and blades with an inspected pre-TU347 turbine fitted with new blades or a post-TU347 turbine in accordance with MSB A292 72 0807 Version D, Par. 2B(1)(c)or(d) or 2B(2)(b)or(c)	Before next flight <i>Note: Already required by AD 2007-0018R1</i>	For pre-TU347 turbine, repeat replacement when condition is fulfilled again.
	Engines with 2 nd stage turbines blades having accumulated more than 1 200 EFH and less than 3 000 EFH since new		Within 1 000 EFH, and Before 2 nd stage turbine blades have accumulated 3 000 EFH since new, and No later than 30 June 2011 <i>whichever comes first</i>	
Arriel 1D, 1D1	Engines with 2 nd stage turbines blades having accumulated more than 1 500 EFH since new, or 2 nd stage turbine disk having accumulated more than 1 500 EFH since new or inspection <i>whichever comes first</i>		Before next flight <i>Note: Already required by AD 2007-0018R1</i>	Not applicable for post-TU347 turbine.
	Engines with 2 nd stage turbines blades having accumulated more than 1 200 EFH and less than 1 500 EFH since new		Before 2 nd stage turbine blades have accumulated 1 500 EFH since new, and No later than 30 June 2011 <i>whichever comes first</i>	

Notes:

EFH = Engine Flight Hours