EASA	NOTIFICATION OF A PROPOSAL TO ISSUE AN AIRWORTHINESS DIRECTIVE
	PAD No.: 15-071 **Date: 29 May 2015** 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 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.

Design Approval Holder's Name:	**Type/Model designation(s) :**
TURBOMECA	TURMO IV C engines

TCDS Number:	EASA.E.074
Foreign AD:	Not applicable
Supersedure:	This AD supersedes DGAC France AD F-2005-037 dated 02 March 2005, EASA approval 2005-1910.

ATA 72	**Engine – Centrifugal Compressor – Replacement / Inspection**
Manufacturer(s):	Turbomeca, S.A.
Applicability:	TURMO IV C engines, all serial numbers. These engines are known to be installed on, but not limited to, Airbus Helicopters (formerly Eurocopter, Aerospatiale) SA 330 J (PUMA) helicopters.
Reason:	Several occurrences were reported of engine power loss or in-flight shut-down as a result of detachment of one or more blade pieces from a TURMO IV centrifugal compressor inducer. Investigations revealed that the failures were due to fatigue cracks on these blades, caused either by a corrosion phenomenon, or by an impact associated to vibratory stress in a range from 80% to 83% gas generator speed, or by a superposition of the inducer vibratory resonances. This condition, if not detected and corrected, could lead to an uncommanded engine in-flight shut-down, possibly resulting in an emergency landing with consequent damage to the helicopter and injury to occupants. To address this potential unsafe condition, Turbomeca developed several standards of centrifugal compressor inducers. In-service experience shows different behaviour in terms of initiation of corrosion and/or cracks between these standards. This led to the issuance of Service Bulletins providing instructions for repetitive inspections (ultrasonic, Eddy Current or boroscopic) of the centrifugal compressors, with different periodicities depending on the standard of centrifugal compressors. Prompted by these findings, DGAC France issued AD 97-122 (later revised and

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<tr><td></td><td>re-numbered as 1997-122) to require those repetitive inspections of the centrifugal compressor, in order to detect incipient cracks on the blades and/or presence of corrosion. DGAC France AD 1997-122 R3 was subsequently superseded by DGAC France AD F-2005-037 (EASA approval 2005-1910), retaining the requirements, but specifying amended inspections intervals.

Since AD F-2005-037 was issued, a specific vibration criterion was introduced during manufacture on certain centrifugal compressors, incorporating modification (mod) TU 224 (centrifugal compressor assembly Part Number (P/N) 0 249 25 790 0, or P/N 0 249 25 811 0) to prevent vibratory resonances superposition. In-service experience shows that no crack associated to this resonance phenomenon has been reported on post-mod TU 224 engines.

More recently, a case of centrifugal compressor inducer blade loss occurred on a post-mod TU 224 engine. This blade loss was determined to be due to cracks caused by impacts combined with significant erosion of the part.

For the reasons described above, this AD does not retain the requirements of DGAC France AD F-2005-037, which is superseded, and requires modification of engines in post-mod TU 197 or TU 215 configuration to post-mod TU 224 configuration, repetitive ultra-sonic or Eddy Current inspections of centrifugal compressor inducers, repetitive boroscope inspections of centrifugal compressor inducers and, depending on findings, replacement of the centrifugal compressor.</td></tr>
<tr><td>Effective Date:</td><td>[TBD: 14 days after Final AD issue date]</td></tr>
<tr><td>Required action(s) and Compliance Time(s):</td><td>Required as indicated, unless accomplished previously:

(1) For engines in post-mod TU 197 or post-mod TU 215 configuration: within 30 days after the effective date of this AD, replace each pre-mod TU 224 centrifugal compressor with a post-mod TU 224 centrifugal compressor in accordance with the instructions of Turbomeca Mandatory SB (MSB) A249 72 0100 Version H.

(2) Within the threshold specified in Turbomeca MSB A249 72 0100 Version H, as applicable depending on the engine configuration, and, thereafter, at intervals not to exceed the values specified in Table 1 of this AD, (except as specified in Note 1 of this AD), accomplish an ultra-sonic or Eddy Current inspection of the centrifugal compressor inducer in accordance with the instructions of Turbomeca MSB A249 72 0100 Version H.

Table 1 – Intervals for Repetitive Inspection

<table>
<tr><th>Engine Configuration</th><th>Interval</th></tr>
<tr><td>Engines without the following modifications: TU 191, TU 197, TU 215 or TU 224</td><td>400 flight hours (FH)</td></tr>
<tr><td>Post-mod TU 191 engines</td><td rowspan="3">1 000 FH</td></tr>
<tr><td>Post-mod TU 224 engines, fitted with a centrifugal compressor assembly Part Number (P/N) 0 249 25 802 0</td></tr>
<tr><td>Post-mod TU 224 engines fitted with a centrifugal compressor assembly P/N 0 249 25 790 0 or P/N 0 249 25 811 0 and an inducer serial number (S/N) listed in Appendix 1 of this AD</td></tr>
<tr><td>Post-mod TU 224 engines fitted with a centrifugal compressor assembly P/N 0 249 25 790 0 or P/N 0 249 25 811 0, and an inducer S/N <u>not</u> listed in Appendix 1 of this AD</td><td>3 000 FH</td></tr>
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	(3) Within the threshold specified in Turbomeca MSB A249 72 0100 Version H, as applicable depending on the engine configuration, and, thereafter, at intervals not to exceed 100 FH or 12 months, whichever occurs first, accomplish a boroscope inspection of the centrifugal compressor inducer in accordance with the instructions of Turbomeca MSB A249 72 0100 Version H. Note 1: A non-cumulative tolerance of 10 FH may be applied only to the repetitive inspection interval expressed in FH, as specified in paragraphs (2) and (3) of this AD. (4) Accomplishment on an engine of an ultra-sonic or Eddy Current inspection of the inducer, as required by paragraph (2) of this AD, is acceptable in lieu of a boroscope inspection as required by paragraph (3) of this AD for that engine. (5) If, during any inspection as required by paragraph (2) or (3) of this AD, as applicable, any crack, corrosion or other damage is detected on the inducer, before next flight, replace the affected centrifugal compressor with a serviceable part. (6) Modification of an engine, accomplished before the effective date of this AD in accordance with the instructions of Turbomeca MSB A249 72 0100 Version G or an earlier version, is acceptable to comply with the modification requirement of paragraph (1) of this AD for that engine. (7) Inspections and corrective actions, accomplished on an engine before the effective date of this AD in accordance with the instructions of Turbomeca MSB A249 72 0100 Version G or an earlier version, are acceptable to comply with the initial inspection requirements of this AD for that engine. (8) Replacement of a centrifugal compressor on an engine, as required by paragraph (5) of this AD, does not constitute terminating action for the repetitive inspections as required by paragraphs (2) and (3) of this AD for that engine. (9) From the effective date of this AD, installation of a centrifugal compressor on an engine is allowed, provided the part has been modified to incorporate Turbomeca mod TU 224.
Ref. Publications:	Turbomeca MSB A249 72 0100 Version H dated 27 May 2015. The use of later approved revisions of this document is acceptable for compliance with the requirements of this AD.
Remarks :	1. This Proposed AD will be closed for consultation on 26 June 2015. 2. Enquiries regarding this PAD should be referred to the Safety Information Section, Certification Directorate, EASA. E-mail: ADs@easa.europa.eu. 3. For any question concerning the technical content of the requirements in this PAD, please contact: Operator Support & Sales TURMO - TURBOMECA 40220 TARNOS – France Telephone: +33 (0)5 59 74 40 00, Fax: +33 (0)5 59 74 45 15, or contact your nearest TURBOMECA field representative on http://www.turbomeca-support.com.

Appendix 1 – Affected Inducers P/N 2 249 25 138 0 listed by S/N

3594AD	3646AD	3757AD	3877AD	3931AD	3996AD
3595AD	3647AD	3758AD	3878AD	3932AD	3997AD
3596AD	3648AD	3759AD	3879AD	3933AD	3999AD
3597AD	3649AD	3760AD	3880AD	3935AD	4001AD
3599AD	3653AD	3761AD	3881AD	3936AD	4004AD
3600AD	3670AD	3762AD	3882AD	3937AD	4005AD
3601AD	3671AD	3763AD	3883AD	3939AD	4006AD
3603AD	3672AD	3764AD	3884AD	3940AD	4007AD
3604AD	3674AD	3765AD	3885AD	3941AD	4008AD
3606AD	3675AD	3766AD	3886AD	3942AD	4009AD
3607AD	3676AD	3767AD	3887AD	3943AD	4010AD
3609AD	3678AD	3768AD	3888AD	3944AD	4011AD
3610AD	3679AD	3769AD	3890AD	3945AD	4012AD
3611AD	3680AD	3770AD	3891AD	3946AD	4013AD
3612AD	3681AD	3771AD	3893AD	3947AD	4016AD
3613AD	3682AD	3772AD	3894AD	3948AD	4017AD
3614AD	3683AD	3773AD	3895AD	3949AD	4018AD
3615AD	3685AD	3835AD	3896AD	3950AD	4023AD
3616AD	3686AD	3840AD	3897AD	3951AD	4061AD
3617AD	3687AD	3843AD	3899AD	3952AD	4062AD
3618AD	3688AD	3844AD	3900AD	3955AD	4063AD
3619AD	3689AD	3849AD	3901AD	3956AD	4064AD
3620AD	3690AD	3850AD	3902AD	3958AD	4065AD
3621AD	3691AD	3851AD	3903AD	3960AD	4066AD
3622AD	3692AD	3853AD	3904AD	3961AD	4067AD
3623AD	3714AD	3854AD	3905AD	3964AD	4068AD
3624AD	3715AD	3855AD	3906AD	3965AD	4069AD
3625AD	3716AD	3856AD	3907AD	3966AD	4070AD
3626AD	3717AD	3857AD	3908AD	3967AD	4071AD
3627AD	3718AD	3859AD	3910AD	3969AD	4072AD
3628AD	3719AD	3860AD	3911AD	3970AD	4075AD
3629AD	3720AD	3861AD	3912AD	3972AD	4076AD
3630AD	3721AD	3862AD	3913AD	3973AD	4077AD
3631AD	3722AD	3863AD	3914AD	3975AD	4078AD
3633AD	3723AD	3864AD	3916AD	3976AD	4080AD
3634AD	3724AD	3865AD	3917AD	3978AD	4083AD
3635AD	3725AD	3866AD	3918AD	3982AD	4084AD
3636AD	3726AD	3867AD	3919AD	3984AD	4088AD
3637AD	3728AD	3868AD	3920AD	3985AD	4089AD
3638AD	3729AD	3870AD	3921AD	3986AD	4092AD
3639AD	3730AD	3871AD	3922AD	3987AD	4100AD
3640AD	3732AD	3872AD	3924AD	3989AD	
3641AD	3733AD	3873AD	3925AD	3990AD	
3642AD	3754AD	3874AD	3926AD	3991AD	
3643AD	3755AD	3875AD	3928AD	3992AD	
3645AD	3756AD	3876AD	3929AD	3995AD	