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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 1

Med hjemmel i lov om luftfart av 16. desember 1960 §§ 214 og 43 jfr. kgl. res. av 8. desember 1961, litra K og Samferdselsdepartementets bemyndigelse av 23. mars 1964 fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

65/86 KORROSJON PÅ TUBINKASSEN

Påbudet gjelder:

Tubomeca Arriel 1; alle versjoner med turbinkasse (modul 03) som har delnr. 0.292.45.509.0, 0.292.45.510.0 eller 0.292.45.511.0

Påbudet omfatter:

For å unngå svekkelse av turbinkassen som følge av korrosjon under identifikasjonsplatefestet, skal Turbomeca Service 72.292.0093, datert 25.2.86, eller senere revisjoner utføres.

Anm.: Korrosjonskontrollen foreskrevet i Turbomeca Service 72.292.0093 innebærer at identifikasjonsplaten til modul 03 må fjernes.

Identifikasjon av modul 03 vil i mellomtiden bare kunne skje ved hjelp av modul 02. Modul 03 må derfor ikke separeres fra modul 02 før fabrikanten har installert ny identifikasjonsplate.

Tid for utførelse:

For Arriel 1B (installert i enmotors helikopter) som har turbinkasser med 2000 timers gangtid eller 5 års kalendertid siden ny, eller mer:

Innen 1.10.86 eller 100 timers gangtid; det som kommer først.

For andre varianter (installert i tomotors helikopter) som har turbinkasser med 2000 timers gangtid eller 5 års kalendertid siden ny, eller mer:

Innen 1.11.86.

Referanse:

Fransk AD 86-29(B)

30.6.86

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDP s nummer.

123/87 MODIFIKASJON AV TRYKKSMØRINGSRØR

Påbudet gjelder:

Turbomeca Arriel 1A,-1A1,-1A2,-1B,-1B2,-1C,-1C1,-1D, og -1K

Påbudet omfatter:

For å unngå mulig risiko for brann i motornacelle forårsaket av brudd i "Rear Bearing Pressure Oil Pipe" til "Gas Generator", skal Turbomeca - Service Arriel No. 72.292.088 eller senere revisjoner utføres.

Tid for utførelse:

Ikke senere enn 31.1.88

Referanse:

Fransk AD 86-147(B)

9.12.87

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA – 2

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

67/88 MODIFIKASJON AV ELEKTRISK DRIVSTOFFKRAN

Påbudet gjelder:

Turbomeca Artouste III B, B1, BF og BF1; alle serienummer hvor modifikasjon TU 153 ikke er utført.

Påbudet omfatter:

For å unngå utilsiktet lukking av en elektrisk drivstoffkran skal gangtiden mellom oppstart og stopp av motoren (operation duration cycle) begrenses til maksimalt 2 timer; inntil modifikasjon TU 153 er utført i henhold til Turbomeca Service 80.218.0083, eller senere revisjoner.

Tid for utførelse:

Gangtidsbegrensningen gjelder f.o.m. 1988.11.15.

Referanse:

DGAC AD 87-060(B).

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA – 2a

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

040/90A VIBRASJONSOVERVÅKING

Påbudet gjelder:

Turbomeca ARRIEL 1 motorer som beskrevet i vedlagte kopi av DGAC AD 1990-064(A)R1.

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 1990-064(A)R1.

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 1990-064(A)R1, med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 1990-064(A)R1.

Gyldighetsdato:

2001-04-01.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

GSAC

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 1990-064(A) R1
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 1 turboshaft engines

Damage to the generator rear bearing (ATA 72)

1. APPLICABILITY:

ARRIEL 1 turboshaft engines all variants installed on single or twin-engine helicopters.

2. REASONS:

Accumulation of small mineral or chemical particles in the turbine shaft is likely to occur during continuous or repeated operation in dusty atmosphere.

This may lead to an unbalance condition of the gas generator rotating assembly which could cause damage to the rear bearing and ultimately result in the uncontrolled in-flight strut down of the engine.

3. MANDATORY ACTIONS AND COMPLIANCE:

In addition to the periodic vibration monitoring operation made mandatory by chapter 05-10-03 of the Maintenance Manual, cleaning of the rotating assembly within the time limits and according to the procedure required by Service Bulletin No. A292-72-230 issue 1 is made mandatory at the effective date of this Revision 1 of this Airworthiness Directive.

REF.: TURBOMECA Service Bulletin No. A292-72-230 issue 1.

This Revision 1 replaces original AD 90-064(B) dated April 04, 1990.

EFFECTIVE DATES :

Original AD : APRIL 14, 1990
Revision 1 : MARCH 31, 2001

n/JFS

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 3

Med hjemmel i lov om luftfart av 16. desember 1960 §§ 214 og 43 jfr. kgl. res. av 8. desember 1961, litra K og Samferdselsdepartementets bemyndigelse av 23. mars 1964 fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

051/90 FRIHJUL - KRYPING

Påbudet gjelder:

Turbomeca: Arriel 1B, 1D, og 1D1; installert i Aerospatiale AS 350.

Gjelder motorer som er utstyrt med "Free Wheel Shaft Assemblies" med følgende serienumre:

For serienumre:
Se "Equipment Log Card" og Engine Log Book" seksjon "C".

a: Serienr. 793 og høyere, eller

b: opp til serienr. 793 dersom "Equipment Log Card" viser at motoren har vært underlagt motorfabrikantens inngripning, eller reparasjonsarbeid utført av av en av motorfabrikanten godkjent vedlikeholdsinstans etter 01.10.88.

Påbudet omfatter:

1. Grunnet noen tilfeller av frihjuls ("Free Wheel") kryping (sluring) som har resultert i enten "Yaw Jerks" under sen re-synkronisering, eller landinger uten motorkraft, gjøres følgende restriksjoner gjeldende for helikoptere utstyrt med berørt komponent, ref. pkt a og b ovenfor:

1.1 Autorotasjonstrening uten å kutte motoren er ikke tillatt.

1.2 Å utføre frivillig de-synkronisering av "Engine Drive", (Torque lavere enn 10%) er ikke tillatt.

1.3 Autorotasjonstrening skal utføres i henhold til "Conditional" revision No. RCa AS 350 B, AS 350 B1 og AS 350 B2.

2. Modifiser berørte "Free Wheel Shaft Assemblies", ref. pkt. a og b, i samsvar med modifikasjonen Turbomeca TU 211 (se Turbomeca Service Arriel 72-292-0140) eller modifikajonen TU 212 (se Turbomeca Service Arriel 72-292-0141).

Anm.: Etter at modifikasjon TU 211 eller TU 212 er utført, er restriksjonene nevnt i pkt. 1 ikke lenger nødvendige.

3. Helikoptere som har motor utstyrt med "Free Wheel Shaft Assemblies" med serienr. under 793 og som ikke omfattes av punkt b, er ikke underlagt de restriksjoner omtalt i pkt.1.

17.08.90

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDP's nummer.

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051/90
forts; Tid for utførelse:

Ikke senere enn 31.10.90.

Anm.: Denne LDP opphever og erstatter LDP 005/90 AEROSPATIALE - 23.

Referanse:

Fransk AD 90-105(B) R1.

|91-040 FRIHJUL - KRYPING

Påbudet gjelder:

Turbomeca ARRIEL 1B, 1D og 1D1; installert i Aerospatiale AS 350.

Påbudet omfatter:

Det har inntruffet tilfeller av frihjuls ("Free Wheel") kryping (sluring) under prøveflyging av fabrikknye helikoptre med motorer som har innlemmet modifikasjon TU 211 (TURBOMECA-SERVICE nr. 72 292 0140) eller TU 212 (TURBOMECA-SERVICE nr. 72 292 0141).

Anm.: Disse modifikasjonene ble innført gjennom LDP 051/90

For å unngå frihjulskryping skal følgende tiltak utføres:

1. For helikopter der modifikasjon Aerospatiale AS 350 TU 211 eller TU 212 er utført skal det installeres et skilt på instrumentpanelet med følgende tekst:

   "Deliberate in flight shutdown of the engine is prohibited"

2. Utfør modifikasjon TU 221 i samsvar med instruksjonene gitt i Turbomeca Service Arriel nr. 292 72 0146.

Anm. 1: Etter utførelse av modifikasjon TU 221, oppheves restriksjonen gitt i punkt 1. i denne LDP.

Tid for utførelse:

1. Før første flyging etter 16.12.91.

2. Innen 31. mars 1992.

Referanse:

Fransk AD 91-156(B)R1.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA-4

Med hjemmel i lov om luftfart av 16. desember 1960 §§ 214 og 43, jfr. kgl. res. av 8. desember 1961, litra K, og Samferdselsdepartementets bemyndigelse av 23. mars 1964, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

92-048B KONTROLL AV "MAGNETIC CHIP DETECTOR"

Påbudet omfatter:

Turbomeca ARRIEL 1A, -1A1, -1B, -1D og -1D1 installert i men ikke begrenset til AS 350B.

Påbudet gjelder:

For å hindre "power turbine overspeed" som følge av skader på gearboksdrevet (MO 5 module), skal følgende tiltak utføres i samsvar med Turbomeca SB 292 72 0157.

1. For ARRIEL 1B, 1D, 1D1 hvor modifikasjon TU 232 ikke er utført, samt ARRIEL 1A og 1A1 hvor modifikasjon TU 13 er utført, men ikke TU 232:

   Utfør en kontroll av "magnetic chip detector", uansett hvilken standard gearboksen befinner seg i.

   Anm.: Kriteriene gitt i kapittel 72-80-01, side 104/105 i Maintenance Manual skal følges.

2. ARRIEL 1B
   ARRIEL 1A og 1A1 hvor modifikasjon TU 13 er utført:

   Gearboksmodul (MO 5) som ikke er modifisert i samsvar med TU 39 er ikke luftdyktig.

3. Gearboksdrevmoduler som listet nedenfor skal fjernes dersom:

   - antall flytimer siden siste planlagte ettersyn eller reparasjon er mindre enn 200 timer;

   - siste planlagte ettersyn eller reparasjon er utført før 01.06.92.

   Berørte MO 5 serienummer:

   120 - 178 - 182 - 197 - 244 - 280 - 354 - 379 - 500 - 589 - 628 - 629 - 643 - 2030 - 2074 - 2219 - 2326 - 2334 - 2469 - 2484 - 2651 - 2686.

Tid for utførelse:

Dersom ikke allerede utført:

1. Hver 8. flytime, eller daglig etter siste flytur.

2. Før første flyging etter 01.08.93.

Referanse:

DGAC 92-078R2. 01.08.93

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 5

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

93-067A UTFØRELSE AV SERVICE BULLETINER

Påbudet gjelder:

Turbomeca ARRIEL modeller som listet i DGAC AD 93-114(B)R2.

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 93-114(B)R2.

Tid for utførelse:

Til de tider og som beskrevet i vedlagte kopi av DGAC AD 93-114(B)R2, med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 93-114(B)R2.

Gyldighetsdato:

01.09.95.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

G S A C

Bilag til LDP 93-067A

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive

Translation of 'Consigne de Navigabilité'
ref.: 93-114(B)R2
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 1 turbo-shaft engines

2nd stage nozzle guide vanes

This Airworthiness Directive is applicable to the ARRIEL 1A, 1A1, 1A2, 1B turbo-shaft engines post-mod TU 76 and pre-mod TU 197 or TU 202 and ARRIEL 1C, 1C1, 1C2, 1D, 1D1, 1S, 1K, 1K1 pre-mod TU 197 or TU 202.

Deteriorations of the 2nd stage nozzle guide vanes in the gas generator module (M03) have resulted, in some cases, in engine shutdowns. These deteriorations cannot be detected by inspections "on field", the module M03 has to be disassembled to check the nozzle's condition.

However, when the engine is installed on the aircraft, there is a premonitory indication of deterioration : an abnormal rubbing noise can be heard either during the gas generator rundown after engine shutdown, or during the daily check of the gas generator free rotation, performed after the last flight.
Consequently, in order to minimize the worsening of this defect which could result in an In Flight Shut Down, it is mandatory to apply Service Bulletin N° 292 72 0181.

Also, implementation of Service Bulletin n° 292 72 0150 (modification TU 202) or Service Bulletin n° 292 72 0153 (modification TU 197) is mandatory at next overhaul occurring after November 1st, 1995 for these ARRIEL 1B, 1D or 1D1 engines which don't have TU 202 or TU 197, as soon as this revision n° 2 becomes effective, but not later than December, 31st, 1998.

This Revision 2 replaces the revision 1 dated August 4, 1993.

Ref. : Service Bulletin TURBOMECA N° 292 72 0181, 292 72 0150, 292 72 0153

EFFECTIVE DATE : JULY 29, 1995

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 6

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

94-075 KONTROLL AV «OVERSPEED SENSOR»

Påbudet gjelder:

Turbomeca ARRIEL 1A, 1A1 hvor modifikasjon TU 13 ikke er utført; ARRIEL 1A2, 1C, 1C1, 1C2, 1E, 1E2, 1K, 1K1, 1S, 1S1.

Påbudet omfatter:

Kontroller «free power turbine overspeed sensor» i samsvar med Turbomeca ARRIEL Service Bulletin 292-77-0194, datert 28.09.94, eller senere revisjoner.

Tid for utførelse:

Ikke senere enn 31.12.94.

Referanse:

DGAC 94-218.

01.12.94

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

LUFTDYKTIGHETSPÅBUD

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 7

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

95-034D UTFØRELSE AV SERVICE BULLETINER

Påbudet gjelder:

Turbomeca ARRIEL 1A, 1A1, 1B, 1D og 1D1 motorer som beskrevet i vedlagte kopi av DGAC AD 1995-069(A) R3.

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 1995-069(A) R3.

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 1995-069(A) R3, med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 1995-069(A) R3.

Gyldighetsdato:

2001-04-01.

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AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 1995-069(A) R3
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 1 turboshaft engines

Free power turbine overspeed (ATA 72)

1. AFFECTED ENGINES:

This Airworthiness Directive is applicable to the turboshaft engines : ARRIEL 1A, 1A1, 1B, 1D, 1D1 which incorporate the modifications standard as indicated in paragraph 3.

2. REASONS:

In case of power turbine overspeed, it may happen under certain circumstances that some debris are not fully contained.

To prevent this situation, Revision 1 of this Airworthiness Directive enforced from November 1st, 1995 that the following TURBOMECA Service Bulletins SB 292-72-0206, 292-72-0207, 292-72-0208 were to be incorporated at the first engine or module shop visit.

Referring to available information, all concerned turboshaft engines are in conformity with this AD but it is impossible to be sure of this information. Revision 2 objective was to terminate this action but engine version and configuration were not clearly identified.

Revision 3 of this AD clarifies the concerned engine version and configuration and terminate this action.

3. ACTIONS:

Apply the Service Bulletins as indicated below:

ARRIEL VERSION AND CONFIGURATION		SB TO BE INCORPORATED
1A 1A1	modified TU 13 and not modified TU 99 and not modified TU 215	292-72-0206 (TU 254) and 292-72-0208 (TU 259)
1B 1D	not modified TU 99 and not modified TU 215	
1A 1A1	modified TU 13 and modified TU 99 and not modified TU 215	292-72-0207 (TU 255) and 292-72-0208 (TU 259)
1B 1D 1D1	Modified TU 99 and not modified TU 215	

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4. COMPLIANCE:

The above mentioned actions must be accomplished before March 31, 2001.

REF.: SB TURBOMECA 292-72-0206, 292-72-0207, 292-72-0208.

This Revision 3 replaces AD 1995-069(B) R2 dated November 29, 2000.

EFFECTIVE DATES :

Original AD : APRIL 22, 1995
Revision 1 : JULY 15, 1995
Revision 2 : DECEMBER 09, 2000
Revision 3 : MARCH 17, 2001

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 008

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

98-077A UTFØRELSE AV SERVICE BULLETINER

Påbudet gjelder:

Turbomeca ARRIEL 1 turboshaftmotorer som beskrevet i vedlagte kopi av DGAC AD 98-311 (A)R1.

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 98-311 (A)R1.

Anm.: Denne LDP erstatter og opphever LDP 93-067A.

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 98-311 (A)R1, med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 98-311 (A)R1.

Gyldighetsdato:

1998-12-01.

GSAC

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 98-311(A) R1
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 1 turbo-shaft engines

2nd stage nozzle guide vanes (NGV2)

This Airworthiness Directive is applicable to all variants of ARRIEL 1 turbo-shaft engines.

Deteriorations of the 2nd stage nozzle guide vanes, at TU 76 standard, in the gas generator module (M03) have resulted, in some cases, in engine shutdowns in flight. One case of deterioration of a post-TU 197 nozzle guide vane resulting in an in-flight shut down was also noted although the degradation mode different. These deteriorations cannot be detected by inspections when the engine is installed on the aircraft, the module M03 has to be disassembled to check the NGV's condition.

However, when the engine is installed on the aircraft, there is a premonitory indication of deterioration : an abnormal rubbing noise can be heard, either during the gas generator rundown after engine shutdown, or during the daily check of the gas generator free rotation, performed after the last flight of the day.

As for the NGV's post-mod TU 197, it is possible to detect a possible beginning of NGV degradation by the mean of a borescopic inspection after having removed the engine and separated modules 3 and 4.

Consequently, in order to minimize the risk of occurence of an In-Flight Shut Down, it is mandatory to apply the following measures :

1. FOR ARRIEL 1A, 1A1, 1A2, 1B, WHICH HAVE TU 76 AND WHICH HAVE NOT TU 197 OR TU 202, AND FOR ARRIEL 1C, 1C1, 1C2, 1D, 1D1, 1S, 1K, 1K1 WHICH HAVE NOT TU 197 OR TU 202.

   1.1. Carry out the noise inspection in accordance with the periodicity and method of Service Bulletin 292 72 0181, Revision 3 dated September 15, 1995 (or later).

   1.2. As from the date of effectiveness of the Airworthiness Directive 93-114(B) Revision 3, it is forbidden to use any Module 3 from ARRIEL 1B, 1D, 1D1 which have TU 76 and which have not TU 197 or TU 202.

2. FOR ARRIEL 1, ALL VARIANTS POST-MOD TU 197

   Carry out the inspections and actions indicated in SB 292 72 0212 Revision 4 dated August 20, 1998 or later update, within the cycle limit specified by this Service Bulletin.

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* ATTENTION : Starting from revision 3 of SB 232 72 0212, inspection intervals are specified in cycles and no longer in hours.

Ref. : TURBOMECA Service Bulletin N° 292 72 0181 and 292 72 0212.

This revision 1 replaces original airworthiness directive 98-311(A) dated July 29, 1998.

EFFECTIVE DATES :

Original AD : AUGUST 08, 1998
Revision 1 : OCTOBER 17, 1998

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 009

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

98-105 UTFØRELSE AV SERVICE BULLETIN 292.72.0163

Påbudet gjelder:

Turbomeca ARRIEL 1 motorer som beskrevet i vedlagte kopi av DGAC AD 98-394 (A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 98-394 (A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 98-394 (A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 98-394 (A).

Gyldighetsdato:

1998-12-01.

GSAC

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 98-394(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

Turbo-shaft engines ARRIEL 1

Gas generator - Rear bearing

1. APPLICABILITY

Turbo-shaft engines ARRIEL 1 all variants installed on single or twin-engine helicopters.

2. REASON

To provide a means of warning the pilot about deterioration in progress of the gas generator rear bearing, which could lead to uncommanded engine shutdown.

3. MANDATORY ACTIONS

Incorporate modification TU208 according to Service Bulletin n° 292.72.0163 Revision No.1 dated April 3, 1996. This modification consists in installing an electrical indicating magnetic plug on the oil return line of the rear bearing.

NOTE : Service Bulletin n° 292.72.0163 Revision No.1 requested modification TU208 to be incorporated before December 31, 1997.

4. COMPLIANCE

Starting from January 17, 1999, flight operations with engines not incorporating TU208 are prohibited.

5. REFERENCES

TURBOMECA Service Bulletin n° 292.72.0163 Revision No. 1.

EFFECTIVE DATE : OCTOBER 17, 1998

n/AK

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 010

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

99-001 UTFØRELSE AV SERVICE BULLETIN 218-72-0099

Påbudet gjelder:

Turbomeca ARRIEL 1 motorer som beskrevet i vedlagte kopi av DGAC AD 98-432 (A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 98-432 (A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 98-432 (A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 98-432 (A).

Gyldighetsdato:

1999-01-01.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

GSAC

AIRWORTHINESS DIRECTIVE

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Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 98-432(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARTOUSTE III Turboshaft Engines

Inspection for smoke emissions

1. APPLICABILITY

This Airworthiness Directive refers to ARTOUSTE III B-B1-D turboshaft engines.

2. REASONS

It has been noticed that cracks could develop on the rear face of the injection wheel, and subsequently allow fuel leakage into the turbine shaft tube during operation.

When the engine is shut down, this fuel flows into the combustion chamber, which could result in a slight increase of rundown time and/or emissions of smoke through the exhaust pipe, the air intake or the turbine casing drain after the rotating assembly has stopped.

Maintaining the engine in service could cause in this case further deterioration to the injection wheel to the extent of seriously compromising engine operation.

3. MANDATORY ACTION AND COMPLIANCE

The inspection for emissions of smoke on engine shutdown and the removal of engines in the conditions defined in Service Bulletin No. 218-72-0099 are made mandatory as from the effective date of this A.D.

4. REFERENCE

TM Service Bulletin No. 218-72-0099 dated September 14, 1998.

EFFECTIVE DATE : NOVEMBER 14, 1998

n/AK

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 011

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

99-011 UTFØRELSE AV SERVICE BULLETIN 292.72.0213

Påbudet gjelder:

Turbomeca ARRIEL motorer som beskrevet i vedlagte kopi av DGAC AD 98-493 (A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 98-493 (A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 98-493 (A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 98-493(A).

Gyldighetsdato:

1999-02-01.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

GSAC

Bilag til LDP 99-011

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 98-493(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

Turbo-shaft engines ARRIEL 1

Power Turbine Nozzle Assembly

1. APPLICABILITY

Turbo-shaft engines ARRIEL 1, variants 1A, 1A1, 1A2 and 1B equipped with a non-mod TU 38 Power Turbine Nozzle Assembly.

2. REASON

To detect cracks on the rear bearing support which could lead to an in-flight shutdown of the engine.

3. MANDATORY ACTIONS

On-line inspection of the Power Turbine Nozzle Assembly

NOTE : This inspection was required as mandatory before February 28, 1997 by Service Bulletin n° 292.72.0213 dated November 15, 1996.

4. COMPLIANCE

At the latest on January 17, 1999.

5. REFERENCES

TURBOMECA Service Bulletin n° 292.72.0213.

EFFECTIVE DATE : DECEMBER 12, 1998

n/AK

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 12

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

99-021 "ELECTRICAL FUEL CLOCK"

Påbudet gjelder:

Turbomeca ARTOUSTE III motorer som beskrevet i vedlagte kopi av DGAC AD 1999-005(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 1999-005(A).

Anm.: Denne LDP erstatter og opphever LDP 67/88.

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 1999-005(A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 1999-005(A).

Gyldighetsdato:

1999-03-01.

GSAC

AIRWORTHINESS DIRECTIVE

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Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 1999-005(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARTOUSTE III Turboshaft engines

Electrical fuel cock

1. APPLICABILITY

This Airworthiness Directive refers to all ARTOUSTE III turboshaft engines.

2. REASON

Cases of partial or total closing of the electrical fuel cock in service which may have led to loss of engine power or even engine shutdown have been reported.

3. MANDATORY ACTIONS AND COMPLIANCE TIME

A modification of the control unit controlling the electrical fuel clock was defined to fix the problem. The references of this modification as applied to the various variants are as follows :

- ARTOUSTE III D : Mod. TU 164 distributed through Service Bulletin Part No. 218 80 0098
- ARTOUSTE III B and B1 : Mod. TU 167 distributed through Service Bulletin Part No. 218 80 0093.

Until December 31, 1999, for ARTOUSTE III B and B1 turboshaft engines non TU 167 modified and for ARTOUSTE III D turboshaft engines non TU 164 modified, the duration of the operating cycle (start down) is limited to 2 hours.

From January 1st 2000, the application of these Service Bulletins is mandatory.

4. REFERENCES

- ARTOUSTE III B and B1 : Mod. TU 167 distributed through Service Bulletin Part No. 218 80 0093
- ARTOUSTE III D : Mod. TU 164 distributed through Service Bulletin Part No. 218 80 0098

EFFECTIVE DATE : JANUARY 23, 1999

n/PV

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 13

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

99-058 "CENTRIFUGAL IMPELLER"

Påbudet gjelder:

Turbomeca ARRIEL 1D, 1D1, 1S og 1S1 motorer som beskrevet i vedlagte kopi av DGAC AD 1999-185(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 1999-185(A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 1999-185(A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 1999-185(A).

Gyldighetsdato:

1999-08-01.

GSAC

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 1999-185(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 1 Turboshaft engines

Centrifugal impeller (ATA 72)

1. **EQUIPMENT CONCERNED :**

This Airworthiness Directive refers to all TURBOMECA ARRIEL 1D, 1D1, 1S and 1S1 turboshaft engines which the centrifugal impeller is listed in Service Bulletin 292 72 0246.

2. **PURPOSE :**

Several cases of contained rupture of centrifugal compressor blades have been observed in service, these ruptures leading to power drop. This situation can cause unwanted engine in-flight shutdown. In order to detect any potential manufacturing problem that may lead to this kind of event, the action below is made mandatory.

3. **ACTION :**

Ultrasonic inspection of all centrifugal impeller blades, as defined by the TURBOMECA Service Bulletin No. 292 72 0246, is made mandatory and must be carried out before July 1st 2000.

REF. : TURBOMECA Service Bulletin No. 292 72 0246

EFFECTIVE DATE : MAY 15, 1999

n/PV

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 14

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

99-059 "CENTRIFUGAL IMPELLER"

Påbudet gjelder:

Turbomeca ARRIEL 2S1 og 2B motorer som beskrevet i vedlagte kopi av DGAC AD 1999-186(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 1999-186(A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 1999-186(A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 1999-186(A).

Gyldighetsdato:

1999-08-01.

GSAC

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 1999-186(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 2 Turboshaft engines

Centrifugal impeller (ATA 72)

1. **EQUIPMENT CONCERNED :**

This Airworthiness Directive refers to all TURBOMECA ARRIEL 2S1 and 2B turboshaft engines.

2. **PURPOSE :**

Several cases of contained rupture of centrifugal compressor blades have been observed in service, these ruptures leading to power drop. This situation can cause unwanted engine in-flight shutdown. In order to detect any potential manufacturing problem that may lead to this kind of event, the action below is made mandatory.

3. **ACTION :**

Ultrasonic inspection of all centrifugal impeller blades, as defined by the TURBOMECA Service Bulletin No. 292 72 2802, is made mandatory and must be carried out before December 31st 1999.

REF. : TURBOMECA Service Bulletin No. 292 72 2802

EFFECTIVE DATE : MAY 15, 1999

n/PV

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 15

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

99-071 INSPEKSJON FOR BRENNSTOFFLEKKASJE

Påbudet gjelder:

Turbomeca ARRIEL 2S1, 2B og 2C motorer som beskrevet i vedlagte kopi av DGAC AD 1999-285(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 1999-285(A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 1999-285(A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 1999-285(A).

Gyldighetsdato:

1999-09-01.

GSAC

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 1999-285(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 2 Turboshaft engines

Pump body of the fuel pumps and metering unit assembly (ATA 73)

1. EQUIPMENT CONCERNED

This Airworthiness Directive refers to ARRIEL 2S1, 2B and 2C turboshaft engines fitted with fuel pumps and metering unit assemblies listed by serial number in Service Bulletin No. 292 73 2803.

2. PURPOSE

It has been noticed, in a well-defined area of the fuel pump bodies, that the material thickness could be lower than the minimum required thickness.

As a result, the fire resistance of this equipment could be affected, and fuel seepage may occur.

3. MANDATORY ACTIONS AND COMPLIANCE

The following actions are made mandatory and must be performed in accordance with the instructions stated in Service Bulletin No. 292 73 2803.

3.1. After the last flight of the day, inspect the floor of the helicopter engine bay for presence of fuel. If fuel is detected, refer to the relevant helicopter Maintenance Manual and then perform the inspection described in paragraph 3.2. of this Airworthiness Directive.

3.2. Every 50 operating hours, inspect the area specified by the Service Bulletin for fuel seepage. If fuel seepage is detected, remove and replace the HP/LP pump assembly before the next flight.

3.3. As soon as possible, and before the 1st of May 2000, check the pump body material thickness as per the instructions given in the Service Bulletin. If the measured thickness is lower than the criteria stated in the Service Bulletin, withdraw the HP/LP pump assembly from service and replace it before the next flight. Application of the control required by this paragraph constitutes a terminating action to the repetitive checks required in paragraphs 3.1 and 3.2 above.

n/PV

.../...

REF. : TURBOMECA Service Bulletin No. 292 73 2803 dated June 07, 1999 (or subsequent approved revision).

EFFECTIVE DATE : JULY 23, 1999

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 16

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

99-089 UTFØRELSE AV TURBOMECA SB No 292 72 2054

Påbudet gjelder:

Turbomeca ARRIEL 2S1 og 2B motorer som beskrevet i vedlagte kopi av DGAC AD 1999-392(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 1999-392(A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 1999-392(A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 1999-392(A).

Gyldighetsdato:

1999-12-01.

GSAC

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 1999-392(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 2 Turboshaft engines

Centrifugal impeller (ATA 72)

1. **APPLICABILITY :**

This Airworthiness Directive refers to all ARRIEL 2S1 and 2B turboshaft engines.

2. **REASON :**

Several cases of contained centrifugal impeller blade rupture have been observed in service. These events have resulted in power losses but could lead to a non commanded in-flight shut down. Investigations have shown an acoustic excitation of the blades to be the cause of the events. The proposed modification suppress this excitation.

3. **MANDATORY ACTIONS AND COMPLIANCE :**

The installation of a sleeve in the bleed valve boss, as defined by TURBOMECA Service Bulletin No. 292 72 2054, is made mandatory and must be performed by March 31, 2000.

REF. : TURBOMECA Service Bulletin No. 292 72 2054

This Airworthiness Directive replaces AD 1999-186(A) which is cancelled.

EFFECTIVE DATE : UPON RECEIPT FROM OCTOBER 06, 1999

n/AK

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AIRWORTHINESS DIRECTIVE

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Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 1999-391(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 1 Turboshaft engines

Centrifugal impeller (ATA 72)

1. **APPLICABILITY :**

This Airworthiness Directive refers to all ARRIEL 1D, 1D1, 1S and 1S1 turboshaft engines.

2. **REASON :**

Several cases of contained centrifugal impeller blade rupture have been observed in service. These events have resulted in power losses but could lead to a non commanded in-flight shut down. Investigations have shown an acoustic excitation of the blades to be the cause of the events. The proposed modification suppress this excitation.

3. **MANDATORY ACTIONS AND COMPLIANCE :**

The installation of a sleeve in the bleed valve boss, as defined by TURBOMECA Service Bulletin No. 292 72 0261, is made mandatory and must be performed by March 31, 2000.

REF. : TURBOMECA Service Bulletin No. 292 72 0261

This Airworthiness Directive replaces AD 1999-185(A) which is cancelled.

EFFECTIVE DATE : UPON RECEIPT FROM OCTOBER 06, 1999

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 17

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartsverket følgende forskrift om luftdyktighet.

99-088 UTFØRELSE AV TURBOMECA SB No 292 72 0261

Påbudet gjelder:

Turbomeca ARRIEL 1D, 1D1, 1S og 1S1 motorer som beskrevet i vedlagte kopi av DGAC AD 1999-391(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 1999-391(A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 1999-391(A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 1999-391(A).

Gyldighetsdato:

1999-12-01.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

GSAC

AIRWORTHINESS DIRECTIVE

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Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 1999-391(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 1 Turboshaft engines

Centrifugal impeller (ATA 72)

1. **APPLICABILITY :**

This Airworthiness Directive refers to all ARRIEL 1D, 1D1, 1S and 1S1 turboshaft engines.

2. **REASON :**

Several cases of contained centrifugal impeller blade rupture have been observed in service. These events have resulted in power losses but could lead to a non commanded in-flight shut down. Investigations have shown an acoustic excitation of the blades to be the cause of the events. The proposed modification suppress this excitation.

3. **MANDATORY ACTIONS AND COMPLIANCE :**

The installation of a sleeve in the bleed valve boss, as defined by TURBOMECA Service Bulletin No. 292 72 0261, is made mandatory and must be performed by March 31, 2000.

REF. : TURBOMECA Service Bulletin No. 292 72 0261

This Airworthiness Directive replaces AD 1999-185(A) which is cancelled.

EFFECTIVE DATE : UPON RECEIPT FROM OCTOBER 06, 1999

n/AK

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 18

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

2000-077 UTFØRELSE AV TURBOMECA SB A 319 73 4808

Påbudet gjelder:

Turbomeca ARRIUS 2F motorer som beskrevet i vedlagte kopi av DGAC AD 2000-482(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 2000-482(A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 2000-482(A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 2000-482(A).

Gyldighetsdato:

2000-12-15.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

GSAC

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 2000-482(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIUS 2F turboshaft engines

Fuel control unit (ATA 73)

1. **AFFECTED ENGINES** :

ARRIUS 2F turboshaft engines fitted on EC 120 B "COLIBRI" helicopters and equipped with a Fuel Control Unit (FCU) listed in Service Bulletin A 319 73 4808.

2. **REASONS** :

A case of fuel flow limitation has been identified during a FCU repair. This limitation, due to a variation in the position of the max. fuel flow mechanical stop, can cause engine available power deficiency.

3. **ACTION** :

Rework the max. fuel flow stop according to Service Bulletin TURBOMECA No. A 319 73 4808 - Issue No. 1 (or further issue).

4. **COMPLIANCE** :

The paragraph 3 action must be accomplished before March 31, 2001.

REF. : Service Bulletin TURBOMECA No. A 319 73 4808 - Issue No. 1 (or further issue)

EFFECTIVE DATE: DECEMBER 09, 2000

n/JFS

LUFTFARTSDIREKTORATET
Avd. for Luftfartsinspeksjon
FORNEBU-OSLO/Dep.
Tlf. : Oslo (02) 12 13 40
AFTN: ENFBYA
Tlgr. : CIVILAIR OSLO
Telex : 11032 Oslo

LUFTDYKTIGHETSPÅBUD

(LDP)

WALTER

SAMMENDRAG

1946 - 1970

Med hjemmel i lov om luftfart av 16. desember 1960 nr. 47, 2. ledd og § 214, Kgl. res av 8. desember 1961, litra K og Samferdselsdepartementets brev datert 23. mars 1964, fastsetter Luftfartsdirektoratet følgende forskrift.

10/63 KONTROLL OG UTSKIFTING AV SYLINDERTOPPER PÅ WALTER MINOR

Fabrikken har ved Service Bulletin meddelt at det har forekommet noen tilfeller av sprukne sylindertopper på Minor 4-III motorer som har den gamle type sylindertopper. Som årsak til sprekkdannelsen nevner fabrikken flere ting, blant annet hard belastning og hurtig avkjøling, sleping av glidere, snittflyging m.m.

Luftfartsdirektoratet bestemmer derfor at det ved ettersyn og bruk av disse motorer skal vises særlig aktpågivenhet med dette for øyet. Ved daglig ettersyn skal propelleren tørnes noen ganger for hånd med tenningen avslått for å kjenne om kompresjonen er den samme på alle sylindere.

Motorer med fabrikknummer opp til 24840 har de gamle sylindertopper. Disse topper skal skiftes ut med ny type ved første overhaling (toppoverhaling eller heloverhaling, det som kommer først).

Inntil sylindertoppene er skiftet ut, er det forbudt å bruke motoren til sleping av glidere, og snittflyging må bare foretas i nærheten av en flyplass, slik at det eventuelt kan landes på plassen.

En sylindertopp av ny konstruksjon har "Drawing No. 0785942", og er lett kjennelig ved at den har to forsterkningskammer på tvers av kjøleribbene like under flensene for ekshaustrør og gassrør.

Service Bulletin No. M4-III/20 og M4-III/23 omhandler denne sak og angir nøye fremgangsmåten for kontroll og utskifting av sylindertoppene. De tsjekkoslovakiske luftfartsmyndigheter har forlangt tilsvarende forholdsregler.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 19

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

2001-007 **UTFØRELSE AV TURBOMECA SB A 319 73 4808**

Påbudet gjelder:

Turbomeca ARRIUS 1A og 1E motorer som beskrevet i vedlagte kopi av DGAC AD 2000-532(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 2000-532(A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 2000-532(A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 2000-532(A).

Gyldighetsdato:

2001-02-06.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

GSAC

AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 2000-532(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIUS 1 turboshaft engines

Fuel injection (ATA 73)

1. **APPLICABILITY:**

This Airworthiness Directive applies to all TURBOMECA ARRIUS 1A and 1E turboshaft engines.

2. **REASONS:**

During inspections carried out at the repair workshop, it was found that some main fuel injectors were totally or partially blocked ; blockage of the injectors may lead to engine flame out during engine deceleration or impossibility to obtain 2 ½ minute OEI rating.

3. **COMPLIANCE:**

In order to prevent blockage of the injectors, it is mandatory to apply the following measure:

Replace periodically fuel main injectors with more than 1250 operating hours, according to Service Bulletin TURBOMECA No. A319 73 0071 (or further issue).

REF. : Service Bulletin TURBOMECA No. A319 73 0071
(or further issue).

EFFECTIVE DATE : JANUARY 06, 2001

n/JFS

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 20

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

2001-039 UTFØRELSE AV TURBOMECA SERVICE BULLETINER

Påbudet gjelder:

Turbomeca ARTOUSTE III motorer som beskrevet i vedlagte kopi av DGAC AD 2001-235(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 2001-235(A).

Anm.: Denne LDP kansellerer LDP 99-001.

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 2001-235(A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 2001-235(A).

Gyldighetsdato:

2001-07-10.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

GSAC

AIRWORTHINESS DIRECTIVE

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Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 2001-235(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARTOUSTE III turboshaft engines

Check for absence of smoke - Turbine shaft labyrinth inspection (ATA 72)

1. APPLICABILITY

This Airworthiness Directive refers to ARTOUSTE III B, B1, D turboshaft engines.

2. REASONS

The analysis carried out after an engine shut-down brought to light that cracks may develop on the rear face of the injection wheel, thus allowing the passage of fuel into the cylinder of the turbine shaft during operation. This was presumed to be the cause of an in-flight shut-down and the AD 98-432 (A) dated November 04, 1998 has been published to enable the detection of such cracks.

The analysis of a second in-flight shut-down showed that these engine shut-downs were in fact caused by the deterioration of a labyrinth which led to heating the turbine shaft material, then to degrading its characteristics.

Moreover, the use of the injection wheel was limited to 3000 h / 6000 cycles in the overhaul manual, in order to minimise the risk of engine operation disturbance following the crack propagation in the injection wheel.

3. MANDATORY ACTIONS AND COMPLIANCE

The test for the absence of smoke emissions at engine shut-down, and the removal of engines in the conditions defined in the Service Bulletin No. 218 72 0099 Rev. 1 (and further approved revision) are rendered mandatory from the effective date of this Airworthiness Directive.

The periodic inspection of the turbine shaft labyrinth according to the instructions in the Alert Service Bulletin No. A 218 72 0100 Rev. 1 (and further approved revision) are rendered mandatory from the effective date of this Airworthiness Directive.

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.../...

REF.: SB TM 218 72 0099 Rev. 1 (and further approved revision).
SB TM 218 72 0100 Rev. 1 (and further approved revision).

This Airworthiness Directive replaces AD 98-432(A) which is cancelled by its Revision 1.

EFFECTIVE DATE : JUNE 23, 2001

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 21

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

2002-028 "CENTRIFUGAL IMPELLER"

Påbudet gjelder:

Turbomeca ARRIEL 1 motorer som beskrevet i vedlagte kopi av DGAC AD 2002-126(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 2002-126 (A).

Anm.: Denne LDP kansellerer og erstatter LDP 99-088.

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 2002-126 (A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 2002-126 (A).

Gyldighetsdato:

2002-03-12.

GSAC

AIRWORTHINESS DIRECTIVE

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Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 2002-126(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 1 turboshaft engines

Centrifugal impeller (ATA 72)

1. APPLICABILITY :

This Airworthiness Directive refers to all ARRIEL 1 series turboshaft engines.

2. REASONS :

Several events of contained centrifugal impeller blade rupture were observed in service. These events resulted in power losses but could lead to a non commanded in-flight shut down. Investigations showed an acoustic excitation of the blades to be the cause of the events. The TU 300 modification for Arriel 1S, 1S1, 1D, 1D1 turboshaft engines by TURBOMECA Service Bulletin No.292 72 0261 suppresses this excitation.

Further more, operation experience showed the necessity to bond the sleeve in the bleed valve boss.

3. MANDATORY ACTIONS AND COMPLIANCE :

3.1. The installation of a sleeve in the bleed valve boss, as described in TURBOMECA Service Bulletin No. 292 72 0261, is rendered mandatory on Arriel 1S, 1S1, 1D, 1D1 (unless already achieved).

3.2. For any Arriel turboshaft engine variant, on which TU 300 modification is embodied, the bonding of the sleeve in the bleed valve boss, as described in TURBOMECA Service Bulletin No. A 292 72 0275 (Modification TU 316A), is made mandatory (unless already achieved).

3.3. The actions described in above paragraphs 3.1. and 3.2. must be performed before May 31, 2002.

REF.: Service Bulletin TURBOMECA No. 292 72 0261
Service Bulletin TURBOMECA No. A 292 72 0275
Modifications TU316A, TU300.

This Airworthiness Directive replaces AD 1999-391(A) which is cancelled.

JFS

EFFECTIVE DATE : MARCH 16, 2002

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 22

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

2002-029 "CENTRIFUGAL IMPELLER"

Påbudet gjelder:

Turbomeca ARRIEL 2 motorer som beskrevet i vedlagte kopi av DGAC AD 2002-127(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 2002-127 (A).

Anm.: Denne LDP kansellerer og erstatter LDP 99-089.

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 2002-127 (A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 2002-127 (A).

Gyldighetsdato:

2002-03-12.

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AIRWORTHINESS DIRECTIVE

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Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 2002-127(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 2 turboshaft engines

Centrifugal impeller (ATA 72)

1. APPLICABILITY:

This Airworthiness Directive refers to all ARRIEL 2 turboshaft engines.

2. REASONS:

Several events of contained centrifugal impeller blade rupture were observed in service. These events resulted in power losses but could lead to a non commanded in-flight shut down. Investigations showed an acoustic excitation of the blades to be the cause of the events. The TU 54 modification for Arriel 2S1, 2B by TURBOMECA Service Bulletin No. 292 72 2054 suppresses this excitation.

Further more, operation experience showed the necessity to bond the sleeve in the bleed valve boss.

3. MANDATORY ACTIONS AND COMPLIANCE:

3.1. The installation of a sleeve in the bleed valve boss, as described in TURBOMECA Service Bulletin No. 292 72 2054, is rendered mandatory on Arriel 2S1, 2B (unless already achieved).

3.2. For any Arriel turboshaft engine variant, on which TU54 modification is embodied, the bonding of the sleeve in the bleed valve boss, as described in TURBOMECA Service Bulletin No. A 292 72 2070 Rev 1 (modification TU 70A), is made mandatory (unless already achieved).

3.3. The actions described in above paragraphs 3.1. and 3.2. must be performed before May 31, 2002.

REF.: Service Bulletin TURBOMECA No. 292 72 2054
Service Bulletin TURBOMECA No. A 292 72 2070 Rev. 1
Modifications TU 70A, TU 54.

This Airworthiness Directive replaces AD 1999-392(A) which is cancelled.

EFFECTIVE DATE : MARCH 16, 2002

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 23

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

2002-041 UTSKIFTING AV GASSGENERATORENS 2. TRINN TURBINBLADER

Påbudet gjelder:

Turbomeca ARRIEL 1B, 1D, 1D1 motorer som beskrevet i vedlagte kopi av DGAC AD 2002-258(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 2002-258(A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 2002-258(A), med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD 2002-258(A).

Gyldighetsdato:

2002-06-25.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

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AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 2002-258(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 1 Turboshaft engines

Replacement of gas generator 2nd stage turbine blades (ATA 72)

1. APPLICABILITY:

This Airworthiness Directive applies to ARRIEL 1B, 1D, 1D1 variants turboshaft engines on single engine rotorcraft with modification TU 204 embodied.

2. REASONS:

Several events of blade rupture were observed in service on some ARRIEL 1 variants with modification TU 204 embodied. The embodiment of this modification makes matters worse for the engines with high operating temperature.

This modification has been cancelled on every variant of newly manufactured engines and on the engines installed on twin-engine rotorcraft.

ARRIEL 1B variant is operated with lower temperature, has never been concerned by this type of incidents and equips single engine rotorcraft. However, it is considered necessary that, by measures of conservation, getting out the implement of modification TU 204 is necessary.

3. MANDATORY ACTIONS AND COMPLIANCE:

By March 31, 2003, replace gas generator 2nd stage TU 204 modified turbine blades (unless already completed), as described in:

- TURBOMECA SB 292 72 0258 at the last approved issue, for ARRIEL 1B variants.
- TURBOMECA SB 292 72 0265 at the last approved issue, for ARRIEL 1D, 1D1 variants.

REF.: Service Bulletin TURBOMECA No. 292 72 0258
Service Bulletin TURBOMECA No. 292 72 0265
Modification TU 204

EFFECTIVE DATE : MAY 25, 2002

IJFS

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Rådhusgata 2, 0031 Oslo
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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 24

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

2002-067 "CENTRIFUGAL IMPELLER"

Påbudet gjelder:

Turbomeca ARRIEL 1-serie motorer som beskrevet i vedlagte kopi av DGAC AD 2002-126(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 2002-126(A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 2002-126(A).

Referanse:

DGAC AD 2002-126(A).

Gyldighetsdato:

2002-08-28.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

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AIRWORTHINESS DIRECTIVE

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Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 2002-126(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 1 turboshaft engines

Centrifugal impeller (ATA 72)

1. APPLICABILITY :

This Airworthiness Directive refers to all ARRIEL 1 series turboshaft engines.

2. REASONS :

Several events of contained centrifugal impeller blade rupture were observed in service. These events resulted in power losses but could lead to a non commanded in-flight shut down. Investigations showed an acoustic excitation of the blades to be the cause of the events. The TU 300 modification for Arriel 1S, 1S1, 1D, 1D1 turboshaft engines by TURBOMECA Service Bulletin No.292 72 0261 suppresses this excitation.

Further more, operation experience showed the necessity to bond the sleeve in the bleed valve boss.

3. MANDATORY ACTIONS AND COMPLIANCE :

3.1. The installation of a sleeve in the bleed valve boss, as described in TURBOMECA Service Bulletin No. 292 72 0261, is rendered mandatory on Arriel 1S, 1S1, 1D, 1D1 (unless already achieved).

3.2. For any Arriel turboshaft engine variant, on which TU 300 modification is embodied, the bonding of the sleeve in the bleed valve boss, as described in TURBOMECA Service Bulletin No. A 292 72 0275 (Modification TU 316A), is made mandatory (unless already achieved).

3.3. The actions described in above paragraphs 3.1. and 3.2. must be performed before May 31, 2002.

REF.: Service Bulletin TURBOMECA No. 292 72 0261
Service Bulletin TURBOMECA No. A 292 72 0275
Modifications TU316A, TU300.

This Airworthiness Directive replaces AD 1999-391(A) which is cancelled.

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n/JFS

EFFECTIVE DATE : MARCH 16, 2002

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 25

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

2002-068 "CENTRIFUGAL IMPELLER"

Påbudet gjelder:

Alle Turbomeca ARRIEL 2 motorer som beskrevet i vedlagte kopi av DGAC AD 2002-127(A).

Påbudet omfatter:

Utfør tiltak som beskrevet i vedlagte kopi av DGAC AD 2002-127(A).

Tid for utførelse:

Til de tider som beskrevet i vedlagte kopi av DGAC AD 2002-127(A).

Referanse:

DGAC AD 2002-127(A).

Gyldighetsdato:

2002-08-28.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

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AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 2002-127(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIEL 2 turboshaft engines

Centrifugal impeller (ATA 72)

1. APPLICABILITY:

This Airworthiness Directive refers to all ARRIEL 2 turboshaft engines.

2. REASONS:

Several events of contained centrifugal impeller blade rupture were observed in service. These events resulted in power losses but could lead to a non commanded in-flight shut down. Investigations showed an acoustic excitation of the blades to be the cause of the events. The TU 54 modification for Arriel 2S1, 2B by TURBOMECA Service Bulletin No. 292 72 2054 suppresses this excitation.

Further more, operation experience showed the necessity to bond the sleeve in the bleed valve boss.

3. MANDATORY ACTIONS AND COMPLIANCE:

3.1. The installation of a sleeve in the bleed valve boss, as described in TURBOMECA Service Bulletin No. 292 72 2054, is rendered mandatory on Arriel 2S1, 2B (unless already achieved).

3.2. For any Arriel turboshaft engine variant, on which TU54 modification is embodied, the bonding of the sleeve in the bleed valve boss, as described in TURBOMECA Service Bulletin No. A 292 72 2070 Rev 1 (modification TU 70A), is made mandatory (unless already achieved).

3.3. The actions described in above paragraphs 3.1. and 3.2. must be performed before May 31, 2002.

REF.: Service Bulletin TURBOMECA No. 292 72 2054
Service Bulletin TURBOMECA No. A 292 72 2070 Rev. 1
Modifications TU 70A, TU 54.

This Airworthiness Directive replaces AD 1999-392(A) which is cancelled.

EFFECTIVE DATE : MARCH 16, 2002

n/JFS

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 26

Med hjemmel om lov om luftfart av 11. juni 1993 kap. IV § 4-1 og kap. XV § 15-4, fastsetter Luftfartstilsynet følgende forskrift om luftdyktighet.

2003-058 IKKE LUFTDYKTIG MOTOR

Påbudet gjelder:

Turbomeca ARRIUS 2F No. 34084.

Påbudet omfatter:

Turbomeca ARRIUS 2F No. 34084 ble stjålet under transit og er følgelig ikke lenger luftdyktig.

Referanse:

DGAC AD 2003-219(A).

Gyldighetsdato:

2003-08-18.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

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AIRWORTHINESS DIRECTIVE

released by DIRECTION GENERALE DE L'AVIATION CIVILE

Inspection and/or modifications described below are mandatory. No person may operate a product to which this Airworthiness Directive applies except in accordance with the requirements of this Airworthiness Directive.

Translation of 'Consigne de Navigabilité' ref. : 2003-219(A)
In case of any difficulty, reference should be made to the French original issue.

TURBOMECA

ARRIUS 2F turboshaft engine

Unairworthy (ATA 72)

1. APPLICABILITY

This Airworthiness Directive concerns the ARRIUS 2F No. 34084 turboshaft engine.

2. REASON

An ARRIUS 2F turboshaft engine was stolen during a transit.

3. MANDATORY ACTION AND COMPLIANCE

This engine may have been damaged during and after the theft. Therefore it has been declared unairworthy.

REF.: Service Letter "Alert Information" 2239/03/ARRIUS 2F/22 dated June 06, 2003.

This Airworthiness Directive has been the subject of an Emergency diffusion on June 16, 2003.

EFFECTIVE DATE :

On receipt of the Emergency AD issued on JUNE 16, 2003

n/BB

Luftfartstilsynet
Postboks 8050 Dep.,
0031 Oslo
Besøksadresse:
Rådhusgata 2, 0031 Oslo
Telefon : 23 31 78 00
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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 027

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2004-008A ENDRING AV LUFTINNTAK

Påbudet gjelder:

Turbomeca ARTOUSTE III B, B1 og D.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2003-455 R1.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2003-455 R1.

Tiltak som angitt i punkt 3.3 i ovennevnte AD må være utført innen 1. mai 2006

Referanse:

DGAC AD F-2003-455 R1.

Gyldighetsdato:

2006-03-31.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

	AIRWORTHINESS DIRECTIVE No F-2003-455 R1	Distribution: A	Issue date: November 09, 2005	Page : 1/2
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **F-2003-455 original issue**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARTOUSTE III turboshaft engines**
Type certificate(s) No. **M 12** TCDS No **M 12**	
ATA chapter: **72, 75**	Subject: **Engine/Air - Air intake assembly**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to TURBOMECA turboshaft engines ARTOUSTE III B, B1 and D which respectively equip SA 315 B, SA 316 B and SA 316 C helicopters.

2. REASONS:

An accident of a LAMA helicopter equipped with a turboshaft engine ARTOUSTE III B1 was attributed to the ingestion of a block of ice that is assumed to have developed at the rear of the air intake while the helicopter was parked on a sloping ground (engine not running).

The investigation office in charge issued a recommendation to improve the water draining since the water flow inside the air intake is not guaranteed with regard to the helicopter attitude when it is parked.

This AD makes a modification mandatory to prevent the repetition of the occurrence.

The original issue of the Service Bulletin No 218 72 0104 required the drilling of one additional drainage hole on each of the half air intake assemblies, which are then no longer interchangeable. A second additional hole therefore needs to be drilled on each to make them interchangeable as required by modification TU171.

The update No 2 enacts the TURBOMECA decision to issue a new revision of the Mandatory Service Bulletin No 218 72 0104 to explain more fully the actions to be taken.

3. MANDATORY ACTIONS AND COMPLIANCE TIMES:

The following measures are mandatory from the effective date of the Revision 1 of this AD:

3.1. If modification TU 171 has not yet been applied on the engine, modify the air intake as instructed in TURBOMECA Mandatory Service Bulletin No 218 72 0104 update No 2.

3.2. If modification TU 171 has been applied on the engine as instructed by the original issue of the AD, before the effective date of this revision 1, check that each half air intake assembly has 4 water drainage holes. If one of the holes is missing, drill it as instructed in TURBOMECA Mandatory Servic Bulletin No 218 72 0104 update No 2.

n/BB

3.3. Modification TU 171 must be applied by December 16, 2005 in compliance with TURBOMECA Mandatory Service Bulletin n° 218 72 0104 update No 2.

4. REFERENCE PUBLICATION:

TURBOMECA Mandatory Service Bulletin No 218 72 0104 update No 2 or approved subsequent issue.

5. EFFECTIVE DATES:

Original issue : January 03, 2004
Revision 1 : Upon receipt as from November 09, 2005.

6. REMARK:

For any technical question concerning the requirements of this AD, please contact:

Operator Support ARTOUSTE III
TURBOMECA
40220 TARNOS - FRANCE
Phone number: 33 (0) 5 59 74 40 32 (or 40 71)
Fax number: 33 (0) 5 59 74 45 15 (or 45 16).

7. APPROVAL:

This AD Revision is approved under EASA reference No 2005-6394 dated November 02, 2005.

BLANK

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Telefax : 23 31 79 95
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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 028

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2004-015 TURBINAKSEL – "LABYRINTH" INSPEKSJON

Påbudet gjelder:

Turbomeca ARTOUSTE III B, B1 og D.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2004-016.

Anm.: Denne LDP erstatter og opphever LDP 2001-039.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2004-016.

Referanse:

DGAC AD F-2004-016.

Gyldighetsdato:

2004-03-01.

	AIRWORTHINESS DIRECTIVE No F-2004-016	Distribution: A	Issue date: February 04, 2004	Page : 1/2
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC : [X] on behalf of EASA, the Primary Airworthiness Authority for the affected product. [ ] as the Registration Airworthiness Authority for the affected aircraft..		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **2001-235, cancelled by its Revision 1**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARTOUSTE III turboshaft engines**
Type certificate(s) No. **M12** TCDS No **M12**	
ATA chapter: **72**	Subject: **Engine - Turbine shaft labyrinth inspection**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to TURBOMECA turboshaft engines ARTOUSTE III B, B1 and D.

2. REASONS:

The deterioration of the labyrinth may induce overheating and consequently a loss of mechanical properties of the turbine shaft material. This situation may lead to the distortion of the turbine shaft and ultimately cause in-flight shutdowns.

This AD introduces mandatory actions to be applied to restore the required level of safety.

This Airworthiness Directive replaces AD 2001-235 in which content has been changed to incorporate the latest information from in-service events.

3. MANDATORY ACTIONS AND COMPLIANCE TIME:

3.1. Check for smoke

After each flight, check for smoke during engine rundown and once the engine has stopped.

If smoke is detected, inspect the fuel system before the next flight or at the latest after the last flight of the day.

The above inspections, and the actions to be taken depending on inspection findings, must be carried out according to TURBOMECA Alert Service Bulletin No. A218 72 0099.

3.2. Inspection of the turbine shaft labyrinth

Regardless of the engine operating hours, inspect the turbine shaft central labyrinth every 1,750 hours and replace it if it is found damaged.

If the labyrinth operating hours are unknown, or if the labyrinth operating time since new (TSN) or since last inspection is higher than 1,750 hours, inspect the central labyrinth within the next 50 flight hours or 6 months (whichever occurs first).

The information necessary to determine the labyrinth operating hours for each engine and the actions to be taken are detailed in TURBOMECA Alert Service Bulletin No. A218 72 0100.

4. REFERENCE PUBLICATIONS:

Alert Service Bulletin No. A218 72 0099
Alert Service Bulletin No. A218 72 0100

5. EFFECTIVE DATE:

February 14, 2004.

6. REMARK:

For questions concerning the technical contents of this AD's requirements, contact:

ARTOUSTE III Operator Support
TURBOMECA
40220 TARNOS – France
Phone number : 33 (0) 5 59 74 40 32 (ou 40 71)
Fax number : 33 (0) 5 59 74 45 15 (ou 45 16)

7. APPROVAL:

This AD is approved under EASA reference No 2004-750 dated January 28, 2004.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 029

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10 desember 1999 nr. 1273

2004-044A GASSGENERATORENS ANDRE TURBINTRINN

Påbudet gjelder:

Turbomeca ARRIEL 1 motorer som beskrevet i DGAC AD F-2004-047 R1.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2004-047 R1.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2004-047 R1.

Referanse:

DGAC AD F-2004-047 R1.

Gyldighetsdato:

2006-03-31.

Kansellert
2007-05-02

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

	AIRWORTHINESS DIRECTIVE No F-2004-047 R1	Distribution: A	Issue date: October 26, 2005	Page : 1/3
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **F-2004-047 original issue**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARRIEL 1 turboshaft engines**
Type certificate(s) No. **M5** TCDS No **M5**	
ATA chapter: **72**	Subject: **Engine - Gas generator second stage turbine**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to the following turboshaft engine variants:

ARRIEL 1B which have been modified per TU 148,
ARRIEL 1D,
ARRIEL 1D1 and
ARRIEL 1S1.

2. REASONS:

Several cases of release of gas generator 2nd stage turbine blade occurred in service, with f containment of debris. These events resulted in an uncommanded In-Flight Shut Down (IFSD) of the engine. While awaiting terminating actions, it has been decided to implement mandatory check and replacement of the turbine in order to reduce the probability of uncommanded engine IFSD.

This preventive maintenance has been tailored in accordance with the performance characteristics and the in-service experience of the affected engine variants.

Revision 1 of this AD aims at introducing on ARRIEL 1D model the same maintenance actions as the ARRIEL 1D1 model ones. In fact after analysis of the field experience return after the original issue of this AD and taking into account technical similarities of both models, it appeared necessary to harmonise mandatory measures on ARRIEL 1D and 1D1 models.

3. MANDATORY ACTIONS AND COMPLIANCE TIMES:

Unless already done, the following actions are made mandatory from the effective date of this AD. The technical work must be performed in accordance with the instructions of the Service Bulletins referenced below.

3.1. ARRIEL 1B engines which have been modified per TU 148

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

- if no check has been previously performed or if the blades have been in operation for more than 150 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0807, within 50 hours of operation;

- if the blades have been in operation for less than 150 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0807, within 200 operating hours of the last check.

3.1.2. Then carry out a check according to SB A292 72 0807 every 200 hours of operation until receipt of an inspected turbine sent by TURBOMECA.

3.1.3. For 2nd stage turbines having accumulated more than 2,200 hours of operation since new or since last inspection in a repair centre, replace the turbine, according to SB A292 72 0807 immediately on receipt of an inspected turbine sent by TURBOMECA and at the latest on August 31, 2006.

3.2. ARRIEL 1D and 1D1 engines

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

- if no check has been previously performed or if the blades have been in operation for more than 100 hours since a check performed according to SB A292 72 0263 or A292 72 0808, carry out a check, according to SB A292 72 0809, within 50 hours of operation;

- if the blades have been in operation for less than 100 hours since a check performed according to SB A292 72 0263 or A292 72 0808, carry out a check, according to SB A292 72 0809, within 150 operating hours of the last check.

3.2.2. Then carry out a check according to SB A292 72 0809, every 150 hours of operation until receipt of an inspected turbine with new blades sent by TURBOMECA.

3.2.3. For 2nd stage turbines having accumulated more than 1,500 hours of operation since new or since last inspection in a repair centre, replace the turbine, according to SB A292 72 0809 immediately on receipt of an inspected turbine sent by TURBOMECA and at the latest on August 31, 2006.

3.3. ARRIEL 1S1 engines

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

- if no check has been previously performed or if the blades have been in operation for more than 100 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0810, within 50 hours of operation;

- if the blades have been in operation for less than 100 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0810, within 150 operating hours of the last check.

3.3.2 Then carry out a check, according to SB A292 72 0810, every 150 hours.

4. REFERENCE PUBLICATIONS:

Alert Service Bulletin No A292 72 0807 (original issue or approved subsequent issue)
Alert Service Bulletin No A292 72 0809 (original issue or approved subsequent issue)
Alert Service Bulletin No A292 72 0810 (original issue or approved subsequent issue).

5. EFFECTIVE DATES:

Original issue : April 10, 2004
Revision 1 : November 05, 2005.

6. REMARK:

For questions concerning the technical contents of this AD's requirements, contact:

ARRIEL 1 Operator Support
TURBOMECA
40220 TARNOS - France
Phone number: 33 (0) 5 59 74 44 31
Fax number: 33 (0) 5 59 74 45 15

7. APPROVAL:

This AD Revision is approved under EASA reference No 2005-6374 dated October 18, 2005.

Luftfartstilsynet
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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 030

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2004-050A KONTROLL AV 2. TRINN NOZZLE GUIDE VANE

Påbudet gjelder:

Turbomeca ARRIEL 1 motorer som beskrevet i DGAC F-2004-088R1.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2004-088R1.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2004-088R1.

Referanse:

DGAC AD F-2004-088R1.

Gyldighetsdato:

2004-12-01

Kansellert
2007-05-02

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

	AIRWORTHINESS DIRECTIVE No F-2004-088 R1	Distribution: A	Issue date: August 04, 2004	Page : 1/2
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			
Corresponding foreign Airworthiness Directive(s): **Not applicable**		Airworthiness Directive(s) replaced: **F-2004-088 original issue**		
Person in charge of airworthiness: **TURBOMECA**		Type(s): **ARRIEL 1 turboshaft engines**		
Type certificate(s) No. **M5** TCDS No **M5**				
ATA chapter: **72**	Subject: **Engine - 2nd stage nozzle guide vanes inspection (NGV2)**			

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to TURBOMECA ARRIEL 1B, 1D and 1D1 models turboshaft engines, modified TU 202, except to those having 2nd stage nozzle guide vanes of which serial numbers or specific marks are identified in Service Bulletin No. 292 72 0231 Revision 5.

2. REASONS:

To detect and prevent a possible perforation of the NGV2 vanes and the formation of an aerodynamic wake upstream of the 2nd stage turbine. Such a wake may lead to the rupture of a 2nd stage turbine blade followed by an uncommanded engine in flight shut-down.

TURBOMECA company has notified, in Service Bulletin No. 292 72 0231, that it considers there is a hazardous situation which is potentially catastrophic.

Revision 1 of this AD aims at clarifying interpretations of the original edition and at limiting its effectivity to ARRIEL 1 models installed on single-engine helicopters.

3. MANDATORY ACTIONS AND COMPLIANCE TIME:

Unless already done and at the latest on December 31, 2006, following actions are made mandatory from the effective date of Revision 1 this AD in accordance with Service Bulletin No. 292 72 0231, Revision 5:

- for engines in service or in service station, check the 2nd stage nozzle guide, if it is accessible, during a deep maintenance operation;

- for engines in repair center, check the 2nd stage nozzle guide whatever the reason for the return of the engine is.

Every inspection carried out, in accordance with a previous revision of the Service Bulletin No. 292 72 0231, before the effective date of this AD, exempts from the application of this AD.

n/BB

4. REFERENCE PUBLICATION:

Service Bulletin No. 292 72 0231 Revision 5.

5. EFFECTIVE DATE:

Original issue: Upon receipt from June 23, 2004
Revision 1: Upon receipt from August 04, 2004.

6. REMARK:

For questions concerning the technical contents of this AD's requirements, contact:

ARRIEL 1 Operator Support
TURBOMECA
40220 TARNOS - France
Phone number : 33 (0) 5 59 74 44 31
Fax number : 33 (0) 5 59 74 45 15

7. APPROVAL:

This AD Revision is approved under EASA reference No 2004-8068 dated July 27, 2004.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 031

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2004-063 **"ACCELERATION CONTROLLER AXLE OF THE FUEL METERING UNIT"**

Påbudet gjelder:

Turbomeca ARRIEL 2 motorer som beskrevet i DGAC F-2004-139.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2004-139.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2004-139.

Referanse:

DGAC AD F-2004-139.

Gyldighetsdato:

2004-12-01

Kansellert

2007-05-02

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

	AIRWORTHINESS DIRECTIVE No F-2004-139	Distribution: A	Issue date: August 18, 2004	Page : 1/2
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **None**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARRIEL 2 turboshaft engines**
Type certificate(s) No. **M19** TCDS No **M19**	

ATA chapter:	Subject:
73	**Engine fuel and control - Control of the acceleration controller axle of the fuel metering unit**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to Arriel 2 turboshaft engines, Arriel 2B model which incorporates the TU 62A modification.

2. REASON:

To prevent the acceleration controller axle from sticking in its bearing as this can result in difficulty or in impossibility to control the fuel flow rate in manual or mixed mode.

This can lead to an unpredictable engine running in manual or mixed mode which can cause gas generator or power turbine overspeed leading to uncommanded or commanded in-flight engine shutdown.

3. MANDATORY ACTIONS AND COMPLIANCE TIMES:

Compliance with this AD is required as indicated, unless already done, from the effective date of this AD.

3.1. Before receipt of the parts required for the application of the Mandatory Service Bulletin A292 73 2814 (§ 3), perform before the first flight of the day, a ground check in mixed mode operation (refer to the AS350 B3 Flight Manual section 8 task 3C, dealing with the control system mixed mode).

3.2. Within 20 operating hours of receiving parts provided by Turbomeca, and at the latest on the 31st of December 2004, check the fuel metering system and perform maintenance procedures prescribed by the Mandatory Service Bulletin A292 73 2814 (original issue or later revision).

3.3. Repeat the maintenance procedures of paragraph 3.2 every 200 hours (+/- 10 hours).

d/BB

4. REFERENCE PUBLICATIONS:

- Mandatory Service Bulletin A292 73 2814 - original issue or later revision.
- AS350 B3 Flight Manual: section 8, chapter "Check after engine or module replacement – Manual Emergency" - Sheet n° 3C.

5. EFFECTIVE DATE:

August 28, 2004.

6. REMARK:

For questions concerning the technical contents of this AD's requirements, contact:

Support Opérateurs ARRIEL 2
TURBOMECA
40220 TARNOS – France
Fax number: 33 (0)5 59 74 45 72

7. APPROVAL:

This AD is approved under EASA reference n° 2004-8594 dated August 10, 2004.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 032

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2005-030 "TEST OF FREE TURBINE OVERSPEED PROTECTION SYSTEM"

Påbudet gjelder:

Turbomeca ARRIUS 1 motorer som beskrevet i DGAC F-2005-063 R1.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2005-063 R1.

Anm: Originalversjonen av denne AD er tidligere distribuert som telefaks til de berørte fartøyeiere/operatører som "Emergency Airworthiness Directive – UF-2005-063 R1".

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2005-063 R1.

Referanse:

DGAC AD F-2005-063 R1.

Gyldighetsdato:

2005-07-08.

	AIRWORTHINESS DIRECTIVE No F-2005-063 R1	Distribution: A	Issue date: May 25, 2005	Page : 1/2
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **UF-2005-063 R1**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARRIUS 1 turboshaft engines**
Type certificate(s) No. **M16** TCDS No **M16**	
ATA chapter: **77**	Subject: **Engine indicating - Test of free turbine overspeed protection system**

1. **EFFECTIVITY:**

This Airworthiness Directive (AD) applies to TURBOMECA turboshaft engines ARRIUS 1A and 1E.

These engines equip AS 355 N twin engined helicopters.

2. **REASONS:**

Investigation of an ARRIUS 1 Digital Engine Control Unit (DECU) revealed a malfunction in the stop circuit of the Free Turbine Overspeed Protection System which cannot be detected through the test defined by the task No 77-30-01 (April 1995 issue) of the ARRIUS 1 Maintenance Manual.

A malfunction of the Free Turbine Overspeed Protection System may lead to a non-contained release high-energy debris from the free turbine in case of a free turbine overspeed event.

The Revision 1 aims at correcting the Alert Service Bulletin in reference.

3. **MANDATORY ACTIONS AND COMPLIANCE TIMES:**

The following actions are made mandatory from the effective date of this AD :

3.1. Implement Alert Service Bulletin No A319 77 0804 within 25 engine operating hours and at the latest by May 31st, 2005,

3.2. Repeat operation of § 3.1. each time task 77-30-01 is performed according to the frequency defined for this task in chapter 05-10-02 of the ARRIUS 1 Maintenance Manual.

4. **REFERENCE PUBLICATIONS:**

Alert Service Bulletin No A319 77 0804 original issue or subsequent
ARRIUS 1A Maintenance Manual Ref X 319 D6 300 1
ARRIUS 1E Maintenance Manual Ref X 319 H5 300 1.

n/BB

5. EFFECTIVE DATE:

Original issue and Revision 1 : May 07, 2005.

6. REMARKS:

This AD was issued as an emergency diffusion on May 04, 2005.

For questions concerning the technical contents of this AD's requirements, contact:

Support Opérateurs ARRIUS 1
TURBOMECA
64511 BORDES - France
Fax: 33 (0) 5 59 74 45 15 (or 45 16).

7. APPROVAL:

This AD Revision is approved under EASA reference No 2005-4011 dated May 04, 2005.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 033

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2005-031 "ENGINE IMMEDIATE GROUNDING"

Påbudet gjelder:

Turbomeca ARRIUS 1 motorer som beskrevet i DGAC F-2005-073 R1.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2005-073 R1.

Anm: Originalversjonen av denne AD er tidligere distribuert som telefaks direkte til berørte fartøyeiere/operatører som "Emergency Airworthiness Directive - UF-2005-073".

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2005-073 R1.

Referanse:

DGAC AD F-2005-073 R1.

Gyldighetsdato:

2005-07-08.

	AIRWORTHINESS DIRECTIVE No F-2005-073 R1	Distribution: A	Issue date: May 25, 2005	Page : 1/2
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **UF-2005-073 R1**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARRIUS 2F turboshaft engines**
Type certificate(s) No. **M22** TCDS No **M22**	
ATA chapter: **72**	Subject: **Engine - Immediate grounding**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to TURBOMECA turboshaft engines ARRIUS 2F which equip EC 120B helicopters.

2. REASONS:

Following an accident involving an EC 120B, the initial investigation of the ARRIUS 2F engine showed that one HP blade was totally released from the HP disk. This blade was contained inside the containment ring.

The preliminary examination of the engine parts showed that the standard of one ferrule initiated a disturbance in the secondary air system used to cool the HP turbine.

This Revision 1 takes into account a modification of paragraph 3.2.: after analysis of the technical situation, it has been put into evidence that the return of engines in a repair center may be avoided by replacing module 2 close to operators or by an inspection on site of the standard of the ferrule.

3. MANDATORY ACTIONS AND COMPLIANCE TIMES:

The following actions are made mandatory from the effective date of this AD:

3.1. For all ARRIUS 2F modules 2 listed in Alert Fax TURBOMECA No 057/05/DSO/TM: immediate grounding.

3.2. Flights may be resumed after the engine having been treated in a repair center, or after module 2 replacement on site or in a workshop, or after inspection of the standard of the ferrule by applying deep servicing instructions on site.

n/BB

4. REFERENCE PUBLICATION:

Alert Fax TURBOMECA No 057/05/DSO/TM dated April 26, 2005.

5. EFFECTIVE DATE:

Original issue : Upon receipt of the EAD issued on April 27, 2005
Revision 1 : Upon receipt of the EAD issued on April 29, 2005.

6. REMARKS:

The original issue of this AD has only been the subject of an emergency diffusion on April 27, 2005. It hasn't been issued on paper form.

This AD was issued as an emergency diffusion on April 29, 2005.

For any questions concerning the technical content of the requirements in this AD, please contact:

ARRIUS Service engineering manager
Customer Support
TURBOMECA
Fax: +33 5 59 74 45 15.

7. APPROVAL:

This AD Revision is approved under EASA reference No 2005-3868 dated April 29, 2005.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 034

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2005-049 "CHECK OF CORRECT POSITION OF ADJUSTED FCU FUEL FILTER"

Påbudet gjelder:

Turbomeca ARRIUS 2F motorer som beskrevet i DGAC AD F-2005-088.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2005-088.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2005-088, med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD F-2005-088.

Gyldighetsdato:

2005-11-01.

	AIRWORTHINESS DIRECTIVE No F-2005-088	Distribution: A	Issue date: June 08, 2005	Page : 1/1
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **None**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARRIUS 2F turboshaft engines**
Type certificate(s) No. **M22** TCDS No **M22**	
ATA chapter: **73**	Subject: **Fuel system and controls - Check of correct position of adjusted FCU fuel filter**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to TURBOMECA turboshaft engines ARRIUS 2F which equip EC 120B helicopters.

2. REASONS:

The acceptance test of an ARRIUS 2F adjusted Fuel Control Unit (FCU) revealed that an incorrect position of the fuel filter of the adjusted FCU could lead to a limitation of the fuel flow downstream of the fuel filter.

A limitation of the fuel flow downstream of the fuel filter of the adjusted FCU may limit the maximum available power of the engine.

3. MANDATORY ACTIONS AND COMPLIANCE TIMES:

The following actions are made mandatory, unless already done, from the effective date of this AD :

3.1. Implement paragraph 2 of Mandatory Alert Service Bulletin No A319 73 4823 within 25 engine operating hours and at the latest by July 31st, 2005,

3.2. Repeat operation of § 3.1. each time a check of the adjusted FCU filtering element is performed (task 73-23-06-201-801 of the ARRIUS 2F Maintenance Manual) according to the frequency defined for this task in chapter 05-20-00 of the ARRIUS 2F Maintenance Manual.

4. REFERENCE PUBLICATIONS:

Mandatory Alert Service Bulletin No A319 73 4823 (or any subsequent approved issue)
ARRIUS 2F Maintenance Manual Ref X 319 L6 301 2.

n/BB

5. EFFECTIVE DATE:

Upon receipt from June 08, 2005.

6. REMARK:

For any questions concerning the technical content of the requirements in this AD, please contact:

ARRIUS 2 Customer Support
TURBOMECA
40220 TARNOS - FRANCE
Fax: +33 5 59 74 45 15.

7. APPROVAL:

This AD is approved under EASA reference No 2005-4736 dated May 31, 2005.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 035

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2005-050 "OIL - REPLACEMENT OF CHECK-VALVE PISTON O-RING"

Påbudet gjelder:

Turbomeca ARRIUS 2F motorer som beskrevet i DGAC AD F-2005-122.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2005-122.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2005-122, med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD F-2005-122.

Gyldighetsdato:

2005-11-01.

	AIRWORTHINESS DIRECTIVE No F-2005-122	Distribution: A	Issue date: July 20, 2005	Page : 1/2
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **None**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARRIUS 2F turboshaft engines**
Type certificate(s) No. **M22** TCDS No **M22**	
ATA chapter: **79**	Subject: **Oil - Replacement of check-valve piston o-ring**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to TURBOMECA turboshaft engine ARRIUS 2F which equip EC 120B helicopters.

2. REASONS:

Investigations of incidents which occured on ARRIUS 2 turboshaft engines have revealed the interruption of engine lubrication further to oil passage blockage within the lubrication unit check valve.

This blockage comes from the excessive swelling of the check valve piston o-ring. The level of swelling of the o-ring depends from the class of the oil used (STD or HTS) and the engine operating time.

On ARRIUS 2F, an interruption of the engine lubrication may lead to an uncommanded in-flight shutdown.

3. MANDATORY ACTIONS AND COMPLIANCE TIMES:

Following actions are made mandatory, unless already done, from the effective date of this AD:

3.1. Implement paragraph 2 of Mandatory Alert Service Bulletin No A319 79 4802 within the next 50 operating hours if the number of operating hours is greater than:

- 300 hours for engines operating with HTS-class oil and engines for which the history of the oils used is not available or engines which used to operate with HTS-class oil and which no longer do so;
- 450 hours for engines operating with STD class-oil since their introduction into service.

n/BB

3.2. Repeat operation of § 3.1:

- every 300 hours for engines operating with HTS-class oil and engines for which the history of the oils used is not available or engines which used to operate with HTS-class oil and which no longer do so;
- every 500 hours for engines operating with STD class-oil since their introduction into service.

4. REFERENCE PUBLICATION:

Mandatory Alert Service Bulletin No A319 79 4802 original issue or approved subsequent issue.

5. EFFECTIVE DATE:

July 30, 2005.

6. REMARK:

For any questions concerning the technical content of the requirements in this AD, please contact:

ARRIUS 2 Customer Support
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40220 TARNOS - FRANCE
Fax: +33 5 59 74 45 15.

7. APPROVAL:

This AD is approved under EASA reference No 2005-6069 dated July 12, 2005.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 036

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2005-051 "FUEL CONTROL UNIT - REPLACEMENT"

Påbudet gjelder:

Turbomeca ARRIUS 2F motorer som beskrevet i DGAC AD F-2005-143 R1.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2005-143 R1.

Anm.: Grunnet kort tidsintervall mellom originalversjon av DGAC AD F-2005-143 og revidert utgave R1, utgis denne LDP basert på DGAC AD F-2005-143 R1.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2005-143 R1, med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD F-2005-143 R1.

Gyldighetsdato:

2005-11-01.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

	AIRWORTHINESS DIRECTIVE No F-2005-143 R1	Distribution: A	Issue date: August 31, 2005	Page : 1/2
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **F-2005-143 original issue**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARRIUS 2F turboshaft engines**
Type certificate(s) No. **M22** TCDS No **M22**	
ATA chapter: **73**	Subject: **Fuel control unit - Replacement**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to TURBOMECA ARRIUS 2F turboshaft engines equipped with an FCU whose serial number is given in the list appended to the Mandatory Service Bulletin No. A319 73 4825.

2. REASONS:

This AD is issued following the case of an increase in fuel flow resulting from deterioration of the constant delta pressure diaphragm.

The increase in fuel flow led to an increase in gas generator rating which resulted in an increase in power turbine and helicopter rotor rating. This then led to an uncommanded in-flight engine shut-down following power turbine blade-shedding (blades contained) due to overspeed.

This increase in fuel flow is attributed to the deterioration of the constant delta pressure diaphragm installed the wrong way round.

The aim of this AD is to replace the diaphragm potentially installed in the wrong way by one having two projections indicating proper direction.

Revision 1 of this AD aims at clarifying mandatory action of § 3.

3. MANDATORY ACTIONS AND COMPLIANCE TIME:

3.1. For FCUs addressed by the Alert Service Bulletin No. A319 73 4825, the following action is made mandatory from the effective date of this AD:

- replace the FCU according to the Alert Service Bulletin No. A319 73 4825.

3.2. This action must be performed at the latest by February 28, 2006.

4. **REFERENCE PUBLICATION:**

TURBOMECA Mandatory Alert Service Bulletin No. A319 73 4825, first issue dated August 2005
(Any subsequent approved revision of this document is acceptable).

5. **EFFECTIVE DATES:**

Original issue : Upon receipt from August 17, 2005
Revision 1 : Upon receipt from August 31, 2005.

6. **REMARK:**

If you have any questions concerning the technical content of the requirements of this AD, please contact:

Support Opérateurs ARRIUS 2
TURBOMECA
40220 TARNOS - FRANCE
Fax: +33 (5) 59 74 45 15

7. **APPROVAL:**

This AD Revision is approved under the EASA reference No 2005-6192 dated August 22, 2005.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 037

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2006-003 "INSPECTION OF FREE TURBINE CONTAINMENT SHIELDS"

Påbudet gjelder:

Turbomeca ARRIEL 2 motorer som beskrevet i vedlagte kopi av DGAC AD F-2005-162.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2005-162.

Tid for utførelse:

Til de tider og intervaller som er beskrevet i vedlagte kopi av DGAC AD F-2005-162, med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD F-2005-162.

Gyldighetsdato:

2006-03-31.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

	AIRWORTHINESS DIRECTIVE No F-2005-162	Distribution: A	Issue date: September 28, 2005	Page : 1/
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **None**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARRIEL 2 turboshaft engines**
Type certificate(s) No. **EASA.E.001** TCDS No **EASA.E.001**	

ATA chapter:	Subject:
72	**Engine - Inspection of free turbine containment shields**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to pre-mod TU 22 ARRIEL 2B and 2B1 engines which respectively equip AS 350 B3 and EC 130 helicopters.

2. REASONS:

On several pre-mod TU 22 ARRIEL 2 engines, large circular cracks have been observed on the free turbine shield at the blending radius between the containment shield and the rear flange.

Under the effects of maneuvering loads, such cracks may potentially cause a loss of alignment of the engine and lead to its shutdown.

The inspection of cracks is made compulsory to reduce the probability of an uncommanded engine in flight shutdown.

TU 22 modification reduces the capability of cracks originating at the level of the blending radius. To day available data allow such modified parts to be exempted from this compulsory check.

3. MANDATORY ACTIONS AND COMPLIANCE TIMES:

Visual inspection of the free turbine shield must be carried out in compliance with paragraph 2 of TURBOMECA Mandatory Service Bulletin No 292 72 2821, from the effective date of this AD:

- within 10 operating hours,
- thereafter at a frequency dependent on the results of the inspection (500 cycles Gas Generator N1, or 100 cycles Gas Generator N1, or daily).

The free turbine shield must be removed if the length or position of the crack(s) exceed(s) the criteria down in paragraph 2 of TURBOMECA Mandatory Service Bulletin No. 292 72 2821.

n/BB

4. REFERENCE PUBLICATION:

TURBOMECA Mandatory Service Bulletin no. 292 72 2821
(original issue or approved subsequent revision).

5. EFFECTIVE DATE:

October 08, 2005.

6. REMARK:

For any questions concerning the technical content of the requirements in this AD, please contact :

ARRIEL 2 Customer Support
TURBOMECA
40220 TARNOS - FRANCE
Fax : +33 5 59 74 45 15

7. APPROVAL:

This AD is approved under EASA reference No 2005-6251 dated September 20, 2005.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 038

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2006-004 **"VISUAL INSPECTION OF THE SPLINES ON THE DRIVE COMPONENTS OF THE HP/LP FUEL PUMP ASSEMBLY"**

Påbudet gjelder:

Turbomeca ARRIEL 2 motorer som beskrevet i vedlagte kopi av DGAC AD F-2005-188.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2005-188.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av DGAC AD F-2005-188, med virkning fra denne LDP's gyldighetsdato.

Referanse:

DGAC AD F-2005-188.

Gyldighetsdato:

2006-03-31.

Kansellert

2007-05-02

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

	AIRWORTHINESS DIRECTIVE No F-2005-188	Distribution: A	Issue date: November 23, 2005	Page : 1/2
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s): **Not applicable**	Airworthiness Directive(s) replaced: **None**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARRIEL 2 turboshaft engines**
Type certificate(s) No. **EASA.E.001** TCDS No **EASA.E.001**	

ATA chapter:	Subject:
73	**Engine fuel and control - Adjusted HP/LP pump and metering unit assembly - Visual inspection of the splines on the drive components of the HP/LP pump assembly**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to all ARRIEL 2B, 2B1 and 2B1A turbo-shaft engines which respectively equip AS 350 B3, EC 130 and Z11 MB1 single engines helicopters.

2. REASONS:

The deterioration of the splines on the HP/LP pump assembly drive shaft may eventually interrupt fuel supply and cause uncommanded in-flight engine shutdown. The result may be an emergency autorotation landing or, at worst, an accident.

Two cases of in-flight shutdown resulting from splines deterioration have been reported for the ARRIUS engine, which has the same HP/LP pump drive design as the ARRIEL 2.

3. MANDATORY ACTIONS AND COMPLIANCE TIMES:

3.1. Visual inspection of HP pump drive gear shaft splines and coupling shaft assembly splines must be carried out, unless already done, in compliance with paragraph 2 of TURBOMECA Mandatory Service Bulletin No 292 72 2812, from the effective date of this AD:

- If the adjusted Hydromechanical Metering Unit (HMU) has logged more than 500 operating hours since new or since repair/overhaul, inspect during the next 50 operating hours, then each time the adjusted HMU is removed/installed.

- If the adjusted HMU has logged less than 500 operating hours since new or since repair/overhaul, perform the inspection as soon as the HP/LP pumps assembly has reached 500 operating hours since new or since repair/overhaul, then each time the adjusted HMU is removed/installed.

3.2. If inspection reveals signs of wear, as listed in § 2.B.1.d of TURBOMECA Mandatory Service Bulletin No 292 73 2812, replace adjusted HMU and coupling shaft assembly.

n/BB

4. REFERENCE PUBLICATION:

Mandatory Service Bulletin no. 292 73 2812 Revision 2
(or subsequent approved revisions).

5. EFFECTIVE DATE:

December 03, 2005.

6. REMARK:

For any questions regarding the technical content of the requirements set out in this AD, please contact:

TURBOMECA
40220 TARNOS - France
Phone: 33 (0) 5.59.74.40.00
Fax: 33 (0) 5.59.64.74.98

7. APPROVAL:

This AD is approved under EASA reference 2005-6408 dated November 15, 2005.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 039

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2006-005 "ENGINE FUEL AND CONTROL - FUEL PUMP, MAXIMUM FLOW CHECK"

Påbudet gjelder:

Turbomeca ARTOUSTE III motorer som beskrevet i vedlagte kopi av DGAC AD F-2005-201.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av DGAC AD F-2005-201.

Tid for utførelse:

Tiltakene som er angitt i pkt. 3 i vedlagte kopi av DGAC AD F-2005-201 må være gjennomført senest 15. mai 2006.

Referanse:

DGAC AD F-2005-201.

Gyldighetsdato:

2006-03-31.

Kansellert

2007-05-02

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

	AIRWORTHINESS DIRECTIVE No F-2005-201	Distribution: A	Issue date: December 07, 2005	Page : 1/2
Direction générale de l'aviation civile France GSAC publication	This Airworthiness Directive is published by the DGAC on behalf of EASA, Airworthiness Authority of the State of Design for the affected product, part or appliance.		*Translation of « Consigne de Navigabilité » of same number.* *In case of difficulty, reference should be made to the French issue.*	
	No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive, unless otherwise agreed with the Authority of the State of Registry.			

Corresponding foreign Airworthiness Directive(s):	Airworthiness Directive(s) replaced:
Not applicable	**None**
Person in charge of airworthiness: **TURBOMECA**	Type(s): **ARTOUSTE III turboshaft engines**
Type certificate(s) No. **M 12** TCDS No **M 12**	

ATA chapter:	Subject:
73	**Engine fuel and control - Fuel pump, maximum flow check**

1. EFFECTIVITY:

This Airworthiness Directive (AD) applies to turboshaft engines ARTOUSTE III B, III B1 and III D.

These engines equip ALOUETTE III (SE 3160 / SA 316 B) and LAMA (SA 315 B) helicopters.

2. REASONS:

The verification of an acceptance test facility has put into evidence an inexact calibration. By this fact it is possible that certain fuel pumps could have been accepted even when the fuel flow rate delivered was really lower than the expected one. This difference can cause, on the engine, a limitation of the maximum available power over a portion of the flight envelope.

This AD aims at requiring the inspection of the accepted fuel pumps during the period concerned, and possibly at replacing them, to make sure they deliver the necessary flow rate.

3. MANDATORY ACTIONS AND COMPLIANCE TIMES:

3.1. Compliance with this AD is required as indicated from the effective date of this AD.

If the serial number of the engine fuel pump is listed in paragraph 3.3.:

- Replace this pump by a pump of which serial number is not listed in paragraph 3.3., or
- Check this pump in accordance with the instructions of TURBOMECA Mandatory Service Bulletin No 218 73 0802, before reinstalling it, or
- Replace this pump by a pump of which serial number is listed in paragraph 3.3. and of which the fuel flow rate has already been checked in accordance with the instructions of TURBOMECA Mandatory Service Bulletin No 218 73 0802.

3.2. These actions must be performed by March 15, 2006.

3.3. Concerned fuel pumps:

Fuel pump serial numbers			
A59B	F320B	808	3175
A82B	F357B	1725	3230
A91B	F368B	1766	3259
B14B	F420B	1770	3282
B29B	F464B	1897	3343
B42B	F466B	1941	3376
C27B	F477B	2154	3383
C6B	F47B	2155	3385
C92B	F504B	2233	3397
D16B	F506B	2512	3458
D18B	F537B	2620	3515
D20B	F561B	2729	3548
D80B	F589B	2759	3660
D99B	F596B	2763	3746
E49B	F607B	2786	3756
E77B	F630B	2787	3757
E90B	F643B	2827	3783
F112B	F706B	2828	3792
F131B	F724B	2830	3826
F176B	F743B	2838	3858
F220B	F745B	2854	3888
F243B	F748B	2867	3894
F253B	F759B	2868	3979
F262B	F760B	2884	4066
F293B	F762B	2944	
F317B	F957B	3078	

4. REFERENCE PUBLICATION:

TURBOMECA Mandatory Service Bulletin No 218 73 0802 original issue
(or any approved subsequent issue)

5. EFFECTIVE DATE:

December 17, 2005.

6. REMARK:

For questions concerning the technical content of this AD's requirements, contact:

Operator Support ARTOUSTE III
TURBOMECA
40220 TARNOS - FRANCE
Phone number: 33 (0) 5 59 74 40 32 (or 40 71)
Fax number: 33 (0) 5 59 74 45 15 (or 45 16).

7. APPROVAL:

This AD is approved under EASA reference No 2005-6421 dated November 29, 2005.

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Postboks 8050 Dep.,
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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 040

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2006-032 **" FUEL LEAKS ON THE START ELECTRO VALVE - INSPECTION"**

Påbudet gjelder:

Turbomeca Arriel 1 series motorer som beskrevet i vedlagte kopi av EASA AD 2006-0068.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2006-0068.

Tid for utførelse:

Innen 15. august 2006.

Referanse:

EASA AD 2006-0068.

Gyldighetsdato:

2006-07-01.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2006-0068** **Date: 24 March 2006**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	ARRIEL 1 Series

TCDS Number : France DGAC M5

Foreign AD : None

Supersedure : None

ATA 72	**Engine - Fuel leaks on the start electro valve - Inspection**
Manufacturer:	TURBOMECA
Applicability:	Arriel 1 Series
Reason:	In operation, fuel leaks at the level of start electro valve fuel coupling were observed. A lack of power or an uncommanded in-flight shutdown may result from these fuel leaks.
Effective Date:	7 April 2006
Compliance:	Before 01 August 2006, control the proper assembly and the lack of looseness on the tee coupling on the start electro valve according to Service Bulletin TURBOMECA N° A292 73 0251.
Ref. Publications:	Service Bulletin TURBOMECA N° A292 73 0251 Update No.2 or later approved revisions.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. This AD was posted as PAD 06-041 for consultation on 13 February 2006 with a comment period until 08 March 2006. The Comment Response Document can be found at http://www.easa.eu.int/home/aw_dir_en_html

	3. Enquiries regarding this PAD should be addressed to Mr. M. Capaccio, AD Focal Point, Certification Directorate, EASA. E-mail: ADs@easa.eu.int 4. For any questions concerning the technical content of the requirements in this AD, please contact TURBOMECA (Ph : +33 (0)5 59 12 50 00; Fax : +33 (0)5 59 53 15 12)

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 041

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2006-033 "INSPECTION OF FUEL PIPE"

Påbudet gjelder:

Turbomeca ARTOUSTE III B og III B1 motorer som beskrevet i EASA AD 2006-0154.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2006-0154.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av EASA AD 2006-0154 med virkning fra denne LDP's gyldighetsdato.

Referanse:

EASA AD 2006-0154.

Gyldighetsdato:

2006-07-01.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2006 – 0154** **Date: 01 June 2006**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	ARTOUSTE III B and III B1 turboshaft engines

TCDS Number : France M12

Foreign AD : not applicable

Supersedure : not applicable

ATA 73	**Engine & Fuel Control – Fuel Pipe (PN 0 202 12 800 0) - Inspection**
Manufacturer(s):	TURBOMECA
Applicability:	This airworthiness directive applies to all ARTOUSTE III B and III B1 turboshaft engines fitted with a fuel pipe P/N 0 202 12 800 0. These engines equip SA 315 B LAMA and SA 316 B Alouette III helicopters.
Reason:	3 cases of cracking due to exfoliation corrosion on the unions of fuel pipes P/N 0 202 12 800 0, connecting the Fuel Control Unit to the start electro-valve, were reported. **These cases of cracking**, if **they** had **not previously been detected**, could have caused a loss of integrity of the union conveying fuel under pressure. **A fuel leakage could then have happened** and **would have led** to an uncommanded loss of power and **to a fire hazard.** This AD requires the fuel pipe to be inspected for cracking.
Effective Date:	09 June 2006
Compliance:	The following action is made mandatory, unless already done, from the effective date of this AD : If the engine is fitted with a fuel pipe P/N 0 202 12 800 0, as soon as the next maintenance operation is performed (on the engine or airframe) and, at the latest, before 1st August 2006, **control there is no crack on the lower union (start electro-valve side) of the fuel pipe according to the procedure given in the** TURBOMECA Mandatory Service Bulletin No. A218 73 0803.

Ref. Publications:	Turbomeca Mandatory Service Bulletin No. A218 73 0803 Original issue or later approved revisions.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance for this AD. 2. This AD was posted as PAD 06-125 for consultation on 10 May 2006 with a comment period until 26 May 2006. No comment was raised during consultation period. 3. Enquiries regarding this Airworthiness Directive should be referred to Mr. M. Capaccio, Airworthiness Directive Focal Point - Certification Directorate, EASA. E-mail: ADs@easa.europa.eu . 4. For any questions regarding the technical content of the requirements of this AD, please contact: TURBOMECA ARTOUSTE III Customer Support 40220 TARNOS – France Telephone: +33 (0) 05.59.74.40.32 (or 40 71) Fax: +33 (0) 05.59.74.45 15 (or 45 16)

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 042

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2006-034 **" REPLACEMENT OF CHECK-VALVE PISTON O-RING IN OIL SYSTEM"**

Påbudet gjelder

Turbomeca ARRIUS 2F motorer som beskrevet i EASA AD 2006-0141.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2006-0141.

Anm.: Denne LDP erstatter og opphever LDP 2005-50.

Tid for utførelse:

Til de tider og intervaller som er beskrevet i vedlagte kopi av EASA AD 2006-0141 med virkning fra denne LDP's gyldighetsdato.

Referanse:

EASA AD 2006-0141.

Gyldighetsdato:

2006-07-01.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2006 - 0141** **Date: 29 May 2006**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	ARRIUS 2F turboshaft engine

TCDS Number : France M22

Foreign AD : Not applicable

Supersedure : DGAC CN F 2005-122, EASA approval No. 2005-6069

ATA 79	**Oil – Replacement of check-valve piston o-ring**
Manufacturer(s):	TURBOMECA
Applicability:	ARRIUS 2F turboshaft engine without modification Tf75 embodied. *ARRIUS 2F equip EC 120B helicopters.*
Reason:	Investigations of incidents which occurred on ARRIUS 2 turboshaft engines have revealed the interruption of engine lubrication further to oil passage blockage within the lubrication unit check valve. This blockage comes from the excessive swelling of the check valve piston o-ring. The level of swelling of the o-ring depends on the class of the oil used (Standard (STD) or High-Thermal Stability (HTS)) and the engine operating time. This phenomenon only affects ARRIUS 2F engines which do not embody modification Tf75 *(i.e.: check-valve piston without o-ring).* On ARRIUS 2F, an interruption of the engine lubrication may lead to an uncommanded in-flight shutdown.
Effective Date:	09 June 2006

Compliance:	The following actions are made mandatory, unless already done, from the effective date of this AD : A. Replace the check-valve piston o-ring according to paragraph 2 of Mandatory Alert Service Bulletin N° A319 79 4802 within the next 50 operating hours if the number of operating hours is greater than: ▪ 300 hours for engines operating with HTS-class oil and engines for which the history of the oils used is not available or engines which used to operate with HTS-class oil and which no longer do so; ▪ 450 hours for engines operating with STD class-oil since their introduction into service. B. Repeat operation of § A: ▪ every 300 hours for engines operating with HTS-class oil and engines for which the history of the oils used is not available or engines which used to operate with HTS-class oil and which no longer do so; ▪ every 500 hours for engines operating with STD class-oil since their introduction into service.
Ref. Publications:	TURBOMECA Mandatory Alert Service Bulletin No A319 79 4802 Update N°1 or later approved revisions.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. This AD was posted as PAD 06-105 for consultation on 19 April 2006 with a comment period until 15 May 2006. No comment was raised during the consultation period. 3. Enquiries regarding this Airworthiness Directive should be referred to Mr. M. Capaccio, Airworthiness Directive Focal Point - Certification Directorate, EASA. E-mail: ADs@easa.europa.eu 4. For any questions concerning the technical content of the requirements in this AD, please contact: ARRIUS 2 Customer Support, TURBOMECA - 40220 TARNOS – FRANCE. Fax: +33 5 59 74 45 15

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 043

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2006-069 **"REPLACEMENT OF THE CONSTANT DELTA PRESSURE VALVE DIAPHRAGM"**

Påbudet gjelder:

Turbomeca ARRIUS 2F motorer som beskrevet i vedlagte kopi av EASA AD 2006-0237.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2006-0237, med mindre de allerede er utført.

Anm.: Denne LDP erstatter LDP 2005-051.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av EASA AD 2006-0237.

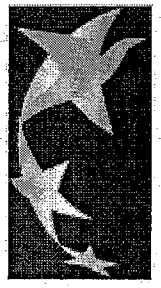
Referanse:

EASA AD 2006-0237.

Gyldighetsdato:

2006-11-27.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2006 - 0237** **Date: 09 August 2006**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	Turbo-shaft engine ARRIUS 2F

TCDS Number: France No. M22

Foreign AD : Not applicable

Supersedure: DGAC AD F-2005-143R1, EASA Approval No. 2005-6192

ATA 73	**Fuel Control Unit (FCU) – Replacement of the constant delta Pressure valve diaphragm: incorporation of modification Tf55**
Manufacturer(s):	TURBOMECA
Applicability:	ARRIUS 2F turbo-shaft engine (installed on EC120B helicopter)
Reason:	This AD is issued following the case of an increase in fuel flow resulting from deterioration of the constant delta pressure valve diaphragm. The increase in fuel flow led to an increase in gas generator speed which resulted in an increase in power turbine and helicopter rotor speed. This then led to an uncommanded in-flight engine shut down following power turbine blade-shedding (blades contained) due to over speed. This increase in fuel flow is attributed to the deterioration of the constant delta pressure valve diaphragm installed inside-out. DGAC AD F-2005-143R1 rendered mandatory the incorporation of modification Tf55 (replacement of the diaphragm potentially installed inside-out by one having two projections indicating proper direction through application of SB 319 73 4055) only on a limited number of engines listed in SB A 319 73 4825. The aim of this AD is to generalize the mandatory incorporation of modification Tf55 (through application of SB 319 73 4055) on the whole Arrius 2F fleet, and therefore to eliminate the possibility of having a

	constant delta pressure valve diaphragm incorrectly installed on any Arrius 2F.
Effective Date:	23 August 2006
Compliance:	The following measure is made mandatory from the effective date of this AD, unless previously accomplished: Before 31 July 2007, implement modification Tf55 as per paragraph 2 of the Turbomeca Mandatory Service Bulletin No. 319 73 4055.
Ref. Publications:	▪ TURBOMECA Service Bulletin No. 319 73 4055 original issue or later approved revisions. ▪ TURBOMECA Mandatory Alert Service Bulletin No. A319 73 4825 original issue or later approved revisions.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. This AD was posted as PAD 06-129 for consultation on 17 May 2006 with a comment period until 13 June 2006. No comment was raised during consultation period. 3. Enquiries regarding this AD should be addressed to Mr. M. Capaccio, AD Focal Point, Certification Directorate, EASA. E-mail ADs@easa.eu.int 4. For any questions concerning the technical content of the requirements in this AD, please contact: ARRIUS 2 Customer Support - TURBOMECA - 40220 TARNOS – FRANCE; Fax: +33 5 59 74 45 15

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 44

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-005 "ENGINE - 2nd STAGE NOZZLE GUIDE VANE (NGV2) - INSPECTION"

Påbudet gjelder:

Turbomeca ARRIEL 1B, 1D, 1D1 motorer som beskrevet i vedlagte kopi av EASA AD 2007-0002.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0002.

Anm.: Denne LDP erstatter og opphever LDP 2004-050A som var basert på DGAC AD F-2004-088 R1.

Tid for utførelse:

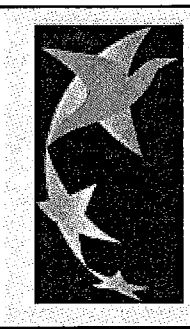
Dersom ikke allerede utført og senest 31. juli 2007 skal tiltakene som er angitt under "Compliance" i EASA AD 2007-0002 gjennomføres.

Referanse:

EASA AD 2007-0002

Gyldighetsdato:

2004-12-01. (Som var gyldighetsdato for LDP 2004-050A).

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0002** **Date: 05 January 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA, S.A.	ARRIEL 1 turboshaft engines

TCDS Number: EASA E.073

Foreign AD: Not applicable.

Supersedure: DGAC France AD F-2004-088 R1 (EASA Approval Number 2004-8068)

ATA 72	**Engine - 2nd Stage Nozzle Guide Vane (NGV2) – Inspection**
Manufacturer(s):	Turboméca, S.A.
Applicability:	TURBOMECA ARRIEL 1B, 1D and 1D1 models turboshaft engines, modified TU 202, except to those having 2nd stage nozzle guide vanes of which serial numbers or specific marks are identified in Service Bulletin No. 292 72 0231 update No 5. These engines are known to be installed on, but not limited to, the following helicopters: Eurocopter AS350 B/BA/B1/B2.
Reason:	To detect and prevent a possible perforation of the NGV2 vanes and the formation of an aerodynamic wake upstream of the 2nd stage turbine. Such a wake may lead to the rupture of a 2nd stage turbine blade followed by an uncommanded engine in flight shut-down. TURBOMECA company has notified, in Service Bulletin No. 292 72 0231, that it considers there is a hazardous situation which is potentially catastrophic for ARRIEL 1 models installed on single-engine helicopters. The present Airworthiness Directive (AD) supersedes the previous DGAC France AD F-2004-088 R1 and is issued to extend the original compliance date from December 31, 2006 to May 31, 2007.The Technical content has not changed.
Effective Date:	4 August 2004, (The effective date of DGAC France AD F-2004-088 R1)

Compliance:	Unless already done and at the latest on May 31st 2007, following actions are made mandatory from the effective date of this AD, in accordance with Service Bulletin No. 292 72 0231, Update No 5: - for engines in service or in service station, check the 2nd stage nozzle guide vane, if it is accessible, during a deep maintenance operation; - for engines in repair center, check the 2nd stage nozzle guide vane, whatever the reason for the return of the engine is. Every inspection carried out, in accordance with a previous revision of the Service Bulletin No. 292 72 0231, before the effective date of this AD, exempts from the application of this AD.
Ref. Publications:	Turbomeca, S.A. Alert Service Bulletin No. A292 72 0231 Update No 5. or later approved revisions of this document.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. Required actions and the risk allowance have granted publication and notification of an immediate AD, ruling out the public consultation process. 3. Enquiries regarding this AD should be referred to the AD Focal Point - 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 Operator Support, 40220 TARNOS, FRANCE. Phone: +33. (0)5.59.74.44.31 Fax: +33 (0)5 59 74 45 15.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 45

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-006 **"HYDRO MECHANICAL UNIT (HMU) CONSTANT DELTA PRESSURE VALVE DIAPHRAGM - REPLACEMENT "**

Påbudet gjelder:

Turbomeca ARRIEL 2B1 motorer som beskrevet i vedlagte kopi av EASA AD 2007-0006.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0006.

Tid for utførelse:

For punkt 1 under "Compliance" i vedlagte kopi av EASA AD 2007-0006 gjelder 15. juni 2007 som absolutt siste frist.

Etter 15. juni 2007 gjelder det tiltak som er angitt under punkt 2 under "Compliance" i EASA AD 2007-0006.

Referanse:

EASA AD 2007-0006.

Kansellert
2007-10-24

Gyldighetsdato:

2007-05-02.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0006** **Date: 09 January 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA, S.A.	ARRIEL 2B1 turboshaft engines

TCDS Number : EASA E.001

Foreign AD : Not applicable

Supersedure : Not applicable

ATA 73	**Engine Fuel & Control – Hydro Mechanical Unit (HMU) Constant Delta Pressure Valve Diaphragm – Replacement**
Manufacturer(s):	Turboméca, S.A.
Applicability:	ARRIEL 2B1 turboshaft engines, all serial numbers. These engines are known to be installed on, but not limited to, Eurocopter (formerly Aérospatiale) AS 350 B3 and EC 130 B4 helicopters.
Reason:	This AD is prompted by several reported cases of rupture of the constant delta pressure valve diaphragm on ARRIEL 2B1 engines, due to the wear of the delta-P diaphragm fabric. Rupture can result in the loss of the automatic control mode of the helicopter, accompanied with a deterioration of the behaviour of the auxiliary back-up mode (emergency mode). In order to reduce the probability of a diaphragm rupture, this AD requires the removal from service of all the delta Pressure valve diaphragms logging more than 2,000 hours since new.
Effective Date:	23 January 2007
Compliance:	The following measures are made mandatory from the effective date of this AD: 1. Adjusted HMU that have operated for more than **2,000 hours** since one of the following, whichever occurs later : - New, - Overhaul, - Incorporation of SB 292 73 2105, must be replaced and returned to a Repair Center for replacement of the

	constant delta P diaphragm, as soon as an adjusted HMU is made available and anyway not later than **28 February 2007.** 2. **After 28 February 2007:** Upon accumulating **2,000 operating hours** since one of the following, whichever occurs later : - New, - Overhaul, - Incorporation of SB 292 73 2105, - Incorporation of SB 292 73 2818. replace the adjusted HMU and return it to a Repair Center for replacement of the constant delta P diaphragm.
Ref. Publications:	Turbomeca Mandatory Service Bulletin n° A292 73 2818, original issue or later approved revisions.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. This AD was posted as PAD 06-263 on 07 December 2006 for consultation until 07 January 2007. No comments were received during the consultation period. 3. Enquiries regarding this AD should be referred to the AD Focal Point - 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 2 Customer Support, 40220 TARNOS, FRANCE. Fax: +33 5 59 74 45 15.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 46

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-007 **"ENGINE GAS GENERATOR 2nd STAGE TURBINE - INSPECTION / REPLACEMENT"**

Påbudet gjelder

Turbomeca ARRIEL 1 motorer som nærmere beskrevet i vedlagte kopi av EASA AD 2007-0018.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0018.

Anm.: Denne LDP erstatter LDP 2004-044A.

Tid for utførelse:

Til de tider og intervaller som er beskrevet i vedlagte kopi av EASA AD 2007-0018. med virkning fra denne LDP's gyldighetsdato dersom ikke allerede utført.

Referanse:

EASA AD 2007-0018.

Gyldighetsdato:

2007-05-02.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0018** **Date: 15 January 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA, S.A.	ARRIEL 1 turboshaft engines

TCDS Number: EASA E.073

Foreign AD: Not applicable.

Supersedure: DGAC France AD F-2004-047 R1, EASA Approval Number 2005-6374.

ATA 72	**Engine - Gas Generator 2nd Stage Turbine - Inspection/Replacement**
Manufacturer(s):	Turboméca, S.A.
Applicability:	ARRIEL 1B, if post-mod TU 148, ARRIEL 1D, ARRIEL 1D1 and ARRIEL 1S1 turboshaft engines, all serial numbers. These engines are known to be installed on, but not limited to: Eurocopter AS 350 B, AS 350 BA, AS 350 B1 and AS 350 B2 helicopters; and Sikorsky S-76C (commercial designation S-76C++) helicopters.
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 has been decided to implement mandatory check and replacement of the turbine in order to reduce the probability of uncommanded engine IFSD. This AD retains the requirements of previous DGAC AD F-2004-047 and includes changes with regard to ARRIEL 1B engines only. Reduction of the turbine blade life limit from 6,000 hours to 3,000 hours has been taken as a precaution measure following additional events.
Effective Date:	29 January 2007

Compliance:	Unless already accomplished, the following actions are made mandatory from the effective date of this AD. The technical work must be performed in accordance with the instructions of the Service Bulletins referenced below. **1. ARRIEL 1B engines which have been modified per TU 148:** 1.1. Once the 2nd stage turbine has accumulated 1,200 hours or 3,500 cycles since new or since inspection in a repair centre: - if no check has been previously performed or if the blades have been in operation for more than 150 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0807, within 50 operating hours; - if the blades have been in operation for less than 150 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0807, within 200 operating hours since the last check. 1.2. Then carry out a check according to SB A292 72 0807 every 200 operating hours until receipt of an inspected turbine sent by Turbomeca. 1.3. For 2nd stage turbines having accumulated more than 2,200 operating hours since new or since last inspection in a repair centre, replace the turbine, according to SB A292 72 0807 immediately on receipt of an inspected turbine sent by Turbomeca, but not later than 31 August 2006 [the original compliance date of DGAC AD F-2004-047]. After 31 August 2006, the turbine disks and blades must be inspected every 2,200 operating hours. 1.4. For 2nd stage turbines fitted with blades having accumulated more than 3,000 operating hours since new, replace the turbine, according to SB A292 72 0807 immediately on receipt of an inspected turbine fitted with blades having accumulated less than 3,000 operating hours since new, sent by Turbomeca, and at the latest on May 30, 2007. Starting 30 May 2007, the 2nd stage turbine must be replaced when the blades accumulate 3,000 operating hours since new. The life limit for 2nd stage turbine blades is be 3,000 operating hours. **2. ARRIEL 1D and 1D1 engines** 2.1. Once the 2nd stage turbine has accumulated 1,200 hours or 3,500 cycles since new or since inspection in a repair centre: - if no check has been previously performed or if the blades have been in operation for more than 100 hours since a check performed according to SB A292 72 0263 or A292 72 0808, carry out a check, according to SB A292 72 0809, within 50 operating hours; - if the blades have been in operation for less than 100 hours since a check performed according to SB A292 72 0263 or A292 72 0808, carry out a check, according to SB A292 72 0809, within 150 operating hours since the last check. 2.2. Then carry out a check according to SB A292 72 0809, every

	150 operating hours until receipt of an inspected turbine with new blades sent by Turbomeca. 2.3. For 2nd stage turbines having accumulated more than 1,500 operating hours since new, replace the turbine, according to SB A292 72 0809 immediately on receipt of an inspected turbine and fitted with new blades, sent by Turbomeca and at the latest on August 31, 2006. After 31 August 2006, the turbine disk must be inspected every 1,500 operating hours and the turbine blades must be replaced by new blades every 1,500 operating hours. The life limit for 2nd stage turbine blades is 1,500 operating hours. **3. ARRIEL 1S1 engines** 3.1. Once the 2nd stage turbine has accumulated 1,200 hours or 3,500 cycles since new or since inspection in a repair centre: - if no check has been previously performed or if the blades have been in operation for more than 100 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0810, within 50 operating hours; - if the blades have been in operation for less than 100 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0810, within 150 operating hours of the last check. 3.2 Then carry out a check, according to SB A292 72 0810, every 150 operating hours.
Ref. Publications:	Turbomeca, S.A. Alert Service Bulletins: A292 72 0807 update 1, or A292 72 0809 update 1, or A292 72 0810, as applicable to engine variant; or later approved revisions of these documents.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. This AD was posted as PAD 06-262 on 12 December 2006 for consultation until 12 January 2007. No comments were received during the consultation period. 3. Enquiries regarding this AD should be referred to the AD Focal Point - 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.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 46

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-007A "ENGINE GAS GENERATOR 2nd STAGE TURBINE - INSPECTION / REPLACEMENT"

Påbudet gjelder

Turbomeca ARRIEL 1 motorer som nærmere beskrevet i vedlagte kopi av EASA AD 2007-0018R1.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0018R1.

Tid for utførelse:

Til de tider og intervaller som er beskrevet i vedlagte kopi av EASA AD 2007-0018R1. med virkning fra 2. mai 2007 som var gyldighetsdato for originalutgaven av denne LDP, dersom ikke allerede utført.

Referanse:

EASA AD 2007-0018R1.

Gyldighetsdato:

2007-10-24.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No.: 2007- 0018R1** **Date: 14 August 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA, S.A.	ARRIEL 1 turboshaft engines

TCDS Number: EASA E.073

Foreign AD: Not applicable.

Revision/Supersedure: This AD revises EASA AD 2007-0018 which superseded DGAC France AD F-2004-047 R1 (EASA Approval No.2005-6374)

ATA 72	**Engine - Gas Generator 2nd Stage Turbine - Inspection/Replacement**
Manufacturer(s):	Turboméca, S.A.
Applicability:	all ARRIEL 1B post-mod TU 148, ARRIEL 1D, ARRIEL 1D1 and ARRIEL 1S1 turboshaft engines, not modified with Turbomeca modification TU347 or 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: Eurocopter AS 350 B, AS 350 BA, AS 350 B1 and AS 350 B2 helicopters; and Sikorsky S-76C (commercial designation S-76C++) helicopters.
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 has been decided to implement mandatory check and replacement of the turbine in order to reduce the probability of uncommanded engine IFSD. This AD retains the requirements of previous DGAC AD F-2004-047 and includes changes with regard to ARRIEL 1B engines only. Reduction of the turbine blade life limit from 6 000 hours to 3 000 hours has been taken as a precaution measure following additional events.

	The present Revision 1 reduces 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 likely to be the terminating action for this AD. Therefore inspections and replacement requirements defined in this AD do not apply any longer to engines equipped with the new Turbine P/N 0 292 25 039 0.
Effective Date:	29 January 2007
Compliance:	Unless already accomplished, the following actions are made mandatory from the effective date of this AD. The technical work must be performed in accordance with the instructions of the Service Bulletins referenced below. **1. ARRIEL 1B engines which have been modified per TU 148:** 1.1. Once the 2nd stage turbine has accumulated 1 200 hours or 3 500 cycles since new or since inspection in a repair centre: - if no check has been previously performed or if the blades have been in operation for more than 150 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0807, within 50 operating hours; - if the blades have been in operation for less than 150 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0807, within 200 operating hours since the last check. 1.2. Then carry out a check according to SB A292 72 0807 every 200 operating hours until receipt of an inspected turbine sent by Turbomeca. 1.3. For 2nd stage turbines having accumulated more than 2 200 operating hours since new or since last inspection in a repair centre, replace the turbine, according to SB A292 72 0807 immediately on receipt of an inspected turbine sent by Turbomeca, but not later than 31 August 2006 [the original compliance date of DGAC AD F-2004-047]. After 31 August 2006, the turbine disks and blades must be inspected every 2 200 operating hours. 1.4. For 2nd stage turbines fitted with blades having accumulated more than 3 000 operating hours since new, replace the turbine, according to SB A292 72 0807 immediately on receipt of an inspected turbine fitted with blades having accumulated less than 3 000 operating hours since new, sent by Turbomeca, and at the latest on May 30, 2007. Starting 30 May 2007, the 2nd stage turbine must be replaced when the blades accumulate 3 000 operating hours since new. The life limit for 2nd stage turbine blades is 3 000 operating hours. **2. ARRIEL 1D and 1D1 engines** 2.1. Once the 2nd stage turbine has accumulated 1 200 hours or 3 500 cycles since new or since inspection in a repair centre: - if no check has been previously performed or if the blades have

	been in operation for more than 100 hours since a check performed according to SB A292 72 0263 or A292 72 0808, carry out a check, according to SB A292 72 0809, within 50 operating hours; - if the blades have been in operation for less than 100 hours since a check performed according to SB A292 72 0263 or A292 72 0808, carry out a check, according to SB A292 72 0809, within 150 operating hours since the last check. 2.2. Then carry out a check according to SB A292 72 0809, every 150 operating hours until receipt of an inspected turbine with new blades sent by Turbomeca. 2.3. For 2nd stage turbines having accumulated more than 1 500 operating hours since new, replace the turbine, according to SB A292 72 0809 immediately on receipt of an inspected turbine and fitted with new blades, sent by Turbomeca and at the latest on August 31, 2006. After 31 August 2006, the turbine disk must be inspected every 1 500 operating hours and the turbine blades must be replaced by new blades every 1 500 operating hours. The life limit for 2nd stage turbine blades is 1 500 operating hours. **3. ARRIEL 1S1 engines** 3.1. Once the 2nd stage turbine has accumulated 1 200 hours or 3 500 cycles since new or since inspection in a repair centre: - if no check has been previously performed or if the blades have been in operation for more than 100 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0810, within 50 operating hours; - if the blades have been in operation for less than 100 hours since a check performed according to SB A292 72 0263, carry out a check, according to SB A292 72 0810, within 150 operating hours of the last check. 3.2 Then carry out a check, according to SB A292 72 0810, every 150 operating hours.
Ref. Publications:	Turbomeca, S.A. Alert Service Bulletins: A292 72 0807 update 1, or A292 72 0809 update 1, or A292 72 0810 original Issue, as applicable to engine variant; and Turbomeca Service Bulletin 292 72 0347 original Issue. any later approved revision of these documents is acceptable.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. The initial AD 2007-0018 released on 15 January 2007 was posted as PAD 06-252 on 12 December 2006 for consultation until 12 January 2007. No comments were received during the consultation period.

	3. Enquiries regarding this AD should be referred to the AD Focal Point - 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 2 Customer Support, 40220 TARNOS, FRANCE. Fax: +33 5 59 74 45 15, or your usual or nearest TURBOMECA technical representative (refer to http://www.turbomeca-support.com)

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 47

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-010 **"ENGINE FUEL & CONTROL HMU ACCELERATION CONTROL AXLE - INSPECTION AND LUBRICATION"**

Påbudet gjelder

Turbomeca ARRIEL 2B motorer som nærmere beskrevet i vedlagte kopi av EASA AD 2007-0026.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0026.

Anm.: Denne LDP erstatter LDP 2004-063 som var basert på DGAC AD F-2004-139.

Tid for utførelse:

Til de tider og intervaller som er beskrevet i vedlagte kopi av EASA AD 2007-0026 med virkning fra 2004-12-01 som var gyldighetsdato for LDP 2004-063, dersom ikke allerede utført.

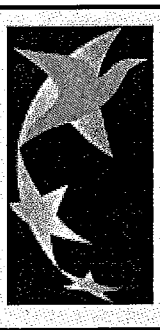
Referanse:

EASA AD 2007-0026.

Gyldighetsdato:

2007-05-02.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0026** **Date: 1 February 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA, S.A.	ARRIEL 2B turboshaft engines

TCDS Number : EASA E.001

Foreign AD : Not applicable

Supersedure : DGAC AD (CN) F-2004-139, EASA Approval Number 2004-8594.

ATA 73	**Engine Fuel & Control – HMU Acceleration Control Axle – Inspection and Lubrication**
Manufacturer(s):	Turboméca, S.A.
Applicability:	Arriel 2B turboshaft engines that incorporate Turbomeca modification TU 62A and have not been modified to incorporate modification TU 132. These engines are known to be installed on Eurocopter AS 350 B3 helicopters.
Reason:	Cases have been reported where the acceleration controller axle was sticking in its bearing, resulting in difficulty or in impossibility to control the fuel flow rate in manual or mixed mode. This condition, if not corrected, can lead to an unpredictable engine running in manual or mixed mode which can cause gas generator or power turbine overspeed, resulting in uncommanded or commanded in-flight engine shutdown. The present AD supersedes DGAC France AD (CN) F-2004-139 (EASA Approval Number 2004-8594) to reflect the fact that Turbomeca has developed modification TU 132 (SB 292 73 2132) to prevent the acceleration controller axle from sticking in its upper bearing. For engines with TU 132-modified Hydro-mechanical Units (HMU) installed, repetitive inspection and lubrication of the HMU acceleration controller axle are no longer required.
Effective Date:	15 February 2007

Compliance:	Compliance with this AD is required as indicated, unless already done, from 28 August 2004, the effective date of DGAC AD F-2004-139: **1.** Before receipt of the parts required for the application of Turbomeca Mandatory Service Bulletin (MSB) A292 73 2814 (§ 3), perform before the first flight of the day, a ground check in mixed mode operation (refer to the AS350 B3 Flight Manual section 8 task 3C, dealing with the control system mixed mode). **2.** Within 20 operating hours of receiving parts provided by Turbomeca, and at the latest on the 31st of December 2004, check the fuel metering system and perform maintenance procedures prescribed by Turbomeca MSB A292 73 2814. **3.** Repeat the maintenance procedures of paragraph 2 every 200 hours (+/- 10 hours). **Note:** After installation on the engine of an HMU modified in accordance with Turbomeca modification TU 132, the repetitive maintenance procedures in accordance with this AD are no longer required.
Ref. Publications:	Turbomeca Mandatory Service Bulletin A292 73 2814 Update n°2 or later approved updates. Eurocopter AS 350 B3 Flight Manual: section 8, chapter "Check after engine or module replacement – Manual Emergency" - Sheet n° 3C.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. This AD was posted as PAD 06-269 on 19 December 2006 for consultation until 19 January 2007. No comments were received during the consultation period. 3. Enquiries regarding this AD should be referred to the AD Focal Point - 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 2 Customer Support, 40220 TARNOS, FRANCE. Fax: +33 5 59 74 45 15.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 48

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-011 "ENGINE FUEL & CONTROL - FUEL PUMP - MAXIMUM FLOW CHECK"

Påbudet gjelder

Turbomeca ARTOUSTE III B, III B 1 og III D motorer som beskrevet i vedlagte kopi av EASA AD 2007-0030.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0030.

Anm.: Denne LDP erstatter LDP 2006-005 som var baset på DGAC AD F-2005-201.

Tid for utførelse:

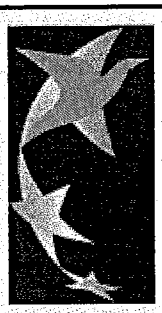
Tiltaket som er angitt under "Compliance" i vedlagte kopi av EASA AD 2007-0030 må være gjennomført innen 31. mai 2007

Referanse:

EASA AD 2007-0030.

Gyldighetsdato:

2007-05-02.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0030** **Date: 06 February 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	ARTOUSTE III turboshaft engines

TCDS Number : DGAC France M 12

Foreign AD : Not applicable

Supersedure : DGAC France AD F-2005-201 (EASA Approval Number 2005-6421)

ATA 73	Engine Fuel and Control – Fuel Pump – Maximum Flow Check
Manufacturer(s):	TURBOMECA
Applicability:	ARTOUSTE III B, III B 1 and III D turboshaft engines. These engines are installed on ALOUETTE III (SE 3160 / SA 316 B) and LAMA (SA 315 B) helicopters.
Reason:	Audit of a fuel pump acceptance test facility revealed evidence of an inexact calibration. Consequently, certain pumps may be incapable of delivering the approved maximum flow, and engines equipped with such pumps may be incapable of delivering maximum power over a portion of the flight envelope. This AD modifies the content of the superseded DGAC France AD F-2005-201 by updating the list of serial numbers of pumps that have to be checked, and the compliance deadline, in accordance with TURBOMECA Mandatory Service Bulletin No. 218 73 0802, Update 1, and TURBOMECA Service Letter No. 2486/06/ARTIII/154.
Effective Date:	21 February 2007
Compliance:	If the serial number of the fuel pump is listed in the table below, check the pump in accordance with the instructions in TURBOMECA Mandatory Service Bulletin No. 218 73 0802, Update 1, and replace it if necessary with one known to be capable of providing the approved maximum fuel flow.

This must be accomplished by 01 March 2007.

The table includes only the serial numbers of affected pumps for which compliance with the TURBOMECA Mandatory Service Bulletin is not confirmed at the time of releasing this AD. A complete list of affected pumps, including those for which compliance is confirmed, is given in the TURBOMECA Mandatory Service Bulletin.

Serial number of the fuel pumps which still have to be checked			
158B	3220	4241B	F48B
1749	3277	B52B	F551B
1750	3293	B82B	F620B
2103	3323	C01B	F652B
2577	3326	D14B	F66B
2665	3395	D2B	F776B
2728	3438	D71B	F801B
2837	3581	D93B	F817B
2882	3725	E67B	F833B
2887	3729	F129B	F944B
2894	3884	F151B	F971B
2933	3923	F164B	G58B
3045	4123	F335B	G61B
3120	4129	F350B	
3200	4213	F472B	

Ref. Publications:

1. TURBOMECA Mandatory Service Bulletin No. 218 73 0802, Update 1, dated 08 January 2007 (or any approved subsequent issue).
2. TURBOMECA Service Letter No. 2486/06/ARTIII/154, dated 10 October 2006.

Remarks :

1. If requested, and with appropriate substantiation, the responsible EASA manager for the engines covered by this AD has the authority to accept alternative means of compliance to the AD.
2. This AD was posted on 18 January 2007 as PAD 07-010 for consultation until 01 February 2007. No comments were received during the consultation period.
3. Enquiries regarding this Airworthiness Directive should be referred to the AD Focal Point - Certification Directorate, EASA. E-mail: ADs@easa.europa.eu
4. For any questions regarding the technical content of the requirements set out in this Airworthiness Directive, please contact:
   Operator Support ARTOUSTE III
   TURBOMECA
   40220 TARNOS – France
   Telephone: 33 (0) 5 59 74 40 32 (or 40 71)
   Fax: 33 (0) 5 59 74 45 15 (or 45 16)

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Besøksadresse:
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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 49

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-012 **"ENGINE FUEL AND CONTROL - HYDROMECHANICAL METERING UNIT - VISUAL INSPECTION OF THE DRIVE-LINK SPLINES"**

Påbudet gjelder

Turbomeca ARRIEL 2B, 2B1 og 2B1A motorer som nærmere beskrevet i vedlagte kopi av EASA AD 2007-0044.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0044.

Anm.: Denne LDP erstatter LDP 2006-004 som var basert på DGAC AD F-2005-188.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av EASA AD 2007-0044.
med virkning fra denne LDP's gyldighetsdato.

Punkt 1 under "Compliance" må utføres ikke senere enn 1. juni 2007.

Referanse:

EASA AD 2007-0044.

Gyldighetsdato:

2007-05-02.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0044** **[Corrected: 27 February 2007]** **Date: 21 February 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	ARRIEL 2B Turboshaft engines

TCDS Number: EASA.E.001

Foreign AD: Not applicable

Supersedure: DGAC France AD F-2005-188 (EASA Approval Number 2005-6408)

ATA 73	Engine Fuel and Control - Hydromechanical Metering Unit (HMU) - Visual Inspection of the Drive-Link Splines
Manufacturer(s):	TURBOMECA
Applicability:	Arriel 2B, 2B1 and 2B1A turbo-shaft engines. These engines are known to be installed on, but not limited to, the following helicopters: Eurocopter AS 350 B3 and EC 130 B4 helicopters.
Reason:	The deterioration of the splines on the HP/LP pump assembly drive shaft may eventually interrupt fuel supply and cause uncommanded in-flight engine shutdown. The result may be an emergency autorotation landing or, at worst, an accident. Two cases of in-flight shutdown resulting from splines deterioration have been reported for the ARRIUS 2B1 engine, which has the same HP/LP pump drive design as the ARRIEL 2. These cases prompted us to require the inspection at 500 hours and each time the HMU is removed/installed. This AD modifies the content of the previous DGAC France AD F-2005-188 (EASA Approval Number 2005-6408) in adding a one time inspection within 30 operating hours from effective date of this AD as

	well as HMU re-installation according to a maintenance task modified to avoid this kind of wrong assembly. This has been set up following a one case of improper clipping of the coupling shaft onto the drive gear shaft, which resulted in an uncommanded in-flight engine shutdown (on a twin engine rotorcraft). This precaution measures has been taken only on engine powering single engine rotorcraft. Correction: The Compliance Section of this AD has been corrected, to extend the Compliance Time to a date after the effective date of this AD.
Effective Date:	08 March 2007
Compliance:	**1.** Visual inspection of HP pump drive gear shaft splines and coupling shaft assembly splines must be performed within 30 operating hours from effective date of this AD and not later than 31 March 2007 (even if an inspection has already been performed in accordance with DGAC France AD F-2005-188 (EASA Approval Number 2005-6408). This inspection is not required for new engines equipped with their initial HMU, delivered by TURBOMECA, and whose HMU has not been removed since delivery. **2.** In addition, further to this inspection: • If the Hydromechanical Metering Unit (HMU) has logged more than 500 operating hours since new or since repair/overhaul inspect each time the HMU is removed/installed. • If the HMU has logged less than 500 operating hours since new or since repair/overhaul, perform the inspection as soon as the HP/LP pumps assembly has reached 500 operating hours since new or since repair/overhaul, then each time the HMU is removed/installed. **3.** If inspection reveals signs of wear, as listed in § 2.B.1.d of TURBOMECA Mandatory Service Bulletin No 292 73 2812, before next flight, replace HMU and coupling shaft assembly.
Ref. Publications:	Turbomeca, S.A. Mandatory Service Bulletin No. 292 73 2812 - Update n°4 (or later approved revisions of this document)
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. This AD was posted as PAD 07-008 on 11 January 2007 for consultation until 12 February 2007. No comments were received during the consultation period. 3. Enquiries regarding this Airworthiness Directive should be referred to the AD Focal Point - 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 2 Customer Support, 40220 TARNOS, FRANCE. Fax: +33 5 59 74 45 15.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 50

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-016 "ENGINE - GAS GENERATOR FRONT BEARING - MODIFICATION"

Påbudet gjelder

Turbomeca ARRIUS 2F motorer som nærmere beskrevet i vedlagte kopi av EASA AD 2007-0057.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0057.

Tid for utførelse:

Til den tid som er beskrevet i vedlagte kopi av EASA AD 2007-0057.

Referanse:

EASA AD 2007-0057.

Gyldighetsdato:

2007-05-02.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0057** **Date: 1 March 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	Turbo-shaft engine ARRIUS 2F

TCDS Number : France n°M22

Foreign AD : Not applicable

Supersedure : Not applicable

ATA 72	**Engine - Gas Generator Front Bearing- Modification**
Manufacturer(s):	TURBOMECA
Applicability:	ARRIUS 2F turboshaft engine (installed on EC120B helicopter)
Reason:	This AD is issued following a case of non-commanded in-flight engine shut-down which occurred on an ARRIUS 2F turboshaft engine, following the seizing of the gas generator. The result may be an emergency autorotation landing or, at worst, an accident. Investigations of this event have revealed that the seizing of the gas generator was caused by the fracture of the separator cage of the gas generator front bearing, due to high-cycle fatigue cracks initiated in the lubrication slots of the separator cage. Modification Tf12 introduces a new gas generator front bearing without lubrication slots on the separator cage.
Effective Date:	14 March 2007
Compliance:	The following measure is made mandatory from the effective date of this AD, unless previously accomplished: Before April 30th, 2008, implement modification Tf12 as per paragraph 2 of the Turbomeca Mandatory Service Bulletin n°319 72 4012.

Ref. Publications:	▪ TURBOMECA Mandatory Service Bulletin N° 319 72 4012 update N°1 or any approved subsequent issue.
Remarks :	1. If requested, and with appropriate substantiation, the responsible EASA manager for the engines covered by this AD has the authority to accept alternative means of compliance to the AD. 2. This AD was posted as PAD 07-017 on 01 February 2007 for consultation until 01 March 2007. No comments were received during the consultation period. 3. Enquiries regarding this Airworthiness Directive should be referred to the AD Focal Point - Certification Directorate, EASA. E-mail: ADs@easa.eu.int 4. For any questions concerning the technical content of the requirements in this AD, please contact: ARRIUS 2 Customer Support TURBOMECA - 40220 TARNOS - FRANCE Fax: +33 5 59 74 45 15

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 51

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-017 **"ENGINE ELECTRONIC CONTROL UNIT (EECU) - SOFTWARE MODIFICATION"**

Påbudet gjelder

Turbomeca ARRIEL 2B1 motorer som nærmere beskrevet i vedlagte kopi av EASA AD 2007-0085.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0085.

Tid for utførelse:

Til de tider som er beskrevet i vedlagte kopi av EASA AD 2007-0085 med virkning fra denne LDP's gyldighets dato.

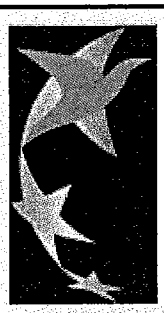
Referanse:

EASA AD 2007-0085.

Gyldighetsdato:

2007-05-02.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0085** **Date: 30 March 2007** **[Corrected 02 April 2007]**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	ARRIEL 2B1 Turboshaft engines

TCDS Number : EASA.E.001

Foreign AD : Not applicable

Supersedure : Not applicable

ATA 73	**Engine Fuel & Control - Engine Electronic Control Unit (EECU) – Software Modification**
Manufacturer(s):	TURBOMECA
Applicability:	Arriel 2B1 turboshaft engines, all serial numbers. These engines are known to be installed on, but not limited to, Eurocopter AS 350 B3 and EC 130 B4 single-engine helicopters.
Reason:	Two cases of flame-out have been reported on Arriel 2B1 engines: one when lowering collective pitch on ground at landing and one when switching from Flight Position to Idle Position on ground. Both flame-out events are explained as follows: ▪ in case of stepper motor loss of steps to a value below the "level 1 failure" detection threshold, the fuel flow of the anti flame-out limit can be reduced, ▪ the reduction can be sufficient to cause an engine flame-out when decreasing rapidly the demand for power (it can therefore also happen in flight) This condition may lead to an uncommanded in-flight shut-down. On a single-engine helicopter, the result may be an emergency autorotation landing or, at worst, an accident.

	To prevent this, software version 5.02 (TU 144C) increases the anti flame-out limit in the event of small stepper motor loss of steps (below the "level 1 failure" detection threshold). This AD was corrected due to a typographical error in the effective date. This has now been corrected to read 13 April 2007 instead of 13 March 2007.
Effective Date:	13 April 2007
Compliance:	Modify the DECU by downloading the TU144C software in accordance with Turbomeca Mandatory Service Bulletin 292 73 2144, as soon as a TURBOMECA technician qualified to download the new software is available or replace the DECU according to mandatory Service Bulletin 292 73 2144, as soon as a TU 144C-modified DECU is available, and by August 31st, 2007 at the latest. After incorporating the instructions of Turbomeca Mandatory Service Bulletin 292 73 2144, the compliance certificate for replacement of Engine Electronic Control Unit must be sent to Turbomeca within 7 days, as stated in paragraph D.(1)(a)3 of the Service Bulletin.
Ref. Publications:	Turbomeca Mandatory Service Bulletin 292 73 2144 Original Issue, or later approved revisions of this document
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. This Ad was posted as PAD 07-034 on 27 February 2007 for consultation until 27 March 2007. No comments were received during this period. 3. Enquiries regarding this AD should be referred to the AD Focal Point - 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 2 Customer Support, 40220 TARNOS, FRANCE. Fax: +33 5 59 74 45 15.

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 52

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-019 **"RETURN TO SERVICE FOR CIVIL USE FROM AN OPERATOR NOT CONTROLLED BY A CIVIL AUTHORITY"**

Påbudet gjelder

Turbomeca ARRIEL 1 serie motorer som nærmere beskrevet i vedlagte kopi av EASA AD 2007-0045.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0045.

Tid for utførelse:

Med virkning fra denne LDP's gyldighetsdato.

Referanse:

EASA AD 2007-0045.

Gyldighetsdato:

2007-05-02.

MERK! For at angjeldende flymateriell skal være luftdyktig må påbudet være utført til rett tid og notat om utførelsen ført inn i vedkommende journal med henvisning til denne LDPs nummer.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0045** **Date: 21 February 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	Turboshaft engines – ARRIEL 1A, 1A1, 1A2, 1B, 1C, 1C1, 1C2, 1D, 1D1, 1E2, 1K, 1K1, 1S, 1S1

TCDS Number: EASA.E.073

Foreign AD: n/a

Supersedure: n/a

ATA 72	**Return to Service for Civil Use from an Operator Not Controlled by a Civil Authority**
Manufacturer(s):	TURBOMECA
Applicability:	ARRIEL 1A,1A1,1A2,1B, 1C, 1C1, 1C2, 1D, 1D1, 1E2, 1K, 1K1, 1S, 1S1 turboshaft engines originally assembled by TURBOMECA and having previously been used by an operator who is not under the control of a civil Authority (Military, Paramilitary…). These engines are known to be installed on, but not limited to, the following helicopters: Eurocopter AS350 B/BA/B1/B2, AS365 N/N1/N2/C/C1/C2/C3 and BK117 C1/C2 (EC 145), Agusta A109 K/K2, Sikorsky S76 A+/A++/C helicopters.
Reason:	The manufacturer has advised EASA that some helicopters equipped with these engines may be or may have been sold to civil operators. The use of ARRIEL 1A,1A1,1A2,1B, 1D, 1D1, 1C, 1C1, 1C2, 1E2, K, 1K1, 1S, 1S1 turboshaft engines which have been previously used by an operator who is not under the control of a civil Authority (Military Operator, Paramilitary, State…) may result in an unsafe condition. Indeed, these engines have not been followed up within the framework of a civil regime and their configuration may not conform to the type definition approved by the civil Authority, especially concerning the modification standard, the applied repair schemes or the maintenance

	program for critical parts. The operating limits approved by the civil Authority may also have been exceeded on these turboshaft engines. It is reminded in particular the life limits are based on normal civil operation cycles. This Airworthiness Directive (AD) explains the conditions for returning these engines to service in a civil regime and issuing an "EASA Form One" attesting the engine's airworthiness.
Effective Date:	08 March 2007
Compliance:	Compliance with this AD is required as indicated, unless already done, from the effective date of this AD. Before delivering a standard certificate of airworthiness to an aircraft in which an ARRIEL 1A, 1A1, 1A2, 1B, 1D, 1D1, 1C, 1C1, 1C2, 1E2, K, 1K1, 1S, 1S1 turboshaft engines, previously used by an operator (Military Operator, Paramilitary, State, ...) who is not under the control of a civil Authority, should be installed, the engine will have got an EASA Form One delivered under the conditions mentioned hereinafter. **1. General case :** Application of Turbomeca service bulletin A292 72 0806 – Issue No. 1 (or any subsequent approved issue) is an acceptable means to get the EASA Form 1. **2. Particular case :** Other means may be proposed to the EASA for approval. In this case, a written request is to be sent to the EASA (European Aviation Safety Agency, Postfach 10 12 53 D-50452 Köln, Germany). These alternative means will have to be based on a demonstration of a level of airworthiness compatible with engine certification criteria, equivalent to the one resulting of the application of the Turbomeca Service Bulletin A292 72 0806 – Original Issue. Particularly, to be acceptable, such a request must include the following justifications demonstrating that the owner or operator: - knows the exact engine configuration, its status with respect to the maintenance rules as defined by TURBOMECA (standard, overhauls, repairs, storage, periodical checks, cumulated operating hours and cycles, cumulated time at Max. Contingency Power if applicable), - is able to know the possible deviations to the TURBOMECA maintenance rules and is able to evaluate the consequences on the engine airworthiness, - set up the conformity to the set of drawings (variant, standard, performance), - has identified, if necessary, the parts which are not approved by the EASA, and accepts to ask the EASA their certification as STC, under his/her own responsibility or to replace them with approved parts, - has identified, if necessary, repair schemes which did not receive

	acceptance from the manufacturer and from the EASA, and accepts to ask EASA their certification, under his/her own responsibility or to replace them by approved parts, - has checked the respect of the airworthiness data approved by the Authority (Airworthiness Directives, Service Bulletins, life limits, operating limits, calendar limits), - has checked that the engine identification plate is fixed on the engine. Furthermore, the owner or operator has to provide, or make available to the EASA the following elements: - the documents from the former operator, concerning the inspection follow-up and frequencies, the stored work data concerning repair, overhaul, and storage (conditions/limits), - the operating time and cycle log, - the assessment of any possible event concerning the helicopter and the engine (hard landing, accident, detection of particles on the engine magnetic plug, spectrometric oil analysis problems, dilution problems, engine visual inspection, identification record sheets for accessible accessories and parts, etc.), - the information from the former operator allowing to check that the engine operating was compatible with the reference operating cycle(s) used to determine the civil Authority approved life limits, - the applicant has to demonstrate by a test bench run that the engine properly delivers the minimum certified ratings. The reception of the written acceptance of this request by EASA allows the authorized organization to issue the EASA Form 1.
Ref. Publications:	Turbomeca, S.A. Service Bulletin No. A292 72 0806 – Original Issue, or later approved revisions of this document.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOCs) for this AD. 2. This AD was posted as PAD 07-006 on 10 January 2007 for consultation until 12 February 2007. No comments were received during the consultation period. 3. Enquiries regarding this Airworthiness Directive should be referred to the AD Focal Point - 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: ARRIEL 1 Operator Support TURBOMECA 40220 TARNOS - France Fax number: 33 (0) 5 59 74 45 15

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 53

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-053 "ENGINE - MODULE M03 (GAS GENERATOR) - TURBINE BLADE BORESCOPE INSPECTION / REPLACEMENT"

Påbudet gjelder

Turbomeca ARRIEL 2B, 2B1 og 2B1A motorer som beskrevet i vedlagte kopi av EASA AD 2007-0109.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0109.

Tid for utførelse:

Til de tider og intervaller som er beskrevet i EASA AD 2007-0109 med virkning fra 1. august 2007.

Referanse:

EASA AD 2007-0109.

Gyldighetsdato:

2007-10-24.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0109** **Date: 19 April 2007** **[Corrected 20 April 2007]**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	ARRIEL 2B, 2B1, 2B1A turboshaft engines

TCDS Number: EASA.E.001

Foreign AD: n/a

Supersedure: n/a

ATA 72	**Engine – Module M03 (Gas Generator) – Turbine Blade Borescope Inspection/Replacement**
Manufacturer(s):	Turboméca, S.A.
Applicability:	ARRIEL 2B, 2B1, 2B1A turboshaft engines. These engines are known to be installed on, but not limited to, the following helicopters: Eurocopter AS 350 B3 and EC 130 B4 helicopters.
Reason:	Several cases of Gas Generator Turbine (HP Turbine) blade rearward displacement have been detected during borescope inspection or in repair centre following engine disassembly. Two of them resulted in blade rubs between the rear face of the fir-tree roots and the rear bearing support cover. High HP blade rearward displacement can potentially result in blade release due to fatigue of the blade, which would cause an uncommanded in-flight engine shutdown. On a single-engine helicopter, the result may be an emergency autorotation landing or, at worst, an accident. The evaluation of this condition has prompted to require a periodic borescope inspection in order to detect HP blade rearward displacement. Additionally, in case displacement is found above the specified limit, removal of Module 03 is required.

	This precaution measure has been taken only on engine powering single engine rotorcraft. This Airworthiness Directive was corrected due to a faulty reference to SB 292 72 2817 instead of 292 72 2825 within the Ref. Publication paragraph.
Effective Date:	03 May 2007
Compliance:	**1.** Perform the HP turbine inspection according to Mandatory Service Bulletin No. 292 72 2825, within 600 gas generator hours or 500 cycles (whichever come first) of the previous HP turbine borescope inspection. For Module 03 that have logged more than 600 hours or 500 cycles since new, repair or overhaul and for which the HP turbine borescope inspection was performed more than 600 hours or 500 cycles ago, this inspection must be performed within 100 hours upon effective date of this AD. This inspection must be repeated within 600 gas generator hours or 500 cycles (whichever comes first), or sooner as defined in paragraph **2.** **2.** Actions required following inspection: If inspections reveal HP blade rearward displacement, follow Mandatory Service Bulletin No. 292 72 2825 § 2.B to determine which action has to be taken. Depending on the blade rearward displacement result, the action will be either: - Module 03 has to be removed or, - Inspect again within the schedules defined in Mandatory Service Bulletin No. 292 72 2825 § 2.B **3.** After each inspection, the compliance certificate must be sent to Turbomeca within 7 days, according to § 2.D.(1)(c) of Mandatory Service Bulletin No. 292 72 2825.
Ref. Publications:	Turbomeca S.A. Mandatory Service Bulletin 292 72 2825 – Original Issue (or any subsequent approved issue)
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOC) for this AD. 2. Required actions and the risk allowance have granted publication and notification of an immediate AD, ruling out the public consultation process. 3. Enquiries regarding this Airworthiness Directive should be referred to the AD Focal Point - 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 2 Customer Support, 40220 TARNOS, FRANCE. Fax: +33 5 59 74 45 15. or your usual or nearest TURBOMECA technical representative (refer to http://www.turbomeca-support.com)

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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 54

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-054 **"RETURN TO SERVICE FOR CIVIL USE FROM AN OPERATOR NOT CONTROLLED BY A CIVIL AUTHORITY"**

Påbudet gjelder

Turbomeca ARRIEL 2- serie motorer som nærmere beskrevet i vedlagte kopi av EASA AD 2007-0117.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0117.

Tid for utførelse:

Med virkning fra denne LDP's gyldighetsdato.

Referanse:

EASA AD 2007-0117.

Gyldighetsdato:

2007-10-24.

EASA	AIRWORTHINESS DIRECTIVE
	AD No : 2007-0117 **Date: 02 May 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA	ARRIEL 2 Turboshaft engines

TCDS Number: EASA.E.001

Foreign AD: n/a

Supersedure: n/a

ATA 72	**Return to Service for Civil Use from an Operator Not Controlled by a Civil Authority**
Manufacturer(s):	TURBOMECA
Applicability:	ARRIEL 2B, 2B1, 2B1A, 2C, 2C1, 2C2, 2S1 and 2S2 turboshaft engines originally assembled by TURBOMECA and having previously been used by an operator who is not under the control of a civil Authority (Military, Paramilitary...). These engines are known to be installed on, but not limited to, the following helicopters: Eurocopter AS 350 B3, AS 365 N3, EC 130 B4, EC 155 B/B1, Sikorsky S76 C+/C++ helicopters.
Reason:	The manufacturer has advised EASA that some helicopters equipped with these engines may be or may have been sold to civil operators. The use of ARRIEL 2B, 2B1, 2B1A, 2C, 2C1, 2C2, 2S1 and 2S2 turboshaft engines which have been previously used by an operator who is not under the control of a civil Authority (Military Operator, Paramilitary, State...) may result in an unsafe condition. Indeed, these engines have not been followed up within the framework of a civil regime and their configuration may not conform to the type definition approved by the civil Authority, especially concerning the modification standard, the applied repair schemes or the maintenance program for critical parts. The operating limits approved by the civil Authority may also have been exceeded on these turboshaft engines.

	It is reminded in particular that the life limits are based on normal civil operation cycles. This Airworthiness Directive (AD) explains the conditions for returning these engines to service in a civil regime and issuing an "EASA Form One" attesting the engine's airworthiness.
Effective Date:	16 May 2007
Compliance:	Compliance with this AD is required as indicated, unless already done, from the effective date of this AD. Before delivering a standard certificate of airworthiness to an aircraft in which an ARRIEL 2B, 2B1, 2B1A, 2C, 2C1, 2C2, 2S1 or 2S2 turboshaft engines, previously used by an operator (Military operator, Paramilitary, State, ...) who is not under the control of a civil Authority, should be installed, the engine will have got an EASA Form One delivered under the conditions mentioned hereinafter. **1. General case :** Application of Turbomeca Mandatory Service Bulletin 292 72 2817 – Original Issue (or any subsequent approved issue) is an acceptable means to get the EASA Form 1. **2. Particular case :** Other means may be proposed to the EASA for approval. In this case, a written request is to be sent to the EASA (European Aviation Safety Agency, Postfach 10 12 53 D-50452 Koeln, Germany). These alternative means will have to be based on a demonstration of a level of airworthiness compatible with engine certification criteria, equivalent to the one resulting of the application of the Turbomeca Mandatory Service Bulletin 292 72 2817 – Original Issue. Particularly, to be acceptable, such a request must include the following justifications demonstrating that the owner or operator: - knows the exact engine configuration, its status with respect to the maintenance rules as defined by TURBOMECA (standard, overhauls, repairs, storage, periodical checks, cumulated operating hours and cycles, cumulated time at Max. Contingency Power if applicable), - is able to know the possible deviations to the TURBOMECA maintenance rules and is able to evaluate the consequences on the engine airworthiness, - set up the conformity to the set of drawings (variant, standard, performance), - has identified, if necessary, the parts which are not approved by the EASA, and accepts to ask the EASA their certification as STC, under his/her own responsibility or to replace them with approved parts, - has identified, if necessary, repair schemes which did not receive acceptance from the manufacturer and from the EASA, and accepts to ask EASA their certification, under his/her own responsibility or to replace them by approved parts,

	- has checked the respect of the airworthiness data approved by the Authority (Airworthiness Directives, Service Bulletins, life limits, operating limits, calendar limits), - has checked that the engine identification plate is fixed on the engine. Furthermore, the owner or operator has to provide, or make available to the EASA the following elements: - the documents from the former operator, concerning the inspection follow-up and frequencies, the stored work data concerning repair, overhaul, and storage (conditions/limits), - the operating time and cycle log, - the assessment of any possible event concerning the helicopter and the engine (hard landing, accident, detection of particles on the engine magnetic plug, spectrometric oil analysis problems, dilution problems, engine visual inspection, identification record sheets for accessible accessories and parts, etc.), - the information from the former operator allowing to check that the engine operating was compatible with the reference operating cycle(s) used to determine the civil Authority approved life limits, - the applicant has to demonstrate by a test bench run that the engine properly delivers the minimum certified ratings. The reception of the written acceptance of this request by EASA allows the authorized organization to issue the EASA Form 1.
Ref. Publications:	Turbomeca S.A. Mandatory Service Bulletin 292 72 2817 – Original Issue (or any subsequent approved issue)
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOC) for this AD. 2. This Ad had been posted as PAD 07-053 on the EASA website on 02 April until 30 April. No comments were received during the consultation period. 3. Enquiries regarding this Airworthiness Directive should be referred to the AD Focal Point - 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: ARRIEL 2 Operator Support TURBOMECA 40220 TARNOS - France Fax number: 33 (0) 5 59 74 45 15

Luftfartstilsynet
Postboks 243, NO-8001 Bodø
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LUFTDYKTIGHETSPÅBUD (LDP)

MOTORER

TURBOMECA - 55

Med hjemmel i lov av 11. juni 1993 nr. 101 om luftfart, § 15-4 jf. § 4-1 og det vedtak om delegering av myndighet til Luftfartstilsynet av 10. desember 1999 nr. 1273

2007-055 **"HYDRO MECHANICAL UNIT (HMU) CONSTANT DELTA PRESSURE VALVE DIAPHRAGM - REPLACEMENT"**

Påbudet gjelder:

Turbomeca ARRIEL 2B1 motorer som beskrevet i vedlagte kopi av EASA AD 2007-0126.

Påbudet omfatter:

Tiltak skal utføres som beskrevet i vedlagte kopi av EASA AD 2007-0126.

Anm.: Denne LDP erstatter LDP 2007-006 som var basert på EASA AD 2007-0006.

Tid for utførelse:

For punkt 1 under "Compliance" i vedlagte kopi av EASA AD 2007-0126 gjelder 1. desember 2007 som absolutt siste frist.

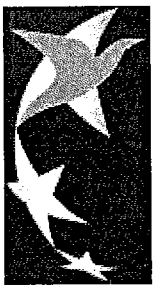
Etter 1. desember 2007 gjelder det tiltak som er angitt under punkt 2 under "Compliance" i EASA AD 2007-0126.

Referanse:

EASA AD 2007-0126.

Gyldighetsdato:

2007-10-24.

EASA	AIRWORTHINESS DIRECTIVE
	**AD No : 2007-0126** **Date: 07 May 2007**

No person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise agreed with the Authority of the State of Registry.

Type Approval Holder's Name :	**Type/Model designation(s) :**
TURBOMECA, S.A.	ARRIEL 2B turboshaft engines

TCDS Number : EASA E.001

Foreign AD : Not applicable

Supersedure : EASA AD 2007-0006

ATA 73	**Engine Fuel & Control – Hydro Mechanical Unit (HMU) Constant Delta Pressure Valve Diaphragm – Replacement**
Manufacturer(s):	Turboméca, S.A.
Applicability:	ARRIEL 2B1 turboshaft engines, all serial numbers. These engines are known to be installed on, but not limited to, Eurocopter (formerly Aérospatiale) AS 350 B3 and EC 130 B4 helicopters.
Reason:	This AD is prompted by several reported cases of rupture of the constant delta pressure valve diaphragm on ARRIEL 2B1 engines, due to the wear of the delta-P diaphragm fabric. Rupture can result in the loss of the automatic control mode of the helicopter, accompanied with a deterioration of the behaviour of the auxiliary back-up mode (emergency mode). On a single-engine helicopter, the result may be an emergency landing or, at worst, an accident. This AD supersedes EASA AD 2007-0006 which required the removal from service of all the delta Pressure valve diaphragms logging more than 2,000 hours since new. Since issuance of EASA AD 2007-0006, no further case of rupture of the constant delta pressure valve diaphragm has been reported on ARRIEL 2 engines. However, about 40 additional diaphragms returning from service have been inspected by Turbomeca, and some signs of wear have been detected on diaphragms having logged less than 2,000 hours. Based on the inspection results, it has been decided to decrease this limit from 2,000 hours to 1,500 hours in order to further reduce the probability of delta-P diaphragm rupture.

Effective Date:	21 May 2007
Compliance:	The following measures are made mandatory from the effective date of this AD: 1. Adjusted HMU that have operated for more than 1,500 hours since one of the following, whichever occurs later : - New, - Overhaul, - Incorporation of SB 292 73 2105 (all issues), - Incorporation of SB 292 73 2818 (all issues), must be replaced and returned to a Repair Center for replacement of the constant delta P diaphragm, as soon as an adjusted HMU is made available, though not later than 30 July 2007. 2. After 30 July 2007: Upon accumulating 1,500 operating hours since one of the following, whichever occurs later : - New, - Overhaul, - Incorporation of SB 292 73 2105 (all issues), - Incorporation of SB 292 73 2818 (all issues). replace the adjusted HMU and return it to a Repair Center for replacement of the constant delta P diaphragm. After applying the instructions of Turbomeca Mandatory Service Bulletin 292 73 2818, the compliance certificate for replacement of HMU must be sent to Turbomeca within 7 days, as stated in paragraph 2.D.(1)(c).
Ref. Publications:	Turbomeca Mandatory Service Bulletin n° 292 73 2818, Update n°1 or later approved revisions.
Remarks :	1. If requested and appropriately substantiated the responsible EASA manager for the related product has the authority to accept Alternative Methods of Compliance (AMOC) for this AD. 2. This AD was posted as PAD 07-065 on 19 April 2007 for consultation until 03 May 2007. No comments were received during that period. 3. Enquiries regarding this AD should be referred to the AD Focal Point - 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 2 Customer Support, 40220 TARNOS, FRANCE. Fax: +33 5 59 74 45 15. or your usual or nearest TURBOMECA technical representative (refer to http://www.turbomeca-support.com)

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