

**Subject: Power Turbine Over-Speed Protection on ARRIEL 2D and ARRIEL 2B1 Engines**

**Revision:**

This SIB revises EASA SIB 2019-10 dated 22 August 2019.

**Ref. Publications:**

Airbus Helicopters (AH) Alert Service Bulletin (ASB) AS350-76.00.29 dated 20 June 2022.

AH ASB AS350-76.00.30 dated 20 June 2022.

AH ASB AS350-76.00.31 dated 28 January 2022.

AH ASB AS350-76.00.32 dated 28 January 2022.

AH ASB EC130-76A009 dated 20 June 2022.

AH ASB EC130-76A010 dated 20 June 2022.

AH ASB EC130-76A011 Revision 1 dated 27 June 2022.

AH ASB EC130-76A012 dated 28 January 2022.

SAFRAN Helicopter Engines (SAFRAN) SB 292-73-2210 dated 10 May 2019.

SAFRAN SB 292 73 2226 dated 20 June 2022.

SAFRAN SB 292 73 2227 dated 20 June 2022.

**Applicability:**

AS 350 B3 and EC 130 T2 helicopters equipped with ARRIEL 2D engine.

AS 350 B3 and EC 130 B4 helicopters equipped with ARRIEL 2B1 engine.

**Description:**

The power turbines (PT) of all SAFRAN ARRIEL 2 series engines are protected from the hazardous effects of over-speed (e.g. turbine disc burst) by the design principle of blade shedding. Once a certain rotational speed (N2) is reached, the PT blades are released and the PT disc has no more driving power. The ability of the ARRIEL 2B1 and 2D PT blade shedding to prevent turbine disc burst, and full containment of the blade debris, has been demonstrated by test to be in compliance with the applicable engine requirements. The helicopter design is also adapted to accommodate this behaviour in case of an impact accident. Therefore, the blade shedding could also occur following a main rotor tip strike leading to transmission system failure and loss of loading on the engine output shaft.

In the particular case of an accident, some specific threats can be observed. If conditions are such that flammable fluids or flammable materials are released or exposed in combination with a

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sufficient thermal source, a potential risk of post impact fire may exist. Sometimes, during blade shedding, extra thermal energy is released from the engine. Along with other thermal sources existing in a helicopter, this extra thermal energy is a potential source of ignition.

The ignition source has not always been clearly determined for every previous occurrence of post-impact fire. However, to initially address this safety issue, AH and SAFRAN have joined efforts to study some ways to reduce the unwanted blade shedding occurrences on rotorcraft equipped with ARRIEL 2B1 and 2D engines, and hence to reduce the potential for post-impact fire. The result of this effort is the implementation of an electronic over-speed protection that, if still operational after the impact, has the aim to limit occurrence of PT blade shedding by early detection of the over-speed condition and subsequent rapid fuel flow shut off. This new function is introduced through a Full Authority Digital Engine Control (FADEC) software modification (for helicopters equipped with ARRIEL 2B1 and 2D engine) and/or through a wiring modification at helicopter level (only for helicopters equipped with ARRIEL 2D engine).

This SIB is revised to include helicopters equipped with ARRIEL 2B1 engine, and consequently update the references to AH and SAFRAN service information, which have been (re)issued in order to support the modifications incorporation.

This SIB is also revised to refer to modification 0720015, which introduces a simplification of an initial modification 074831 through the integration of a shunt harness, for helicopters equipped with ARRIEL 2D engine.

Table 1 of this SIB provides a list of modifications approved by EASA and the associated (A)SBs, as available at the issue date of this SIB at Revision 1.

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Table 1 – Approved Modifications / (Alert) Service Bulletins

Helicopter Type	Helicopter Modification	Engine Mod Reference	(A)SB Reference	Engine Type	EECU Reference
EC 130 T2	074831	TU210	AH ASB EC130-76A012 (previously AH SB EC130-76-006) SAFRAN SB 292-73-2210	ARRIEL 2D	FADEC D
AS 350 B3			AH ASB AS350-76.00.32 (previously AH SB AS350-76.00.23) SAFRAN SB 292-73-2210		
EC 130 T2	0720015		AH ASB EC130-76A011 (previously AH SB EC13076-008) SAFRAN SB 292-73-2210		
AS 350 B3			AH ASB AS350-76.00.31 (previously AH SB 76.00.28) SAFRAN SB 292-73-2210		
AS 350 B3	0720060	TU226	AH ASB AS350-76.00.29 SAFRAN SB 292 73 2226	ARRIEL 2B1	EMC101
EC 130 B4			AH ASB EC130-76A009 SAFRAN SB 292 73 2226		
AS 350 B3	0720061	TU227	AH ASB AS350-76.00.30 SAFRAN SB 292 73 2227	ARRIEL 2B1	FADEC B
EC 130 B4			AH ASB EC130-76-010 SAFRAN SB 292 73 2227		

At this time, the safety concern described in this SIB is not considered to be an unsafe condition that would warrant Airworthiness Directive (AD) action under Regulation (EU) [748/2012](#), Part 21.A.3B.

EASA is, however, reviewing the accident data and further recommendation and/or AD action may follow.

#### Recommendation(s):

EASA recommends operators to modify the affected helicopters by incorporating the applicable engine and helicopter modifications.

#### Contact(s):

For further information contact the EASA Safety Information Section, Certification Directorate, E-mail: [ADs@easa.europa.eu](mailto:ADs@easa.europa.eu).

For any question concerning the technical content of this SIB, please contact:

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Web portal: <https://keycopter.airbushelicopters.com> - Technical Requests Management;

or your nearest SAFRAN Helicopter Engines technical representative, or connect to  
[www.tools.safran-helicopter-engines.com](http://www.tools.safran-helicopter-engines.com).

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