GENERAL ALERT SERVICE LETTER

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General Alert Service Letter no. 3051/20 – 1st issue

Subject: ALL engines
Biocidal product use in engines of Safran Helicopter Engines

ERRATUM - January 10TH, 2022
Read: mold growth/fungi
Instead of: moisture proliferation

Reference documents:

- EASA SIB 2020-06
- FAA SAIB NE-20-04
- 9680-05 - IATA "Microbiological contamination in Aircraft fuel tanks"

Dear Sir or Madam,

1 – Context

Several engines may be stored for a long time given current Covid-19 pandemic, situation conductive to mold growth in fuel tanks. Safran Helicopter Engines was informed of incidents occurred on several commercial airline engines using KATHON FP1.5. Manufacturer DUPONT, being informed of recurrent misunderstanding of dosing procedures, and consecutively to those events, revoked its marketing approval for aeronautic use of KATHON FP1.5.

2 - Goal

Provide Safran Helicopter Engines recommendations enabling worldwide use of authorized biocidal products, in order to address potential need for fuel tanks decontamination after a long period of storage. Those recommendations will be integrated in upcoming releases of technical documentations.

3 - Safran Helicopter Engines return of experience with biocidal products

Based on its return of experience, Safran Helicopter Engines has no record of engine dysfunction following use of biocidal products (BIOBOR/KATHON) in accordance with aircraft/engine documentation, especially in terms of dosage and uplift.

- Some cases of fuel filter pre-clogging indications without by-pass opening (expected consequence in case of advanced proliferation). No record of several engines being impacted simultaneously on one helicopter.
- One incident in 2009 on an ARRIUS engine, where continuous use of KATHON FP1.5 with curative concentrations higher than specified limits was heavily suspected.

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Return of experience highlights that not respecting dosage procedures in the fuel tanks and/or at the entry of the engine fuel system may lead to loss of power of one or several engines.

4 - Safran Helicopter Engines recommendations with biocidal products

a) Maximum authorized concentrations at engine fuel system inlet

Safran Helicopter Engines reminds that maximum authorized concentrations at engine fuel system inlet are specified within Engine Maintenance Manuals.

CAUTION: biocide concentration at the engine fuel system inlet above authorized limits may lead to loss of power on one or several engines.

Specified values in engine maintenance manuals shall in any case be lower or equal to below values:

BIOCIDE / Authorized maximum concentrations in mL/L[1] at engine fuel system inlet	Maximum concentrations for preventive treatment	Maximum concentrations for curative treatment
BIOBOR	0,100[2]	0,199[2]
KATHON FP1.5	0,050	0,100

[1] To convert in volumetric ppm: multiply above values by 1000.
[2] Those concentrations are respectively equivalent to 135 and 270 mass ppm for BIOBOR.

b) Precautions when incorporating biocidal product in aircraft fuel tanks

Safran Helicopter Engines reminds you that precautions for proper maintenance of fuel tanks and addition of biocidal products in fuel are under aircraft manufacturer responsibility.

Hence, Safran Helicopter Engines invites you to contact your aircraft manufacturer if support is needed for example:

- To apply procedures to avoid growth of molds and fungi in tanks.
- To define appropriate checks to detect mold growth and treat it as soon as possible.
- To define appropriate treatment upon molds and fungi concentration, for example accordingly to IATA recommendations (refer to Reference documents)
- To ensure proper mix of biocide in fuel at entry of the engine fuel system.

CAUTION: non-compliance with aircraft procedures when dosing/uplifting the biocidal products in the fuel tanks may lead to concentrations above maximum authorized thresholds at the engine fuel system inlet and lead to loss of power of one or several engines.

c) Precautions while using biocidal products with Safran Helicopter Engines

Pending investigations of incidents encountered on civil transport aircrafts, Safran Helicopter Engines recommends to:

- Use BIOBOR whenever available
- Inform Safran Helicopter Engines of any engine event related to use of biocidal products.
- Not use fuel treated with biocide if mold contamination is considered “high” as per IATA defined thresholds. Prior filtering, when authorized by aircraft procedures, to reduce contamination to moderate level is necessary before treatment
- Whatever the type of treatment (preventive/curative):
  - Check fuel filter(s) pre-clogging/clogging indicators as often as possible and at least every 100 flight hours.
  - In case of fuel filter by-pass indication, refer to Engine Maintenance Manual procedures.
  - Record in the engine logbook the use of biocidal product (including concentrations)
- In case of curative treatment (when curative treatment is authorized by applicable Engine Maintenance Manual) :
  - Before curative treatment, check mold concentration is within the « Negligible » to « moderate » thresholds as per IATA definitions. If mold concentration is « high », do not proceed to curative treatment without prior decontamination/filtration.
  - After treatment and before next flight, replace fuel filter(s) with new ones.
  - Check fuel filter(s) pre-clogging/clogging indicators as often as possible and at least every 10 to 25 flight hours until pollution in tanks has been eliminated.
  - Replace fuel filter(s) after the first 10 to 25 flight hours following the treatment, and again every 10 to 25 flights hours until pollution in tanks has been eliminated.
  - Curative concentrations shall be used punctually after mold contamination has been detected, never continuously.

Please contact us if you require further information or assistance.

Yours sincerely,

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