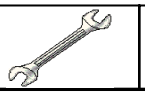
No. 2145-I-28

Information Notice

SUBJECT: FUEL

Fuel Quality

For the attention of	
	

AIRCRAFT CONCERNED	Version(s)	
	Civil	Military
EC120	B	
AS350	B, BA, BB, B1, B2, B3, D	L1
AS550		A2, C2, C3, U2
AS355	E, F, F1, F2, N, NP	
AS555		AF, AN, SN, UF, UN
EC130	B4, T2	
SA365 / AS365	C1, C2, C3, N, N1, N2, N3	F, Fs, Fi, K, K2
AS565		AA, MA, MB, SA, SB, UB
SA366	G1	GA
EC155	B, B1	
SA330	J	Ba, L, Jm, S1, Sm
SA341	G	B, C, D, E, F, H
SA342	J	L, L1, M, M1, Ma
ALOUETTE II	313B, 3130, 318B, 318C, 3180, 3180B, 3180C	
ALOUETTE III	316B, 316C, 3160, 319B	
LAMA	315B	
EC225	LP	
EC725		AP
AS332	C, C1, L, L1, L2	B, B1, F1, M, M1
AS532		A2, U2, AC, AL, SC, UE, UL
EC175	B	
H160	B	

No. 2145-I-28

Airbus Helicopters is issuing this Information Notice to inform you of findings during engine overhaul, and of the recurrence of problems encountered in 2021-2022. These events revealed various significant alterations of the fuel quality.

Despite the recommendations provided by this Information Notice, which is continuously being enriched through revisions, we regularly receive incident reports.

Non-compliance with the refueling and fuel quality monitoring procedures can affect the operation of the engine(s) and potentially cause power loss and/or flame-out in flight.

The purpose of revision 5 is to highlight that it is necessary to refer to international standards concerning aircraft refueling and fuel quality.

To ensure normal helicopter operation, the instructions given in the engine and helicopter documentation must be complied with scrupulously.
The authorized fuels are listed in the Flight Manual. They must meet the specifications and standards issued by the different authorities. It is of course understood that these specifications exclude any contamination or other foreign matter.

Example:

Type of Fuel	NATO code	SPECIFICATIONS			
		USA	UK	FR	OTHERS
Kerosene 50 - Jet A1	F35	ASTM-D-1655 MIL-DTL 83133	DEF.STAN.91-91	DCSEA 134	STANAG 3747 / GOST R 52050-2006 CAN/CSGB 3.23 QAV-1

SMS:

Operators must implement a Safety Management System (SMS):
The regulating authorities such as EASA (GM1 ORO.GEN.200(a)(6) Management system) and FAA (FAR 121.73) require a quality program that includes the procedures for:
- Refueling of aircraft and helicopters,
- Elimination of fuel contamination,
- Fire protection & Passenger supervision during refueling.

Refueling & Fuel quality:

Regulation JIG 4 “Aviation fuel Quality Control and Operating Standard for smaller Airport” (Joint Inspection Group) is applicable to operations outside major airports and is particularly suitable for helicopters.

Non-compliance with the refueling and fuel quality monitoring procedures can affect the operation of the engine(s) and potentially cause power loss and/or flame-out in flight.

No. 2145-I-28

Consequences of fuel contamination:

Contamination can:

- Attack and destroy fuel system components such as the fuel tank skin, hoses and pipes.
- Impede fuel probe operation. This results in the erroneous display of fuel quantities.
- Stain / clog and/or obstruct the fuel filters.
- Obstruct all of the fuel system components, in particular the heat exchangers.
- Disrupt the fuel metering system (metering valve failure, HMU loss of steps)
- Cause engine malfunctioning which can lead to a loss of power or engine flame-out.

Any such symptom encountered in service must lead to compliance with fuel quality inspection tasks. If an anomaly is found, refer to the engine manufacturer's MM for the maintenance tasks to be performed on the engine.

Reminder of the instructions given in the maintenance documentation:

- Fuels:
  - must comply with the standards specified in the Flight Manual and Engine Maintenance Manual, if specified.
  - must not be contaminated, for example, by water, particles in suspension, micro-organisms such as bacteria, fungi, actinomyces, EMAG/FAME, etc.
  - must be tested:
    1. for traces of water (for the method used and the interval, refer to MTC Work Card 20.07.03.412).
    2. for fungi. The instructions for the detection and prevention of fungi, and the preparation of mixtures against contamination by the formation of fungi are given on MTC Work Card 20.08.06.401.
    3. for the detection of biocontamination (refer to MTC Work Card 20.08.06.403) if any particular smell is detected.
  - must be treated with BIOBOR or KATHLON-FP-15 fungicide especially if they are used in hot and humid atmospheric conditions (30 to 40°C) as a preventive measure (refer to MTC Work Card 20.08.06.401 and to MTC Work Card 20.08.06.402 - in compliance with the engine maintenance manual).
- Bleeding (tanks and filters) must be carried out regularly in accordance with the Flight Manual and Maintenance Manual: refer to "Daily Checks", "General Information" and "Check before the First Flight of the Day".
- Filter cartridges must be replaced or cleaned in accordance with the instructions given in the Maintenance Programs (PRE or MSM).

Particular recommendations for the use of anti-icing additives:

Airbus Helicopters reminds you that in conditions where fuel anti-icing protection is required, the anti-icing additive content shall be complied with scrupulously, in accordance with the Flight Manual (Chapter 2: Limitations).
If not required by the flight conditions, it is advisable not to add any anti-icing additive.
Furthermore, if possible, it is recommended to use fuels containing anti-icing additives premixed by the oil company.

If the **fuel used contains no additive**, the best way to add the correct percentage of additive consists in using a **continuous-mixing nozzle** connected to the helicopter refueling line (for example from a tanker).
If such equipment is not available, we recommend that you carry out the following operations:

- Fill the tank to approximately half the fuel quantity required for the next flight.
- Premix the required quantity of additive with 10 to 20 liters of fuel. Add this fuel containing the additive, to the fuel in the fuel tank.
- Then replenish the tank to the level required for the next flight.
- The additive content shall be 0.10% to 0.15% by volume:
  - Of the total fuel quantity required for the next flight if the residual fuel in the tank contains no additive.
  - Or of the quantity of fuel replenished for the next flight if the residual fuel in the tank already contains an additive.

You must avoid exceeding the dose of anti-icing additive. The recommended concentration is sufficient to prevent fuel icing phenomena from occurring on a helicopter.
An excessive concentration of additive can rapidly cause helicopter fuel filter clogging.
If the additive content is too high, the additive no longer dissolves in the fuel and deposits on the bottom of the tank and can then cause damage to the internal liner of the tank.

Particular recommendations for maintenance:

- If work is carried out on the fuel system, requiring a pipe or other components to be removed, do not forget to fit protective blanks on the openings.
- Check the cleanliness of the pipes or other components before installation. No foreign bodies or large quantities of talcum powder residues.
- If any signs of contamination are detected, investigations must be carried out regarding fueling, the points of distribution and the complete helicopter fuel system.
- If contamination of the helicopter fuel system is confirmed, the appropriate measures must be taken immediately to ensure that clean fuel is used before the next flight of the day. Clean and flush the fuel system until there are no more signs of contamination.
- A sample of fuel must be analyzed in order to determine the exact cause of the contamination. Inform the Airbus Helicopters Technical Support department and the engine manufacturer.

Particular recommendations when EMAG/FAME is found:

In order to meet the environmental and governmental requirements concerning diesel fuel, an "EMAG/FAME" type organic component is incorporated during the production of conventional diesel.

Note: FAME is the abbreviation for Fatty Acid Methyl Ester. The French translation of FAME is EMAG (Ester Méthylique d'Acide Gras).

When this bio-diesel is transported via multi-product pipelines or by other conventional means (ship, road, train), the bio-component "EMAG/FAME" adheres to the walls and may mix with the next product, which could be aviation fuel, and thus contaminate it.

Standards ASTDM1655 and DEF-STAN 91.91 limit the maximum FAME content in fuels. Airbus Helicopters reminds you that compliance with these standards is mandatory.
We request you to report any unusual event related to the use of fuel with a FAME content that exceeds the standard value.

No. 2145-I-28

Special recommendations concerning SAP:

Airbus Helicopters also informs you of several recently reported cases in which SAP (Superabsorbent Polymer) was found inside fuel tanks.
This type of product is used in the filtering systems of fueling services to enable the trapping of any water. If this filter is saturated, SAP can extrude and be transferred to the helicopter's fuel tanks.

As specified in Safety Information Bulletin SIB 2018-10 issued by the EASA in July 2018, this type of contamination can lead to engine power variations, and the monitoring of the condition of the filtering system is the responsibility of the fuel supplier.