Airworthiness Bulletin

AWB 02-066 Issue 1 - 18 March 2022

Maintenance - Aircraft Immersed in Water

An Airworthiness Bulletin is an advisory document that alerts, educates and makes recommendations about airworthiness matters. Recommendations in this bulletin are not mandatory.

1. Effectivity

Aircraft effected by immersion in standing water or flash floods.

2. Purpose

To provide general guidance to aircraft owners, operators, and maintenance repair organisations on how to conduct appropriate maintenance actions post flooding events.

3. Background

Aircraft damage by water can range from minor to severe. This depends on the level of the flood water, whether it was fresh or contaminated water, and the elapsed time between the flood occurrence and when repairs can be initiated. The longer it takes to extricate the aircraft and assess the damage, the greater the likelihood the water (and its contaminants) will migrate into components and assemblies. Prompt corrective action is required and should include in-depth cleaning and inspection of both exterior and interior areas, corrosion removal, treatment, application of protective finish, and preservation, as required.

A significant number of component/parts may need to be replaced as water serves as an electrolyte that promotes corrosion.

The corrosiveness of water depends on the dissolved minerals, organic impurities, and dissolved gasses, particularly oxygen, in the water. One characteristic of water which promotes corrosion is conductivity, or the ability to act as an electrolyte and conduct a current.

The corrosive effects of fresh water vary from locality to locality due to the concentration of dissolved impurities in any area. Some community water supplies with chlorine and fluorides added can be quite corrosive. Commercially softened water and industrially polluted water are usually also very corrosive. Corrosion will result from entrapment of moisture which also must be removed.

Inspections should be accomplished per the manufacturer’s recommendations, or the operator’s own maintenance program.

The information in this AWB should only be applied to aircraft for which the manufacturer has not published information. Where the aircraft and/or component manufacturer has published a recommended inspection schedule and treatment program, the applicable program must take precedence over the recommendation of this AWB.

4. References

FAA Advisory Circular (AC) 43-4B “Corrosion Control for Aircraft

FAA Advisory Circular (AC) 43.13-1B

FAA AC 43-206, Ch.6 - Treatment of Specific Avionics Equipment

AWB 02-019 - Aircraft Washing

AWB 02-042 - Corrosion Inhibiting Compounds and Effects on Aircraft Structural Joints

AWB 02-045 - Using FAA AC 43.13-1B Change 1 as Approved Maintenance Data

AWB 85-027 - Engine Inspection in Event of Water Immersion

Note: Refer to the latest published revision.

5. Recommendations

The following actions are recommended by CASA before the potential return to service of an aircraft that has been immersed in standing water or flash floods. Do not return the aircraft to service until the contamination is eliminated and appropriate repairs or parts replacements are made to correct any discrepancies discovered during aircraft inspection.

AIRFRAME: refer aircraft manufacturers published maintenance/service manuals for instructions on disassembly of the airframe.

- Remove interior components to expose aircraft structure
- Remove flight controls, wings, rudder, elevators, and horizontal and vertical stabilizers, as necessary, to facilitate better cleaning of individual structural subassemblies.
- Remove subcomponents including, but not limited to, mechanical actuators, bell-cranks, pushrods etc.
- Thoroughly wash all internal and external areas of the aircraft using an approved water/detergent solution. If the aircraft manufacturer does not specify a liquid detergent product, use water-emulsion cleaning compound MIL-C-43616. Thoroughly rinse with fresh potable water, dry all areas and apply corrosion inhibitive material, as necessary.
- Replace bearings including, but not limited to roller, needle, and bushing-type bearings.
- Check for structural damage (in the absence of specific post flooding structural checks follow overspeed, and overweight landing inspections).
- Inspect for any corrosion; remove and treat or replace affected parts in accordance with applicable service/maintenance/structural repair manuals.

COMPONENTS: (propeller(s), avionics, motors, instruments, etc)

Note: AWB 85-027 - Engine Inspection in Event of Water Immersion

- Overhaul or replace components in accordance with the component manufacturers publications.

SYSTEMS: (fuel, hydraulic, pneumatic, etc)

- Fluid systems (fuel, hydraulic, pneumatic, etc) – flush, clean and replenish per instructions in the manufacturers maintenance/service manual.
- Electrical - Overhaul/replace electrical components. Replace wire bundle assemblies and connectors. Consult vendor publications for instruction on disposition of electrical motors.
- Control systems - Clean and lubricate flight control actuators, linkages, and pulleys. Replace primary and secondary flight control cables and bearings in accordance with manufacturers publications.

SYSTEM CHECKS & TEST FLIGHT

Thoroughly check all systems and equipment for proper operation per aircraft and component manufacturers published instructions. Undertake an aircraft flight test prior to a return to service.

6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link email address:

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