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AIC
Series A
66/24
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AIRWORTHINESS
CAUTION
CORROSION

1. This AIC replaces AIC A41/2024.

2. Recent discoveries of corrosion particularly in "blind" (unexposed) areas in aircraft structures have indicated that damage caused by structural corrosion in aircraft may be more widespread than hitherto realised. Corrosion is well known as an aerobic, destructive process which, if left unchecked, may lead to structural failure.

3. When observed, it will be present as a powdery deposit of a reddish colour on steel and its alloys, green on copper and its alloys, white/grey on aluminium and magnesium alloys. Such deposits may also keep the underlying metal moist, thereby accelerating the corrosion process.

4. The speed at which the corrosion process progresses, will depend on the type and composition of the metal concerned, the environment (moisture, temperature, salinity, chemical pollution etc) to which the metal is exposed, previous treatment (e.g. heat treatment) of the metal and the nature and thoroughness of preventative measures invoked to retard the process as well as the stress the material is subjected to.

5. Aircraft structural materials are subject to corrosion which cannot be completely isolated from the environment. Corrosion of such material cannot be completely precluded at best; anti-corrosion measures are only inhibitory.

6. Areas of particular concern with regard to corrosion are "blind" areas, e.g. the inner surfaces of tubular material and of preformed channel and angular metal, and at certain joints. In the case of tubular engine mountings, which themselves are already subject to harmonic stresses, particular vigilance with regard to corrosion is called for.

7. Once corrosion is detected, the following action should be taken:
   7.1. Remove the corrosion,
   7.2. Treat the affected surface to inhibit further corrosion, and
   7.3. Apply a protective finish.

8. Removal of the corrosion may be accomplished either mechanically or chemically, whichever method is most effective. During corrosion removal, particular attention should be paid to the structural integrity of the product. If doubt exists with respect to the airworthiness of the part concerned, the local Airworthiness Inspector should be consulted for advice.

9. It is therefore clear, that internal and external corrosion of aircraft structures and of tubular structures in particular, is a matter which must be addressed on an ongoing basis, and maintenance personnel are urged to give this matter the serious attention it deserves.

10. Regulation 43.02.5 of the Civil Aviation Regulations, 2020, as amended, read together with NAM-CATS GMR 43.02.5 1.2(1) and the contents of AIC A43/2024 deals with climate circumstances and precautionary measures respectively.

11. Operators of large aircraft must comply strictly with the relevant Manufacturers Corrosion Preventative Control Programs (CPCP).

12. When any uncertainty exists with regard to the extent of corrosion, an X-ray method of inspection is recommended.