

## CONTINUING AIRWORTHINESS OF AGEING AIRCRAFT

### 1. Applicability

The purpose of this Airworthiness Notice is to provide information and guidance for the continuing airworthiness of an aircraft registered in Myanmar, which have completed 15 Years of age or 50% of Limit of Validity-LOV/Design Service Goals-DSG specified by aircraft manufacturer.

### 2. Definitions

- 2.1. Accidental Damage - Damage caused to an aircraft structure due to discreet sources caused by birds, uncontained engine failure, damage due to wrong handling of ground equipment occurring during routine inspection of the aircraft.
- 2.2. Damage Tolerant (DT) - is the attribute of the structure that permits it to retain its required residual strength without detrimental structural deformation for a period of use after the structure has sustained a given level of fatigue, corrosion, and accidental or discrete source damage.
- 2.3. Design Approval Holder (DAH) - is the holder of any design approval, including type certificate, supplemental type certificate or repair approval.
- 2.4. Design Economic Life - Most of the transport category aircraft are designed keeping in view their economic maintenance and trouble free operation in their expected life cycle. The design substantiation document etc. is also produced and tests carried out to confirm the life cycle. Generally, this is known as design economic life and maintenance of aircraft in airworthy condition beyond this may be possible with greater attention which may not be economical for an airline.
- 2.5. Design Service Goal (DSG) - is the period of time (in flight cycles/hours) established at design and/or certification during which the principal structure will be reasonably free from significant cracking including widespread fatigue damage.
- 2.6. Environmental Damage - Damage due to environment in the form of corrosion and stress corrosion which may or may not be time and/or usage dependent.
- 2.7. Enhanced Airworthiness Program for Airplane Systems (EAPAS) - is designed to enhance current airplane systems airworthiness programs at operator facilities, repair stations, and manufacturing plants based on data-driven initiatives developed under the Aging Transport Non-Structural Systems Plan.
- 2.8. Fatigue Critical Structure (FCS) - is structure that is susceptible to fatigue cracking that could lead to a catastrophic failure of an aircraft.
- 2.9. Fatigue Damage - Fatigue damage is damage caused to a metal structure

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characterized by initiation of a crack and its subsequent propagation as a result of continuous dynamic stresses with cumulative effects in the aircraft life cycle.

- 2.10. Limit of validity (LOV) - is the period of time, expressed in appropriate units (e.g. flight cycles) for which it has been shown that the established inspections and replacement times will be sufficient to allow safe operation and in particular to preclude development of widespread fatigue damage.
- 2.11. Multiple Element Damage (MED) - is a source of widespread fatigue damage characterized by the simultaneous presence of fatigue cracks in similar adjacent structural elements.
- 2.12. Multiple Site Damage (MSD) - is a source of widespread fatigue damage characterized by the simultaneous presence of fatigue cracks in the same structural element (i.e., fatigue cracks that may coalesce with or without other damage leading to a loss of required residual strength).
- 2.13. Primary Structure - is structure that carries flight, ground, crash or pressurization loads.
- 2.14. Repair Evaluation Guidelines (REG) - provide a process to establish damage tolerance inspections for repairs that affect Fatigue Critical Structure.
- 2.15. Repair Assessment Programme (RAP) - is a programme to incorporate damage tolerance-based inspections for repairs to the fuselage pressure boundary structure (fuselage skin, door skin, and bulkhead webs) into the operator's maintenance and/or inspection programme.
- 2.16. Structural Significant Item (SSI) - A structural detail, structural element or structural assembly which is judged significant by the manufacturers because of the reduction in aircraft residual strength or loss of structural function which are consequences of its failure.
- 2.17. Widespread Fatigue Damage (WFD) - in a structure is characterized by the simultaneous presence of fatigue cracks at multiple points that are of sufficient size and density that while individually they may be acceptable, link-up of the cracks could suddenly occur and the structure could fail.

### **3. Requirements for Ageing Aircraft**

- 3.1 When the aircraft has completed 15 Years of age or 50% of Limit of Validity-LOV/ Design Service Goals-DSG specified by aircraft manufacturer, a number of associated problems due to age creep in because of fatigue, environmental corrosion and accidental damage may encounter during the service. These damages if not properly detected and repaired in time, may cause catastrophic failures and endanger to public safety.

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- 3.2 To ensure continuing airworthiness of an ageing aircraft, the owner/operators must have DCA accepted Repair Assessment Programme and Ageing Aircraft Management Programme based on the followings;
- (i) Embodied Service Bulletins (SBs),
  - (ii) Airworthiness Directives requiring structural inspection of specific areas at certain intervals,
  - (iii) Airworthiness Limitation Items,
  - (iv) Supplemental Structural Inspection Document (SSID),
  - (v) Corrosion Prevention and Control Program (CPCP),
  - (vi) Ageing Aircraft Repair and Modification Program,
  - (vii) Ageing Airplane Non-Structural Systems Plan,
  - (viii) Widespread Fatigue Damage Inspections,
  - (ix) State of Design Requirements for Ageing Structures/Systems,
  - (x) Enhanced Airworthiness Program for Airplane Systems (EAPAS),
  - (xi) In-Service Management of Structural Programme, etc.
- 3.3 The owner/operators/CAMO/contracted AMO shall have/arrange trained and qualified personnel with adequate knowledge, experience and skill on the subject of ageing aircraft and the items mentioned 3.2 of this notice, related SBs, ADs, CPCP, SSID, NDT and other relevant programs.
- 3.4 All structural inspections required to be complied as per SSID, CPCP, Ageing Aircraft Program, Continued Airworthiness Program, ADs, SBs etc., shall be carried out as per the reference documents.
- 3.5 Life of major components shall be closely monitored to ensure that the life as laid down in the maintenance program approved. If it is observed that there is a wide variation between the approved life and the average life achieved, the approved life should be downgraded to the average life achieved.
- 3.6 The owner/operators must ensure that the maintenance of the aircraft's structure, skin and other age-sensitive part and component has been adequate and timely enough to ensure the highest degree of safety. These consist of aging airplane structural modifications, Corrosion Prevention and Control Programs, Supplemental Structural Inspections Programs including Airworthiness Limitations inspections and structural repair requirements.
- 3.7 The owner/operators must ensure the competent and trained qualified personnel, facilities including arrangement of tools, equipment and materials required for maintenance of the ageing aircraft are available.
- 3.8 The continue serviceability of ageing aircraft shall rely on operations and maintenance standards of the operator.

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#### **4. Airplane Records**

The owner/operators must ensure that each aircraft imported have clear service history and records. The records shall contain but not limited to as follow;

- (i) Total years in service of the aircraft;
- (ii) Total time in service of the airframe;
- (iii) Total flight cycles of the airframe;
- (iv) Date of the last inspection and records review;
- (v) Current status of life-limited parts of the airframe;
- (vi) Time since the last overhaul of all structural components required to be overhauled on a specific time basis;
- (vii) Current inspection status of the airplane, including the time since the last inspection required by the inspection program under which the airplane is maintained;
- (viii) Current status of applicable ADs, including the date and methods of compliance and, if the AD involves recurring action, the time and date when this action is required;
- (ix) A list of major structural modifications/alterations; and
- (x) A report of major structural repairs and the current inspection status for those repairs.

#### **5. Reporting**

5.1 Upon completion of the inspection or records review for a specific airframe of aging aircraft, the Head of CAMO/Head of Engineering of approved organizations who accomplished the inspection or records review, shall notify to DCA of any discrepancies found during the inspection/ records review.

5.2 A report shall be submitted to the DCA that includes the aircraft registration number, total years in service, total flight hours and date of last inspection and records, as well as a statement that the inspection or review, as applicable, is complete for that aircraft.

5.3 Based on that report, DCA may accept to undergo the Ageing Aircraft Management Programme for that specific aircraft.

5.4 All minor and major defects should be thoroughly analyzed and exact reason as to the cause of the defect established. Appropriate corrective action shall be taken to ensure that the defects are not repeated and the occurrences of defects are minimized.

5.5 Major defects shall be promptly reported to DCA and the relevant Original Equipment Manufacturer and/or Organization responsible for the Type Design.