



Barbados Civil Aviation  
Department

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**AIRWORTHINESS**

**ADVISORY**

**CIRCULAR**

**GAS TURBINE ENGINE PARTS  
SUBJECT TO RETIREMENT OR  
ULTIMATE (SCRAP) LIVES**



## **GAS TURBINE ENGINE PARTS SUBJECT TO RETIREMENT OR ULTIMATE (SCRAP) LIVES**

- 1.** The design of gas turbine engines in service is such that certain critical parts, notably compressor and turbine discs, experience cyclic variations of stress as a result of mechanical and thermal effects which are of sufficient magnitude to result in fatigue damage. The failure of these parts can result in damage to the aircraft since, under operating conditions, they may possess more energy than can be absorbed by the surrounding engine structure. It is therefore necessary to limit the life of all critical parts in order to prevent fatigue damage developing into complete failure. As fatigue damage is not detectable by current inspection techniques until cracking has begun, and because crack propagation to the point of failure can be unacceptably rapid, a safe life for each critical part will have to be established and approved as part of the certification process.
- 2.** These safe lives, also referred to as retirement lives, ultimate lives, scrap lives and low cycle fatigue (LCF) lives are mandatory limits which must never be exceeded. They are required to be published, in the engine manuals, for all engines. Manufacturers also publish this information variously in Service Bulletins, Service Memoranda, Notices to Operators, Maintenance manuals etc., for the benefit of operators and engine overhaul agencies.
- 3.** The Inspection and Test Certificate of an engine issued by a manufacturer or recorded the life consumed, up to the time of release, by each of the life limited parts fitted in the engine. This statement should normally be included in the engine logbook, but may be included in any other document which has been approved as an alternative for a particular operator.
- 4.** Each operator is responsible for ensuring that parts fitted to the engines being operated do not exceed the published lives. Therefore accurate up-to-date records of life consumed by each engine are required to be maintained and this may involve recording flying hours, number of landings, ‘ touch and go ‘ landings and take offs , air restarts, etc., dependent upon each manufacturers definition of a unit of life. In order to preserve continuity of the records, an up-to-date statement of the life consumed since last release must accompany each engine when dispatched by an operator to an overhaul agency for repair, modification and partial or complete overhaul.