2018 Engine & Propeller Aftermarket Focus Meeting

AIA Influencing Parts Guide

Presented to: Engine and Propeller Aftermarket Workshop

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Federal Aviation Administration

Background: Life-Limited Parts

What is a life-limited part? (LLP)

A part whose failure could result in a Hazardous Engine Effect as defined by the FAA in 14 Code of Federal Regulations (CFR) §33.75 – Safety Analysis.

What is a life limit?

A life limit specifies the maximum allowable number of flight cycles for which an engine LLP may be operated. (See 14 CFR §33.70 - Engine life-limited parts.) The life limit ensures that each engine life-limited part is withdrawn from service before hazardous engine effects can occur.

What is an influencing part?

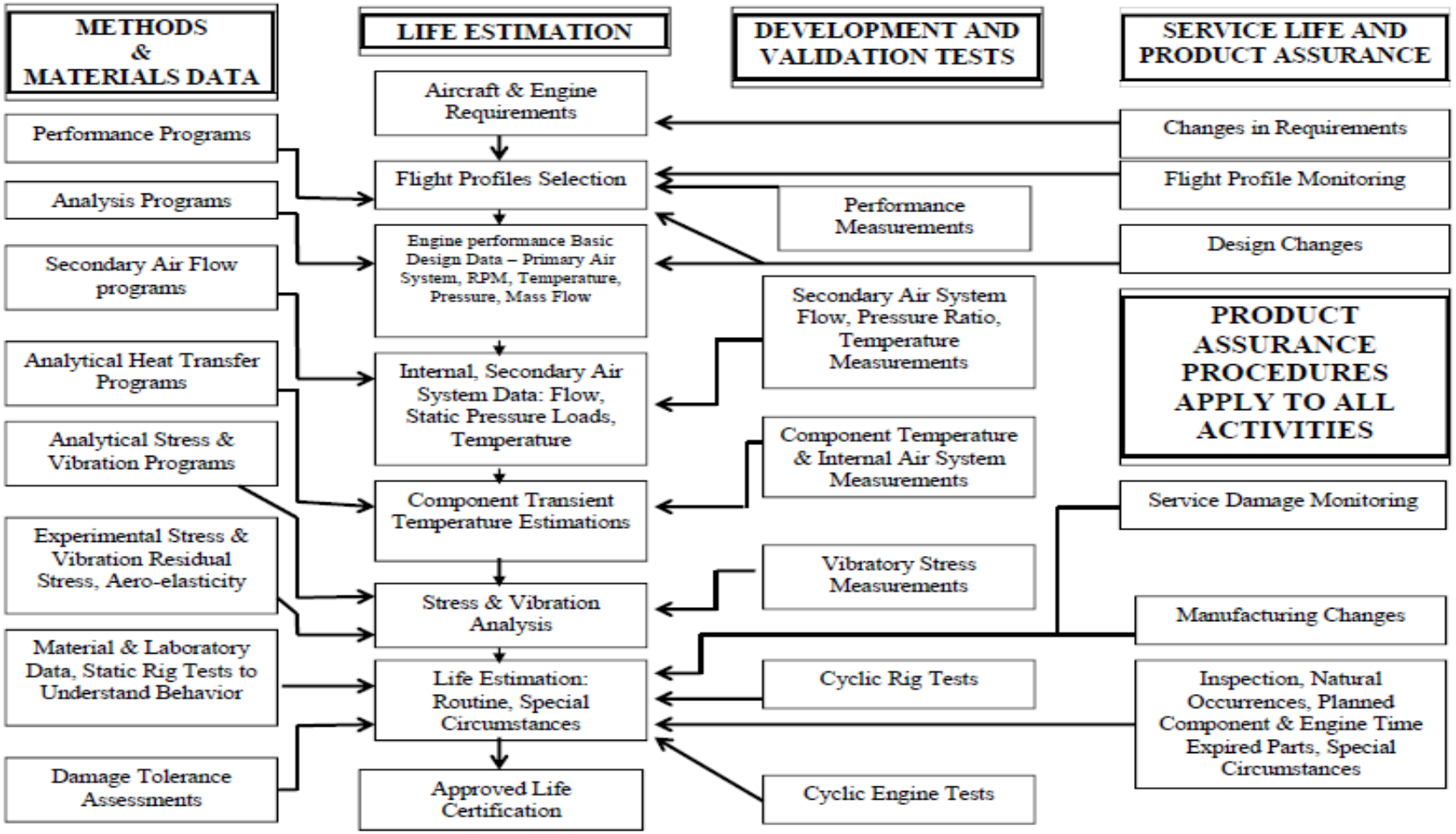
14 CFR §33.70 states that establishing a life limit requires an assessment such that “the combination of loads, material properties, environmental influences and operating conditions, including the effects of other engine parts influencing these parameters, are sufficiently well known and predictable so that the operating limitations can be established and maintained for each engine life-limited part.” These “other engine parts influencing these parameters” are commonly called influencing parts.

Background: Life-Limited Parts

What factors go into establishing a life limit?

Figure 1 from FAA Advisory Circular 33.70-1 provides a good overview.

Figure 1. Representative Process to Establish Approved Life Limits.



Influencing Parts Guide

In 2015, FAA requested that AIA create a “familiarization guide” to help applicants identify engine parts that might affect the integrity of turbine engine life limited parts.

Rather than a traditional policy document, this guide is meant to be an informative resource instead of a prescriptive method for achieving certification.

- Flexibility and adaptability are key to this guide’s success.
- Guide is meant to be a ‘living document’.

Influencing Parts Guide Team

- **Pat Markham (HEICO)**
- **Jeff Conner (GE Aviation)**
- **Robert Esteve (Pratt & Whitney)**
- **Mike Haerr (Rolls-Royce Corp.)**
- **Mark Bouyer (FAA – EPSB)**
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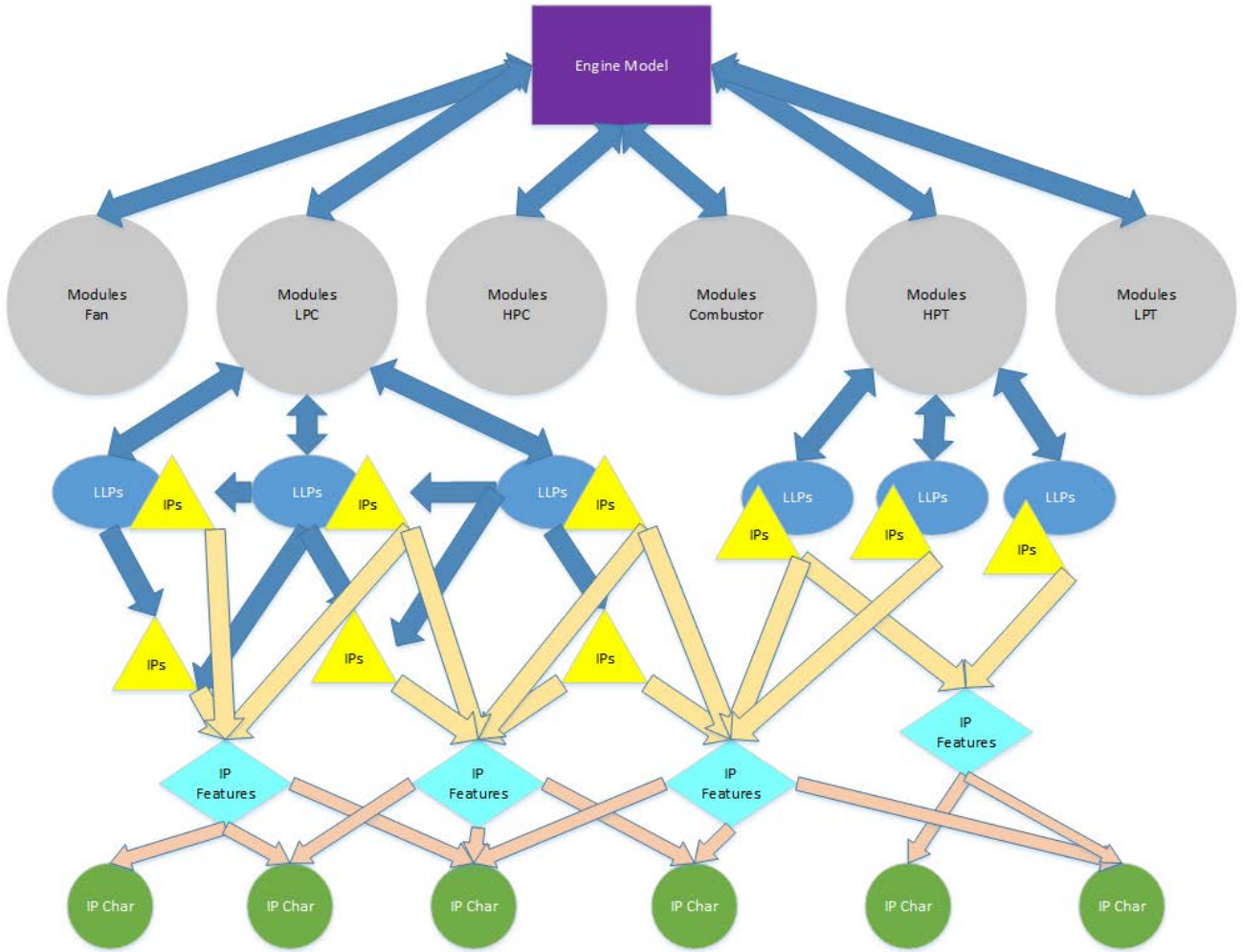
Influencing Part Tool Format

Traditional document layout would quickly become very complicated due to number of interactions between elements in a design.

Instead, this tool takes a visual, interactive approach to convey the information.



AIA Familiarization Guide

This is a tool more than it is a traditional document. A user can review it at their own pace and focus on areas of interest based on their specific focus.

Influencing Parts Guide currently hosted on the AIA website:

https://www.aia-aerospace.org/report/aia-familiarization-guide-influencing-parts-tool/

Examples

Turbine Blades

Knife-Edge Seals

LLP Interaction Points (HPC Spool example)

Anything of Interest to the Audience

Questions/Comments