



EASA
European Aviation Safety Agency

EASA Part 26 - Ageing Aircraft Rule

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Issue 1

STC WORKSHOP
May 17th/18th 2017

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TE.GEN.00409-001



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Introduction/the issue

- ❑ Any aircraft could be considered to be ageing from the moment it is manufactured.
- ❑ Undetected ageing phenomena in structures of large aeroplanes could lead to catastrophic failures.



the primary Objective of “ageing aircraft structures rule” is therefore to:

Prevent the catastrophic failure of large ageing aeroplanes due to fatigue and corrosion.



Risks addressed by Ageing Aircraft Rulemaking

How does EASA propose to improve the current situation?

By setting specific objectives to address each of the following areas of residual risk:

- Fatigue of the basic type design
- Widespread fatigue damage (WFD)
- Corrosion
- Fatigue of changes and repairs
- Continued safe operation of a/c structure without DT evaluations

and setting the regulatory basis for their systematic application.



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Overall Roadmap

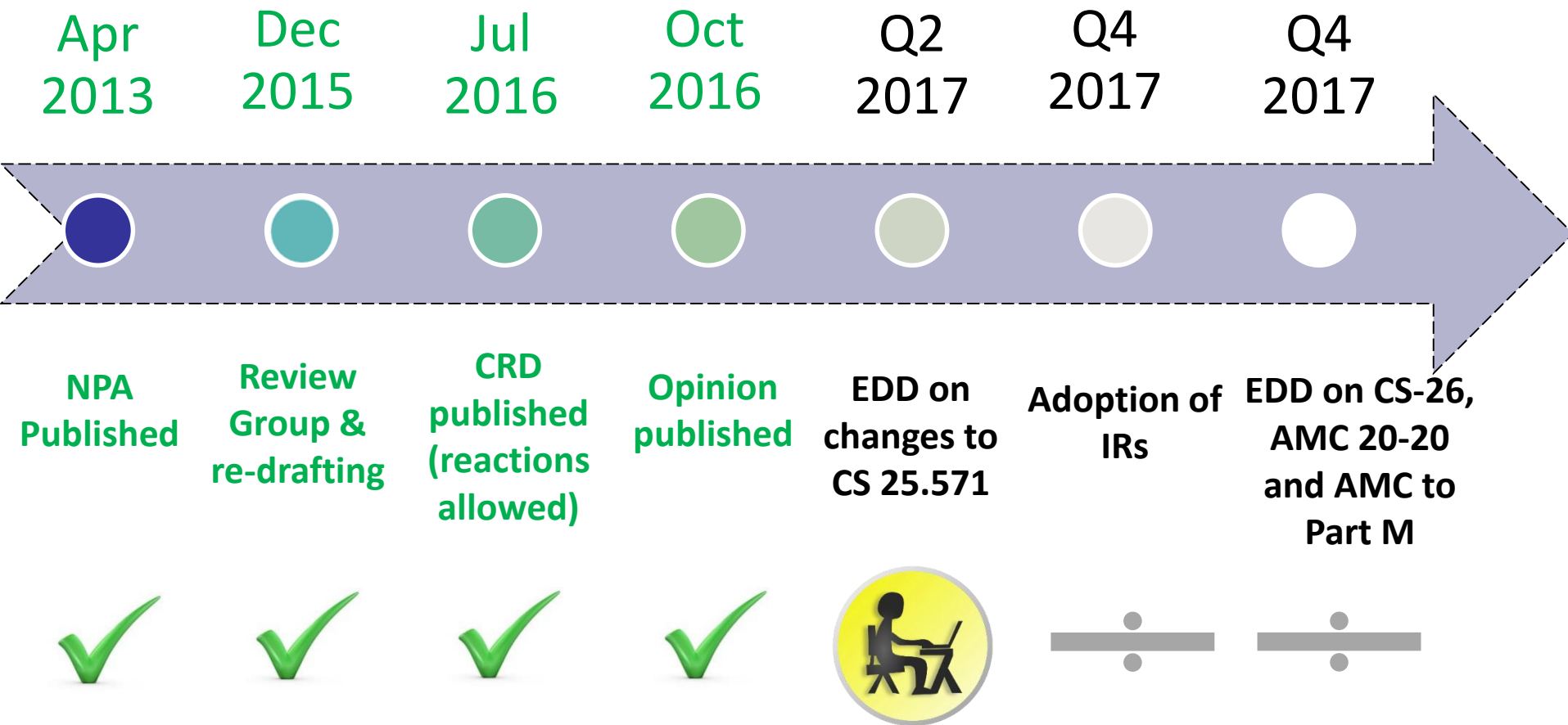


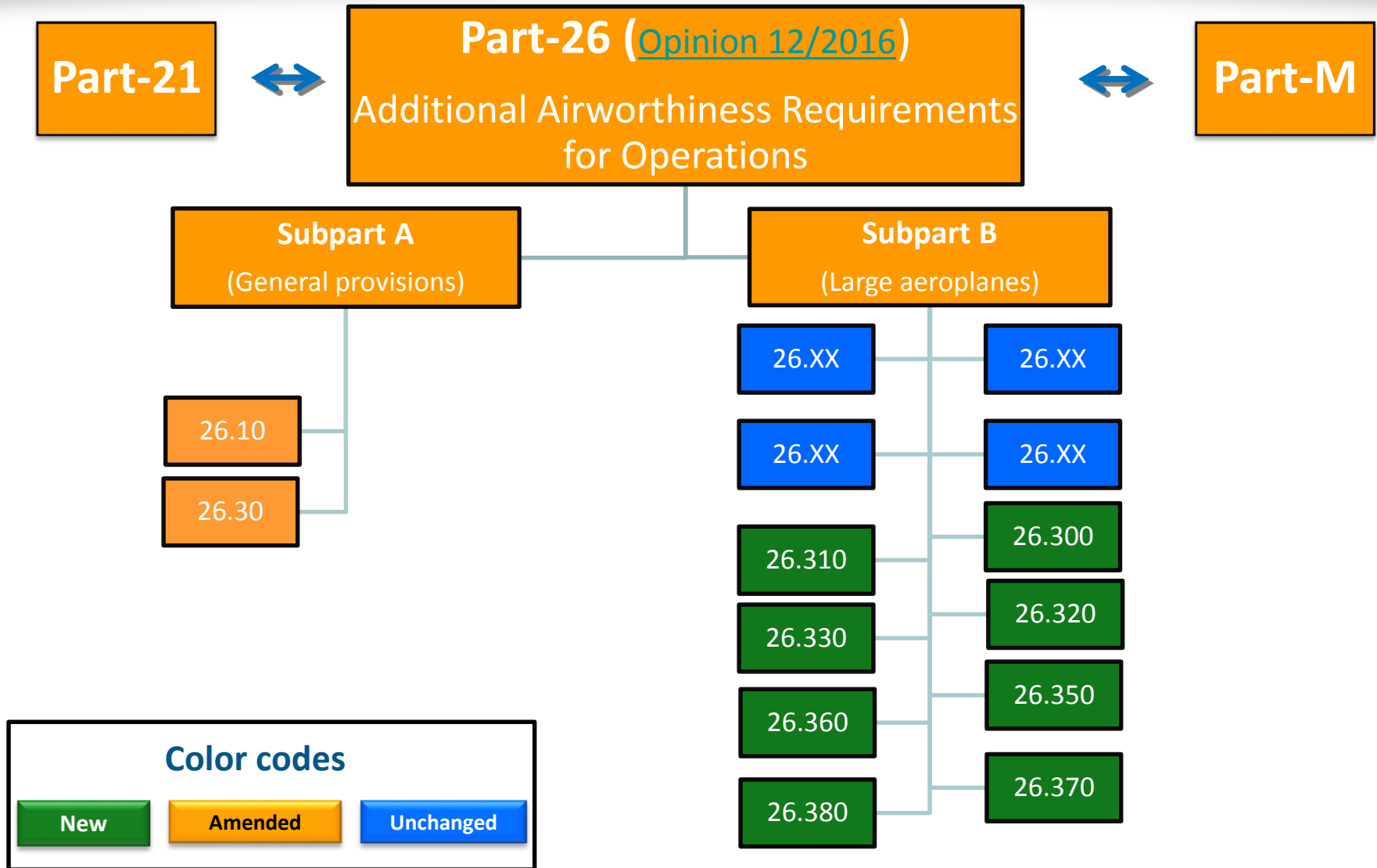


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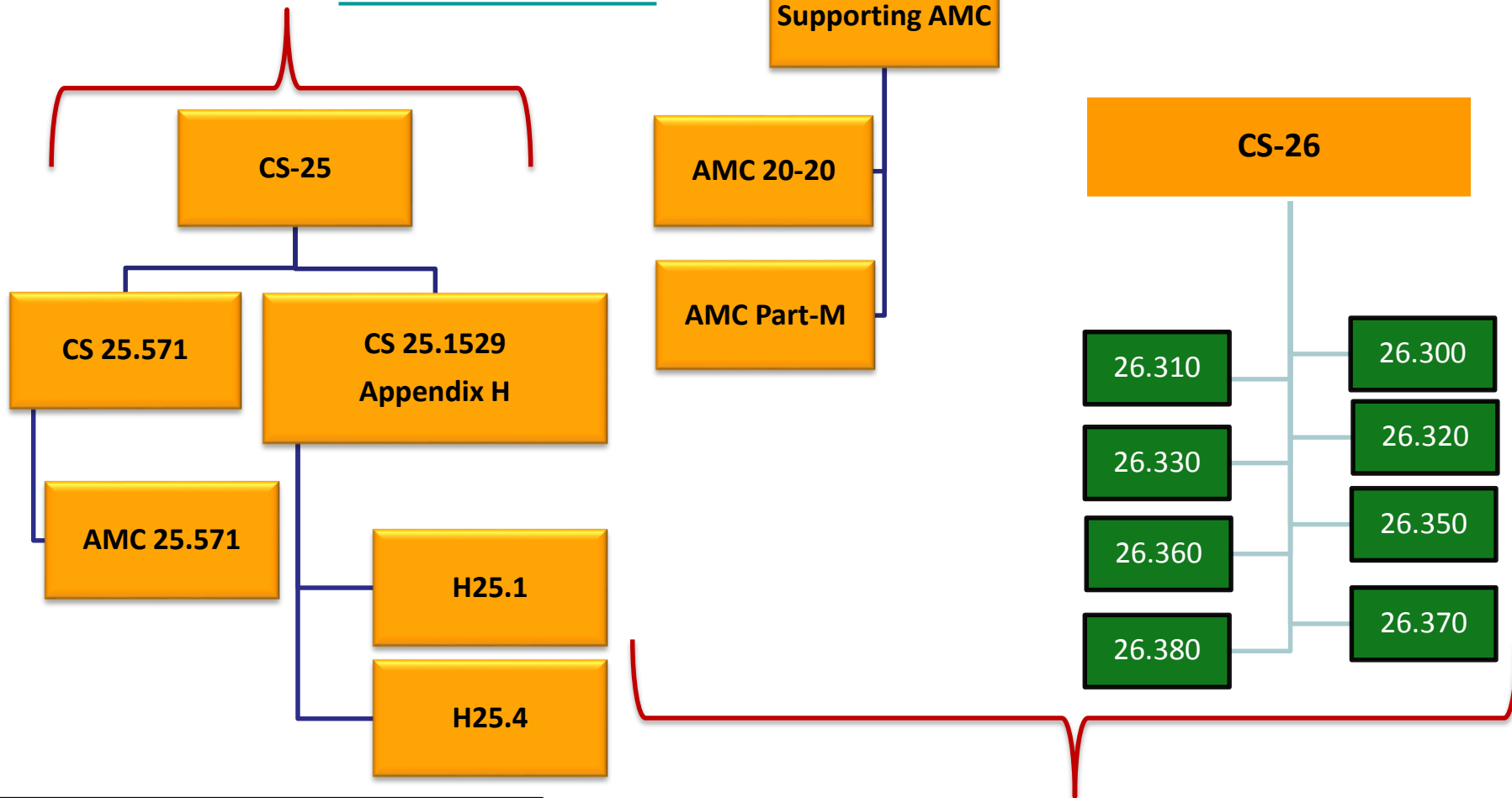
Ageing A/C structures at IR level





Ageing A/C structures at Soft Law level

combined with [CS-25 amdt 19](#)



Color codes

New

Amended

Unchanged

EDD at Part-26 adoption (ref. [CRD 2013-07](#))



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Proposed Changes to Part-26

➤ 26.300 Continuing Structural Integrity for ageing aircraft structures — General requirements

Retroactive requirement

Summary of requirements

Establish a compliance plan for continuing structural integrity which includes:

- ❑ fatigue and damage tolerance evaluations,
- ❑ WFD evaluation,
- ❑ LOV determination,
- ❑ maintenance actions (inspections and mods),
- ❑ baseline CPCP,
- ❑ a process to ensure continued validity of the structural integrity programme,
- ❑ identification of the Fatigue-critical baseline structure

as applicable.

Affected Stakeholders	Compliance Time	Note
TCHs	3 months for Compliance Plan, 6 months for FCBS. Other requirements have proportionate due time 18-60 months.	Applicable also to new large a/c. EASA approval needed



Proposed Changes to Part-26

► 26.310 WFD evaluation of type design changes

Summary of requirements

Evaluate each new design change to identify and assess those affecting or introducing any structure susceptible to widespread fatigue damage (WFD). Considerations to be given on possible changes in the LOV and/or existing maintenance actions.

Affected Stakeholders	Compliance Time	Note
TCHs	Up to 60 months	Only for new design changes. EASA approval needed



Proposed Changes to Part-26

► 26.320 Damage Tolerance data for existing repairs and existing changes to Fatigue-Critical Structure

Retroactive requirement

Summary of requirements:

Review existing design changes to identify those affecting Fatigue Critical Baseline Structure which requires Damage Tolerance Evaluation (DTE).

Review existing repair data to identify those affecting Fatigue Critical Baseline Structure which requires DTE.

Develop Repair Evaluation Guideline if CS25.571 was not in the aeroplane Type Certificate basis

Affected Stakeholders	Compliance Time	Note
TCHs	3 months for Compliance plan. Remaining requirements 12 to 24 months.	EASA approval needed



Proposed Changes to Part-26 :

26.330: Main rule applicable to STC Holders

- 26.330 DT data for existing STCs, other existing major changes and existing repairs affecting those changes or STCs

Retroactive
requirement

Summary of requirement

- 1) Establish compliance plan
- 2) Identify changes and published repairs that affect FCBS, Identify new FCMS
- 3) Perform damage tolerance evaluation and define DT inspections for changes/repairs identified under 2)

Affected Stakeholders	Compliance Time	Note
STCHs	6 months for Compliance Plan, remaining 12 months to 24 months	EASA approval needed



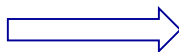
Proposed Changes to Part-26 : 26.330 Compliance time and provision for alleviation

STC

(Approval > 01/09/2003)

➤ Currently in Part-CAT

Alleviation
provision



Major Change

(Approval < 01/09/2003)

➤ Currently in Part-CAT

STC /Major Change

➤ Currently not in Part CAT

Identification of changes :
12Mo after entry into force

26.330 b)1)

Identification of changes :
12Mo after entry into force

26.330 b)1)

Identification of changes :
12Mo after entry into force

26.330 b)1)

create list of changes, FCMS :
12Mo after entry into force

26.330 b2),b3),b4)

create list of changes, FCMS :
**12Mo after being requested by
an operator (Part-CAT)**

26.330 b2),b3),b4)

Create list of changes, FCMS :
**Prior to operation under Part-
CAT when requested by
operator**

(or 12Mo after EIF which ever occurs later)

26.330 b2),b3),b4)

Perform Damage tolerance
evaluation and develop DTI
24Mo after entry into force

26.330(c)

Perform Damage tolerance
evaluation and develop DTI:
**24Mo after being requested by an
operator (Part-CAT)**

26.330(c)

Perform Damage tolerance
evaluation and develop DTI:
**Prior to operation under Part-CAT
when requested by operator**

(or 24Mo after EIF which ever occurs later)

26.330(c)



Proposed Changes to Part-26

► 26.350 Extension of an LoV

Summary of requirements:

To facilitate future extensions of the LOV, this requirement ensures appropriate levels of Fatigue and Damage Tolerance and that test evidence is provided to support the Widespread Fatigue Damage (WFD) evaluation

Affected Stakeholders	Compliance Time	Note
Any applicant for future LOV extension (e.g. TCH)	N/A	-



Proposed Changes to Part-26

► 26.360 Fatigue and Damage Tolerance Evaluation of future repairs and changes

Summary of requirements:

Changes or repairs affecting Fatigue Critical Structures shall be substantiated by applying Fatigue and Damage Tolerance Evaluation criteria

Affected Stakeholders	Compliance Time	Note
Any future applicant for repair or changes approval	within 12 months or according to Part-21	Needed to address new repairs and changes to ageing products



Proposed Changes to Part-26

► 26.370 Continuing Airworthiness tasks and Aircraft maintenance programme

Summary of requirements:

Amend the Aircraft Maintenance Programme as applicable to include:

- ❑ damage-tolerance based inspections
- ❑ limitations on the use of the Maintenance Programme (e.g. LOV or more restrictive)
- ❑ a CPCP

Affected Stakeholders	Compliance Time	Note
Operators	6 to 36 months	-



Proposed Changes to Part-26

► 26.380 Additional Limitations on the applicability of this subpart

Summary of requirements:

Ensure proportionate application of the Ageing Aircraft requirements for TCHs and DAHs preventing the generation of design data/evaluations which will not be implemented (e.g. because the aeroplane will not operate beyond the compliance date).

Affected Stakeholders	Compliance Time	Note
TCHs, DAHs and Operators	N/A	Full criteria provided in CS-26



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Appendix - Definitions & Abbreviations

ALS - 'Airworthiness limitation section (ALS)' is a section in the instructions for continuing airworthiness (or the maintenance manual, for earlier products,) that contains airworthiness limitations that set forth each mandatory replacement time, inspection interval and related inspection procedure.

CPCP - 'Corrosion prevention and control programme (CPCP)' is a systematic approach to prevent and to control corrosion in an aircraft's primary structure, consisting of a basic corrosion inspection task, task areas, defined corrosion levels, and compliance times (implementation thresholds and repeat intervals).

Damage Tolerance Data - 'Damage tolerance data' are damage tolerance evaluation (DTE) documentation and damage tolerance inspections (DTIs).

DTE - 'Damage tolerance evaluation (DTE)' is a process that leads to the determination of the maintenance actions necessary to detect or preclude fatigue cracking that could contribute to a catastrophic failure. As applied to repairs and modifications, DTE includes the evaluation of the repair or modification and the fatigue-critical structure affected by the repair or modification.

DTI - 'Damage tolerance inspections (DTIs)' are the inspections developed as a result of a DTE. A DTI includes the areas to be inspected, the inspection method, the inspection procedures (including the sequential inspection steps and, acceptance and rejection criteria), the threshold, and any repetitive intervals associated with those inspections. DTIs may specify a time limit at which a repair or modification needs to be replaced or modified.

FCS - 'Fatigue-critical structure (FCS)' is a structure that is susceptible to fatigue cracking that could lead to a catastrophic failure of an aircraft.



Appendix - Definitions & Abbreviations

- FCBS** - 'Fatigue-critical baseline structure (FCBS)' is the baseline structure of the aircraft that is classified as fatigue-critical structure.
- FCMS** - 'Fatigue-critical modified structure (FCMS)' is any structure added by a modification that is fatigue-critical and is not already listed as part of the FCBS.
- LOV** - 'Limit of validity (LOV)' of the engineering data that supports the structural maintenance programme corresponds in this Regulation to the period of time, stated as a number of total accumulated flight cycles or flight hours or both, during which it is demonstrated that widespread fatigue damage will not occur in the aeroplane.
- Future design changes and repairs** - 'Future design changes and repairs are changes and repairs that are approved after the date of entry into force of the amending Regulation introducing 26.300 through 26.380.
- REG** - 'Repair evaluation guideline (REG)' provides a process to establish damage tolerance inspections for repairs that affect any fatigue-critical structure to ensure the continued structural integrity of all relevant repairs.
- WFD** - 'Widespread fatigue damage (WFD)' in a structure is the simultaneous presence of cracks at multiple structural locations that are of sufficient size and density whereby the structure will no longer meet the applicable residual strength requirements.