



Ageing aircraft structures

CRD TO NPA 2013-07 — RMT.0225 (MDM.028(A)) — 10.10.2016

EXECUTIVE SUMMARY

The primary safety objective of this rulemaking task is to prevent the catastrophic failure of large ageing aeroplanes due to fatigue and corrosion. The proposed resulting text aims to ensure that the safety risks associated with the ‘ageing aircraft’ issues are mitigated. This risks include fatigue of the basic type design, widespread fatigue damage (WFD), corrosion, fatigue of changes and repairs, continued operation with unsafe levels of fatigue cracking.

This comment-response document (CRD) contains an overview of the comments received on NPA 2013-07 on ‘Ageing aircraft structures’ during the extended consultation period, and a summary of the responses provided thereto by EASA.

EASA has finalised the proposed draft Regulations and the corresponding certification specifications (CSs) and acceptable means of compliance (AMCs), taking into account the comments (674) submitted by the stakeholders (48). As the consideration of the comments resulted in a number of substantial changes to the proposed resulting text of the requirements relating to ageing aircraft, EASA performed a further public consultation on the new proposed resulting text by means of CRD 2013-07 dated 25.07.2016.

Following stakeholders requests, the reaction period for CRD 2013-07 has been extended until 26 September 2016.

The extension applies only to Sections IV. ‘Draft Decision CS-26’, V. ‘Draft Decision CS-25’, VI. ‘Draft Decision AMC to Part M’, and VII. ‘Draft Decision AMC 20-20’ of Chapter 3 ‘Resulting text’ of the CRD

This CRD contains:

- EASA’s responses to individual comments submitted during the initial NPA consultation
- summary of EASA’s responses to comments referring to Part-M, Part-21, Part-26 and General aspects submitted during the CRD reaction period
- final proposed text of amendments to Part-M, Part-21 and Part-26

Applicability		Process map	
Affected regulations and decisions:	Regulation (EU) No 748/2012 (Part-21), Regulation (EU) 2015/640 (Part-26), Regulation (EU) No 1321/2014 (Part-M), CS-26, CS-25, AMC 20-20, AMC to Part-M	Concept Paper:	No
Affected stakeholders:	Large aeroplane TC/RTC/STC holders; applicants for a TC/RTC/STC; design or repair approval; operators; maintenance organisations; competent authorities	Terms of Reference:	02.05.2007
Driver/origin:	Safety	Rulemaking group:	Yes
Reference:	N/A	RIA type:	Full
		Technical consultation during NPA drafting:	Yes
		Publication date of the NPA:	23.04.2013
		Duration of NPA consultation:	6 months
		Review group:	Yes
		Focussed consultation:	Yes
		Publication date of the Opinion:	2016/Q4
		Publication date of the Decision (on CS-25):	2016/Q4
		(CS-26, AMC/GM to Part 21 and Part-M):	2017/Q4



Table of contents

1. Procedural information	3
1.1. The rule development procedure	3
1.2. The structure of this CRD and related documents.....	4
1.3. The next steps in the procedure	4
2. Summary of comments and responses	5
2.1 Summary of comments and responses to NPA 2013-07	5
2.2 EASA/FAA differences	8
2.3 Summary of reactions and responses to CRD 2013-07.....	10
3. Resulting text.....	13
I. Draft Opinion PART-21	14
II. Draft Opinion PART-26.....	16
III. Draft Opinion PART-M.....	27
4. Attachments	28



1. Procedural information

1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') developed this comment-response document (CRD) in line with Regulation (EC) No 216/2008¹ and the Rulemaking Procedure².

This rulemaking activity is included in EASA's [5-year Rulemaking Programme](#), under RMT.0225 (MDM.028(a)). The scope and timescale of the task were defined in the related terms of reference (ToR) (see process map on the title page).

The draft Regulation/CS/AMC/GM has been developed by EASA based on the input of the rulemaking group RMT.0225 (MDM.028)]. All interested parties were consulted through NPA 2013-07³, which was published on 23 04 2013. 674 comments were received from interested parties, including industry and national aviation authorities.

Further comments from stakeholders have been obtained through CRD 2013-07⁴ which was published on 25.7.2016.

Initially EASA established a reaction period of one month, however, further to stakeholder requests, the reaction period has been extended till 26.9.2016. The extension applies only to:

- 'Draft Decision CS-26',
- 'Draft Decision CS-25',
- 'Draft Decision AMC to Part M',
- 'Draft Decision AMC 20-20'

The text of this CRD has been developed by EASA based on the comments received on:

- draft Opinion Part-21
- draft Opinion Part-26
- draft Opinion Part-M
- and aspects of generic nature

The process map on the title page contains the major milestones of this rulemaking activity.

¹ Regulation (EC) No 216/2008 of the European Parliament and the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1).

² The Agency is bound to follow a structured rulemaking process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'. See Management Board (MB) Decision 01-2012 of 13 March 2012 concerning the procedure to be applied by the Agency for the issuing of Opinions, Certification Specifications and Guidance Material (Rulemaking Procedure).

³ <http://easa.europa.eu/system/files/dfu/NPA%202013-07.pdf>

⁴ <https://www.easa.europa.eu/system/files/dfu/CRD%202013-07.pdf>



1.2. The structure of this CRD and related documents

This CRD provides a summary of comments and responses received to NPA 2013-07 and summary of comments to CRD 2013-07. The resulting text of Part-M, Part-21 and Part-26 is provided in Chapter 3 of this CRD.

Since the consultation of the draft decisions is still on-going at the time of preparation of this document, the summary of reactions to CRD 2013-07 with respect to the draft decisions will be published as part of the Decision containing the changes to CS-25.

1.3. The next steps in the procedure

The Opinion containing the proposed changes to EU regulations is addressed to the European Commission together with the publication of this CRD 2013-07 Issue 2.

With the exception of the Decision to CS 25.571 and the corresponding AMC 25.571, the Decisions containing CS-26 and AMC 20-20 will be published by EASA when the related implementing rules (IRs) are adopted by the Commission. Since the changes to CS-25 and the supporting AMC could be separated from the rest of the Ageing Aircraft package, the Decision reflecting these changes will be published after the extended CRD reaction period.

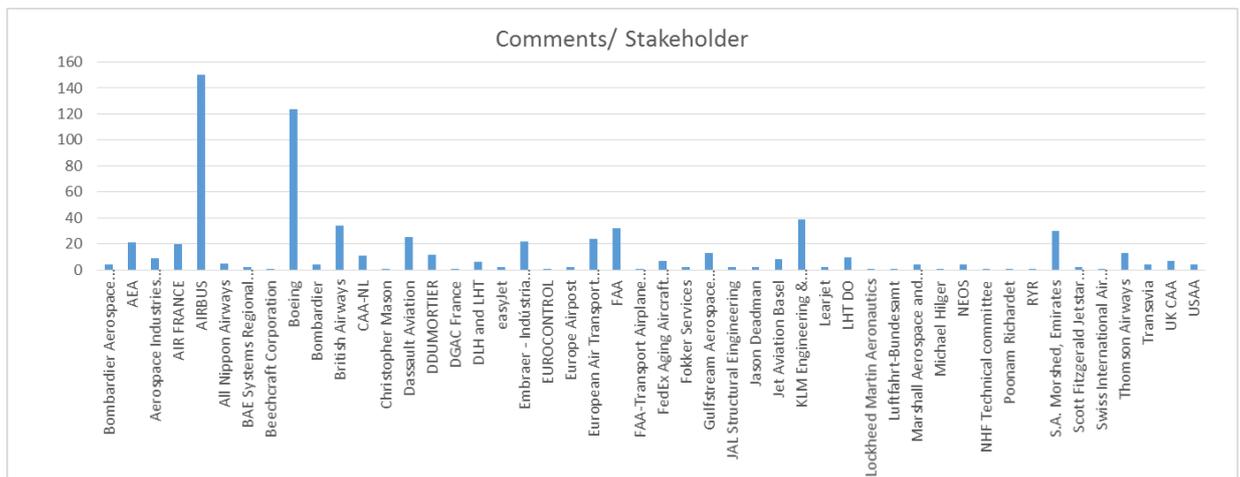


2. Summary of comments and responses

2.1 Summary of comments and responses to NPA 2013-07

The intent of the summary below is to provide a high level overview, as well as statistics on the comments received.

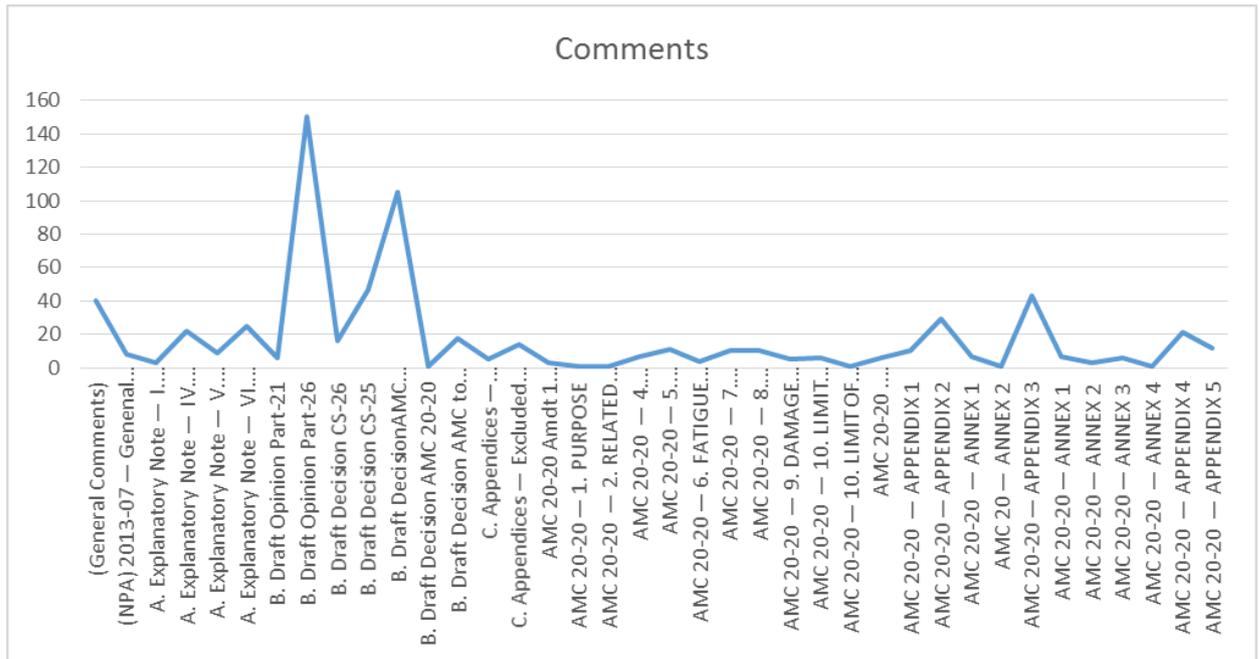
There were 674 comments submitted by 48 stakeholders. As shown below, the stakeholders commenting on the NPA 2013-07 included authorities (FAA, CAA-UK), (supplemental) type certificate holders ((S)TCHs), operators and others. The following graph provides a high level indication of the number of comments received and the stakeholders submitting them. However, this graph only provides a partial picture of the extent of the comments received. Some stakeholders provided short comments targeting specific issues, while others have provided comments consolidating multiple issues within the same comment, thus increasing the comment’s length and associated responses substantially.



It should be noted that, wherever the information was marked ‘proprietary’ (primarily in case of exclusions), the information submitted to EASA has not been attached to this CRD.

The following graph provides an indication on which segments (of the NPA) the stakeholders’ interest and comments were directed to. It should be noted that, for readability purpose, only the document segments with more than 10 comments are represented below.





Based on the graph above, it should be noted that the majority of the comments were submitted on Part-26 topics. Many comments focused on the non-harmonised (with the 14 Code of Federal Regulations (CFR)) elements of the ageing aircraft requirements. Some of the differences with the FAA rules were also captured in the NPA 2013-07.

These items included the limit of validity (LOV) definition, requirements for the extension of the LOV, applicability of the fatigue and damage tolerance requirements and monitoring of the operational usage data. While the first three elements have been harmonised with the 14 CFR, the requirements of 26.300(f) have been revised to focus on the process to ensure that the continuing structural integrity programme remains valid throughout the operational life of the aircraft. The alignment of the FAA and EASA ageing aircraft requirements also addresses various comments on the regulatory impact assessment (RIA).

The following para 2.2 provides an overview of the remaining differences with the FAA rules, as well as the main differences compared with NPA 2013-07.

Another frequently received comment was on the use of the FAA-approved data. While some of the comments provided by the stakeholders are addressed by the existing or the proposed processes, it should be noted that EASA intends to accept to a large extent the existing data provided in compliance with other similar requirements (e.g. 14 CFR Part-26), provided it is directly applicable to EASA’s requirements. This issue is to be further detailed during the implementation phase of the EASA Part-26 requirements.

Some comments referred to the operator versus the design approval holder’s (DAH) responsibilities for damage tolerance (DT) data of supplemental type certificates (STCs). To relieve the DAHs of the burden of developing DT data that may not implemented, the requirements have been optimised to better share the responsibilities between the DAH and operators.

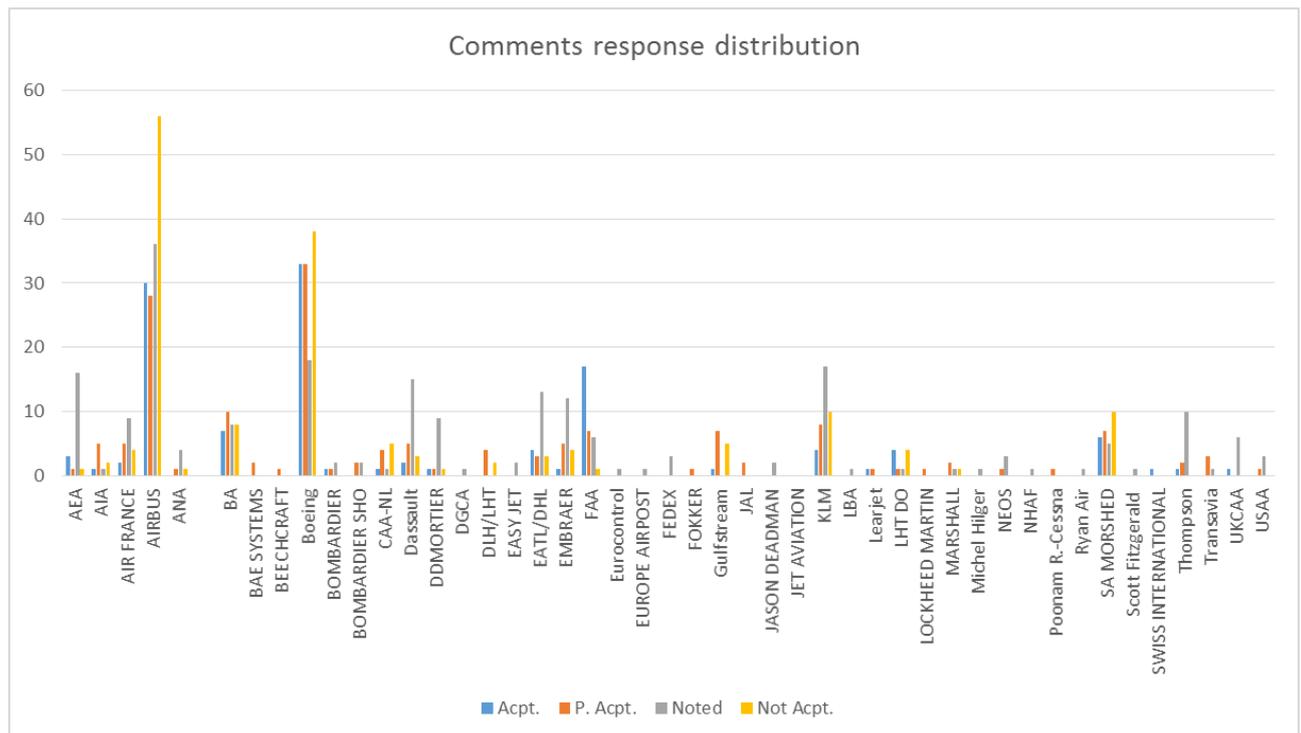
Several comments have been raised on the interpretation of 3-stage approval process for repairs. The wording in Part 26.360 is slightly different to the comparable 14 CFR (and FAA AC 120-93) text due to the different regulatory framework, however the intent is the same and this is explained in the CRD.



EASA received various comments including requests for exclusion of aircraft types to the proposed ageing aircraft requirements. It should be noted that the updated ageing aircraft requirements already address some of the exclusion requests.

Several comments received on CS-25, included requests to change some wording used in CS 25.571 and the corresponding AMC 25.571 to align with the 14 CFR Part 25.571 (e.g. the use of ‘contribute to’ versus ‘cause’ when referring to catastrophic failure).

The following graph provides an overall picture of the stakeholder, the comments submitted and the comments’ disposition. (Accepted/Partially accepted/Noted/Not accepted).



Several comments received on aircraft/model/type and STC exclusions have triggered a change to the implementing rule that facilitates the development of specific criteria in CS-26, in particular CS 26.380. This will allow EASA to determine which additional limitations on the applicability of the requirements in Part-26 to aircraft types, models, changes and repairs are acceptable. This approach differs from the earlier proposal which would have led to an exhaustive list at the regulation level. The new approach will allow the exclusion requests already received to be assessed against the criteria for additional applicability limitations. The change to the implementing rule will also allow future assessments on products, modifications and repairs for which an additional applicability limit may exist.

After the entry into force of the rule, EASA will publish a list of the products meeting the criteria for additional applicability limitations. However, based on the exclusions requests received by EASA following the publication of NPA 2013-07, a preliminary list of aircraft, which could benefit from the additional applicability limitations, is provided in Attachment 1.

Exclusion request files submitted by the stakeholders which contained proprietary data are not attached to this CRD.



The complete list of comments with detailed responses thereto is provided as attachment 2 to this CRD.

2.2 EASA/FAA differences

Further to the comments received during the public consultation of NPA 2013-07, EASA attached two tables as follows:

- Table 1: focussing on the remaining differences with the corresponding FAA regulations together with the rationale for the differences.
- Table 2: showing the previous differences with the corresponding FAA regulations as identified in NPA 2013-07, and which have been harmonised based on comments received during public consultation

PART 26	EASA CURRENT TEXT (AS PER THE CRD 2013-07)	DIFFERENCE TO FAR AND JUSTIFICATION
26.300b	Requires in the DAHs rules that DT-based inspections to be produced for large aeroplanes above 7 500 lbs payload or 30 pax are EASA approved and made available to operators.	The FAA has no corresponding DAH rule, but ensures that all transport aeroplanes in Part 121 operation have a SSID or equivalent in place. A requirement with a similar outcome for the operator is imposed via 14 CFR Part 121.1109. EASA believes that it is more efficient for EASA to impose the requirement at the rule level rather than mandate individual DTIs for the baseline structures using individual ADs.
26.300e	Requires a baseline CPCP to be produced for all large aeroplanes are EASA approved and made available to operators.	The FAA either mandates existing CPCP or it is controlled through MRB. Both of these approaches satisfy the EASA requirement. The FAA has no operational requirement or DAH rule, but considers that most transport aeroplanes in the US have something in place (see FR DOC 04-18633). More types are affected by the EASA requirement. It ensures a level playing field and consistent availability of a baseline CPCP to operators. It is more efficient for EASA as it does not have to manage the CPCP using individual ADs.
26.300f	Proposes that TCHs develop specific elements of a Continuing Airworthiness (CAW) programme to prevent unsafe cracking	No similar FAA requirement exists, although in the past there have been mandatory modification programmes. This requirement has been introduced to ensure regular assessment of the validity of the structural CAW programme taking into account operations and occurrences. EASA expects that most DAHs have already procedures in place which satisfy this paragraph of the requirement. NOTE: The details of the rules and guidance material have been extensively modified in response to the comments received. In particular the elements related to the



PART 26	EASA CURRENT TEXT (AS PER THE CRD 2013-07)	DIFFERENCE TO FAR AND JUSTIFICATION
		monitoring of fleet usage at rule level have been deleted.
26.330	STC holders are not required to develop DTI for certain STCs, unless requested by the operator.	This requirement provides more flexibility than the equivalent FAR. For historical reasons related to record keeping before the entry into force of Part 21, some STCs holders will not be required to develop DTI unless the DTI is requested by operators. The end result is equivalent.
26.370	Operational implementation of EASA rules will be achieved through Part-26 and Part-M plus ADs (limited to mandatory modifications arising from the WFD evaluation) The applicability of the LOV covers all large aeroplanes above 75000 lbs maintained under Part M.	FAR rules are implemented operationally through Part 121 and Part 129 plus ADs for some existing programmes such as SSIDs and CPCPs in addition to the mandatory modifications arising from WFD. FAA rules require LOV to be implemented operationally only to Part 121 and Part 129. EASA considers that this measure will ensure the safety of all large aeroplanes above 75000 lbs that are equally affected by the risk of WFD. EASA does not expect a significant economic impact. In addition, only a limited number of aircraft will be affected by these differences, as most large aeroplanes will fly in CAT or in combined CAT/NCC operations.
26.380	A rule has been developed to allow DAH to compile lists of limited applicability for their products, changes and repairs. The criteria for these limitations of applicability have been defined at CS level.	There is no exhaustive list of excluded aircraft types/models at rule level, neither exemptions letters are issued by EASA, however, the end result is equivalent.

TABLE 1



PART 26	EASA-FAA DIFFERENCE AS IDENTIFIED IN THE NPA 2013-07	DECISION TAKEN
26.300 b	Requires additional information in the ALS e.g. SSID by reference. This ensures SSID availability and implementation through Part M.	Full alignment with FAA. EASA does not require the SSID to be referenced in the ALS
26.300 g	Proposes TCH to develop a list of Principal Structural Elements (PSEs) in addition to Fatigue Critical Structures (FCSs). Reduces the risk of confusion and promotes a consistent and complete compliance with Part-26 and 25.571.	Full alignment with FAA. EASA does not require a list of PSEs as part of 26.300 requirements
26.350	Requires a WFD evaluation of all future and existing repairs and modifications on aircraft subject to an extended LoV. This is because EASA has no data that would support safe operation with such repairs up to an indeterminate extension of an LoV. The proposal ensures no reduction in safety subsequent to implementation of an extended LoV.	Full alignment with FAA. EASA does not requires WFD evaluations of repairs and STCs subject to extended LOV unless it is determined that a WFD evaluation is required through the CPR or applicable Certification Basis.
26.360	Requires DTE for future changes and repairs for all large aeroplanes for the following reasons: To maintain the established DT safety standard, and post-baseline DTE implementation. To prevent a repair/change from adversely affecting the validity of inspections required by the SSID/ALS. NOTE: The majority of aircraft operating in the EU are post-JAR Change 7/Amdt 45 and, therefore, require DTE anyway, so this is not a substantial burden.	Partial alignment with FAA. EASA requires only a DT only for future repairs and changes for aeroplanes with more than 30 pax or 7500 lbs payload. To bridge the gap with the corresponding FAA requirement, at CS level EASA requires special considerations for WFD for future repairs and modifications to products certified according to CFR Part 25.571 amdt 96 and later.
26.300-360	EASA does not require a compliance plan. Part-21 and Part-26 define the requirements which need to be complied with in the EASA regulations.	Full alignment with FAA. Compliance plan has been introduced.

TABLE 2

2.3 Summary of reactions and responses to CRD 2013-07

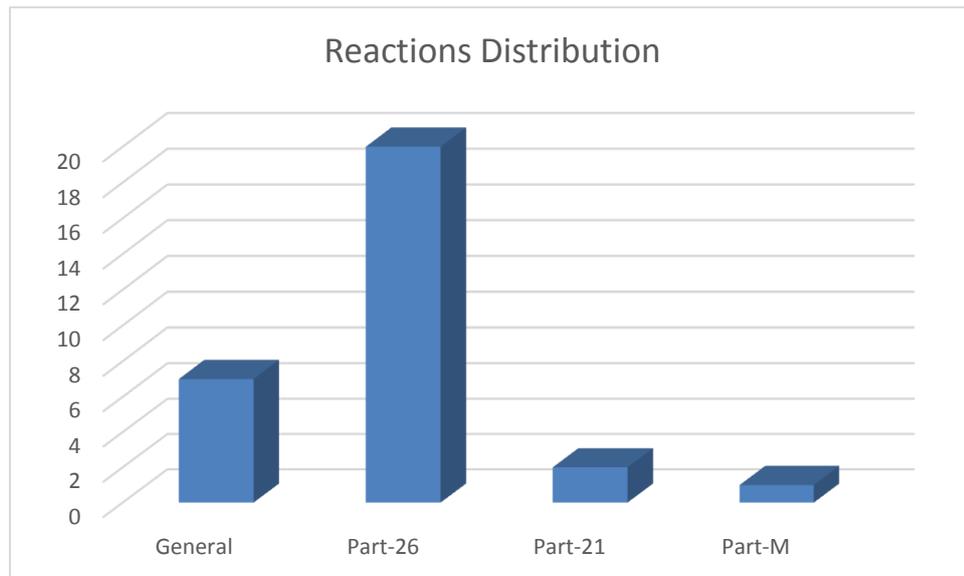
During the first month of CRD consultation 47 comments have been submitted by 6 stakeholders.

30 comments referred to Part-M, Part-26, Part-21 or to other elements of general nature.

The remaining 17 comments refer to the draft decisions which are still under consultation. The summary of these reactions will be provided as part of the decision for amendment of CS-25.

The reactions addressed by this CRD can be grouped as shown in the following graph:





As already observed during the consultation of NPA 2013-07 the majority of reactions referred to Part-26.

The following table provides an overview of EASA responses to the reactions received :

	ACCEPTED	PARTIALLY ACCEPTED	NOTED	NOT ACCEPTED	Σ
occurrences	3	7	8	12	30
%	10	23	27	40	100

Some of the reactions are interconnected; therefore, the responses provided thereto may include references to responses provided to other reactions.

In some cases the reactions received were similar to the comments already submitted during the consultation of the NPA.

The reactions have led to improvements of the rule text and will also provide further clarifications and precision in the decisions to follow.

The subjects which received the more significant amount of reactions are listed hereafter:

- 26.300 Continuing structural integrity for ageing aircraft structures — General requirements
- 26.330 Damage tolerance data for existing STCs, other existing major changes and existing repairs affecting those changes or STCs
- 26.370 Continuing airworthiness tasks and aircraft maintenance programme
- 26.380 *Additional limitations*

Here after a brief summary of the main comments received and the related Agency position:

- a) List of changes and repairs for aircraft which does not have to show compliance

According to some interpretations made by commenters, the proposed text of Part 26.380 could mandate the creation of list of repairs or changes for compliance with Part-26 also for the aircraft that do not need to show compliance with 26.300 through 26.370.

This interpretation was not intended and to avoid further misinterpretations, EASA agreed to provide clarifications in Part 26.380(b)(c) and CS 26.380(a)(b).

b) Continuing airworthiness tasks

Some commenters asked for additional clarifications regarding the Maintenance Programme limitations which will be imposed by the Ageing Aircraft regulation.

EASA clarifies that LOV may not be the most restrictive limitation on the validity of the Maintenance Programme in all cases, therefore, the more restrictive limitation should take precedence.

c) Continued validity of the structural integrity programme

Some commenters repeated their previous concerns in respect of Part 26.300(f) regarding the relationship and data exchange between Type Certificate Holders and Operators.

EASA clarifies that continued operational safety evaluation might not be adequate without understanding the operational usage of the aeroplane. CS-26 and its supporting material will provide explanations regarding operational usage to be taken into account.

The text of the proposed regulation has been amended on the basis of the reactions received, in most of the cases the changes were intended to improve consistency in the wording or to provide additional clarifications. In a few cases typographical errors have been identified and corrected.

The resulting text of the draft Opinions is provided in paragraph 3.



3. Resulting text

Following the 2007 rulemaking procedure, this section includes the full resulting text, i.e. draft Regulation/CS/AMC. The text of the amendment is arranged to show deleted text, new text or new paragraph as shown below:

1. deleted text is shown with a strike through: ~~deleted~~
2. new text is highlighted with grey shading: **new**
3. ... indicates that remaining text is unchanged in front of or following the reflected amendment.



I. **Draft Opinion PART-21⁵**

Amendment to COMMISSION REGULATION (EU) No 748/2012

Article 1

Scope and definitions

2. For the purpose of this Regulation, the following definitions shall apply:

...

(k) 'Part-26' means additional airworthiness requirements for operations and design approval holders laid down in Annex I to Commission Regulation (EU) 2015/640;

⁵ EASA Opinion 07/2016 has been used as basis to show the proposed changes to Part-21



ANNEX I

PART 21

Certification of aircraft and related products, parts and appliances, and of design and production organisations

CONTENTS

21.A.21 Requirements for the issuance of a type-certificate or restricted type-certificate

(a) To obtain from the Agency a product type-certificate or, when the aircraft does not meet the essential requirements of Annex I to Regulation (EC) No 216/2008, an aircraft restricted type-certificate, the applicant shall:

...

3. demonstrate that:

(iii) the applicable Part-26 requirements are complied with.

21.A.61 Instructions for continued airworthiness

(a) The holder of the type-certificate or restricted type-certificate shall furnish at least one set of complete instructions for continued airworthiness, comprising descriptive data and accomplishment instructions prepared in accordance with the applicable type-certification basis and Part-26 to each known owner of one or more aircraft,

...

21.A.101 Type-certification basis, operational suitability data certification basis and environmental protection requirements for a major change to a type-certificate

...

(h) An applicant for a change to a type-certificate shall comply with the requirements laid down in Part-26 for applicants for a change to a type certificate

21.A.120 Instructions for continued airworthiness

a) The holder of the supplemental type-certificate for an aircraft, engine, or propeller, shall furnish at least one set of the associated variations to the instructions for continued airworthiness, prepared in accordance with the applicable type-certification basis and Part-26, to each known owner of ...

21.A.433 Requirements for approval of a repair design

A repair design shall only be approved:

(a) The applicant for approval of a repair design shall:

1. when it has been demonstrated, following the certification programme under 21.A.432C(b), where applicable, that the repair design complies with the type-certification basis incorporated by reference in the type-certificate or supplemental type-certificate or APU ETSO authorisation, as applicable, and the requirements laid down in Part-26, as well as with any amendments established and notified, when applicable, by the Agency in accordance with 21.B.

...



II. Draft Opinion PART-26

Amendment to COMMISSION REGULATION (EU) 2015/640⁶

...

Article 1

Scope

Article 1 of the 2015/640 is amended as follows:

- 1) This Regulation lays down common additional airworthiness specifications in order to support the continuing airworthiness and safety improvements of:
 - (a) aircraft registered in a Member State;
 - (b) aircraft registered in a third country and used by an operator for which a Member State ensures oversight;
- 2) This Regulation also lays down additional airworthiness specifications for the design approval holders and applicants for aircraft type designs, changes and repairs approved by EASA or deemed to have been issued in accordance with Commission Regulation (EU) No 748/2012.

Article 2

Definitions

For the purposes of this Regulation, the following definitions shall apply:

...

- e) '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.
- f) '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).
- g) 'Damage tolerance data' are damage tolerance evaluation (DTE) documentation and damage tolerance inspections (DTIs).
- h) '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.
- i) '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.

⁶ EASA Opinion 08/2016 has been used as basis to show the proposed changes to Part-26.



- j) 'Existing design changes or repairs' are changes and repairs that are approved before the date of entry into force of the amending Regulation introducing 26.300 through 23.380.
- k) 'Fatigue-critical structure (FCS)' is a structure that is susceptible to fatigue cracking that could lead to a catastrophic failure of an aircraft.
- l) 'Fatigue-critical baseline structure (FCBS)' is the baseline structure of the aircraft that is classified as fatigue-critical structure.
- m) '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.
- n) '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.
- o) '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.
- p) 'Published repair data' are instructions for accomplishing repairs that are published for general use in structural repair manuals and service bulletins (or equivalent types of documents).
- q) '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.
- r) '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.

Article 3

Additional airworthiness specifications for a given type of operation

1. Operators for which a Member State ensures oversight shall, when operating the aircraft referred to in Article 1, comply with the provisions of Annex I.
2. Design approval holders and applicants for design approvals for aircraft, changes or repairs referred to in Article 1, shall comply with the provisions of Annex I.

ANNEX I

PART-26

ADDITIONAL AIRWORTHINESS SPECIFICATIONS FOR OPERATIONS

CONTENTS

...

SUBPART B — LARGE AEROPLANES

26.50 Seats, berths, safety belts, and harnesses

...

26.300 Continuing structural integrity for ageing aircraft structures — General requirements

26.310 WFD evaluation of type design changes



- 26.320 Damage tolerance data for existing repairs and existing changes to fatigue critical structure
- 26.330 Damage tolerance data for existing STCs, other existing major changes and existing repairs affecting those changes or STCs
- 26.350 Extension of an LOV
- 26.360 Fatigue and damage tolerance evaluation of future repairs and changes
- 26.370 Continuing airworthiness tasks and aircraft maintenance programme
- 26.380 Additional limitations



SUBPART A GENERAL PROVISIONS

26.10 Competent authority

- (a) For the purpose of this Part, the competent authority to which compliance with the requirements needs to be demonstrated by operators shall be the authority designated by the Member State in which the operator has its principal place of business.
- (b) For the purposes of this Part, the competent authority to which compliance with the requirements needs to be demonstrated by holders of and applicants for type certificates, restricted type certificates, supplemental type certificates, changes and repair design approvals shall be EASA.

26.30 Demonstration of compliance

- (a) The Agency shall issue, in accordance with Article 19 of Regulation (EC) No 216/2008, certification specifications as standard means to show compliance of products with this Part. The certification specifications shall be sufficiently detailed and specific to indicate to operators and to holders of and applicants for a type certificate, restricted type certificate, supplemental type certificate and change and repair design approval the conditions under which compliance with the requirements of this Part may be demonstrated
- (b) Operators, holders of and applicants for a type certificate, restricted type certificate, supplemental type certificate and change and repair design approval may demonstrate compliance with the requirements of this Part by complying with:
 - (i) the detailed specifications issued by the Agency under (a) or the equivalent specifications issued by the Agency under Part 21.B.70⁷; or
 - (ii) technical standards offering an equivalent level of safety as those included in those specifications.
- (c) Holders of and applicants for a type certificate, restricted type certificate, supplemental type certificate or a change and repair design approval shall make available to each known operator of one or more aeroplanes, the 'Instructions for Continued Airworthiness' ICA required in order for them to demonstrate compliance with this Part. For the purposes of this regulation, the ICA also include damage tolerance inspections (DTIs), repair evaluation guidelines (REGs), a baseline corrosion prevention and control programme (CPCP), and a list of fatigue-critical structures (FCSs) and airworthiness limitation sections (ALSs).

The article 21.A.16A has been moved to Section B as 21.B.70 by EASA Opinion 07/2016.



SUBPART B

LARGE AEROPLANES

26.300 Continuing structural integrity for ageing aircraft structures — general requirements

The holder of a type certificate (TC) or a restricted type certificate for a turbine-powered large aeroplane certified after 1 January 1958, except as provided for in 26.380, and the applicant for a TC or restricted TC for a turbine-powered large aeroplane, shall comply with the following:

- (a) Establish a compliance plan for continuing structural integrity that addresses 26.300(b) to (h) inclusive.
- (b) For aeroplanes certified to carry 30 passengers or more, or with a payload capacity of greater than 3 402 kg (7 500 lbs), perform a fatigue and damage tolerance evaluation of the aeroplane structure and establish associated inspections and other procedures that will avoid catastrophic failures due to fatigue throughout the operational life of the aircraft.
- (c) For aeroplanes certified with a maximum take-off weight (MTOW) greater than 34 019 kg (75 000 lbs), establish a limit of validity (LOV) of the engineering data that supports the structural maintenance programme and include this LOV in an ALS.
The aircraft structural configurations to be evaluated include:
 - (1) for TC holders (TCHs), all model variations and derivatives approved under the type certificate as of the date of entry into force of this Regulation;
 - (2) for TC applicants, all model variations to be approved under the first issue of the type certificate;
 - (3) all structural changes and replacements to the aircraft structural configurations specified in 26.300(c)(1) that are mandated by airworthiness directives as of the date of entry into force of this Regulation;
- (d) Identify existing maintenance actions and develop new maintenance actions upon which the LOV established in accordance with 26.300(c) depends.
- (e) Establish a baseline CPCP.
- (f) Establish and implement a process that ensures that the continuing structural integrity programme remains valid throughout the operational life of the aircraft, considering service experience and current operations.
- (g) For aeroplanes subject to 26.300(b), identify and list the fatigue-critical baseline structure (FCBS) for all aircraft models and derivatives in the type certificate. Upon approval of the list, make it available to operators and persons required to comply with 26.330, 360 and 370.
- (h) Compliance times
 - (1) Submit the compliance plan required by point (a) to EASA for approval within 90 days of the date of entry into force of this Regulation. For applications for TCs received after the date of entry into force of this Regulation, the compliance plan shall be submitted with the certification programme as required by Annex I (Part-21) to Commission Regulation (EU) No 748/2012.
 - (2) Unless the inspections and other procedures required by 26.300(b) are already approved in accordance with Annex I (Part-21) to Commission Regulation (EU) No 748/2012, submit them to EASA for approval within 24 months from the date of entry into force of this



Regulation, except applicants for TC, who must obtain approval prior to the issuing of the TC.

- (3) Develop the LOV and ALS amendments required by 26.300(c) and submit them to EASA for approval as provided in (h)(3)(i), (ii), (iii) or prior to the issuing of the TC whichever occurs later.
 - (i) 18 months from the date of entry into force of this Regulation, for aircraft structure with a certification basis prior to JAR 25.571 Change 7 or 14 CFR 25.571 Amdt 45;
 - (ii) The later of 60 months from the date of entry into force of this Regulation or the date specified in the plan approved for completion of the full-scale fatigue testing and demonstrating that widespread fatigue damage will not occur in the aeroplane structure certified in Europe or in the USA according to 14 CFR Part 25.571 Amdt 96 or equivalent, or later amendments;
 - (iii) 48 months from the date of entry into force of this Regulation for all other aircraft structure.
- (4) Submit the actions established according to 26.300(d) to EASA for approval, according to the timescales defined in 26.300(h)(3)(ii) for aircraft structure certified to CS-25 Amdt 19 or later, or according to a schedule agreed with EASA for all other aircraft structure. The schedule must be submitted together with the LOV according to the compliance time specified in 26.300(h)(3).
- (5) If the baseline CPCP required by 26.300(e) is not currently approved by EASA and available to operators, submit the baseline CPCP to EASA for approval within 24 months from the date of entry into force of this Regulation or prior to the issuing of the TC, if later.
- (6) Submit the process required by 26.300(f) to EASA within 24 months from the date of entry into force of this Regulation or prior to the issuing of the TC, if later. Implement the process within 6 months after its approval by EASA.
- (7) Within 6 months from the date of entry into force of this Regulation or prior to the issuing of the TC if later, submit to EASA for approval a list of the structures identified under 26.300(g).

26.310 WFD evaluation of type design changes

The holder of a type certificate or restricted type certificate of a turbine-powered large aeroplane certified after 1 January 1958 with a maximum take-off weight (MTOW) greater than 34 019 kg (75 000 lbs), except as provided for in 26.380, shall comply with the following:

- (a) Evaluate each type design change approved after the date of entry into force of this Regulation and identify whether it affects or introduces any structure susceptible to widespread fatigue damage (WFD).
- (b) Perform a WFD evaluation of these type design changes and assess the impact of each design change on the LOV and existing maintenance actions established in accordance with 26.300.
- (c) Develop new and revised maintenance actions necessary to preclude WFD up to the LOV and submit them for approval by EASA no later than:
 - (1) 60 months from the date of entry into force of this Regulation; or



- (2) the design change approval date; or
- (3) the date specified in the plan approved for completion of the full-scale fatigue testing and demonstrating that widespread fatigue damage will not occur in the aeroplane structure; or
- (4) for aeroplane structure with a certification basis prior to CS-25 Amdt 19, according to a schedule agreed with EASA, which must be submitted to EASA no later than (1), (2) or (3) above.

26.320 Damage tolerance data for existing repairs and existing changes to fatigue-critical structure

The holder of a TC or restricted TC of turbine-powered large aeroplanes certified after 1 January 1958 to carry 30 or more passengers, or that have a payload capacity of 3 402 kg (7 500 lbs) or more, except as provided for in 26.380, shall comply with the following:

- (a) Establish a compliance plan that addresses 26.320(b) to (d) inclusive
- (b) For existing changes and fatigue-critical modified structure (FCMS):
 - (1) Review existing design changes (modifications) and identify all changes that affect FCBS identified under 26.300(g);
 - (2) For the changes identified in 26.320(b)(1), perform a damage tolerance evaluation and develop the associated damage tolerance inspections;
 - (3) For each change identified under 26.320(b)(1), identify any associated fatigue-critical modified structure; and
 - (4) Submit to EASA for approval a list of the structure (FCMS) identified under 26.320(b)(3) and, upon approval, make the list available to operators and persons required to comply with 26.330, 26.360, and 26.370.
- (c) For existing published repair data
 - (1) Review the repair data and identify each repair specified in the data that affects the fatigue-critical baseline structure and the fatigue-critical modified structure identified under 26.300(g) and 26.320(b)(3);
 - (2) Unless previously accomplished, perform a damage tolerance evaluation and develop the damage tolerance inspection (DTI) for each repair identified under (c)(1).
- (d) For aircraft with a certification basis that does not include CS 25.571 (Initial issue or later amendments), develop repair evaluation guidelines (REGs) that:
 - (1) establish a process for conducting surveys of affected aircraft that will enable the identification and documentation of all existing repairs that affect the fatigue-critical structure identified under 26.300(g) and 26.320(b)(3);
 - (2) establish a process that will enable operators to obtain a DTI for repairs identified under 26.320(d)(1); and
 - (3) establish an implementation schedule that provides timelines for conducting aircraft surveys, obtaining DTIs and incorporating DTIs into the Operator's maintenance programme.
- (e) Compliance times

The following data must be submitted to EASA for review and approval by the specified compliance time, unless otherwise stated:



- (1) the list of all fatigue-critical modified structure required by 26.320(b)(3) must be submitted within 12 months from the date of entry into force of this Regulation;
- (2) for published repair data that are current as of the date of entry into force of this Regulation, the damage tolerance data required by 26.320(c)(2) must be submitted or approved in accordance with Subpart M of Part-21, within 18 months from the date of entry into force of this Regulation;
- (3) the repair evaluation guidelines required by 26.320(d) must be submitted within 24 months from the date of entry into force of this Regulation;
- (4) for changes developed and approved before the date of entry into force of this Regulation, the damage tolerance data required by 26.320(b)(2) must be submitted within 18 months from the date of entry into force of this Regulation.
- (5) the compliance plan required by 26.320(a) must be submitted for approval within 90 days of the date of entry into force of this Regulation.

26.330 Damage tolerance data for existing STCs, other existing major changes and existing repairs affecting those changes or STCs

The holder of an STC for a major change or the holder of a major design change that has been deemed approved in accordance with Article 4 of Regulation (EU) No 748/2012, for large aeroplanes certified after 1 January 1958 to carry 30 or more passengers or that have a payload capacity of 3 402 kg (7 500 lbs) or more, except as provided for in 26.380, shall comply with the following:

- (a) Establish a compliance plan that addresses 26.330(b) to (d) inclusive.
- (b) For existing STCs, major changes and published repairs to changes:
 - (1) Review the changes and identify those that affect fatigue-critical baseline structure; and
 - (2) For each change identified under 26.330(b)(1), identify any associated fatigue-critical modified structure (FCMS); and
 - (3) Develop and submit to EASA for review and approval a list of the changes and FCMS identified under 26.330(b)(1) and (b)(2) and, upon approval, make these lists available to persons and operators required to comply with 26.360 and 26.370.
 - (4) Identify the published repairs affecting the changes identified in 26.330(b)(1).
- (c) For existing changes and published repairs identified under 26.330(b)(1) and 26.330(b)(4), unless previously accomplished, perform a damage tolerance evaluation and develop the associated damage tolerance inspection.
- (d) Compliance times
 - (1) Except as provided in 26.330(d)(2), compliance with 26.330(b)(1), (b)(2), (b)(3) and (b)(4) is required within 12 months from the date of entry into force of this Regulation.
 - (2) The list of changes identified in 26.330(b)(1) must be submitted to EASA within 12 months from the date of entry into force of this Regulation and, upon approval, made available to persons and operators required to comply with 26.360 and 26.370. For a major change approved prior to 1 September 2003, installed on an aircraft operated under Part-CAT, compliance with 26.330(b)(2), (b)(3) and (b)(4) must be established when requested by an operator within 12 months of being requested by an operator.



For changes installed on an aircraft currently not operated under Part-CAT, compliance with 26.330(b)(2), (b)(3) and (b)(4) must be established when requested by an operator, prior to that aircraft being operated under Part-CAT or within 12 months of the date of entry into force of this Regulation, whichever occurs later.

- (3) Except as provided in 26.330(d)(4) or (d)(5), the damage tolerance data required by 26.330(c) must be submitted to EASA for review and approval within 24 months from the date of entry into force of this Regulation.
- (4) For changes installed on an aircraft currently not operated under Part-CAT, approval of the damage tolerance data required by 26.330(c) must be established when requested by an operator, prior to that aircraft being operated under Part-CAT or within 24 months of the date of entry into force of this Regulation, whichever occurs later.
- (5) For a major change approved prior to 1 September 2003, installed on an aircraft operated under Part-CAT, the damage tolerance data required by 26.330(c) must be submitted to EASA for review and approval within 24 months after it is requested by an operator.
- (6) The compliance plan required by 26.330(a) must be submitted to EASA for approval within 180 days of the date of entry into force of this Regulation.

26.350 Extension of an LOV

For aeroplanes with an LOV established according to 26.300, 26.350 or CS 25.571 Amdt 19 or later, the applicant for an LOV extension shall comply with the relevant provisions of subparts D or E of Part-21 for a major change and 26.350(a),(b) and (c):

- (a) A fatigue and damage tolerance evaluation of the following structural configurations must be performed for:
 - (1) all model variations, and derivatives approved under the type certificate for which approval for an extension of the LOV is sought; and
 - (2) all major structural changes to and replacements of the aeroplane structural configurations specified in 26.350(a)(1), mandated by an airworthiness directive, up to the date of approval of the extended LOV.
- (b) The evaluation required by 26.350(a) must include consideration of WFD and at least be supported by test evidence and analysis and, if available, service experience data, or service experience and teardown inspection results, of high-time aeroplanes of similar structural design, accounting for differences in operating conditions and procedures.
- (c) Based on the evaluation required by 26.350(a), establish the DTI and any necessary maintenance actions required to preclude catastrophic failures up to the proposed extended LOV. The inspections and other maintenance actions and procedures resulting from this evaluation must be included directly or by reference in the revision to the ALS or the supplement to the ALS that includes the extended LOV, as appropriate.

26.360 Fatigue and damage tolerance evaluation of future repairs and changes

For aircraft subject to 26.300(b), the applicant for a repair or change approval that is approved after the date of entry into force of this Regulation, except as provided for in 26.380, shall comply with the following:

- (a) For any repair or change that affects or includes fatigue-critical structure (FCS), perform a fatigue and damage tolerance evaluation and develop the inspections and other procedures as necessary to prevent catastrophic failures due to fatigue throughout the operational life of the



aeroplane. Identify any new FCSs introduced or created by the change, and list them in the instructions for continuing airworthiness.

(b) Compliance times

- (1) For applications for changes received after the date of entry into force of this Regulation or an application received prior to the date of entry into force of this Regulation that included DT (damage tolerance) in the certification basis, the data required by 26.360(a) shall be part of the compliance data for the change to be approved in accordance with Part-21 Subparts D or E, as applicable.
- (2) For applications for changes received prior to the date of entry into force of this Regulation, and for which a damage tolerance evaluation is not otherwise required by the applicable certification basis, the data required by 26.360(a) must be submitted to EASA within 12 months from the date of entry into force of this Regulation, or be part of the compliance data for the change to be approved in accordance with Part-21.
- (3) For repairs, a damage tolerance evaluation defining thresholds for maintenance actions that allow continued safe operation must be approved in accordance with Part-21, Subpart M within 12 months after the initial repair approval, except as provided in 26.360(b)(4).
- (4) If, prior to release into service, an evaluation has been performed that supports the approval of a temporary limitation allowing a period of safe operation, the approval of the data required under 26.360(b)(3) must be accomplished prior to the expiry of the temporary limitation.
- (5) For repairs, the approval of the inspections and other procedures required by 26.360(a) must be granted before the first approved inspection threshold is reached.

26.370 Continuing airworthiness tasks and aircraft maintenance programme

The operator/owner of turbine-powered large aeroplanes certified after 1 January 1958, except as provided for in 26.380, shall comply with the following:

(a) The aircraft maintenance programme required by Annex I (Part-M) to Commission Regulation (EU) No 1321/2014 M.A.302 shall include:

- (1) For aircraft certified to carry 30 passengers or more, or with a payload capacity greater than 3 402 kg (7 500 lbs), an approved damage-tolerance-based inspection programme.
- (2) For aircraft operated under Annex IV (Part-CAT) to Commission Regulation (EU) No 965/2012 and certified to carry 30 passengers or more or with a payload greater than 3 402 kg (7 500 lbs), a means for addressing the adverse effects that repairs and modifications may have on fatigue-critical structure and on inspections required by 26.370(a)(1).
- (3) Applicable limitations on the use of the maintenance programme in flight hours, flight cycles or both. The limitations shall include the LOV approved under 26.300(c) or 26.350, unless there is a more restrictive applicable limitation on the use of the maintenance programme, which shall then be incorporated.
- (4) A CPCP.

(b) Compliance times

- (1) Revise the maintenance programme to address the requirements of 26.370(a)(1), (a)(2) and (a)(4), within 36 months from the date of entry into force of this Regulation or prior to operating the aircraft, whichever comes later.



- (2) Revise the maintenance programme to address the requirements of 26.370(a)(3) no later than 6 months after the date of entry into force of this Regulation, or 6 months after the publication of the limitation, or prior to operating the aircraft, whichever comes later.

26.380 Additional limitations

- (a) EASA shall publish certification specifications containing specific conditions under which 26.300 through 26.370 may not be applicable to products, changes or repairs.
- (b) Design approval holders (DAHs) who do not comply with 26.300 through 26.370 on the basis of the specific conditions established in accordance with (a) shall establish a list of aeroplanes, changes and repairs, as necessary to define the applicability of the corresponding certification specifications established under (a). DAHs shall also submit this list to EASA.
- (c) EASA shall publish a list of the products, changes and repairs, provided by DAHs under (b), as necessary to assist DAHs and operators needing to comply with 26.300 through 26.370 or any part thereof.



III. **Draft Opinion PART-M**
SUBPART C
CONTINUING AIRWORTHINESS

...

M.A.302 **Aircraft Maintenance Programme**⁸

...

(d). The aircraft maintenance programme must establish compliance with:

(...)

(4) relevant provisions of Annex I (PART-26) to Commission Regulation (EU) No 2015/640, , as applicable.

⁸ EASA Opinion 06/2016 has been used as basis to show the proposed changes to Part-M.



4. Attachments

Attachment 1

Aeroplanes subject to the additional limitations of applicability as provided in Part 26.380

Pending the entry into force of Part 26.300 to 26.380, the Agency has listed in the table below the aeroplane models that are expected to meet the additional applicability limitation criteria in compliance with Part 26.380.

TC Holder	Type	Model subject to limited applicability in accordance with 26.380 (*)	Part-26 paragraphs not applicable	Applicable CS paragraph for Part 26.380 compliance.
AIRBUS MILITARY SOCIEDAD LTDA	A400M	All	26.300–26.360	CS 26.380(a)(4)
AIRBUS S.A.S.	A300-600ST 'Beluga'	All	26.300–26.370	CS 26.380(a)(5)
BERIEV AIRCRAFT COMPANY	Be-200ES-E	All	26.300–26.370, except for 26.300(e) and 26.370(a)3 and (a)4	CS 26.380(d)
The Boeing Company	707	All	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
The Boeing Company	720	All	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
The Boeing Company	DC-10	DC-10-10 DC-10-30 DC-10-30F	26.300 –26.330 and 26.360	CS 26.380(b)(1)&(2)
The Boeing Company	DC-8	All	26.300 –26.330 and 26.360	CS 26.380(b)(1)&(2)
The Boeing Company	DC-9	DC-9-11, DC-9-12, DC-9-13, DC-9-14, DC-9-15, DC-9-15F, DC-9-21, DC-9-31, DC-9-32, DC-9-32 (VC-9C), DC-9-32F, DC-9-32F (C-9A, C-9B), DC-9-33F, DC-9-34, DC-9-34F, DC-9-41, DC-9-51	26.300 –26.330 and 26.360	CS 26.380(b)(1)&(2)
The Boeing Company	MD-90	MD-90-30	26.300 –26.330 and 26.360	CS 26.380(b)(1)&(2)
BOMBARDIER INC	CL-215	All	26.300–26.370, except for 26.300(e) and 26.370(a)3 and (a)4	CS 26.380(d)
BOMBARDIER INC	CL-415	All	26.300–26.370, except for 26.300(e) and 26.370(a)3 and	CS 26.380(d)



TC Holder	Type	Model subject to limited applicability in accordance with 26.380 (*)	Part-26 paragraphs not applicable	Applicable CS paragraph for Part 26.380 compliance.
			(a)4	
FOKKER SERVICES B.V.	F27	Mark 100, 200, 300, 400, 500, 600, 700	26.300(g), 26.320, 26.330 and 26.360	CS 26.380 (a)(2)
FOKKER SERVICES B.V.	F28	Mark 1000, 1000C, 2000, 3000, 3000C, 3000R, 3000RC, 4000	26.300(g), 26.320, 26.330 and 26.360	CS 26.380 (a)(2)
GULFSTREAM AEROSPACE CORP.	G-159	G-159 (Gulfstream I)	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
GULFSTREAM AEROSPACE CORP.	G-II_III_IV_V	G-1159A (GIII) G-1159B (GIIB) G-1159 (GII)	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
KELOWNA FLIGHTCRAFT LTD.	CONVAIR 340/440	440	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
LEARJET INC.	Learjet 24/25/31/36/35/5 5/60	24,24A,24B,24B-A,24D, 24D-A,24F,24F-A,25,25B,25C,25D,25F	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
LOCKHEED MARTIN CORPORATION	1329	All	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
LOCKHEED MARTIN CORPORATION	188	All	26.300 –26.330 and 26.360	CS 26.380(b)(1)&(2)
LOCKHEED MARTIN CORPORATION	382	All	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
LOCKHEED MARTIN CORPORATION	L-1011	All	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
PT. DIRGANTARA INDONESIA	CN-235	All	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
SABRELINER CORPORATION	NA-265	NA-265-65	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
SHORT BROTHERS PLC	SD3	SD3-30 SD3-60 Sherpa SD3 Sherpa	26.300(g), 26.320, 26.330 and 26.360	CS 26.380 (a)(2)
VIKING AIR LIMITED	DHC-7	All	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)
TUPOLEV PUBLIC STOCK COMPANY	TU-204	All	26.300–26.330 and 26.360	CS 26.380(b)(1)&(2)

(*) Affected models are identified from the EASA TCDS applicable to the type.

