Attachment 2

CRD table of comments and responses to NPA 2013-07

(General Comments)	-

comment	*3* comment by: *DDUMORTIER* This NPA is addressing ageing on aircraft structure ; however it appears that only metallic structure subject to AD, ED and FD is being addressed. What about non metallic aircraft structure which are potentially candidate to ageing but in different degradation modes ? We may recognize that we don't have the same level of experience in service on non metallic structure ; however some well known issue are existing and have generated AD mandated actions for recovery of unsafe condition. For example ageing on sandwich composite structure, resin degradation from UV exposure ... Is the intent to look for having more in service experience/in service issues to address this topic ? Can EASA accept that for the moment, potential ageing on non metallic structure is not being evaluated at all either for in service a/c or new products in TC phase ?
Response	Noted. The primary intent of the NPA was to address the metallic structure, however, certain requirements such as 26.300(f) are considered applicable to all structure, regardless of the material.

Comment	*25* comment by: *Learjet* Attachment #1 Learjet Inc. comment submission
Response	Partially accepted. Regarding the DTI and DTE EASA is now alligned with the FAA in requiring a DTE only for a/c 30 pax or more and 7 500 lbs or more. Regarding the monitoring issue (26.300(f)) the rule has been updated to focus on the process thus allowing for more flexibility in compliance demonstration. Flexibility on the CPCP requirement is provided, the format of the CPCP could be integrated in the maintenance manual(e.g. under the MSG 3 methodology). The query on the 24 months compliance in the rule (for 26.300(b)) is not relevant any more, since the applicability threshold has been changed to 30 pax and above or 7 500 lbs or above.

Comment	*34* comment by: *NHAF Technical committee* NHF support this NPA and it's contents. We would like to see similar set of rules for helicopters as well.
Response	Noted.

Comment	*38* comment by: *AIRBUS* Airbus thanks the EASA for the opportunity to comment this NPA with an extension of the comment period. After review, Airbus submit an extensive list of comments which are due to the following factors: - this NPA takes only partially into account the comments of the working group - this NPA includes Part 25 changes which were never discussed in the WG - this NPA includes a lot of requirements which go beyond the FAA part 26 and introduces significant regulatory differences. - this NPA does not consider all induced or related regulatory changes in the EASA system. - The EASA and the FAA should target harmonised rules (unique interpretation, unique compliance,..) - The changes highlighted in the NPA do not cover all changes. - The definitions should be consistent throughout the documents, should be harmonised as far as possible with the FAA published definition. Definition should be in a single place and not duplicated.
Response	Noted. CS-25 changes have been previously discussed in forums such as GSHWG. Partially accepted. Most of the highlighted issues were addressed during the RM review group meetings or answered within this document. Further harmonisation may take place following completion of the ARAC composite and metalics working group activity.

Comment	*42* comment by: *EUROCONTROL* The EUROCONTROL Agency has no comments to make.
Response	Noted.

Comment	*131* comment by: *KLM Engineering & Maintenance* General comment: The EASA NPA does not establish what FAA approved data will be acceptable. Provide clarification for each FAA required deliverable of FAR 26.43-26.47 and WFD FAR 26.21 that will satisfy compliance to the EASA rule.
Response	Noted. For a similar requirement, the Agency may accept the compliance demonstration which would normally be provided to demonstrate compliance with the corresponding FAR. If the data is not clear, it may require administrative changes to the data to show that is applicable to the EASA requirement. (e.g. LOV applicability to 121, 129) The rule has been revised to introduce a compliance plan. The use of the already FAA approved data will be assessed and discussed as part of the compliance plan submission. The Agency may also produce a certification memorandum (CM) to clarify the acceptability of the FAA data.

comment	*286* comment by: *AIR FRANCE* The NPA does not establish what FAA approved data will be acceptable. Provide clarification for each FAA required deliverable of FAR 26.43, 26.47 and WFD FAR 26.21 that will satisfy compliance to the EASA rule.
response	Noted. See the response for 131.

comment	*287* comment by: *AIR FRANCE* There is no requirement for OIP (Operational Implementation Program) into this NPA. Do you plan to issue EASA Guidelines or each NAA will be responsible to issue their own guidelines ?
response	Noted. CS 26.370 has been expanded to provide sufficient information on how to update the maintenance program. At this point, the Agency does not plan to issue further guidance on this issue.

comment	*299* comment by: *Michael Hilger* EASA is requested to consider a full harmonization for all the differences between FAA rule and EASA proposed rule related to the safety of ageing aircraft. This would minimize the costs for all stakeholders with a marginal impact on the general level of safety of the fleet. In this respect, Cargolux likes to highlight the following points : [a] The EASA NPA does not establish what FAA approved data will be acceptable. In this context, the following should be noted: • The compliance schedule for the 3 stage approval process are different within the EASA and FAA rule set-up, so that operator might be forced to adapt to the most stringent requirement, which will create problems and compliance findings for past repair approvals • The validity of a FAA approved REG (including its definitions) as a valid EASA compliance document needs to be clarified. If differences persist, the operator will be forced to show compliance to two different sets of requirements, which will be an additional administrative and maintenance burden, while keeping a similar level of safety. In addition all existing repair evaluations that were performed since establishment of the FAR 26 requirements would need to be re-assessed, adding costs and burden, without creating an appreciable improvement of the safety aspect. • The validity of (past or future) damage tolerance data as part of the Structural Repair Manual (SRM) or in previously issued FAA approval forms could be questioned, if the EASA planned rule and FAA rule are not harmonised. In Cargolux' opinion, a full harmonization between the EASA and FAA AASR requirements would automatically remove any ambiguity for this subject and relief the operator of the additional burden for the evaluation of past, current and future repairs, while keeping an equivalent level of safety.

[b] The cost benefit analysis should be extended to more accurately assess the impact of the proposed rules on the operators with respect to:

- additional costs and compliance problems or risks when transferring aircraft between the FAA and EASA regulating spaces, if the differences between the rules are not harmonised: during aircraft ownership transfer, (short term) lease agreements , etc;
- potential impact of the residual value of the assets (aircraft, engines, major components, etc.);
- additional maintenance costs and burden because of additional or stricter repair recording and control requirements;
- significant additional costs for evaluations (e.g. for the wide spread fatigue program) that could be passed on by the Design approval holder, as the operator is responsible for obtaining the data.

[c] In this context, Cargolux likes also to understand in which way the non-harmonised elements between the FAA rule and the EASA would add to the overall safety of the fleet.
In case of non-harmonization of the differences between the EASA proposed rule and the FAA current rule, Cargolux is concerned about:

- significant additional administrative, maintenance and cost burden for meeting the requirements of two separate rules;
- the mutual acceptance of repair approval data between the EASA and FAA controlled areas. Operators, like Cargolux, will have to request double approvals and meet the most strict requirements which implies an additional cost burden;
- the implications, problems and compliance risks during the transfer of aircraft or appliances between the EASA and FAA controlled environments;
- the residual value of its assets.

In Cargolux' view, the additional burden due to the non-harmonization will not result in any appreciable improvement of the safety of the fleet.

response

Noted.
Harmonisation between the FAA and EASA rules has been considerably extended. The 3-stage repair approval process is applicable to the new repairs (as per 26.360). Existing repairs should be evaluated using the REG issued by the TCH.
The existing REG in compliance with the CFR Part 26 will be taken into account if submitted in compliance with the EASA requirement.
The Agency may also produce a certification memorandum to clarify the acceptability of the FAA data.

comment

310 comment by: *Gulfstream Aerospace Corporation*

Attachment #2

Gulfstream appreciates the opportunity to review this Notice of Proposed Amendment concerning ageing aircraft structures. Gulfstream is pleased to support EASA in this effort.
Please find attached a summary of the Gulfstream Aerospace Corporation comments to EASA NPA 2013-07 'Ageing Aircraft Structures'.

response

Partially accepted.

26.300(d) requested change accepted. The text is clarified.

26.300(g) has been revised to limit the request for FCBS list only for aircraft which are affected by 26.300(b) (i.e. 30 pax or more or 7 500 lbs or more).

The Agency believes that splitting the issues and having a separate (a)(4) will facilitate a better understanding of what is required from the TCH. The Agency offers additional explanation on the assessment and practicality of the DTE.

Comment on (a)(5) is not accepted (the Agency recognises the value of the MRB process, however the MSG-3 is not a certification process requirement.

25.571(b) is amended.

AMC 20-20 is general guidance for retrofit and future applications, therefore the link in H25.1 is maintained.

FCS definition was provided, as requested.

For the definition of 'normal maintenance', please refer to comment 525.

Regarding the use of the DDP, no new policy on doors and fairings is intended. Compliance with CS 25.1301 and 25.1309 and 25.571 are not mutually exclusive. The same part would be subject to multiple requirements. (eg. landing gear itself).

With regard tothe question on thrust reverser, it may be seen as PSE in conjunction with the reliability option. AMC 25.933 already references the 25.571.

For excluded aircraft, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

Paragraphs 4.3.8, 4.3.9 have been revised to remove redundancy and to make the link to paragraph 4.3.10.

Regarding AMC 20-20 Appendix 2, Annex 1, Annex 1 will be kept since new test data may be created to show compliance with Part-26.

Redundant statement in AMC 20-20, Appendix 5 has been revised.

comment *342* comment by: *All Nippon Airways*

ANA comments to NPA 2013-07

The FAA already mandated the NPA requirements per FAA-1999-5401 (Aging Airplane

	Safety Final Rule) and FAA–2006–24281 (WFD Final rule). If there is a difference between EASA rules and FAA rules, it will burden all stake holders. To reduce any impact, harmonization process will be required and some work shop activities will be helpful to all stake holders.
response	Noted. The rules have been further harmonised.

comment	*345* comment by: *DGAC France* DGAC France has no specific comment on this NPA
response	Noted.

comment	*430* comment by: *Luftfahrt-Bundesamt* The LBA has no comments on NPA 2013-07.
response	Noted.

comment	*444* comment by: *RYR* RYR requests that EASA, as far as possible, harmonise their proposed rule with the existing FAA rule. This is to help minimise the additional work required in complying with the proposed EASA rule and to eliminate future difficulties and associated costs when aircraft transfer between US and European registers. RYR request a further workshop to discuss the many already identified differences and difficulties with the EASA proposed rule in its present form.
response	Noted. The rules have been further harmonised.

comment	*447* comment by: *Aerospace Industries Association* Attachment #3
response	Comment 1 Partially accepted. RMT.0225 rulemaking group meetings have further discussed the changes to CS 25.571. Example 1: text has been changed Example 2: Comment on a(5) is not accepted (EASA recognizes the value of the MRB process however the MSG-3 is not a certification process requirement.) Example 3: Agreed. The LOV definitions are harmonised. Comment 2: The Agency may produce a certification memorandum (CM) to clarify the acceptability of the FAA data. Comment 3 on Part 26.300 (f) is partially accepted. See revised text on 26.300(f)

Comment 4: Accepted. LOV definition is harmonised with the FAA LOV definition. LOV is a limitation at the aeroplane level.
Comment 5: Accepted. REG definition in Part-26 has been revised.
Example 1, 2:
Non-reinforcing repairs are not specifically excluded by either FAA requirement or by EASA proposal. Conversely the Agency is not requiring non-reinforcing repairs to be systematically considered.

Repairs may influence a loading and stress distribution in structure adjacent to repair, ie. not directly under the reinforcing elements of the repair. Relevant adjacent structure is therefore structure whose fatigue and damage tolerance behaviour and justification is altered by the repair. See comment 617 and the revised AMC 20-20 Chapter 9.
Example 3: Although the term REG has been removed from the rule, the intent of having a plan/survey remains the same.
Comment 6: 26.350 text has been harmonised with the FAA requirements.

comment *497* comment by: *Bombardier Aerospace*

Bombardier concurs with and supports the comments submitted by AIA on behalf of Boeing, Airbus, Dassault, Embraer and Bombardier.

response Noted.

comment *601* comment by: *Boeing*

GENERAL COMMENT
Examples:
Page: 145 & 146
Paragraph: *Multiple places*

Example proposed text:
"…In addition, although the applicant for an STC may not have access to the original equipment manufacturer's full-scale fatigue test data, the applicant may assume that the basic structure was shown to comply with the regulation, unless EASA has taken, or intends to take, Airworthiness Directive (AD) action to alleviate a WFD condition. This assumption implies that sufficient full-scale fatigue test evidence exists, demonstrating that WFD will not occur within the design service goal of the aeroplane. …"
REQUESTED CHANGE:
"…In addition, although the applicant for an STC may not have access to the original equipment manufacturer's full-scale fatigue test data, the applicant may assume that the basic structure was shown to comply with the ~~regulation~~ **Limit of Validity as stated in the ALS**, unless EASA has taken, or intends to take, Airworthiness Directive action to alleviate a WFD condition or inspections or modifications exist in the ALS relating to WFD conditions. This assumption implies that sufficient full-scale fatigue test evidence exists, demonstrating that WFD will not occur within the ~~design service goal~~ **Limit of Validity** of the aeroplane. …"

JUSTIFICATION:
The assumption that all airplanes have been certified to the latest version of the regulation is incorrect. The original release of CS 25.571 did not include a requirement to test to two DSG or two LOV. It is therefore an un-founded assumption that is being proposed.

response

Accepted.
The text has been amended.

comment

602 comment by: *Boeing*

GENERAL COMMENT
Examples:
Page: 185 to 196
Paragraph: *Multiple places*
The term "Baseline programme" is used in numerous places.
REQUESTED CHANGE:
Change this term from : "Baseline programme" to "**Baseline CPCP programme."**

JUSTIFICATION:
The term "baseline program" normally refers to entire maintenance program (Zonal, Structural, and Systems Maintenance program). It would be confusing to now label one piece of the maintenance program as the "baseline program."

response

Partially accepted.
The text was changed to 'baseline CPCP'.

comment

603 comment by: *Boeing*

GENERAL COMMENT
Examples:
Page: 70 and 142
Paragraph: *Multiple places*

Example proposed text:
Page 70
Paragraph: Appendix 2, para (a), *Factor 5*
"… Small, simple design changes, comparable to the original structure, could be analytically determined to be equivalent to the original structure in their propensity for WFD. …"
REQUESTED CHANGE:
Change to:
" …Small, simple design changes, comparable to the original structure, **or changes that are derived from the original design using the same basic design configuration, such as a fuselage stretch,** could be analytically determined to be equivalent to the original structure in their propensity for WFD …"

JUSTIFICATION:
Change is needed to clarify that certain types of changes that may not be considered "small" would not necessarily require full scale test. This is consistent with the discussion later in the same appendix (Appendix 2 and Annex 1).

response

Partially accepted.
Example of the fuselage stretch needs careful consideration with respect to loads, and associated stress level and where the detailed design features such as joints remain similar to the original structure.
Note: under AMC 25.571(c)(2) of Appendix 2 this scenario is also addressed.

comment

604 comment by: *Boeing*

GENERAL COMMENT
Examples:
Page: 72 and 143
Paragraph: *Multiple places*

Example proposed text:
Page: 72
Paragraph: Appendix 2, para (b)(3):
"...If inspection is practical the guidance states that inspection should start at one third of the WFD average behaviour with modification/replacement at one half of that time. It is standard practice to interpret the unfactored fatigue life of one specimen as the average life. It follows that if a full-scale fatigue test article survives a test duration of X without WFD occurrence it can be conservatively assumed that the WFD average behaviour of all susceptible areas is equal to X. Based on this, and assuming that the susceptible areas are impractical to inspect for MSD/MED, the guidance of AMC 20-20 would require that replacement/modification would have to be implemented at X/3. For areas where MSD/MED inspections were practical replacement/ modification could be deferred until X/2, but MSD/MED inspections would have to start at X/3. The preceding should be kept in mind when deciding what the test duration will be."
REQUESTED CHANGE:
Add to end of the paragraph: **"Other, statistically based approaches for factoring the average behavior to determine ISP and SMP may be used when coordinated with and accepted by the agency."**

JUSTIFICATION:
Change is needed to allow for more precise methods of calculating ISP and SMP than the simple factors listed in the AMC.

response

Not accepted.
The AMC is only one way to comply. Statistical approaches to determine the ISP/SMP are discussed in the relevant paragraphs. Most of these approaches have some dependencies on the outcome of this testing, therefore in support of the rule, which has a minimum test duration requirement and the fact that this section is targeting the planned test duration,

it is not considered appropriate to address it here.

comment

605 comment by: *Boeing*

GENERAL COMMENT
Examples:
Page: 72 & 144
Paragraph: *Multiple places*

Example proposed text:
Appendix 2 – para (b)(4):
"…establish a lower bound on crack size…"
and
Appendix 2 – para (b)(4)(i):
"The direct way to demonstrate freedom from WFD at the end of a full-scale fatigue test is to subject the article to the required residual strength loads specified in CS 25.571(b)."
REQUESTED CHANGE:
Appendix 2 – para (b)(4):
"…establish ~~a lower~~ **an upper** bound on crack size…" -- Or clarify the intent of this sentence.
and
Appendix 2 – para (b)(4)(i):
"~~**The direct**~~ **One acceptable** way to demonstrate freedom from WFD at the end of a full-scale fatigue test is to subject the article to the required residual strength loads specified in CS 25.571(b)."

JUSTIFICATION:
Change is needed to be consistent with the process described. A crack may exist that is below the threshold of detectability of the inspection method. Therefore, the threshold of detectability is an upper bound on the crack size, not a lower bound.

response

Accepted.
The second request was accepted, the text has been changed.

comment

606 comment by: *Boeing*

GENERAL COMMENT
Examples:
Page: 75 and 146
Paragraph: *Multiple places*

Example proposed text:
Page: 75
Paragraph: Appendix 2 — Full-scale fatigue test evidence, para (c)(5)
"(5) **Repairs.** New repairs that differ from the repairs contained in the original equipment manufacturer's structural repair manual, but that are comparable in design to such

repairs, and that meet CS-25 in other respects, would not necessitate full-scale fatigue testing to support freedom from WFD up to the LoV. For TCH repairs, only extensive major repair solutions (that may be susceptible to WFD) and that utilise different design concepts from the type design would require further testing."

REQUESTED CHANGE:

"(5) **Repairs.** New repairs that differ from the repairs contained in the original equipment manufacturer's structural repair manual, but that are ~~comparable~~ **equivalent** in design to such repairs **(and do not exceed the size of the repairs in the SRM)** , and that meet CS-25 in other respects, would not necessitate full-scale fatigue testing to support freedom from WFD up to the LoV. For TCH repairs, only extensive major repair solutions (that may be susceptible to WFD) and that utilise different design concepts from the type design would require further testing."

JUSTIFICATION:

Anything may be "comparable," but not necessarily "equivalent." The WFD assessment of the SRM repairs sometimes relies on the direct or indirect size limits of the repair in the SRM (e.g., limited to crossing one frame or limited to 40" long, etc.).

response

Partially accepted.

'Equivalent' addition is accepted. However, it is envisioned that there could be circumstances where an applicant could justify equivalence for a larger repair than the one in the SRM.

comment

607

comment by: *Boeing*

GENERAL COMMENT

Examples:

Page: 97, 95, 197

Paragraph: *Multiple places*

Example proposed text states:

"... or validate an existing process

" ….or validated procedures ..."

REQUESTED CHANGE:

"...or ~~validate~~ **identify** an existing process..."

"...or ~~validated~~ **identified** procedures..."

JUSTIFICATION:

It is unclear as to what constitutes "validation" of an existing process.

[Note that this comment need not be considered if 26.300(f)

is deleted, as requested earlier in these comments.]

response

Noted.
The comment is, however, no longer applicable since the text has been changed.

comment

608 comment by: *Boeing*

GENERAL COMMENT.
Examples:
Page: 95, 197
Paragraph: *Multiple places*

Example proposed text:
Page: 95
Paragraph: AMC 20-20 -- Amdt 1, -- para 5.(a)- CONTINUING STRUCTURAL INTEGRITY PROGRAMME AND WAY OF WORKING
“The monitoring of operational usage is best achieved in cooperation with the operators, including implementation of fleet leader programmes to ensure that flight lengths, fuel weights, payloads, altitudes, etc., correspond with the assumptions made when the aircraft was certified or that were used in the development of the ageing aircraft programmes."
Page: 195
Paragraph: Appendix 5, para 1. – GENERAL
“Acceptable compliance for the monitoring of operational usage would be to review every five years the key operating variable parameters such as weight, fuel, payload, mission length, etc., and evaluate their influence on the fatigue analysis and inspection programme. …”
REQUESTED CHANGE:
Delete the highlighted text.

JUSTIFICATION:
Past experience has shown that this data is particularly impractical to obtain. Usually, it would require a dedicated operator special effort to collect and provide such data and a regulation compelling the operators to track and report such data. This requirement creates additional burden without added safety benefit.
[Note that this comment need not be considered if 26.300(f) is deleted, as requested earlier in these comments.]

response

Not accepted.

	Nonetheless, amendments to 26.300(f) have been made to offer greater flexibility to compliance demonstration.
comment	*609* comment by: *Boeing* **GENERAL COMMENT** Example: Page: 95, 197 Paragraph: *Multiple places* **Example proposed text:** Page 95; Paragraph: AMC 20-20 -- Amdt 1, -- para 5.(a)- CONTINUING STRUCTURAL INTEGRITY PROGRAMME AND WAY OF WORKING "… For a large transport aeroplane in commercial air transport it should be sufficient to review the operational data at 5-year intervals. .." **REQUESTED CHANGE:** "… For a large transport aeroplane in commercial air transport it should be sufficient to review the operational data at ~~5-year~~ **6 year(s) or equivalent heavy check** intervals. .." **JUSTIFICATION:** Change is needed to align the evaluation so that it is synchronized with operator maintenance intervals. [Note that this comment need not be considered if 26.300(f) is deleted, as requested earlier in these comments.]
response	Partially accepted. The data collection is not directly related to the maintenance check intervals. Flexibility in the interval is allowed through the revised text. The above proposal would be acceptable in that context. The resulting period should provide several opportunities to ensure that the programme can be adjusted in a timely manner if necessary.
comment	*610* comment by: *Boeing* **GENERAL COMMENT** Examples: Page: 95, 197 Paragraph: *Multiple places* **The example proposed text states**: ...The monitoring of operational usage is best achieved in cooperation with the operators, including implementation of fleet leader programmes to ensure that flight lengths, fuel weights, payloads, altitudes, etc., correspond with the assumptions made when the aircraft was certified or that were used in the development of the ageing aircraft programmes. Where data does not correspond to the original assumptions its potential impact on all ageing aircraft structural programmes and CAW in general must be

considered. For a large transport aeroplane in commercial air transport it should be sufficient to review the operational data at 5-year intervals. Obvious changes to usage should be addressed for their impact on fatigue and damage tolerance and when they occur. In particular, aircraft use for conducting surveys, commercial or non-commercial operations should be considered on a case-by-case basis. ...

REQUESTED CHANGE:

We request a threshold of at least **15 years** for the requirement to evaluate the operational data and service data.

JUSTIFICATION:

Designs of the last 20 years have not shown indications of chronic ageing airplane problems. Therefore the requirement for this evaluation, particularly SB review, earlier than that will have no appreciable safety benefit but will add appreciable industry costs. Note that most TCH's would continue to collect and analyze flight hour and flight cycle data from airplane delivery, as they do today.

[Note also that this comment need not be considered if 26.300(f) is deleted, as requested earlier in these comments.]

response

Partially accepted.

The text has been revised. A specific number of years is not explicitly requested any longer (as the threshold). 26.300(f) offers the option of reviewing in-service data either continuously or at regular intervals.

The objective of the AMC is ensure that the TCH can adjust the maintenance program in a timely manner when needed.

comment *611* comment by: *Boeing*

GENERAL COMMENT:

ISSUE:

Placement of "Definitions"

REQUESTED CHANGE:

The NPA has eight different sets of definitions scattered within the NPA. Many of the definitions are repeated in each of the eight sets; some definitions are the same, while others are not. These definitions should be consolidated into the AMC material and revised to be consistent.

JUSTIFICATION:

Consolidate definitions for clarity. Definitions are currently dispersed throughout the NPA in the following sections:

- Background, pages 5-10
- Article 2, pages 27-28
- Draft Decision CS-25, pages 39-42
- AMC 25.571, pages 44-46
- Appendix 5, pages 80-82
- Appendix I, pages 83-84

- AMC 20-20 Amdt 1, pages 92-93

Appendix 4, pages 185-188

response: Partially accepted.

comment *612* comment by: *Boeing*

GENERAL COMMENT

ISSUE:
Differentiate between published and non-published repairs throughout the NPA.
REQUESTED CHANGE:
Ensure that where repairs are discussed the context is clear. There are different expectations for processing published and un-published repairs.

JUSTIFICATION:
For clarity in understanding what is required for compliance.

response: Accepted.
The text was reviewed and amended as necessary to improve clarity.

comment *613* comment by: *Boeing*

GENERAL COMMENT

REQUESTED CHANGE:
The general structure and order of AMC 20-20 and its appendices and annexes should be carefully reviewed for editorial issues, including order of presentation, clarity of subject being presented, and overall message.

JUSTIFICATION:
For clarity and intent.

response: Accepted.

comment *614* comment by: *Boeing*

GENERAL COMMENT
This comment is being submitted on behalf of the Boeing Company, Airbus, Bombardier, Dassault Aviation, and Embraer.
EXAMPLE:
Page: 39-67, *multiple places*

ISSUE:
CS 25.571 addresses damage tolerance and fatigue evaluation of structure
REQUESTED CHANGE:
Remove proposed changes to CS 25.571 and associated AMC material. Reconvene the

industry working group to establish the benefit to the fleet and clarify non-harmonised requirements.

JUSTIFICATION:
More time is required to review and fully understand the potential impact on future designs and certification. The changes in the rule and associated AMC material go beyond the addition of widespread fatigue damage and Limit of Validity. These changes create further non-harmonization with 14 CFR 25.571 amdt 25 – 132, which have not been vetted within the industry and were not a focus of discussion at the EASA Aging Aircraft Workshop held in Cologne, Germany on April 24-25, 2013. The changes to CS 25 need to be fully understood as these changes can affect future designs.

Examples of topics that need to be explored further are:
Example 1: CS 25.571(b)(5) (pg 41)
The proposed change excludes the aerodynamic pressure from the application of the 1.15 factor. This would increase compliance costs since this isn't harmonised and it is not apparent that this difference from the existing FAA rule provides any improvement in safety.
Example 2: 3.5/Re CS 25.571(a)(5) (Pg 40)
Delete: "Inspection programmes for environmental damage and service-induced accidental damage must be established to protect the structure against catastrophic failure. "
Reason: CS 25 Appendix H and similar 14 CFR 25 Appendix H already require that the TCH provide a maintenance manual and "… an inspection programme that includes the frequency and extent of the inspections necessary to provide for the continued airworthiness of the aeroplane …"
Therefore, the requirement for these programs already exists in the EASA regulations and the EASA proposal is to introduce a redundant regulation. Those programs have historically been developed through the MSG-3 process and provided in the maintenance manuals as required by Appendix H. No compelling safety reason has been provided that justifies the inclusion of this requirement in CS 25.571 and the proposal is not harmonised. In addition, it would place additional burdens on the TCH and operators in obtaining approval for these programs and revision to these programs from multiple different organizations within the regulatory agencies that are responsible for type certification and operator maintenance programs.
Example 3: Limit of Validity Definition (pg. 45)
The proposed definition of LoV differs from the existing FAA definition by including a statement regarding "…the other elements of the fatigue and damage tolerance evaluation as provided for in the ALS…" The additions to the FAA definition appear to require additional compliance activity for fatigue and damage tolerance aspects that are met via the existing EASA compliance requirements regarding fatigue and damage tolerance, specifically, JAR 25.571-Change 7 and the Supplemental Structural Inspection Document (SSID) airworthiness directive for airplanes certified prior to Change 7. This will drive additional cost to the industry to meet redundant compliance requirements that make no improvement in safety.

response | Partially accepted.

Example 1 Accepted. The editorial mistake has been corrected and the text has been harmonised.
Example 2: Not accepted. The link in current and past certifications between the 25.571 requirement to prevent catastrophic failure and the inspection programs developed under the MRB process for environmental and accidental damage is not transparent to the Agency in all cases. The proposed requirement will ensure that the applicant, be it for a TC with associated MRB or for an STC, identifies this dependency which will facilitate understanding and agreement of the suitability of the program.
The acceptance of the MRBR as part of the compliance finding will not be changed.
Example 3: Accepted. LOV definition was harmonised with the FAA's definition.

comment

615 comment by: *Boeing*

GENERAL COMMENT

This comment is being submitted on behalf of the Boeing Company, Airbus, Bombardier, Dassault Aviation, and Embraer.]

ISSUE:

The rule does not establish what FAA-approved data will be acceptable for demonstrating compliance.

REQUESTED CHANGE:

Provide clarification as to whether previous compliance with FAA's 14 CFR §§26.21, 26.43, 26.45 and 26.47 will satisfy compliance with the EASA rule or if additional data will be required to comply with EASA Requirements.

JUSTIFICATION:

The FAA's 14 CFR Part 26 has been in existence for a number of years and compliance plans have been put in place. The proposed requirements in the NPA would add the need for redundant compliance findings for those applicants who products have already complied with the Part 26 requirements. This would place a significant burden to the industry with no additional improvement in the safety of the fleet. It is important to understand the level to which EASA will require evaluation and acceptance of FAA approved data.

response

Noted.
Part 26 has been revised to introduce a requirement for the DAH to develop a compliance plan. Such an acceptability statement could not be placed in the rule, however the FAA approved data could be used to support compliance with EASA Part-26. Acceptability of such data could be proposed in the frame of the compliance plan as required by Part 26 for the DAHs.
EASA may also produce a certification memorandum to clarify the acceptability of the FAA data.

comment

616 comment by: *Boeing*

GENERAL COMMENT

This comment is being submitted on behalf of the Boeing Company, Airbus, Bombardier, Dassault Aviation, and Embraer.

Example:
Page: 6
Paragraph: 4.

The proposed text states:
"LoV is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that WFD is unlikely to occur in the aircraft structure; and that the inspections and other maintenance actions and procedures resulting from this demonstration and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aircraft structure. The LoV terminology is usually used in the context of 'Limit of validity of engineering data that supports the structural maintenance programme'. The term 'structural maintenance programme' refers to the structure's part/section of the maintenance programme."
REQUESTED CHANGE:
[Please note, Boeing has also submitted separate additional comments requesting to revise the definition of LoV by removing the words: " and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aircraft structure."]
Throughout the NPA, harmonise the EASA definition of LoV with FAA's definition, or explain the reasoning for the difference.
FAA's 14 CFR Part 26, Subpart C, states:
(1) Establish a limit of validity of the engineering data that supports the structural maintenance program (hereafter referred to as LoV) that corresponds 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 airplane. This demonstration must include an evaluation of airplane structural configurations and be supported by test evidence and analysis at a minimum and, if available, service experience, or service experience and teardown inspection results, of high-time airplanes of similar structural design, accounting for differences in operating conditions and procedures. The airplane structural configurations to be evaluated include:
(i) All model variations and derivatives approved under the type certificate; and
(ii) All structural modifications to and replacements for the airplane structural configurations specified in paragraph (b) (1) (i) of this section, mandated by airworthiness directives as of January 14, 2011.

JUSTIFICATION:
EASA's proposed text in the NPA could be interpreted to apply LoV at the part/component level rather than airplane level. The FAA clearly stated in the preamble to 14 CFR §26.21 that, *"The LoV is an airplane-level number. The FAA does not anticipate that rotable parts will be identified by design approval holders as structure susceptible to WFD."* This difference in definition could result in early retirement of parts not susceptible to WFD, if

total usage is not known. It poses a potential risk for inappropriately grounding fleets due to inadequate quantity of spare parts with documented usage. This will place a significant burden on the industry with no additional improvement in the safety of the fleet.
In addition, the LoV definition establishes a redundant requirement; DT of non-WFD structure is already required by SSIDs; 26.300(a); 14 CFR §25.571 at Amendment 25-45 or CS 25.571 at Change 7; and to repairs via 14 CFR §26.43 or CS 26.320.

response

Partially accepted.
LOV definition is harmonised with the FAA's defintion.
The LOV is an aeroplane level requirement, however this does not exclude any component susceptible to WFD from being evaluated and appropriate ICA being established.
The second part regarding the redundant requirement: the LOV is not necessarily redundant.
Currently several TCHs limit their maintenance programs based on the validity of the engineering data available or submitted at the time of approval. This could be a higher or lower limit than that which could be justified for freedom from WFD.

comment

617 comment by: *Boeing*

GENERAL COMMENT
This comment is being submitted on behalf of the Boeing Company, Airbus, Bombardier, Dassault Aviation, and Embraer.
Example: page 28 & *Multiple places*
ISSUE:

The Repair Evaluation Guideline (REG) is a process to establish damage tolerance inspections for repairs that affect fatigue-critical structure to ensure the continued structural integrity of all relevant repaired and adjacent structure.
REQUESTED CHANGE:
Harmonise the EASA Repair Evaluation Guidelines (REG) definition with the FAA AASR requirement, or explain the benefits and impact of the deviation.
FAA's AC120-93 ("Damage Tolerance Inspections for Repairs and Alterations") Appendix 2, Definition (S), states:
"Repair Evaluation Guidelines (REGs) provide a process to establish DTI for repairs that affect Fatigue Critical Structure."

JUSTIFICATION:
The EASA REG is a more complex process than required by the FAA. Non-harmonised elements will require revised compliance findings that may not provide additional safety benefits.
Example 1: There are differences in airplane survey requirements in that they do not specifically exclude non-reinforcing repairs from consideration as the FAA AC 120-93 page 25 does.
-- AMC 20-20, para. 3.13.2, pg. 158:

This typically excludes maintenance actions such as blend-outs, plug rivets, trim-outs, etc.,

unless there are known specific risks associated with these actions in specific locations.
-- FAA AC 120-93, Section 218:

This typically excludes maintenance actions such as blend-outs, plug rivets, trim-outs, etc.

Example 2: There is lack of clarity in the NPA concerning the definition of the term adjacent structure, which is not included in either FAA requirements or guidance. The term is not clearly defined, but is used 30 times throughout the document.
-- AMC 20-20, Amdt 1, pg.101:

Repair Evaluation Guidelines (REG) are intended to assure the continued structural integrity of all relevant repaired and adjacent structure, based on damage tolerance principles, consistent with the safety level provided by the SSID or ALS as applied to the baseline structure. To achieve this, the REG should be developed by the TCH and implemented by the operator to ensure that an evaluation is performed of all repairs to structure that is susceptible to fatigue cracking and could contribute to a catastrophic failure.

Example 3: EASA Draft Opinion 26.370 (a)(3) requires the operator to adopt the TCH/EASA approved REG as the only available means to comply; whereas, the FAA approved REG is presented as a means to comply.
This will require TCH's to significantly revise the REG to provide guidance for possible appropriate deviations to the current text. The EASA REG should be harmonised with the FAA AASR requirement.

response

Partially accepted: The REG definition has been revised.

Example 1: Non-reinforcing repairs are not specifically excluded by either an FAA requirement or by an EASA proposal. Conversely EASA is not requiring non-reinforcing repairs to be systematically considered.

Adjacent structure definition: in general the REG is addressing only reinforcing repairs. Such repairs may influence a loading and stress distribution in structure adjacent to repair, ie. not directly under the reinforcing elements of the repair. Relevant adjacent structure is therefore structure whose fatigue and damage tolerance behaviour and justification is altered by the repair. (see revised Chapter 9 in AMC 20-20)
See also other comments: 293, 556, 459, 623.

Example 3: Accepted. The rule has been revised to allow greater flexibility for operators.

comment

618 comment by: *Boeing*

GENERAL COMMENT

ISSUE:

	EASA has stated they will require all relevant documents to be updated to reflect EASA rule standards. However, they have not stated how that might be accomplished. **REQUESTED CHANGE:** Where regulations are essentially the same, publish (in the preamble or some other public document) EASA's acceptance of existing FAA-approved compliance data. **JUSTIFICATION:** EASA does not require a compliance plan. For regulations requiring approval or submission of data, please specify how the data will be submitted and to whom it should be submitted.
response	Noted. The rule has been revised to introduce a compliance plan. The use of the already FAA approved data will be assessed and discussed as part of the compliance plan submission. EASA may also produce a certification memorandum to clarify the acceptability of the FAA data.

comment	*619* comment by: *Poonam Richardet* Attachment #4 Please See comments from Cessna Aircraft Company on the following NPA: NPA-2013-07 "Ageing aircraft structures" Thank you. **Poonam Richardet** **Analyst Engrg Procedures** **Regulatory Affairs/Dept.-381** **Cessna Aircraft Company** **316-517-5395 (office)** **316-218-8638 (cell)**
response	Partially accepted. 1. Accepted. 26.300 c and d are now linked. 2. Noted. 26.300 (f) has been revised to allow more flexibility for the TCH to comply. 3. Noted. 26.300(b) has been revised., ii not accepted. No clear reasoning is provided why CPCP development need longer time to accomplishment (Corrosion aspects are usually already covered in the maintenance manuals/SID). iii rule is re-written allowing for flexibility in compliance demonstration. No need to acepte an extended compliance time. iv rule has been re-written. 4. Future repairs could also address non-reinforcing repairs as in accordance to Part 21, Subpart M an unrepaired damage needs to be evaluated for its airworthiness consequences which does not necessarily exclude the need to perform a DTE. 5. Partially accepted: It is the intend to make use of Part 21 privileges when possible. (21.A.433 refers). For US organizations acceptance of data depends on what is covered under the bilateral agreement. 6. Partially accepted. Some data would require direct approval by the Agency (FCBS), other data may be approved under the provisions of Part-21.

7. Noted.

comment *632* comment by: *Scott Fitzgerald Jetstar Airways*

As a developer of Maintenance programs for Airbus and Boeing aircraft, the coverage and control of ALS and AWL items by OEM are in some cases lack detail, this causes the operator to accomplish additional work just to maintain the PSE with in their Maintenance Program frame work.
For example:
The PSEs for the 787, include items such as fittings, these items can be removed from aircraft to aircraft when damaged. However these items are not listed in any delivery documentation nor tracked by part number or serial number, yet the operator has to treat PSE items with a definitive life. Thus the operator has to treat each PSE was a life limited component, allocate a part number an serial number, to effectively track the item.
If the manufacture has not provided a part number or serial number, it is then up-to the operator to “invent” a process of control, including creating a serial number.
Even if the operator accomplished this control process, this can still be “undone" by an engineer removing the part and not knowing that the part is serialised “electronically” and certifying that the part does not have a serial number. Thus the operator is at risk of overflying a PSE without knowing that the part has been moved.
PSE numbering is a version of the ATA, thus the OEM has created a situation where multiple PSEs are allocated the same ATA number. It is again, up-to the operator to control each of these locations. Thus the operator has to “invent” individual task numbers to control each individual PSE listed under the one ATA by the OEM.
In the case of the 787, the only way for Jetstar to identify the original PSE was by OEM description of the task required.
Below is how Jetstar has controlled some PSEs for 53-11-01.

PSE-53-11-01X01	AWL PSE-53-11-01	Skin/Stringer/Frame Assembly Forward of BS 232.5 Inner Splice Strap at Mid AB Post / Upr AB Post Joint (BS 182.0, BL 0.0, WL 277)
PSE-53-11-01X02	AWL PSE-53-11-01	Skin/Stringer/Frame Assembly Forward of BS 232.5 Outer Splice Strap at Upr CD Post / CD Post Extension Joint (BS 192, LBL 29, WL 280)
PSE-53-11-01X03	AWL PSE-53-11-01	Skin/Stringer/Frame Assembly Forward of BS 232.5 Outer Splice Strap at QF Sill / FH1 Sill Extension Joint (BS 193, LBL 67, WL 233)

PSEs with part number effectivity, both Airbus and Boeing release aircraft from production that have part numbers that are not listed in the ALS or AWL document due to them being of a higher mod status, but the life has not been established by the OEM, and the ALS or AWL document is out of date. Thus again the operator has to confirm with the OEM the life and that the part number is valid.
Thus I am concerned that the current control of PSEs is not stringent enough and incorporating this into EASA rule will enable OEMs to further place the control burden, onto the operators.
I would be happy with the rule change provided:

1. 1. All PSEs have an individual identifier, in the ALS or AWL.
2. 2. The OEM identifies by part number and serial number each individual PSE that

can be removed from one aircraft and installed on another aircraft, thus identified in the ALS and AWL, and in the Aircraft Inspection Report, Airplane Readyness log or as applicable OEM documentation.

3. 3. If the PSE is part number related, the OEM has the part number listed in the IPC or IPD as applicable.
4. 4. The OEM has a mechanism in place for the operator to receive notification of a TR to an ALS or AWL document that relates to a PSE in which the part number has been changed or dash numbers added,**prior to** the operator receiving the aircraft.

response

Noted:
26.300(g) has been revised to remove the requirement to have PSEs identified for the purpose of this rule.

The current method of having a FCBS/FCMS list (which could make reference to other ICA documents for better identification if needed) and the link to Part-M through 26.370 is considered adequate for the purpose of identification of structure for which compliance to Part-26 needs to be shown.

comment

643 comment by: *AEA*

The Regulatory Impact Assessment does not provide a cost versus safety benefit analysis for the affected industry sectors. The RIA is especially deficient in addressing the impact and costs to operators.
Due to the lack of harmonisation with US rules, EU operators will be exposed to increased operator costs associated with additional repair recording and control requirements (especially on removable structural components): reduced residual value of aircraft and certain components (and affects of the write-down on company balance sheets): Damage tolerance/widespread Fatigue damage development costs passed on by DAH's (both existing and future certain repairs and changes – increased data requirements over US operators); transfer and import of aeroplanes: potentially increased aircraft lease and finance costs; where the responsible DAH is unable to provide the data or no longer exists: operator procedural and maintenance programme changes etc
Operators with Part 21 approval and/or inherited DAH responsibilities who will be exposed to additional costs as a result of the proposed rule are not accounted for. This would include inherited, major changes and repairs developed pre EASA, to aeroplane models certified after 01 January 1958. Inherited responsibilities are transferred when an airline purchases another airline that included a DAH.

response

Noted:
After the publication of the NPA significant harmonisation efforts have been achieved and are introduced in the amended Part-26 regulation.

comment	*644* comment by: *AEA* The AEA urges EASA to reconsider its rulemaking on ageing aircraft. Whereas new rules for ageing aircraft are needed, we believe it is inappropriate and fundamentally flawed for EASA to reinvent the wheel and introduce requirements which are not harmonised with the existing FAA requirements. This will lead to additional complexity and costs which as such is not in line with the intentions from the new EASA Executive Director and EASA Management Board regarding the need to simply EASA rules based on clear safety needs.
response	Noted. EASA is reconsidering the proposed rule which will be discussed during the rulemaking group activity. Significant harmonisation efforts have been achieved and are introduced in the revised Part-26 regulation.

comment	*664* comment by: *AEA* Some further detailed comments have been submitted by individual AEA members. AEA urges EASA to adress those comments as well in addittion to the comments submitted through AEA.
response	Noted.

Notice of Proposed Amendment (NPA) 2013-07 — Genenal comments	p. 1-3

comment	*31* comment by: *easyJet* EZY would like to make the following comment regarding compliance timescales: Please provide details as to when amendments to Part 21, Part 26, CS-25, AMC 20-20 and AMC to Part M will be issued.
response	Noted. The ED Decision will be issued after the EASA Opinion on Part-26 and Part-21 are adopted. It is estimated that the EASA Opinion will be issued in 2016/Q2.

comment	*300* comment by: *Dassault Aviation* **DASSAULT-AVIATION general comments** o The text is very long and complex. Can-it be simplified in order to synthesize its contents and improve its understanding? o Why not stay as much as possible near the FAA texts of FAR 26, FAR 25, AC 25.571D and AAWG report for harmonization purpose? o The only way to reach the two previous aims is to reopen the corresponding WG (as recommended in the common letter reminded below) and to enlarge it foreign countries. To be noticed that in fact on the DASSAULT-AVIATION side only Maintenance people participate to the initial WG. o Those comments are in supplement and complement to DASSAULT-AVIATION ones

made in a common letter formulated in conjunction with BOEING, AIRBUS and EMBRAER.
Major Comments concern:
o The proposition to add a criteria of exclusion in Appendix II.
o The detrimental deformation associated with residual strength loads;
o The DDPs outside the PSEs;
o The request to verify the in service aeroplane usage conforms with its theoretical missions;
o The consideration of crash for PSE selection;
o The request to have to demonstrate the Ultimate load strength after the fatigue one;
o The promotion of the successful application of residual strength loads at the end of fatigue test as a means to demonstrate the absence of WFD (avoiding the teardown);
o The fact to have to demonstrate the engine burst residual strength with a fatigue damaged structure.
o The proposition to add the aeroplane age as an element of the LoV definition.
Detailed comments are filed in each items

response

Noted:
See the responses to the detailed comment from Dassault filed on each item.

comment

386 comment by: *FAA*

General comment - clarification. The document refers to the ALS (airworthiness limitation sections) as either “the ALS” or “the ALS of the instructions for continued airworthiness (ICA).” Although it is generally understood that it is the ALS of the ICA, EASA should review the NPA for consistent terminology.
Suggested Resolution:
Make references consistent throughout document.

response

Partially accepted.
ALS will be used in Part-26. In CS-25, for consistency with other paragraphs, it is preferrd to keep ALS of the ICA.

comment

450 comment by: *Thomson Airways*

Propose EASA harmonise this NPA with the FAA rule as much as possible, to minimize additional costs, maintaining existing bi-lateral US / EU repair acceptance and allow for continued US / EU airplane transfers.

response

Noted.

comment

456 comment by: *Aerospace Industries Association*

The proposed text states:
The rule does not establish what FAA approved data will be acceptable
Requested Change:
Provide clarification as to whether previous compliance with FAA’s 14 CFR 26.21, 26.43, 26.45 and 26.47 will satisfy compliance with the EASA rule or if additional data will be

required to comply with EASA Requirements.
Justification:
14 CFR 26 has been in existence for a number of years and compliance plans have been put in place. The proposed requirements in the NPA would add the need for redundant compliance findings for those applicants who products have already complied with the Part 26 requirements. This would place a significant burden to the industry with no additional improvement in the safety of the fleet.
It is important to understand the level to which EASA will require evaluation and acceptance of FAA approved data.

response

Partially accepted.
The rule has been amended to introduce a compliance plan. The use of the already FAA approved data will be assessed and discussed as part of the compliance plan submission.

comment

645 comment by: *AEA*

Major concerns from the Association of European Airlines (AEA):
Regulatory Impact Assessment (RIA)
The RIA type is categorised as 'Light'. This is inappropriate when considering the serious impact it will have on industry and a more detailed analysis should have been conducted. The RIA does not contain any costs and does not reflect the financial impact on operators and industry in general. Many operators are also Design Approval Holder's (DAH). These operators have not been discussed or considered. Many non-harmonised aspects have not been highlighted or financially quantified. The RIA details numerous industry events. These are misleading as most were attributed to non-compliance issues, maintenance errors and lack of industry oversight. The proposed rule would not address these.
Damage Tolerance Assessment of Major Changes & Repairs to Major Changes
The DAH/Part 21 DOA will be required to assess all major changes made to aeroplanes certified from 1958. EASA indicate this will include inherited organisations (the rule does not state this). These changes met the National Airworthiness Authority (NAA) approved requirements that prevailed at the time. The Major definition was not previously consistently applied by the NAA's. Some NAA's used it based on time required to review rather than airworthiness implications. It is unclear what changes are affected. The FAA limited the assessment to major changes in support of CFR121, 129 operators. They also produced a list of Supplemental Type Certificate's (STC) that may need assessment and contacted the Supplemental Type Certificate Holder's (STCH) individually. EASA has not provided a list nor clearly defined Major change. The proposed rule significantly increases (compared to the FAA) the requirement scope.
Excluded Aeroplanes
The requirement to assess all major changes back to 1958 introduces a significant burden. In many cases there is no safety benefit. As currently worded, the rule will require DAH's to assess Major changes on models even if there is no current EASA/EU type certificate (Basic regulation EC 216/2008 requires a current Type Certificate (TC)). Part 21 requires the demonstration of compliance to the aircraft TC, so it is unclear how a Part 21 DOA could meet the requirement if there is no current TC. Also, as the rule is to support Part M operator compliance it should limited to modified aircraft in Part M operation. Non-Part

M operators would not be required to adopt the revised Damage Tolerance Inspections. Aeroplanes transferred into Part M would be addressed at the bridging phase (as is the case for other requirements).

Widespread Fatigue Damage (WFD) assessment of repairs/changes, existing & future.

The requirement is not harmonised with the FAA and will introduce a serious burden on EU operators. It will be extremely costly and few DAH's are able to perform WFD assessments (outside the TCH). The requirement is contrary to the intent of the EU-US bilateral arrangements on the mutual acceptance of design data. It will become much more difficult for Operators to transfer aeroplanes & certain components, meet lease agreements and procure design. The requirement is likely to severely restrict or prevent operators purchasing non-EU approved STC's. Operators of certain aircraft models where a relatively low Limit of Validity (LoV) has been published in support of the FAA rule will be especially affected. This could have a dramatically adverse affect on asset values.

EU/US Bilateral agreement

The rule appears to fundamentally undermine the principles and agreements contained in the bilateral agreement. The proposed rule appears to contradict the bilateral agreement and associated Technical Implementation Procedures.

Definitions

Certain definitions used in the Notice of Proposed Amendment (NPA) are not harmonised with the FAA/industry definitions. As such, the rule will introduce further complexities, ambiguities and costs for industry. Examples include the more onerous Principal Structural Element (PSE) and LOV definitions. Also, some definitions are not consistent within the NPA. The corrosion level 1 definition differs from the industry accepted Maintenance Steering Group (MSG) 3 definition.

Changes to Part M Acceptable Means of Compliance (AMC)

The proposed changes require the operator to incorporate certain service bulletins into the maintenance programme. This is not required, as under Part M operators are already obliged to adopt Airworthiness Directive's (AD) service bulletins.

Recognition of existing industry practices

The proposed rule does not recognise or provide guidance on established industry arrangements. One major Type Certificate Holder (TCH) uses 18 month for stage 1 static repair approval (proposed rule requires 12 months subject to a Damage Tolerance evaluation). It is also unclear whether EASA will accept the TCH's Repair Design Record (RDR) documents.

Repair Evaluation Guidelines (REG) incorporation

Proposed 26.370 mandates the operator to incorporate the REG in its entirety. This is un-harmonised with the FAA. The REG was intended as a means of compliance but not the only means. The requirement should be to ensure the operator has a maintenance programme containing procedures and practices to ensure applicable repairs are assessed for Damage Tolerance.

response

Noted.

For responses to each subject see the repsonses to equivalent comments from other parties. Significant efforts following the publication of the NPA have been made to harmonise the rule with the FAA requirements.

comment	*670* comment by: *USAA* The EASA NPA does not establish what FAA approved data will be acceptable for aircraft operated by US operators. US operators have been complying with FAA requirements since 2008. If EASA does not recognize or allow for FAA equivalent findings for repairs and alterations accomplished by US operators, the component parts and airframes could be deemed unacceptable to EU operators which could translate to significant or adverse cosy impacts to US operators.
response	Noted. If the aircraft is operated by US operator, 26.370 is not applicable. The rules have been significantly harmonised since the NPA was published. For a US operated aircraft that is to be imported into the EU, it is expected that evidence of compliance with 14 CFR Part 26 for a repair or design change, will be sufficient evidence for compliance with the corresponding paragraphs of EASA Part-26.

A. Explanatory Note — I. General; II. Consultation; III. Comment-Response Document (CRD) p. 4-5

comment	*26* comment by: *Learjet* Attachment #5 Learjet Inc. Exclusion request
response	Partially accepted. 26.300(b) has been updated. 26.300(f) has been re-drafted to allow for more flexibility. For excluded aircraft, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

comment	*36* comment by: *(Bombardier Aerospace) Short Bros PLC* With reference to Explanatory Note II 10. - Short Brothers PLC is submitting a request for exemption for specific SD3 aircraft types, request and justification submitted against "B. Draft Opinion(s) and/or Decision(s) — II. Draft Opinion Part-26" See Comment 37 and referenced attached document mm1809.pdf.
response	Noted: Some of the requests may be solved by the amended rule.

comment	*107* comment by: *AIRBUS* Comment related to page 4, chapter II Consultation, paragraph 10 Airbus submit a proposal for aircraft type or model to be excluded, in section C Appendix II: Excluded aeroplanes (comment 175) , complying with the proposed exclusion criteria, and additional criteria of exclusion, based on the **note section A page 21(see comment**

185)
Quote
In addition to the above proposed exemption criteria, EASA may take into account the number of the aircraft subject to the rule, the type of operation and their likely remaining service life.
Unquote

response

Noted.
The type of operation has been taken into account. This has allowed some of the requests to be accepted.

A. Explanatory Note — IV. Background p. 5-11

comment

17 comment by: *JAL Structural Eingineering*

1. - FAR requests WFD evaluation only for baseline structure and not include repair. This difference between EASA and FAA affect extended LOV significantly for aircraft operated under EASA rule. Under EASA rule, extended LOV can be applied for aircraft type, but under EASA rule, individual aircraft. JAL believes that evaluation of repair is covered by RAP, AASR.
2. -CPCP in FAR is per MRBR process and sometimes per AD. Under EASA rule, baseline CPCP are EASA approved. It is not clear FAA process is also acceptable means for EASA rule.
3. -STC evaluation is not required in FAA, but EASA requests evaluation for extended LOV, this difference cause problem when aircraft operated under FAA rule is transferred to the operator under EASA rule.
4. -EASA rule requests TCH to develop specific elements of a Continuing Airworthiness (CAW) program to prevent unsafe cracking, including monitoring of fleet usage and comparison to certification assumptions and assessment of the need for mandatory changes. JAL assumes that structural inspection program in MPD is acceptable means. Meaning of “monitoring of fleet usage” is not clear how different from existing reliability monitoring of every operator.

response

Partially accepted.

1. 26.350 has been harmonised with the FAA after NPA publication. However the LOV extension is a major change and needs to be approved in accordance with Part-21.
2. See AMC 20-20 for CPCP approval processes.
3. See response to 1.
4. 26.300(f) has been reworded to focus more on the process to be followed rather than being being prescriptive in terms of what data should be analysed.

comment

43 comment by: *AIR FRANCE*

	Differences between FAA and EASA rules could lead to cost effect in case of aircraft transfer. FAA rules seems to bring suffisant level of safety. In order to minimize costs is requested to harmonise all differences between the FAA and the EASA proposed requirements.
response	Partially accepted. The text has been revised to further increase the harmonisation with the FAA.

comment	*86* comment by: *AIRBUS* **COMMENT IS RELATED TO:** page 6, Background, paragraph 14 LOV **PROPOSED TEXT / COMMENT:** it is proposed to modify the following paragraph to read: LoV is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that WFD is unlikely to occur in the aircraft structure; ~~and that the inspections and other maintenance actions and procedures resulting from this demonstration and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aircraft structure. The LoV terminology is usually used in the context of 'Limit of validity of engineering data that supports the structural maintenance programme'. The term 'structural maintenance programme' refers to the structure's part/section of the maintenance programme.~~ **RATIONALE / REASON / JUSTIFICATION:** Harmonisation the definition with the FAR 26A and unique definition The AC 25-571-1D is not applicable to FAR 26 A/C. This is then a definite difference between FAR 26 and Part/CS 26.
response	Partially accepted. Agreed to remove only '… and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aircraft structure'. Further more the LOV definition has been harmonised with the FAA.

comment	*87* comment by: *AIRBUS* **COMMENT IS RELATED TO:** page 6, 8, 9 Background, LOV **PROPOSED TEXT / COMMENT:** It is proposed to modify the paragraph to read: Supporting the LoV extension: To extend the LoV of an individual aircraft maintenance programme, the operator needs to ensure ~~all repairs and modifications have DTI and other applicable maintenance actions based upon a fatigue and damage tolerance evaluation that includes consideration of WFD up to the extended LoV~~. This is achieved by engaging the support of existing design approval holders or applicants to provide this additional approved data as necessary. DAHs supporting the LoV extension have to demonstrate compliance with Part 26.350(b). **RATIONALE / REASON / JUSTIFICATION:**

	For harmonisation with FAR 26A, repairs and modifications shall not be considered in LOV extension
response	Partially agreed. See amended 26.350 which is harmonised with the FAA and requires approval under Part-21.

comment	*90* comment by: *KLM Engineering & Maintenance* Differences between EASA and FAA rule: Due to the differences with the existing FAA aging aircraft rules, operators under EASA Part M will have increased operator costs, for example when transferring and importing airplanes from the European register to and from the US register, potential airplane lease and finance costs, additional repair recording and control requirements (especially for removable structural components), reduced residual value of airplanes and certain structural components, additional costs for Damage Tolerance and Wide Spread Fatigue evaluations passed on by Design Approval Holders. Compliance with the FAA aging aircraft rules will provide an acceptable level of safety. The additional requirements in the proposed EASA rule will not result in a significant improvement of the level of safety. The differences between the rules lead to unnecessary and avoidable impact for the operators. In order to minimize costs for all stake holders, EASA is requested to harmonise all differences between the FAA rule and the EASA proposed rule.
response	Partially accepted. The revised EASA Part-26, following the NPA publication, is better harmonised with the FAA rule. Regarding removable components AMC 20-20 Chapter 10(a) provides more clarification saying: *'Note:* The LoV applies to aeroplanes, not to individual parts. Should there be any concerns about the service life of a removable component containing FCS or PSEs, an ALS limitation or SMP can be mandated on that specific component, which would then need to be tracked. This practice is in fact no different then what should be done today having ALI on removable components.' EASA and FAA requirements are harmonised on this subject.

comment	*301* comment by: *Dassault Aviation* § IV. 19.: RSTCH to be defined.
response	Not accepted. RSTCH is not identified in Part-21.

comment	*302* comment by: *Dassault Aviation* §IV. 20.:

· **TCHs/Applicants for TC:**

_ *"… establish a process that ensures that unsafe levels of fatigue cracking will be precluded in service and identify fatigue-critical structure.*" The identification of fatigue-critical structure has to be made before establishing a process to ensure that unsafe levels of fatigue cracking will be precluded in service. So DASSAULT-AVIATION suggest to invert the terms of the sentence to restore the logic that unsafe fatigue cracking, if happening, will occur on FCS. Furthermore, unsafe levels of fatigue cracking are mainly linked to WFD so why not address it? Then rewrite as: "… identify fatigue-critical structure e.g. WFD and *establish a process that ensures that unsafe levels of fatigue cracking will be precluded in service* in those areas."

_ "*For large aeroplanes with an MTOW above 34 019 kg (75 000 lbs), must establish an LoV and include it in the ALS, develop maintenance actions that support the LoV, and perform WFD evaluation of all future type design changes.*" The maintenance actions supporting the LoV are linked to WFD. So the end of the sentence "… *and perform WFD of all future type design changes."* has to be enlarged to existing design. So DASSAULT-AVIATION propose to clarify writing as: "*For large aeroplanes with an MTOW above 34 019 kg (75 000 lbs)* existing design and for their all future type design changes, must perform WFD evaluation, establish an LoV, develop maintenance actions that support the LoV and include them in the ALS."

_ "*Must provide operators with sufficient data to ensure the continued safe operation of ageing aircraft in a standardised manner.*" To define what "sufficient" means i.e. giving the LoV (if defined), DTI, WFD zones inspection time and location. So the proposed writing is: "*Must provide operators with sufficient data* i.e. LoV (if defined), DTI, WFD zones inspection time and location *to ensure the continued safe operation of ageing aircraft in a standardised manner.*"

_ "*If applying for future repairs and changes, must perform a DTE, develop a DTI and submit it for Agency approval."* Why not limit the submission to EASA for the ones not covered by DOA? The modified text would be: "*If applying for future repairs and changes, must perform a DTE, develop a DTI and submit it for Agency approval*, for the ones not covered by DOA."

· **STCHs(or equivalent)**

_ "*For large aeroplanes with a maximum capacity of 30 passengers or more, or a payload of 3401,9 kg (7 500 lbs) or more, must review changes and published repairs and perform DTE and develop DTI for changes and published repairs affecting FCS."* For clarity please precise that it concerns existing changes or use the term "published" as for repairs, so DASSAULT-AVIATION proposed writing is: "*For large aeroplanes with a maximum capacity of 30 passengers or more, or a payload of 3401,9 kg (7 500 lbs) or more, must review published changes and repairs and perform DTE and develop DTI for* published changes and repairs affecting FCS."

· **STC/applicants for approval of a design change or repair:**

_ "*Will have to perform a DTE of future repairs and changes and develop inspections and any other necessary procedures to preclude fatigue failure."* That last part of the sentence means that finally WFD will have to be studied and an LoV defined. So why not to write it as: "*Will have to perform a DTE of future repairs and changes and develop* associated DTI *and any other necessary procedures to preclude fatigue failure*, as determining an LoV to avoid WFD."

response

Noted.
The rule takes precedence over the preamble, however some re-wording has been considered following an amendment to Part-26 after the NPA was published.

comment

303 comment by: *Dassault Aviation*

§IV. 20.:
· **What are the differences between EASA and FAA approaches?:**
_ Why not work so that to eliminate or reduce at a maximum the differences?

response

Noted.
Following the publication of the NPA the amended Part-26 is harmonised as much as possible with the FAA rule.

comment

370 comment by: *FAA*

Definition of limit of validity (LOV) is not harmonised with FAA's definition. The EASA term is broader in scope and includes "other elements of the fatigue and damage tolerance evaluation" in it.
The un-harmonised definition occurs throughout the NPA. (e.g., see pages 45 and 47 of AMC 25.571 and page 93 of AMC 20-20).
This is also reflected in rule requirements as well, which may result in an increase in the amount of documentation needed to show compliance.
For the FAA, the requirement to establish an LOV is the last element of a series of initiatives meant to ensure the continued airworthiness of aging airplane structure. As a result, the part 26 rule was designed to address widespread fatigue damage and establishing an LOV. Our intent, as stated in the FAA's NPRM and final rule, was to ensure that large transport category airplanes not be operated beyond some point in time measured in flight cycles and/or flight hours. Just as the structural fatigue characteristics of airplanes are understood only up to a point consistent with analyses performed, testing accomplished, and in service experience gained, the engineering data used to develop inspections and modifications to preclude WFD is valid only to a certain point.
The LOV, in effect, is the operational life of the airplane consistent with evaluations accomplished and maintenance actions established to prevent WFD. Although the LOV is required to be established based on WFD considerations, it is intended that all maintenance actions required to address fatigue, corrosion, and accidental damage up to the LOV are identified in the structural-maintenance program (reference AC 25.571-1D).
Suggested Resolution:
Harmonise definition with FAA's.
Limit of validity (of the engineering data that supports the structural maintenance program)—The period of time (in flight cycles, flight hours, or both), up to which it has been demonstrated by test evidence, analysis and, if available, service experience and teardown inspection results of high-time airplanes, that widespread fatigue damage will not occur in the airplane structure.

response

Accepted.
The LOV definition is harmonised with the FAA LOV definition.

comment	*371* comment by: *FAA* Extended LOV. The NPA would require all repairs and modifications be evaluated for WFD up to the extended LOV. This requirement will be difficult to implement because of the number of repairs, alterations, and modifications (RAMs) on each airplane that might exist and the potential to have multiple RAMs that vary from airplane to airplane. The review and approval of each RAM may be administratively difficult for EASA to do. Although the FAA's notice of proposed rulemaking (NPRM) proposed the evaluation of certain repairs, alterations, and modifications of the baseline structure of the airplane, we issued a final rule that removed those proposed requirements. This included removing requirements for type certificate holders to develop WFD guidelines for any person to use in evaluating repairs and alterations for WFD. Industry stated that the means proposed for extending an LOV, which included the evaluation of all repairs and alterations, was administratively difficult, impractical, and technically unachievable. Commenters further added that extending an LOV would need to be done by addressing each individual airplane, identified by tail number, whereas the maintenance actions which support the initial LOV are based on statistics pertaining to behaviour of the entire fleet of a particular model. See the FAA's final rule for further explanation on why the FAA removed requirements for evaluating certain repairs and alterations for WFD. In addition, the FAA conducted a review of over 150 airplanes and 2100 RAMs that were sampled from the existing fleet and retired airplanes. The review included a teardown inspection of some RAMs. The FAA did not find evidence of MSD or MED in those RAMs surveyed. The results of this review confirm the FAA's position that including specific requirements to address all repairs and alterations for LOV extensions is not justified. Suggested Resolution: Change the extended LOV requirements to align with the FAA's rule. The table (pages 10 and 11 of the NPA) that describes the differences between EASA and FAA approaches will need to be revised if final rule is revised to be harmonised with the FAA's.
response	Accepted. 26.350 has been amended to be harmonised with the FAA. The LOV extension will need to be approved as a major change/STC in accordance with Part-21.

comment	*372* comment by: *FAA* Extended LOV. The NPA would require all repairs and modifications be evaluated for WFD up to the extended LOV. This requirement will be difficult to implement because of the number of repairs, alterations, and modifications (RAMs) on each airplane that might exist and the potential to have multiple RAMs that vary from airplane to airplane. The review and approval of each RAM may be administratively difficult for EASA to do. Although the FAA's notice of proposed rulemaking (NPRM) proposed the evaluation of certain repairs, alterations, and modifications of the baseline structure of the airplane, we issued a final rule that removed those proposed requirements. This included removing requirements for type certificate holders to develop WFD guidelines for any person to use

	in evaluating repairs and alterations for WFD. Industry stated that the means proposed for extending an LOV, which included the evaluation of all repairs and alterations, was administratively difficult, impractical, and technically unachievable. Commenters further added that extending an LOV would need to be done by addressing each individual airplane, identified by tail number, whereas the maintenance actions which support the initial LOV are based on statistics pertaining to behaviour of the entire fleet of a particular model. See the FAA's final rule for further explanation on why the FAA removed requirements for evaluating certain repairs and alterations for WFD. In addition, the FAA conducted a review of over 150 airplanes and 2100 RAMs that were sampled from the existing fleet and retired airplanes. The review included a teardown inspection of some RAMs. The FAA did not find evidence of MSD or MED in those RAMs surveyed. The results of this review confirm the FAA's position that including specific requirements to address all repairs and alterations for LOV extensions is not justified. Suggested Resolution: Change the extended LOV requirements to align with the FAA's rule. The table (pages 10 and 11 of the NPA) that describes the differences between EASA and FAA approaches will need to be revised if final rule is revised to be harmonised with the FAA's.
response	Accepted. See response to comment 371.

comment	*373* comment by: *FAA* MA 302 (g) requires a periodic review of the airplane model fleet to ensure the continued airworthiness of airplanes. The FAA has existing regulations that require design approval holders (DAH) to report findings in the fleet. The FAA may require further action of the DAH to address any unsafe conditions that may have been found. FAA Order 8110.107A, Monitor Safety/Analyze Data – Document, describes a process to analyse continued operational safety data and monitor safety in aircraft fleets. The process is designed to filter, review, analyse and trend aviation safety data. The process is used to identify safety issues in the in-service aircraft fleets, and identify corrective actions to mitigate safety risks across the fleet. The FAA's expectation is that certificate holders will work with the FAA to facilitate integrated processes to assess the continued operational safety of aircraft fleets. Suggested Resolution: Delete the requirement. The FAA believes that the requirements and guidance in existing regulations and guidance materials are available to address the continued airworthiness of airplane fleets.
response	Noted. MA.302(g) requires operators to review DAH maintenance instructions and revise the maintenance program as applicable and this has not been affected by this NPA. The process referred in the comment is not specific to structural issues and relates to actions the Authority would take not directly to the actions expected from the TCH.

comment	*374* comment by: *FAA* Table does not include a number 8 (skips it). Suggested Resolution: Renumber the table accordingly
response	Noted.

comment	*375* comment by: *FAA* EASA does not require a compliance plan. This element is not harmonised with FAA's rules as identified in the table. Although Part 21 and Part 26 define the requirements, a compliance plan provides a means for NAA and design approval holder to agree upon a method of compliance to those requirements, especially if a design approval holder's methods deviate from that described in AMC 25.571 or AMC 20-20. Suggested Resolution: Harmonise with the FAA's rules.
response	Accepted. A compliance plan was introduced in the amended Part 26.

comment	*403* comment by: *FAA* *3.3. Identifying Fatigue-Critical Baseline Structure* The description of FCBS is not accurate. The use of "and" between the words "cracking" and "which" creates two separate conditions. Suggested Resolution: Change wording to read: "TC holders should identify and make available to operators a list of baseline structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure. Note: it is correctly written a couple sentences later.
response	Accepted. The wording has been adjusted in Appendix 3 of AMC 20-20.

comment	*439* comment by: *Transavia* Comment summary: Differences between EASA and FAA rule: Due to the differences with the existing FAA aging aircraft rules, operators under EASA Part M will have increased operator costs, for example when transferring and importing airplanes from the European register to and from the US register, potential airplane lease and finance costs, additional repair recording and control requirements (especially for

removable structural components), reduced residual value of airplanes and certain structural components, additional costs for Damage Tolerance and Wide Spread Fatigue evaluations passed on by Design Approval Holders.
Compliance with the FAA aging aircraft rules will provide an acceptable level of safety. The additional requirements in the proposed EASA rule will not result in a significant improvement of the level of safety.
The differences between the rules lead to unnecessary and avoidable impact for the operators.
suggested resolution:
In order to minimize costs for all stake holders, EASA is requested to harmonise all differences between the FAA rule and the EASA proposed rule.

response

Partially accepted.
See also comment 90.

comment

458 comment by: *Aerospace Industries Association*

The proposed text states:
LoV is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that WFD is unlikely to occur in the aircraft structure; and that the inspections and other maintenance actions and procedures resulting from this demonstration and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aircraft structure. The LoV terminology is usually used in the context of 'Limit of validity of engineering data that supports the structural maintenance programme'. The term 'structural maintenance programme' refers to the structure's part/section of the maintenance programme.
Requested Change:
Harmonise EASA definition of LoV with FAA definition, or explain the reasoning for the deviation.
FAA 14 CFR 26, Subpart C
Establish a limit of validity of the engineering data that supports the structural maintenance program (hereafter referred to as LoV) that corresponds 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 airplane. This demonstration must include an evaluation of airplane structural configurations and be supported by test evidence and analysis at a minimum and, if available, service experience, or service experience and teardown inspection results, of high-time airplanes of similar structural design, accounting for differences in operating conditions and procedures. The airplane structural configurations to be evaluated include:
(i) All model variations and derivatives approved under the type certificate; and
(ii) All structural modifications to and replacements for the airplane structural configurations specified in paragraph (b) (1) (i) of this section, mandated by airworthiness directives as of January 14, 2011.
Justification:
The EASA proposed text could be interpreted to apply LoV at the part/component level

rather than airplane level. The FAA clearly stated in the preamble to 14 CFR 26.21 that "The LoV is an airplane-level number. The FAA does not anticipate that rotable parts will be identified by design approval holders as structure susceptible to WFD." This difference in definition could result in early retirement of parts not susceptible to WFD, if total usage is not known. It poses a potential risk for inappropriately grounding fleets due to inadequate quantity of spare parts with documented usage. This will place a significant burden on the industry with no additional improvement in the safety of the fleet.
In addition, the LoV definition establishes a redundant requirement; DT of non-WFD structure is already required by SSIDs; 26.300(a); 14 CFR 25.571 amendment 45 or CS 25.571 change 7; and to repairs via 14 CFR 26.43 or CS 26.320.

response

Partially accepted.
The LOV definition is harmonised with the FAA rule. Regarding removable components AMC 20-20 Chapter 10(a) provides more clarification saying:
Note: The LOV applies to aeroplanes, not to individual parts. Should there be any concerns about the service life of a removable component containing FCS or PSEs, an ALS limitation or SMP can be mandated on that specific component, which would then need to be tracked.

comment

463 comment by: *Jet Aviation Basel*

STCHs (or equivalent) "... must review changes and published repairs and perform DTE and develop DTI for changes and published repairs affecting FCS".
If the STCH DAH is subject to the EASA regulation, although the EASA STC is for example for an individual serial numbered aircraft for a cabin completions installation, for a non EU operator subject to foreign NAA regulations where the aircraft is not on the EU register, please confirm the obligation of the DAH to conduct the retrospective review in this instance.

response

Partially accepted:
STCH will be relieved of providing DTI if the aircraft is not operated under Part-CAT. 26.330 is amended accordingly.

comment

464 comment by: *S.A. Morshed, Emirates*

Differences between FAA & EASA EASA approaches (Page 10)
EASA is requested to harmonise all differences between the FAA rule and the EASA proposed rule in order to minimize costs and allow a common/unified compliance plan for all stakeholders, especially for operators.

response

Partially accepted.
Harmonisation has been considered in the amended Part-26 based on the comments received after the NPA was published.

comment

493 comment by: *Boeing*

Page: 9

Paragraph: 20 [3rd bullet on page]

The proposed text states:
"For large aeroplanes with a maximum capacity of 30 passengers or more, or a payload of 3401,9 kg (7 500 lbs) or more, must review existing design changes/repairs, develop a REG and perform a DTE and develop a Damage Tolerance Inspection (DTI) for changes/repairs affecting the fatigue-critical baseline structure (FCBS)."
REQUESTED CHANGE:
Reword to say
"For large aeroplanes with a maximum capacity of 30 passengers or more, or a payload of 3401,9 kg (7 500 lbs) or more, must review existing **TCH developed** design changes/repairs, develop a REG and perform a DTE and develop a Damage Tolerance Inspection (DTI) for changes/repairs affecting the fatigue-critical baseline structure (FCBS)."

JUSTIFICATION:
As written in the NPA, the statement implies that the TCH is responsible for all existing design changes/repairs. The statement is unclear, open ended, and far-reaching. The TCH should only have to consider items that have exited their own engineering or quality control system.

response

Not accepted.
TCH is responsible for its own design, therefore the wording should be interpreted as such.

comment

494 comment by: *Boeing*

Page: 9
Paragraph: 20

The proposed text states:
"STCHs (or equivalent). For large aeroplanes with a maximum capacity of 30 passengers or more, or a payload of 3401,9 kg (7 500 lbs) or more, must review changes and published repairs and perform DTE and develop DTI for changes and published repairs affecting FCS."
REQUESTED CHANGE:
"STCHs (or equivalent). For large aeroplanes with a maximum capacity of 30 passengers or more, or a payload of 3401,9 kg (7 500 lbs) or more, must review **existing STCH developed design** changes and published repairs and perform DTE and develop DTI for changes and published repairs affecting FCS."

JUSTIFICATION:
As written in the NPA, this statement implies that the STCH is responsible for all existing design changes/repairs. The statement is unclear, open ended, and far-reaching. The STCH should only have to consider items that have exited their own engineering or quality control system.

response	Not accepted. STCH is responsible for its own design, therefore the wording should be interpreted as such.

comment	*620* comment by: *Scott Fitzgerald Jetstar Airways* Dot point on top of page only list ALS, what about AWLs?
response	Noted. AWLs are within the ALS.

A. Explanatory Note — V. Content of the draft Opinion/Decision p. 12-16

comment	*91* comment by: *AIRBUS* **PROPOSED TEXT / COMMENT:** Airbus does not share the EASA opinion. **RATIONALE / REASON / JUSTIFICATION:** All changes in proposed CS25.571 and AMC updates that are not related to ageing aircraft. They are related to GSHWG proposals, are not in the ToR of the MDM.028WG and should be handled by a separate WG consisting of Authority and Industry F&DT experts. These F&DT experts are a different group of specialist people within Industry as the ones discussing pure ageing aircraft topics. Airbus strongly recommend to discuss these non ageing aircraft updates first in the appropriate forum. These changes should not be presented as “agreed” by MDM.028WG..
response	Not accepted. These changes are not presented as agreed by the MDM.028 rulemaking group. Changes to 25.571 have been further discussed during the rulemaking review meetings.

comment	*304* comment by: *Dassault Aviation* §V. 25.: · *“26.320 Damage Tolerance data for existing repairs, existing changes and existing repairs to changes to Fatigue-Critical Structure — Type Certificate Holders and applicants for Type Certificates.”* DASSAULT-AVIATION understand that it applies to both existing changes and existing repairs concerning FCS only. Is-it correct? Please clarify that sentence. · “*This paragraph supplements 26.300 by ensuring that TCHs evaluate existing changes and published repairs for DT and provide operators with e means to evaluate…”* What is the difference between “published” and “existing”? Typo error “e means”. Please rephrase as: “*This paragraph supplements 26.300 by ensuring that TCHs evaluate existing changes and ~~published~~ repairs for DT and provide operators with a means to evaluate…”*
response	Noted. The commentator is correct. The statement is referring to all the existing changes, existing repairs and existing repairs to changes affecting the FCS.

	Typo ‘e’ should be ‘a’ is accepted. ‘Published repairs’ by definition exist, and are those repairs found in documentation such as SRMs and SBs. They are the subset of existing repairs that the TCH must evaluate for DT. ‘Unpublished repairs’ will be addressed by the REG.
comment	*305* comment by: *Dassault Aviation* §V. 28.: · “*Paragraph 25.571(a)(1)(ii) is now changed to specify those structural elements whose failure would ‘contribute’ rather than ‘cause’ catastrophic loss of the aeroplane.*” DASSAULT-AVIATION do not agree as “contribute” is too vague and even the loss of secondary elements could finally “contribute” to loss of the aeroplane through successive cumulative events. The use of “cause” is clearer. So DASSAULT-AVIATION ask to stay to “those structural elements whose failure would cause catastrophic loss of the aeroplane”. · “*The concession to use lower values of limit load for residual strength assessment…*” To be corrected as residual strength loads are not limit loads but the ones defined in 25.571 (b).
response	Noted. The term ‘contribute’ was agreed by the GSHWG some years ago and is actually only a repetition of the same word used in the first paragraph of 25.571(a) which reflects the true intent of the requirement. Historically ‘cause’ has sometimes been interpreted in a too specific manner resulting in the introduction of the term FCS in recent ageing aircraft structural requirements. Noted. The lower values are for loads not limit loads, as indicated by the commentator.
comment	*306* comment by: *Dassault Aviation* §V. 29.: · “*Guidance for evaluation of Discrete Source Damage (DSD) in paragraph 10 now includes reference to AMC 120-128A…*” Typo error AMC 120-128A to be replaced by AMC 20-128A. · “*It identifies the association of the LoV with the fatigue test and teardown results required for assessment of the onset of WFD…*” DASSAULT-AVIATION do not agree as the assessment of the onset of WFD can be also assured by the application of residual strength loads. To modify the sentence as: “*It identifies the association of the LoV with the fatigue and teardown results* ~~required for assessment~~ that is a means to assess *of the onset of WFD*, another one being the successful application of residual strength loads…”.
response	Accepted. It should be 20-128A. Partially accepted. The statement is referring to assessing the onset of WFD not establishing a safe LOV.
comment	*402* comment by: *FAA* Comments on the draft opinion (part 21 and 26) and decisions (CS-26, CS-25) should be applied to the applicable guidance in AMC 25.571, AMC 20-20, and AMC to Part M, as

	applicable. Suggested Resolution: revise the applicable sections of each AMC to reflect changes to the regulatory text.
response	Noted. If changes are made to the proposed regulatory text they will be made consistently.

comment	*434* comment by: *Thomson Airways* This NPA does not establish what FAA approved data will be acceptable. Will existing FAA 8100-9 or FAA 8110-3 forms for repairs approved after the Damage tolerance compliance requirements in January 2008 still be valid?
response	Noted. Yes, if the FAA approved data fulfils the related EASA and FAA Part 26 requirement.

comment	*466* comment by: *Jet Aviation Basel* 26.330 ST data for existing STCs and repairs for STCs Possible typographical error in first sentence "STHs" believed should read "STCHs"
response	Accepted.

comment	*467* comment by: *Jet Aviation Basel* 26.330 ST data for existing STCs and repairs for STCs "This paragraph supplements 26.300 by ensuring that changes and repairs to changes under the responsibility of STCs are provided with DTI". If the STCH DAH is subject to the EASA regulation, although the EASA STC is for example for an individual serial numbered aircraft for a cabin completions installation, for a non EU operator subject to foreign NAA regulations where the aircraft is not on the EU register, please confirm the obligation of the DAH to conduct the retrospective review in this instance, as by making the data available to the operator no action will necessarily need to be taken by the operator.
response	Partially accepted: STCH will be relieved of providing DTI if the aircraft is not operated under Part-CAT. 26.330 is amended accordingly.

comment	*675* comment by: *European Air Transport Leipzig GmbH / DHL* SUMMARY: The Regulatory Impact Assessment (RIA) does not provide a cost vs benefit analysis for the affected industry sectors. The RIA is especially deficient in addressing the impact and costs to operators. Due to the lack of harmonisation with US rules, EU operators will be exposed to increased operator costs associated with additional repair recording and control requirements

(especially on removable structural components): reduced residual value of aircraft and certain components (and affects of the write-down on company balance sheets): Damage tolerance/widespread Fatigue damage development costs passed on by DAH's (both existing and future certain repairs and changes – increased data requirements over US operators); transfer and import of aeroplanes: potentially increased aircraft lease and finance costs; where the responsible DAH is unable to provide the data or no longer exists: operator procedural and maintenance programme changes etc.
Specifically operators with second-hand aircraft or older aircraft are realistically not in the position to establish back to birth tracking for removeable structural components and are therefore exposed to much higher costs then estimated by the RIA.
Operators with Part 21 approval and/or inherited DAH responsibilities who will be exposed to additional costs as a result of the proposed rule are not accounted for. This would include inherited, major changes and repairs developed pre EASA, to aeroplane models certified after 01 January 1958. Inherited responsibilities are transferred when an airline purchases another airline that included a DAH.
SUGGESTED RESOLUTION:
Provide a more realistic and costed Regulatory Impact Assessment that more accurately addresses the affects of the proposed rules on the operators.

response

Noted.
No additional recording and control requirements are introduced by this NPA. Is not clear if the commenter is comparing increased costs to the US requirement already in force or increased costs due to the impact of the NPA on EU operators which, with respect to repairs and changes, should be similar with those faced by the US operators.
Additionally, the EASA Part-26 has been significantly harmonised with the FAR 26 rule.

A. Explanatory Note — VI. Regulatory Impact Assessment p. 17-25

comment

39 comment by: *British Airways*

Regulatory Impact Assessment A.VI 5.1 (Page 18-19)
Comment:
The Regulatory impact assessment uses various accidents where evidence of fatigue and/or where corrosion has been present. These examples are used to set the context for the impact assessment and can be misleading to the reader.
The actual accident investigation conclusions and summaries point to regulatory oversight of the organisations, maintenance errors and non-compliance with approved data as being the prime causes.
The other accidents relate to the original baseline structure and not STC's, Major changes or repairs. The baseline structure has been addressed by the TCH in conjunction with the regulatory agencies by mandatory service actions.
The proposed rules do not address maintenance or regulatory oversight errors.
This is especially the case for the proposal for WFD assessment of repairs, STC's and Major changes.
Discussion on the effects of fatigue failure is included within the content of the proposed documents for example AMC20-20 and is therefore not required in the RIA.

Proposal:
Make clear that the examples provided are examples of results of fatigue and/or corrosion but the proposed rules would not have addressed them.
This is especially the case for WFD assessment of STC's, Major changes and repairs.

response

Noted.
These examples are indeed examples of the effects of fatigue and corrosion that this proposal is intended to prevent, by ensuring that the level of safety intended by the introduction of the fatigue and damage tolerant requirements circa 1978 are properly and uniformly implemented across the EU fleet.
Regarding the WFD assessment of repairs, STC's and major changes: the amended EASA Part-26 has been harmonised with the FAR 26.

comment

40 comment by: *British Airways*

Regulatory Impact Assessment A. VI 5.4 (Page 22)
Comment: Cost to operators and operator's with DAH's has not been addressed.
Cost to operators:
EU operator increased costs (exacerbated due to the lack of harmonisation with US rules) include the following costs:
· The harmonisation issues will expose European operators to increased costs that competing FAA regulated operators would not incur.
· DT surveys and associated planning and de-scheduling aeroplanes.
· Increased repair recording and control costs (especially on certain removable structural components).
· Reduced residual values of aircraft & certain component assets as a result of assigning ultimate lives (the write-down affects company balance sheets).
· DT/WFD development costs passed on by DAH's (existing & future repairs /changes – increased data requirements over US operators).
· Agency charges levied to review Major repairs (Agency guidance material requires repairs with supplemental inspections to be classified as Major).
· Transfer/import of aeroplanes: increased aircraft lease and finance costs,
· Costs where the DAH is unable to provide the data or no longer exists:
· Review and change to operator contractual arrangements, procedural changes and maintenance programme revision costs etc
Operators with Part 21 approval or inherited DAH responsibilities who will be exposed to additional costs as a result of the proposed rule are not accounted for.
Further additional cost to Operators with DAH's or inherited DAH responsibilities:
Damage Tolerance- Those holding a US STC will have complied with AASR: no additional work required for EASA Damage Tolerance for repairs and modifications {few European STCH's hold US STC's}. EASA should include the many thousands of Major changes approved prior to 2003 by the respective NAA's – under the proposals these will be required to be evaluated (also associated repairs affecting major changes).
Widespread Fatigue Damage- Some holders of specific STC will have to perform WFD evaluation (also see comment above regarding the many pre 2003 NAA approved Major changes). There is little industry guidance on acceptable WFD analysis methods and

reverse engineering techniques. Most STCH's cannot perform the WFD analysis. This significant burden and has not been addressed in the RIA. The RIA also does not consider the larger number of repairs that will need to be considered for WFD analysis.
As the DAH requirements are to support Part M operator compliance, why does the EASA rule not restrict the DAH requirement to those Major changes that are embodied on aircraft in Part M operation only? The requirement is for ALL major changes no matter where the aeroplane is now being operated. This is at variance with the US rule and has not been accounted for/costed in the RIA.
The RIA is not balanced. The following extracts are taken from the AAWG report (21 May 2008) on WFD. EASA should consider including these issues in the RIA:
'The AAWG concludes that a simplified methodology is needed to support third parties for the WFD development for RAMs.'
'The AAWG concludes that there is a concern that the subjects discussed in this report have not been harmonised between the FAA and EASA.'
'The AAWG concludes that there is no information that a properly installed repair has exhibited WFD in service.'
'Having a non-harmonised WFD rule will have a significant impact on the leasing companies as well as when an operator buys or sells an airplane to another part of the world. In this case this would either mean a reduced residual value of the airplane or additional cost to upgrade the plane to comply with the different requirement.'
Proposal: Improve RIA to address the costs of the proposed rules to operators. Distinguish costs between those operators who have/inherited DAH responsibilities and those who don't.

response

Noted.
Please note that the amended EASA Part-26 has been further harmonised with FAA rule, and covers many of the issues described by British Airways.

comment

41 comment by: *British Airways*

Regulatory Impact Assessment A VI 5.6 (Page 24)
Comment:
Non-harmonised requirements of the proposed rule (compared to the FAA rules) have not been addressed. These should be individually detailed and accounted for.
Proposal:
The RIA should account for the non-harmonised requirements with the FAA rules.

response

Noted.
Please be informed that based on the comments received after publications of the NPA, the amended Part-26 has been further harmonised with the FAA FAR 26.

comment

44 comment by: *AIR FRANCE*

5.1.1 WFD failure : Examples do not support the proposal to introduce WFD assessment of repairs, STC's and Major changes. Please make this clear in the RIA.

response

Noted.

	See the response to comment 39

comment	*45* comment by: *AIR FRANCE*
	5.4 Econonomic impact: The evaluation of of the economic impact for operators is not enough accurate. It does not take the incurred cost for aircraft transfer from an environment to another one. Specify and quantify the estimated costs for TCH, STCH, DAH, and operators.
response	Noted. However, the information that would allow a detailed cost-estimate is not available to EASA. Additional costs for the operators (compared with the FAA) is very limited due to the increased harmonisation of the requirements.

comment	*46* comment by: *AIR FRANCE*
	Section 5.6 and 6 both infers that the FAA rules do not provide compatibility to ICAO Annex 8. If this is not correct the references to ICAO Annex 8 should be qualified. If the FAA rules are compatible with ICAO Annex 8, the statements contained in 5.6 and 6.0 referring to it should be removed. a) Demonstrate how the text is compliant with ICAO annex 8 otherwise, remove the reference to this article. b) Qualify the references to the non-harmonised requirements with the FAA and compatibility with ICAO Annex 8.
response	Noted. Currently EASA has no ageing aircraft requirements, and the level of harmonisation is greatly increased by the introduction of this requirement. The FAA programmes have been developed in stages over many years within the US regulatory framework, while with this proposal EASA provides an equivalent and comprehensive ageing aircraft package in one step. See ICAO text: 4.2.1.1 The State of Design of an aircraft shall:… …ensure that, in respect of aeroplanes over 5 700 kg maximum certificated take-off mass, there exists a continuing structural integrity programme to ensure the airworthiness of the aeroplane. The programme shall include specific information concerning corrosion prevention and control; and b) FAA implements corrosion control through ADs and implementation of MRB developed maintenance programs. However, not all large aeroplanes have an MRB and the Agency prefers to apply a uniform requirement in an efficient manner compatible with their resources. Both FAA and EASA requirements are compatible with the ICAO requirement.

comment	*92* comment by: *KLM Engineering & Maintenance*

The RIA cites a number of accidents and, by association, suggests these could have been prevented by the proposed rules. These incidents are high profile and resulted in fatalities. A number of these incidents were in fact attributed to maintenance errors and the proposed rules do not address maintenance errors. These are misleading as they have been included to help justify the proposed rules.
Par. 5.1.1 Examples of WFD failure:

Aloha Airlines 737.

The NTSB Report AAR9-03 summary states the probable cause: *"The National Transportation Safety Board determines that the probable cause of this accident was the failure of the Aloha Airlines maintenance program to detect the presence of significant disbonding and fatigue damage which ultimately led to failure of the lap joint a S-10L and the separation of the fuselage upper lobe. Contributing to the accident were the failure of Aloha Airlines management to supervise properly its maintenance force; the failure of the FAA to require Airworthiness Directive 87-21-08 inspection of all the lap joints proposed by Boeing Alert Service Bulletin SB 737-53A1039; and the lack of a complete terminating action (neither generated by Boeing nor required by the FAA) after the discovery of early production difficulties in the B-737 cold bond lap joint which resulted in low bond durability, corrosion, and premature fatigue cracking".* This accident was caused by failure of baseline structure, and not by failure of repaired or modified structure.
Grumman G73T accident.

NTSB report AAR0704 states the probable cause:

"The National Transportation Safety Board determines that the probable cause of this accident was the in-flight failure and separation of the right wing during normal flight, which resulted from (1) the failure of the Chalk's Ocean Airways maintenance program to identify and properly repair fatigue cracks in the right wing and (2) the failure of the Federal Aviation Administration to detect and correct deficiencies in the company's maintenance program". The NTSB report attributes the accident to maintenance oversight errors. In addition, the report states the airplane was built in 1947 and so would not be addressed by the proposed rules, which apply to airplanes certified from 1958.
5.1.3 Examples of Older repairs, Corrosion:

China Airlines Boeing B747 accident.

The ASC report CI611 states:

"The permanent repair of the tail strike was not accomplished in accordance with the Boeing SRM, in that the area of damaged skin in Section 46 was not removed (trimmed) and the repair doubler did not extend sufficiently beyond the entire damaged area to restore the structural strength".
In par. 5.1.3 a reference is made to AAWG Report 04-10816. It should be noted that the

	AAWG did not recommend performing WFD evaluations on STC's, major changes, and repairs. Excluding the accidents attributed to maintenance error, the remaining incidents cited are issues with original baseline structure and not STC's, major changes or repairs. The changes to the baseline structure are addressed by TCH service actions. The accidents cited do not support the case for WFD assessment of STC's, major changes or repairs. This is not made clear in the RIA. These are high profile accidents. Their inclusion is misleading as a number are attributed to maintenance or regulatory oversight errors and therefore these proposed rules would not have addressed them. These examples do not support the proposal to introduce WFD assessment of repairs, STC's and Major changes. Please make this clear in the RIA. Discussion on the effects of fatigue failure is included within the content of the proposed documents, for example AMC20-20, and is therefore not required in the RIA.
response	Noted. 26.350 and 26.370 have been revised to align with the FAA requirements. When establishing an LOV under 26.300(c), or an extended LOV under 26.350, you are not required to evaluate repairs and design changes for WFD, except for modifications and replacements mandated by airworthiness directives. For aircraft with an LOV, the changed product rule, Part 21.101, would require applicants for significant design changes to include the latest amendment of the CS 25.571 in the design change certification basis.

comment	*93* comment by: *KLM Engineering & Maintenance* Evaluation of the economic impact: The evaluation of the economic impact of the proposed rule is only described at high level without estimates of the costs for Type Certificate Holders, Supplemental Type Certificate Holders, Design Approval Holders, and operators, for example when transferring and importing airplanes from the European register to and from the US register, potential airplane lease and finance costs, additional repair recording and control requirements (especially for removable structural components), reduced residual value of airplanes and certain structural components, additional costs for Damage Tolerance and Wide Spread Fatigue evaluations passed on by Design Approval Holders. In the evaluation of the economic impact of the proposed rule specify and quantify the estimated costs for Type Certificate Holders, Supplemental Type Certificate Holders, Design Approval Holders, and operators, conform the RIA definition on EASA Managementboard Decision 01-2012.
response	Noted. The costs are highly dependent on the type, certification basis, the original compliance demonstration by the approval holders, quality of records, etc., so it makes even a crude estimate difficult to achieve and, moreover, its applicability to any individual affected party would be highly questionable. No data has been provided by any commenter that would help answer similar request. Additionally, the EASA Part-26 rule has been significantly harmonised with the FAR 26

rule.

comment 94 comment by: *KLM Engineering & Maintenance*

Cost to operators and operator's with DAH's responsibilities has not been addressed.

Cost to operators:

EU operator increased costs, which are further exacerbated due to the lack of harmonisation with US rules, include the following costs:

· The harmonisation issues will expose European operators to increased costs that competing FAA regulated operators would not incur.

· DT surveys and associated planning and de-scheduling aeroplanes.

· Increased repair recording and control costs (especially on certain removable structural components).

· Reduced residual values of aircraft and certain component assets as a result of assigning ultimate lives (and affects of the write-down on company balance sheets).

· DT/WFD development costs passed on by DAH's (both existing and future repairs/changes and other associated data – increased data requirements over US operators).

· Charges levied by the Agency to review Major repairs (Agency guidance material requires repairs with supplemental inspections to be classified as Major).

· transfer and import of aeroplanes: potentially increased aircraft lease and finance costs,

· costs associated where the responsible DAH is unable to provide the data, or when the responsible DAH no longer exists,

· review and change to operator contractual arrangements, procedural changes and maintenance programme revision costs etc

Operators with Part 21 approval or inherited DAH responsibilities who will be exposed to additional costs as a result of the proposed rule are not accounted for.

Further additional cost to Operators with DAH responsibilities or inherited DAH responsibilities:

Damage Tolerance

The proposal states "Those holding a US STC will have complied with AASR: no additional work required for EASA Damage Tolerance for repairs and modifications" Please note that very few European STC holders will hold US STC's. EASA also should include the cost for the many thousands of Major changes approved prior to 2003 by the respective NAA's – under the proposals these will be required to be evaluated (together with associated repairs affecting major changes).

Widespread Fatigue Damage

Some holders of specific STC will have to perform WFD evaluation (also see comment above regarding the many pre 2003 NAA approved Major changes). There is little industry guidance on acceptable WFD analysis methods and reverse engineering techniques. As a result the vast majority of STCH's cannot perform the WFD analysis. This will be a significant burden and has not been addressed in the RIA. There is a larger burden for applicants for extended LOV, because of the significantly larger number of repairs that will need to be considered for WFD analysis, which has not been addressed in the RIA.

The following extracts are taken from the AAWG report (dated 21 May 2008) on WFD. EASA may wish to consider including these issues in the RIA for this rule:

	The AAWG concludes that a simplified methodology is needed to support third parties for the WFD development for RAMs. *(AAWG report, Rev B May 21 2008, Task 3 Final Report)* The AAWG concludes that there is a concern that the subjects discussed in this report have not been harmonised between the FAA and EASA. *(AAWG report, Rev B May 21 2008, Task 3 Final Report)* The AAWG concludes that there is no information that a properly installed repair has exhibited WFD in service. *(AAWG report, Rev B May 21 2008, Task 3 Final Report)* Some foreign operators also operate N-registered airplanes in addition to airplanes registered in their home countries. This could present a significant increase in cost of maintaining two separate maintenance programs within one model fleet. Approximately 30 % of the airplanes in service today are leased airplanes that are transferred frequently from one operator to another. Having a non-harmonised WFD rule will have a significant impact on the leasing companies as well as when an operator buys or sells an airplane to another part of the world. In this case this would either mean a reduced residual value of the airplane or additional cost to upgrade the plane to comply with the different requirement. *(AAWG report, Rev B May 21 2008, Task 3 Final Report)* EASA is requested to provide a Regulatory Impact Assessment that is more realistic and that more accurately addresses the economic impact of the proposed rules on the operators.
response	Noted. Significant efforts have been made to harmonise the EASA rule with the FAA rule. This will further reduce the costs.

comment	*95* comment by: *KLM Engineering & Maintenance* Section 5.6 and 6 both infers that the FAA rules do not provide compatibility to ICAO Annex 8. If this is not correct the references to ICAO Annex 8 should be qualified. If the FAA rules are compatible with ICAO Annex 8, the statements contained in 5.6 and 6.0 referring to it should be removed. Either delete or qualify the references to the non-harmonised requirements with the FAA and compatibility with ICAO Annex 8.
response	Noted. See response to comment 46.

comment	*185* comment by: *AIRBUS* Comment related to page 21 /203, Option 1 exemption criteria PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read: In addition to the above proposed exemption criteria, EASA may take into account the number of the aircraft subject to the rule, the type of operation and / or their likely remaining service life. Airbus proposes to develop the interpretation of this text as proposed below In addition to the categories of aircraft to be excluded as per paragraph 10 of the explanatory note, the following aeroplanes to be excluded are: - Aircraft only operated by Air Force - Aircraft developed or modified in a small number for a specific operation not listed in the

	basis regulation (humanitarian A/C developed from military A/C, unique VIP configuration) - Aircraft developed or modified in a small number and primarily operated for the industrial needs of holder(s) of type certificates of 26.380 aeronautical products, or of aerospace industrial organisations with a business link to TC holder(s). - Any future aircraft complying with above criteria
response	Noted. The Agency has proposed an additional rule which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on which aircraft changes and repairs are to be excluded from Part 26.

comment	*284* comment by: *FedEx Aging Aircraft Structures* As an operator FedEx has great concerns that structural components that we may be sharing in a pool arrangement would not be acceptable for a European airline because of the non-harmonised requirements of the EASA rule, and vice versa. The same concerns exist for purchasing or selling of used aircraft between FAA and EASA operators. This could result in an expensive and restrictive fence being created between US and European operators.
response	Noted. The amended rule has been further harmonised with the FAA rule.

comment	*307* comment by: *Dassault Aviation* . §VI. 2.2: · Meaning of MRO not indicated: Maintenance Repair Organization? §VI. 5.4: · Meaning of AASR not indicated: Aging Aircraft Safety Rule? · Meaning of IORS not indicated: Internal Occurrence Reporting System? · Costs will be increased by the fact that the rule is not harmonised with FAA. §VI. 5.6 / 6.: · Harmonised texts between EASA and FAA must be reached to reduce costs induced otherwise by the differences.
response	Noted. However, these acronyms are used in the preamble. Requirements are further harmonised with the FAA requirements.

comment	*468* comment by: *S.A. Morshed, Emirates* **5.4 Economic impact (Page 17)** In the evaluation of the economic impact of the proposed rule, specify and quantify the estimated costs for operators. **Reason:** The evaluation of the economic impact of the proposed rule is only described at high level without estimates of the costs for operators, for example when transferring and importing aircraft from the European register to and from the US register, potential aircraft lease

	and finance costs, additional repair recording and control requirements (especially for removable structural components), reduced residual value of aircraft and certain structural components, additional costs for Damage Tolerance and Wide Spread Fatigue evaluations passed on by Design Approval Holders.
response	Noted. See the response to comment 93.

comment	*469* comment by: *S.A. Morshed, Emirates*
	Regulatory impact assessment (Page 22) EASA is requested to provide a Regulatory Impact Assessment that is more realistic and that more accurately addresses the economic impact of the proposed rules on the operators.
response	Noted. See the response to comment 93.

comment	*471* comment by: *S.A. Morshed, Emirates*
	Regulatory impact assessment (Page 24) Either delete or qualify the references to the non-harmonised requirements with the FAA and compatibility with ICAO Annex 8. **Reason:** Section 5.6 and 6 both infers that the FAA rules do not provide compatibility to ICAO Annex 8. If this is not correct then the references to ICAO Annex 8 should be qualified. If the FAA rules are compatible with ICAO Annex 8, the statements contained in 5.6 and 6.0 referring to it should be removed.
response	Noted. See the response to comment 46.

comment	*495* comment by: *Boeing*
	Page: 18 Paragraph: 5.1.1. *WFD failure* The proposed text states: "— **Aloha Airlines accident** An early illustration of the extent to which the controls against fatigue failure introduced during the early years of the 'jet age' might be inadequate was delivered by a 1988 incident to a 19-year-old Boeing 737-200, which on an internal flight in Hawaii suffered sudden structural failure and an explosive decompression at FL240. Nearly 6 metres of cabin skin and structure aft of the cabin entrance door and above the passenger floor line separated from the aircraft. The investigation found de-bonding and fatigue damage which had led to the failure. For that aircraft, at least, the introduction of static test hulls with simulated hours and cycles kept well ahead of equivalent in-service aircraft was not sufficient. This aircraft had completed 89 680 flight cycles with an average flight time of only 25 minutes, almost all of them in the marine environment of the Hawaiian Islands, a somewhat atypical service life

which was considered to have allowed corrosion to increase the likelihood of fatigue."
See the NTSB investigation summary and the Safety Recommendation at: **http://www.ntsb.gov/doclib/recletters/1989/A89_70_72.pdf**

REQUESTED CHANGE:

Delete or revise this section to provide a complete and detailed synopsis of the NTSB findings, instead of interpreting the results. From NTSB/AAR-89/03, Section 3.2, Probable Cause:

" The National Transportation Safety Board determines that the probable cause of this accident was the failure of the Aloha Airlines maintenance program to detect the presence of significant disbonding and fatigue damage which ultimately led to failure of the lap joint at S-10L and the separation of the fuselage upper lobe. Contributing to the accident were the failure of Aloha Airlines management to supervise properly its maintenance force; the failure of the FAA to evaluate properly the Aloha Airlines maintenance program and to assess the airline's inspection and quality control deficiencies; the failure of the FAA to require Airworthiness Directive 87-21-08 inspections of all the lap joints proposed by Boeing Alert Service Bulletin SB 737-53A1039; and the lack of a complete termination action (neither generated by Boeing nor required by the FAA) after the discovery of early production difficulties in the B-737 cold bond lap joint which resulted in low bond durability, corrosion, and premature fatigue cracking."

JUSTIFICATION:

The NTSB cited the probable cause of the accident as the operator's maintenance program. The program was insufficient to properly maintain the airplane and detect known damage mechanisms and, further, that regulatory oversight of the maintenance program was inadequate. See NTSB/AAR-89/03, Section 3.2.

response: Noted.

comment *496* comment by: *Boeing*

Page:19
Paragraph: 5.1.3.

The proposed title of this paragraph is:
"5.1.3. Older repairs, corrosion"

REQUESTED CHANGE:

Revise as follows:
"5.1.3. Older repairs, ~~corrosion~~"

JUSTIFICATION:

The title, as proposed in the NPA, is incorrect. Corrosion is not discussed in this paragraph.

response: Noted.

comment *647* comment by: *AEA*

The RIA cites a number of accidents and, by association, infers these could have been

prevented by the proposed rules. These incidents are high profile and resulted in fatalities. A number of these incidents were in fact attributed to maintenance errors and the proposed rules do not address maintenance errors. These are extremely misleading as they have been included to help justify the proposed rules.
For example, 5.1.1 WFD failure examples, - Aloha Airlines. The NTSB summary states:
The National Transportation Safety Board determines that the probable cause of this accident was the failure of the Aloha Airlines maintenance program to detect the presence of significant disbonding and fatigue damage which ultimately led to failure of the lap joint a S-10L and the separation of the fuselage upper lobe. Contributing to the accident were the failure of Aloha Airlines management to supervise properly its maintenance force; the failure of the FAA to require Airworthiness Directive 87-21-08 inspection of all the lap joints proposed by Boeing Alert Service Bulletin SB 737-53A1039; and the lack of a complete terminating action (neither generated by Boeing nor required by the FAA) after the discovery of early production difficulties in the B-737 cold bond lap joint which resulted in low bond durability, corrosion, and premature fatigue cracking.
Grumman G73T accident. The NTSB report attributes the accident to maintenance oversight errors. In addition, the report states the aeroplane was built in 1947 and so would not be addressed by the proposed rules, which apply to aeroplane certified from 1958.
5.1.3 Older repairs, Corrosion – China Airlines Boeing B747 accident. The ASC report states:
The permanent repair of the tail strike was not accomplished in accordance with the Boeing SRM, in that the area of damaged skin in Section 46 was not removed (trimmed) and the repair doubler did not extend sufficiently beyond the entire damaged area to restore the structural strength.
Excluding the accidents attributed to maintenance error, the remaining incidents cited are issues with original baseline structure and not STC's, Major changes or repairs. The changes to the baseline structure are addressed by TCH service actions. The accidents cited do not support the case for WFD assessment of STC's, Major changes or repairs. This is not made clear in the RIA.

response | Noted.

comment | *648* comment by: *AEA*

Cost to operators and operator's with DAH's has not been addressed.
Cost to operators:
EU operator increased costs, which are further exacerbated due to the lack of harmonisation with US rules, include the following costs:
· The harmonisation issues will expose European operators to increased costs that competing FAA regulated operators would not incur.
· DT surveys and associated planning and de-scheduling aeroplanes.
· Increased repair recording and control costs (especially on certain removable structural components).
· Reduced residual values of aircraft and certain component assets as a result of assigning ultimate lives (and affects of the write-down on company balance sheets).

· DT/WFD development costs passed on by DAH's (both existing and future repairs/changes and other associated data – increased data requirements over US operators).
· Charges levied by the Agency to review Major repairs (Agency guidance material requires repairs with supplemental inspections to be classified as Major).
· transfer and import of aeroplanes: potentially increased aircraft lease and finance costs,
· costs associated where the responsible DAH is unable to provide the data or no longer exists:
· review and change to operator contractual arrangements, procedural changes and maintenance programme revision costs etc
Operators with Part 21 approval or inherited DAH responsibilities who will be exposed to additional costs as a result of the proposed rule are not accounted for.
Further additional cost to Operators with DAH's or inherited DAH responsibilities:
Damage Tolerance
Those holding a US STC will have complied with AASR: no additional work required for EASA Damage Tolerance for repairs and modifications {Very few European STC holders will hold US STC's}. EASA also should include the many thousands of Major changes approved prior to 2003 by the respective NAA's – under the proposals these will be required to be evaluated (together with associated repairs affecting major changes).
Widespread Fatigue Damage
Some holders of specific STC will have to perform WFD evaluation (also see comment above regarding the many pre 2003 NAA approved Major changes). There is little industry guidance on acceptable WFD analysis methods and reverse engineering techniques. As a result the vast majority of STCH's cannot perform the WFD analysis. This will be a significant burden and has not been addressed in the RIA. There are a significantly larger number of repairs that will need to be considered for WFD analysis, which has not been addressed in the RIA.
Further, as the DAH requirements are to support Part M operator compliance, why does the EASA rule not restrict the DAH requirement to those Major changes that are embodied on aircraft in Part M operation only? The requirement is for ALL major changes no matter where the aeroplane is now being operated. This is at variance with the US rule and has not been accounted for or costed in the RIA.
The following extracts are taken from the AAWG report (dated 21 May 2008) on WFD. EASA may wish to consider including these issues in the RIA for this rule:
The AAWG concludes that a simplified methodology is needed to support third parties for the WFD development for RAMs. *(AAWG report, Rev B May 21 2008, Task 3 Final Report)*
The AAWG concludes that there is a concern that the subjects discussed in this report have not been harmonised between the FAA and EASA. *(AAWG report, Rev B May 21 2008, Task 3 Final Report)*

response | Noted. Harmonisation efforts have been made leading to a further reduction in the cost impact.

comment | *649* | comment by: *AEA*

Non-harmonised requirements of the proposed rule (compared to the FAA rules) have not been addressed. These should be individually detailed and accounted for.
Section 5.6 and 6 both infers that the FAA rules do not provide compatibility to ICAO Annex 8. If this is not correct the references to ICAO Annex 8 should be qualified. If the FAA rules are compatible with ICAO Annex 8, the statements contained in 5.6 and 6.0 referring to it should be removed.

response

Noted. See the response to comment 46.

comment

677 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
The RIA cites a number of accidents and, by association, infers these could have been prevented by the proposed rules. These incidents are high profile and resulted in fatalities. A number of these incidents were in fact attributed to maintenance errors and the proposed rules do not address maintenance errors. These are extremely misleading as they have been included to help justify the proposed rules.
For example, 5.1.1 WFD failure examples, - Aloha Airlines. The NTSB summary states: The National Transportation Safety Board determines that the probable cause of this accident was the failure of the Aloha Airlines maintenance program to detect the presence of significant disbonding and fatigue damage which ultimately led to failure of the lap joint a S-10L and the separation of the fuselage upper lobe. Contributing to the accident were the failure of Aloha Airlines management to supervise properly its maintenance force; the failure of the FAA to require Airworthiness Directive 87-21-08 inspection of all the lap joints proposed by Boeing Alert Service Bulletin SB 737-53A1039; and the lack of a complete terminating action (neither generated by Boeing nor required by the FAA) after the discovery of early production difficulties in the B-737 cold bond lap joint which resulted in low bond durability, corrosion, and premature fatigue cracking. Grumman G73T accident. The NTSB report attributes the accident to maintenance oversight errors. In addition, the report states the aeroplane was built in 1947 and so would not be addressed by the proposed rules, which apply to aeroplane certified from 1958.
5.1.3 Older repairs, Corrosion – China Airlines Boeing B747 accident. The ASC report states:
The permanent repair of the tail strike was not accomplished in accordance with the Boeing SRM, in that the area of damaged skin in Section 46 was not removed (trimmed) and the repair doubler did not extend sufficiently beyond the entire damaged area to restore the structural strength.

Excluding the accidents attributed to maintenance error, the remaining incidents cited are issues with original baseline structure and not STC's, Major changes or repairs. The changes to the baseline structure are addressed by TCH service actions. The accidents cited do not support the case for WFD assessment of STC's, Major changes or repairs. This

is not made clear in the RIA.
SUGGESTED RESOLUTION:
These are high profile accidents. Their inclusion is misleading as a number are attributed to maintenance or regulatory oversight errors and therefore these proposed rules would not have addressed them.

This is especially the case for the proposal for WFD assessment of repairs, STC's and Major changes.
Discussion on the effects of fatigue failure is included within the content of the proposed documents for example AMC 20-20 and is therefore not required in the RIA.

response | Noted.

comment | *678* comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
Cost to operators and operator's with DAH's has not been addressed.
Cost to operators:
EU operator increased costs, which are further exacerbated due to the lack of harmonisation with US rules, include the following costs:
- The harmonisation issues will expose European operators to increased costs that competing FAA regulated operators would not incur.
- DT surveys and associated planning and de-scheduling aeroplanes.
- Increased repair recording and control costs (especially on certain removable structural components).
- Reduced residual values of aircraft and certain component assets as a result of assigning ultimate lives (and affects of the write-down on company balance sheets).
- DT/WFD development costs passed on by DAH's (both existing and future repairs/changes and other associated data – increased data requirements over US operators).
- Charges levied by the Agency to review Major repairs (Agency guidance material requires repairs with supplemental inspections to be classified as Major).
- transfer and import of aeroplanes: potentially increased aircraft lease and finance costs,
- costs associated where the responsible DAH is unable to provide the data or no longer exists:
- review and change to operator contractual arrangements, procedural changes and maintenance programme revision costs etc
Operators with Part 21 approval or inherited DAH responsibilities who will be exposed to additional costs as a result of the proposed rule are not accounted for.
Further additional cost to Operators with DAH's or inherited DAH responsibilities:
Damage Tolerance
Those holding a US STC will have complied with AASR: no additional work required for EASA Damage Tolerance for repairs and modifications {Very few European STC holders will hold US STC's}. EASA also should include the many thousands of Major changes approved prior to 2003 by the respective NAA's – under the proposals these will be required to be evaluated (together with associated repairs affecting major changes).

Widespread Fatigue Damage

Some holders of specific STC will have to perform WFD evaluation (also see comment above regarding the many pre 2003 NAA approved Major changes). There is little industry guidance on acceptable WFD analysis methods and reverse engineering techniques. As a result the vast majority of STCH's cannot perform the WFD analysis. This will be a significant burden and has not been addressed in the RIA. There are a significantly larger number of repairs that will need to be considered for WFD analysis, which has not been addressed in the RIA.
Further, as the DAH requirements are to support Part M operator compliance, why does the EASA rule not restrict the DAH requirement to those Major changes that are embodied on aircraft in Part M operation only? The requirement is for ALL major changes no matter where the aeroplane is now being operated. This is at variance with the US rule and has not been accounted for or costed in the RIA.
The following extracts are taken from the AAWG report (dated 21 May 2008) on WFD. EASA may wish to consider including these issues in the RIA for this rule:
The AAWG concludes that a simplified methodology is needed to support third parties for the WFD development for RAMs. (AAWG report, Rev B May 21 2008, Task 3 Final Report)
The AAWG concludes that there is a concern that the subjects discussed in this report have not been harmonised between the FAA and EASA. (AAWG report, Rev B May 21 2008, Task 3 Final Report)

The AAWG concludes that there is no information that a properly installed repair has exhibited WFD in service. (AAWG report, Rev B May 21 2008, Task 3 Final Report)
Some foreign operators also operate N-registered airplanes in addition to airplanes registered in their home countries. This could present a significant increase in cost of maintaining two separate maintenance programs within one model fleet.
Approximately 30 % of the airplanes in service today are leased airplanes that are transferred frequently from one operator to another. Having a non-harmonised WFD rule will have a significant impact on the leasing companies as well as when an operator buys or sells an airplane to another part of the world. In this case this would either mean a reduced residual value of the airplane or additional cost to upgrade the plane to comply with the different requirement. (AAWG report, Rev B May 21 2008, Task 3 Final Report)
SUGGESTED RESOLUTION:
Provide a more realistic and costed Regulatory Impact Assessment that more accurately addresses the affects of the proposed rules on the operators.

response

Noted.
See the response to comment 94.

comment

679 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
Non-harmonised requirements of the proposed rule (compared to the FAA rules) have not been addressed. These should be individually detailed and accounted for.
Section 5.6 and 6 both infers that the FAA rules do not provide compatibility to ICAO

Annex 8. If this is not correct the references to ICAO Annex 8 should be qualified. If the FAA rules are compatible with ICAO Annex 8, the statements contained in 5.6 and 6.0 referring to it should be removed.
SUGGESTED RESOLUTION:
Provide a more detailed comparison of the non-harmonised elements with associated costs.
Either delete or qualify the references to the non-harmonised requirements with the FAA and compatibility with ICAO Annex 8.

response

Noted.
See the response to comment 46.

comment

711 comment by: *Bombardier Aerospace*

The criteria for exclusion do not appear to allow any aircraft to operate in Europe once the regulation has come into effect. Could EASA clarify that this is the intent of the exclusions? From our perspective, exclusions should be used to address in-service aircraft models where compliance with the NPA can be demonstrated to be unfeasible. Our request for an exclusion for CL-215/CL-415 Amphibious aircraft has been submitted with this in mind.

response

Noted.
Some of the requests may be solved by the revised rule. Additionaly, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

B. Draft Opinion(s) and/or Decision(s) — I. Draft Opinion Part-21 p. 26

comment

4 comment by: *DDUMORTIER*

It would be great in the frame of part21 to emphasize specific duties/responsibilities of TCH/STCH.
They have the responsibility to manage continued airworthiness activities and in the frame of their requirement to regularly review the CPCP baseline for efficiency, they shall organize collect system and record means related to corrosion level 1 exceedance. Different updates you have proposed on Part 26 and AMC 20-20 are well identifying the duties at operator level to manage similar requirement, it is important to remind as well this basic TCH/STCH requirement in the same way.

response

Noted.
However, In the AMC 20-20 it is stated that 'The TCH is responsible for monitoring the effectiveness of the baseline programme and, if necessary, to recommend changes based on operators reports of findings'.

comment

166 comment by: *British Airways*

Reference:
Part 21, B. I.
Comment Summary:
FAA policy notice Air-100-12-10-05 refers to FAA AC 21.101-1A, Appendix A, page A-25 identifies an “airframe life extension” of a transport category airplane as a significant product level change. There has been confusion whether the application of LOV should be categorized as an “airframe life extension” in this context. The memorandum clarifies that AC 21.101-1A guidance for “airframe life extension” is not intended to apply to extending an LOV in accordance with 14 CFR 26.23. The FAA plans to clarify this point in the next revision of FAA AC21.101-1A. The FAA policy notice states:
Requirements: Establishing the Certification Basis:
Extending an LOV in accordance with 14 CFR 26.23 without a physical modification to the airplane is considered a “not significant” design change in accordance with AC 21.101. However, if extending the LOV requires a physical design change to the airplane, the design change is to be evaluated in accordance with 14 CFR 21.101. Use AC 21.101-1A for guidance to determine the level of significance of the design change and the corresponding certification basis.
If the EASA proposed rule is adopted, would EASA harmonise with the FAA position with regard to Part 26 and 21.101? If so, EASA should take the opportunity to add this to their guidance material.
Suggest resolution:
Suggest EASA provides guidance either within the proposed rules or accompanying the proposed rule on the EASA policy regarding LOV extension and 21.101.
If EASA harmonise with the FAA position, it would help reduce the complexity and cost burden on operators and DAH’s. If the EASA position is different from the FAA, it would create an ambiguous position regarding the EU-US bilateral and associated Technical Implementation Procedures related to mutual acceptance of design data. Transfer of aeroplanes would also be more complex and the additional burden should be accounted for in the proposed rules Regulatory Impact Assessment.

response

Accepted.
Extending an LOV in accordance with a specific requirement that addresses LOV extension such as proposed 26.350 without a physical modification to the airplane is considered a ‘not significant’ design change in accordance with 21.101.
However, if extending the LOV requires a physical design change to the aeroplane, the design change is to be evaluated in accordance with 21.101.
In all other cases of ‘life extension’ the significance of the proposed change will be assessed on a case by case basis.
Guidance is proposed to be added to 21A.101

comment

308 comment by: *Dassault Aviation*

I. Draft Opinion Part-21:
§ § 21.A.21 (c) 5., .101 (g), .433(a): Regulation (EU) N_o …/… to be specified when published

response

Accepted.
The regulation number will be specified when available.

comment	*427* comment by: *Jason Deadman* 26.300: A requirement to monitor fleet usage would be dependent on operator data inputs even though some of this data may be proprietary to an airline. Making a TCH dependent on operator inputs in order to demonstrate compliance to 26.300 may be a potential weak element in this rule.
response	Noted. Regarding the monitoring issue 26.300(f), the rule has been updated to focus on the process thus allowing for more flexibility in compliance demonstration.

comment	*428* comment by: *Jason Deadman* 26.300(g): The FCBS List must consistent between type certificate holders. One TCH may have a very detailed breakdown of FCBS, while another TCH may have a very broad definition of FCBS. It would be benefitial for operators as well as the industry if this list was standardized.
response	Noted. The FAA has already implemented a similar requirement and the intent of that requirements was to achieve a better and more consistent overview of critical structure than previous compliance with 25.571 had achieved with the interpretation of PSEs. This compliance with FAR Part 26 has yielded some differences in interpretation, but overall substantially greater consistency. It is more important now for the Agency to be able to adopt already accepted lists from major manufacturers that have been approved by their NAAs.

comment	*499* comment by: *Boeing* Page: 29 Paragraph: 26.300(f) The proposed text states: "(f) Establish a process that ensures that unsafe levels of fatigue cracking will be precluded in service. This process must include: (1) periodic monitoring of operational usage with comparison to design assumptions; and (2) a periodic assessment of the need for mandatory changes in cases where inspection alone is not reliable enough to ensure that unsafe levels of cracking are precluded." **REQUESTED CHANGE:** *This comment is being submitted on behalf of the Boeing Company, Airbus, Bombardier, Dassault Aviation, and Embraer:* Eliminate periodic monitoring from the rule and retain it in the guidelines (i.e., as part of AMC 20-20). **JUSTIFICATION:** Periodic monitoring of operational usage and assessing of the need for mandatory

	modifications, as would be required by 26.300(f), is problematic for manufacturers to comply with, due to current reporting requirements and lack of access to operators' proprietary data. TCH access to operational data is limited and there is no enforcement vehicle to require compliance from operators. Please note that the FAA considered -- and then removed -- a similar requirement from its final rule, concluding that existing regulations (i.e., 14 CFR §21.3 and §121.703) require both DAHs and operators to report structural defects. The FAA concluded that these requirements should be appropriate to enable a determination of whether the objectives of this final rule are being met.
response	Accepted. 26.300(f) has been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

B. Draft Opinion(s) and/or Decision(s) — II. Draft Opinion Part-26	p. 27-35

comment	*1* comment by: *Fokker Services* Fokker Services is not convinced that the proposed specific mentioning in the rule part 26.300 (f) (1) of monitoring of operational usage relative to design assumptions is required to increase the level of safety. This aspect is only one of many aspects to be considered when analyzing crack findings in service. In addition, without a requirement for the airlines to report such details of operational usage, the TCH will not be in a position to comply with this requirement. Even with such requirement in place, this will have only a limited effect for fleets where most of the operation is outside the European Union member states.
response	Noted. 26.300(f) has been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment	*5* comment by: *DDUMORTIER* under item 10 of page 27, in the CPCP definition, you quote "defined corrosion level" which we understand as not being only the level 1, 2 and 3 definitions that you provide later on. We understand this "defined corrosion level" as the link to structure certification in relation to certified rework limits for example. Such fundamental link in between CPCP and rework limits satisfying certification requirements is not well highlighted later on in the proposed updates. How can we evaluate the control to corrosion level 1 (either in CPCP developement phase or during in-service evaluation of corrosion findings) until we have a reference available regarding the limits of rework ? This is a very practical issue that should be emphasized along the different supporting documents to this NPA.

response

Noted.
Nonetheless, at the level of the definition of the baseline programme provided to operators, it is the corrosion level definition that is of importance, in particular Level 1 and its relationship to rework limits.
It is acknowledged that for a new design it is not always clear whether such margins will exist in all areas that may be found susceptible to corrosion either through the ED analysis or experience.

comment

18 comment by: *JAL Structural Eingineering*

1. -In Part 26.320, TC Holder is requested to identify “Fatigue-Critical Modified Structure (FCMS)”. In Part 26.330, there is no term of “Fatigue-Critical Modified Structure (FCMS)”. On the other hand, in FAR 26.43 and 26.47, TC Holder and STC Holder are requested to identify “fatigue critical alteration structure”. To avoid any confusion, JAL requests to use the term of “fatigue critical alteration structure” in Part 26.320 and Part 26.330.
2. -EASA rule mentions “widespread fatigue damage is unlikely to occur in the aeroplane structure”. On the other hand, FAA rule mentions “widespread fatigue damage will not occur in the airplane structure”. To avoid any confusion, JAL requests to use same sentence as FAA rule in EASA rule.

response

Partially accepted.
1) Not accepted. Alteration is not a term used in the EU regulations. However, the equivalent word for alternation would be ‘modification’ in the EU regulatory system. Note that the amended 26.330 has introduced explicitly the FCMS.
2) Accepted. The LOV definitions are harmonised.

comment

19 comment by: *Jet Aviation Basel*

1. 26.330 (c) (1) requires STC holders review changes and repairs to FCS and provide a list within 12 months of entry into force of ruling. 26.300 (h) (2) (6) provides a compliance time of 6 months for TC holders to produce the list, giving an STC holder a window between 6 and 12 months to produce their list. However, 26.320 (a) (2) provides a timeline of 12 months for TC holders to produce the list of FCMS, which if the whole allotted time period is utilised provides no window of opportunity for an STC holder to review the list and produce data required per 26.330 (c) (1).
Proposal – extend 26.330 (c) (1) compliance time beyond 12 months or reduce 26.320 (a) (2) compliance time to 6 months.

response

Not accepted.
The FCBS list from the TCH is meant to assist the STCH to develop their FCS list. It remains the STCHs responsibility to understand the criticality of all structures introduced or affected by their changes and submit their FCMS list. In practice the vast majority of the TCH FCS is to be found in the FCBS which is already available.

comment

20 comment by: *NEOS*

It is not clear how compliance to decision can be done by an European operator that operates a/c manufactured by non - EU TCHs where a bilateral exists (FAA system) with particular attentions to:
· non-published repair
· published repair
In case of non-published future repair, approval forms (FAA 8100-9 or FAA 8110-3) are providing compliance with FAA AASR, therefore to FAR 25.571 and FAR 14 CFR 26.43 not to PART 25.571 and PART26.
As per decision 2004/04/CF amended by 2007/01/C these approvals constitutes agency approval but in some way they are not compliant with EASA AASR (these means that future approvals affecting a FCBS are no more to be condiered EASA approved?).

The same applies to published data (SRM, MPD, SB) for non - EU TCHs where a bilateral agreement exists.

We believe that a statement on AMC 20-20 amdt 1 should be made to reconize, for **non – EU TCHs where a bilateral exists,** approvals of published/non published repairs when they are referencing to FAR 25.571 post amdt 96 and FAR 14 CFR 26.43.

response

Noted.
If the repair is approved under a document which includes a damage tolerance justification (e.g. an FAA 8110-3 form which refers to FAR 25.571 at Amdt 45 or later) and the repair is one for which a bilateral agreement applies (meaning the repair data is accepted by EASA), then this repair may statisfy EASA Part 26.370(a)(2) as the operator was able to show that he has obtained the means to address the adverse effect this repair may have on FCS (this would be the FORM 8110-3 referring to FAR 25.571 Amdt 45 or later).
Regarding published repairs e.g. an FAA approved SRM is per bilateral also considered to be accepted data and therefore , if it can be shown that the SRM complies to FAR 26.43 or FAR 25.571 amdt 45 or later, then EASA Part 26.370 a)2) may be satisfied.
The Agency may produce a certification memorandum or use another mean to further clarify the acceptability of the FAA data.

comment

27 comment by: *CAA-NL*

In our opinion it is better keep all requirements to the maintenance program of an aircraft in one place and thus to transfer the relevant texts of Part 26.370 and CS 26.370 to Part M.A.302 and its AMC material.
· We suggest to include proposed Part 26.370(b)/(a)(5) into a new paragraph M.A.302(f), while renumbering the current (f) and (g) to (g) and (h) as follows:
(f) For large aeroplanes,
(1) prior to incorporating an EASA-approved extended LoV into the aircraft maintenance programme, the operator shall ensure that all installed repairs and modifications have been subject to a fatigue and damage tolerance evaluation, including consideration of WFD up to the proposed LoV, according to Part 26.350 and incorporate the approved DTI and other maintenance actions established as a result of these evaluations and any other

	associated ALS amendments; (2) for existing repairs that are not addressed by by the operator's implementation of the REG and STCs and major changes that affect fatigue-critical structure, for which DTI does not exist and that are embodied on an aircraft of a type subject to Part 26.320, a procedure to show how approved damage tolerance inspection data will be obtained and used to address the potential adverse effects of repairs and modifications to fatigue-critical structure. · We suggest to delete the rest of the proposed texts as these are already covered by the amended M.A.302(g) and the amended AMC to M.A.302.
response	Not accepted. The purpose of Part-26 is to have clear and unambiguous rules to address potential safety issues with regard to ageing aircraft both for operators as well as DAHs . Please note that 26.370 was revised with regards to the requirement of considering WFD for repairs and modifications when incorporating an extended LOV.

comment	*33* comment by: ***easyJet***
	With reference to NPA 2013-07, Page 34, Section 26.370, Paragraph (c)(3), EZY would like for the following to be clarified: If a DTI is issued by the TCH at time 'x', please confirm that the DTI must be implemented within the operator's maintenance programme within a time period of 'x + 12 months'
response	Noted. The revised 26.370 provides a completion time of maximum 36 months for actions per (a)(1),(a)(2) and (a)(5). There is no requirement to have the DTI itself implemented after 12 months, however the maximum compliance time is 36 months (for example: for the DTI per 300(b) the TC Holder has a maximum compliance time of 24 months). Assuming it would effectively take 24 months for the TC Holder develop the DTI the operator would have just 12 months to incorporate the DTI into the maintenance programme. For the existing repairs (26.320) it is the means to address the adverse effects of the repairs that needs to be incorporated into the maintenance programme with the 36 months (e.g. adoption of the REG). Please note that further clarification on implementation schedules can be found in Appendix 3 of AMC 20-20.

comment	*37* comment by: ***(Bombardier Aerospace) Short Bros PLC***
	Attachment #6 In respect of Draft Opinion Part 26, Article 3, refer to attached document "mm1809.pdf". This provides background information on the SD3 aircraft types, Short Bros plc position in respect of this NPA and request for exclusion from Part 26.xxx for the SD3-30, SD3 Sherpa and SD3-60 Sherpa aircraft types. Note these aircraft have already been exempted from the equivalent FAA Aging Aircraft rule under exemption # 9823, Doc# FAA-2008-0259 (SD3-30 and SD3 Sherpa) and # 9870, Doc# FAA-2008-0260 (SD3-60 Sherpa).

response

Partially accepted.
The Agency may exclude the SD3-30, SD3 Sherpa and SD3-60 Sherpa based on the criteria proposed rule 26.380 which sets criteria for exclusion.

comment

47 comment by: *AIR FRANCE*

Article 2 : The EASA REG stipulations are above the FAA REG exigences, justify this difference (profit).
Quid for FAA REG compliant aircraft in EASA environment ?
Example: There are difference in aircraft survey requirement in that they do not specifically exclude non-reinforcing repair from consideration as the FAA AC does. AMC20-20, 3.13.2 page 158, This typically excludes maintenance actions such as blend-out, plug rivet, trim-outs, etc, unless there are known specific risks associated with these actions in specific locations.
Harmonise the EASA Repair Evaluation Guidelines (REG) definition with the FAA AASR requirement, or explain the benefits and impact of the deviation.

response

Partially accepted.
Non-reinforcing repairs are not specifically excluded by either FAA requirement or by EASA proposal. Conversely the Agency is not requiring non-reinforcing repairs to be systematically considered.

The Agency has revised the definition of the REG in Part-26 and AMC 20-20 in order to bring clarification to what is understood with reviewing adjacent structure in relation to the repair.

comment

48 comment by: *AIR FRANCE*

26.300(f) : The proposed rule requires to include an LOV into the ALS, but does not provide a default value of the Limit of Validity (LOV) as done in FAR 26,21.
Provide default LOV values like has been provided in FAR 26.21 table 1 and 2.

response

Not accepted. (reference to 26.300(f) is not correct.)

AMC 20-20 para 10. States:
'In the event an acceptable WFD evaluation cannot be completed on a timely basis, the Agency may impose service life, operational, or inspection limitations to assure structural integrity of the subject type design.'

In addition: 26.370, as currently worded, requires operators to implement any applicable limitation to its maintenance programme, which may be the LOV (depending on its applicability). The amended CS to 26.370 provides additional clarification.

comment

49 comment by: *AIR FRANCE*

26.300(f) : The proposed rule requires establishing a process that ensures that unsafe

	levels of fatigue cracking will be precluded in service. It seems that the achievement of payload, flight length, etc. tracking may not be possible. Request that EASA delete 26.300 (f) requirement.
response	Partially accepted. The requirement will not be deleted, however, 26.300(f) has been reworded to focus more on the process to be followed rather than being being prescriptive in terms of what data should be analysed.

comment	*50* comment by: *AIR FRANCE* 26.300 (h)(2)(i) : This paragraph requires a compliance time of 18 months to develop the LOV and ALS amendment for older aircraft, while Par. 26.300 (h)(1) requires a compliance time of 24 months to develop the ALS. Change to compliance time in Par. 26.300 (h)(2)(i) to 24 months.
response	Not accepted. The compliance time of 18 months is harmonised with FAA. The revised text 26.300(b) does not request an ALS to be developed Note that the ALS amendment as requested by 26.300(h)(2)(i) is meant to introduce the LOV.

comment	*51* comment by: *AIR FRANCE* 26.320(a) : This paragraph describes the requirements for a List of Fatigue Critical Modified Structure (FCMS). The FAA terminology for these structures is Fatigue Critical Alteration Structure (FCAS), as described in FAA AC 120-93 and FAR 26.45(b). Harmonise terminology between FCMS and FCAS.
response	Not accepted. The term 'Alteration' is not used by EASA. However FCMS and FCAS are considered to be equivalent. The definition and equivalency have been clarified.

comment	*52* comment by: *(Bombardier Aerospace) Short Bros PLC* 26.300(f)(1): without a requirement for owners/operators/maintenance organisations to provide "operational usage" data to the DAH, it is questionable whether or not the outcome from such monitoring will add significantly to the continued operational safety. Even if such a requirement were placed on owners/operators/maintenance organisations, for types where most of the fleet operate outside the remit of EASA a meaningful level of feedback is not assured.
response	Partially accepted. 26.300(f) will be reworded to focus more on the process to be followed rather than being being prescriptive in terms of what data should be analysed.

comment	*53* comment by: *AIRBUS*

PROPOSED TEXT / COMMENT:
"While the core requirements for design approval holders are introduced through the recently proposed Part-26, the requirements for operators are also introduced through Part-26 and Part-M and the correspondent guidance material" (NPA 2013-07, page 17/203, Section A., paragraph VI., subparagraph 2.1.).
Although connected to other, each community concentrates its efforts on a particular objective (contributing to aviation safety) that is specific to the community. In this context, two terms are frequently used in this NPA: 'continued airworthiness' and 'continuing airworthiness'. According to Regulation (EC) No 2042/2003, 'continuing airworthiness' means all of the processes ensuring that, at any time in its operating life, the aircraft complies with the airworthiness requirements in force and is in a condition for safe operation.
No definition has been found for 'continued airworthiness'. It is deemed necessary to develop one. It is proposed to relocate the definition of 'continuing airworthiness' in the Regulation (EC) No 216/2008, and to introduce a definition of the term 'continued airworthiness' next to it. This will prevent confusion, ambiguities and/or extensive interpretations. For example:
The Article 1 of Part-26 indicates that the objective of this Regulation is "to support the continued airworthiness and safety improvements of" different aircraft. If the scope of Part-26 is restricted to continued airworthiness, no requirement for the management of aircraft continuing airworthiness should be introduced in this Regulation.
The following definition of 'continued airworthiness' is proposed:
"Continued airworthiness means all of the processes ensuring that the conditions under which a design approval certificate has been granted continue to be fulfilled at any time during its period of validity".
RATIONALE / REASON / JUSTIFICATION:
It cannot be checked whether the term 'continued airworthiness' is appropriately used or not in this NPA (in the Regulation (EC) No 216/2008, or anywhere else).

response

Noted.
It is not the intend to exlude any requirement for the management of aircraft continuing airworthiness as Part-26 addresses requirements for both DAH's as well as operators. Adding a definition for continued airworthiness could be considered in a seperate future Rulemaking activity. The Agency currently believes that the amended Part-26 rules do not introduce any ambiguity with respect to the wording 'continued airworthiness' which would prevent operators and DAH's to adequately comply with the rule.

comment

54 comment by: *AIRBUS*

COMMENT IS RELATED TO: NPA 2013-07, page 27/203, section B., paragraph II., Opinion Part-26, Article 1 'Scope'
PROPOSED TEXT / COMMENT:
It is proposed to modify this Article to read:
"This Regulation lays down common additional airworthiness requirements to support the continued airworthiness and safety improvements of:
1. aircraft registered in a Member State;

2. aircraft registered in a third country and used by an operator for which a Member State ensures oversight.
3. ~~A~~aircraft, changes, modifications and repairs designed by an organisation for which the Agency ensures safety oversight".
Can a clarification be added on the reason why point 2. refers to 'oversight' and point 3. to 'safety oversight'?
RATIONALE / REASON / JUSTIFICATION:
The term 'change' is frequently associated to 'changes to type designs and type-certificates/restricted type-certificates' (refer to Part-21, subpart D, point 21.A.90A).
To prevent confusion, inconsistencies, or possibilities for extensive interpretations, it is proposed to use the term 'modification'. This term is included in the definition of 'maintenance' in the Article 2 of Regulation (EC) No 2042/2003:
"(h) 'maintenance' means any one or combination of overhaul, repair, inspection, replacement, modification or defect rectification of an aircraft or component, with the exception of pre-flight inspection".
It is to be noted that a change to type design is not necessarily a modification: e.g. an amendment to a published airworthiness limitation is an example of change to type design that is not a (physical) modification of the aeroplane.

response
Not accepted.
The paragraph relates to the activities of the DAH under EASA's responsibilities. Therefore it is the intend to use the word change in accordance with Part-21. This would not lead to confusion since a change could affect in both cases (physical/non-physical change) an operator.

comment
55 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 27/203, section B., paragraph II., Opinion Part-26, Article 2 'Definitions'
PROPOSED TEXT / COMMENT:
The definition of 'Limit of Validity' given in this Article is not strictly the same as the one found in the AMC 25.571.
Can an explanation be added on the reasons why two different definitions are used?
RATIONALE / REASON / JUSTIFICATION:
The existence of differing definitions for the same term can have adverse safety impacts caused by confusion or inconsistent interpretations.

response
Accepted.
The LOV definition will be harmonised across Part 26 and CS 25.

comment
56 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 27/203, section B., paragraph II., Opinion Part-26, Article 2 'Definitions'
PROPOSED TEXT / COMMENT:
The point 8. of this Article indicates the ALS is a section in the 'instructions for continuing airworthiness'. The Annex I of Regulation (EC) No 216/2008, in the paragraph 1.d.4., refers

	also to ‘instructions for continuing airworthiness’. It seems that nothing in the Part-M indicates that the ALS is a section of the ‘instructions for continuing airworthiness’, which is a term that is not defined. The Part 21.A.31 (and the related Certification Specifications) indicates the ALS is a section of the ‘instructions for continued airworthiness’. Which wording should be used: ‘instructions for continued airworthiness’ or ‘instructions for continuing airworthiness’? **RATIONALE / REASON / JUSTIFICATION:** For clarity. Refer also to Comment No 53
response	Noted. It is recognized that the wording continuing airworthiness and continued airworthiness are not harmoninsed across Part-M, Part-26 and Part-21. A harmonisation could be a future rulemaking activity. For Part-26, the Agency believes that the rules do not introduce any ambiguity with respect to the wording ‘continued airworthiness’, which would prevent operators and DAH’s to adequately comply with the rule.

comment	*57* comment by: *AIRBUS* **COMMENT IS RELATED TO:** pages 27-28/203, section B., paragraph II., Opinion Part-26, Article 2 ‘Definitions’ **PROPOSED TEXT / COMMENT:** The Article 1 of Part 26 refers to ‘changes and repairs’. Refer to Comment No. 54. The points 11. and 12. of Article 2 refer to ‘repairs and modifications’. The points 15. and 16. of Article 2 refer to ‘changes and repairs’. Would not it be appropriate to use a unique term, i.e. either modification or change to type design? **RATIONALE / REASON / JUSTIFICATION:** The existence of differing terms for a given item can have adverse safety impacts caused by confusion or inconsistent interpretations.
response	Noted. Part-21 refers to the approval of change to the type design compared to Part-M which uses the term modifications, where changes are implemented on an aircraft. Consistency with this approach was the goal.

comment	*58* comment by: *AIRBUS* **COMMENT IS RELATED TO:** pages 27-28/203, section B., paragraph II., Opinion Part-26, Article 2 ‘Definitions’ **PROPOSED TEXT / COMMENT:** It is proposed to modify the point 12. of Article 2 to read: “12. ‘Damage tolerance inspections’ (DTI) 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. [...]".

RATIONALE / REASON / JUSTIFICATION:
The FAA KSI Team defined in its final report, dated 12-Mar-2007, the term 'procedure' as the instructions for how a task is to be accomplished. A procedure consists of one or more sequential steps. The proposed changes will prevent confusion with what is covered by the term 'inspection method' (already observed).

response | Accepted.

comment | *59* | comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 28/203, section B., paragraph II., Opinion Part-26, Article 2 'Definitions'
PROPOSED TEXT / COMMENT:
It is proposed to modify the definition of 'Repair Evaluation Guideline' to read:
"13. 'Repair eEvaluation gGuidelines' (REG) is a process developed by the holder of a Type Certificate or Restricted Type Certificate to assist the operator in the evaluation of damage tolerance inspections for ~~to establish damage tolerance inspections for~~ repairs that affect fatigue-critical structure ~~to ensure the continued structural integrity of all relevant repaired and adjacent structure.~~"
RATIONALE / REASON / JUSTIFICATION:
The REG is a process to evaluate repairs embodied on an aeroplane rather than to establish damage tolerance inspections. The Damage Tolerance Evaluation (DTE) is the process that leads to the determination of maintenance actions necessary to detect or preclude fatigue cracking that could contribute to a catastrophic failure.
Note the wording "ajacent structure" is not part of the FAA REG definition.

response | Partially accepted.
The wording adjacent structure was added to emphasise that the repair may be influencing the structure around it, however the definition has been revised to remove this wording. The consideration of adjacent structure is further defined in AMC 20-20, Chapter 9.

comment | *60* | comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 34/203, section B., paragraph II., Part-26 Subpart B, point 26.370
page 38/203, section B., paragraph III., CS-26, point CS 26.370
PROPOSED TEXT / COMMENT:
Two solutions have been considered to address the issue of ageing aircraft structure, from the standpoint of the person or organisation responsible for the management of the aircraft continuing airworthiness:
– Solution 1:
It is proposed to delete the points 26.370 from both the Part-26 and the CS-26. The argument is based on the point M.A.301-5(iii), which states that "The aircraft continuing airworthiness and the serviceability of both operational and emergency equipment shall be ensured by: [... 5.] the accomplishment of any applicable [... (iii)] continued airworthiness requirement established by the Agency [...]".

The associated AMC M.A.301-5 should be modified to read:
"[...] ~~Any other c~~Continued airworthiness requirements established by the Agency include instructions and airworthiness limitations made mandatory by the Agency under the Regulation (EU) No 748/2012 and its Annex (Part-21) or the Regulation (EU) No …/… and its Annex (Part-26).~~includes TC related requirements~~ These instructions and airworthiness limitations embrace items such as~~:~~ safe life and damage-tolerant airworthiness limitation items (SL ALI and DT ALI), certification maintenance requirements (CMR), ~~certification life limited parts, airworthiness limitations contained in CS-25 Book 1, Appendix H, paragraph H25.1~~, fuel tank system airworthiness limitation~~s~~ items, including Critical Design Configuration Control Limitations (CDCCL) etc."
– Solution 2:
It is proposed to modify the point M.A.201 to call up the Part-26 (the points 26.370 are kept in both the Part-26 and the CS-26):
"(a) The owner is responsible for the continuing airworthiness of an aircraft and shall ensure that no flight takes place unless:
1. the aircraft is maintained in an airworthy condition, and;
2. any operational and emergency equipment fitted is correctly installed and serviceable or clearly identified as unserviceable, and;
3. the airworthiness certificate remains valid~~, and~~;
4. the maintenance of the aircraft is performed in accordance with the approved maintenance programme as specified in M.A.302, and;
5. compliance is demonstrated with the requirements for owners or continuing airworthiness management organisations of Annex I ('Part-26') to Regulation (EU) No .../... on additional airworthiness requirements for operations."

RATIONALE / REASON / JUSTIFICATION:

– Solution 1:
The requirements proposed in the points 26.370 of both Part-26 and CS-26 are already covered:
· The revision of the Aircraft Maintenance Programme is already required by the point M.A.302(g) and detailed in the various AMC for the point M.A.302.
· The compliance times defined in Part-26 point 26.370(c) are consistent with practices already s in the AMC M.A.302. To deviate from this AMC, the operator will need to apply for an AltMOC (refer to NPA 2013-01).
· The assessment of modifications and repairs is detailed in the point M.A.304.
Duplication of these requirements is unnecessary and contributes to make regulations confusing or more complex than necessary: e.g. CS 26.370(d) indicates that the necessary actions included in the approved design data should be incorporated into the aircraft maintenance programme for approval by the competent authority. Does it mean that the indirect approval procedure cannot be applied to approve the amendments to the aircraft maintenance programme in accordance with point M.A.302(c)? What justifies this restriction?
An amendment of points M.A.302 and/or M.A.304 (and/or their AMC) can be contemplated should an improvement is deemed necessary. Refer also to Comment No. 76
– Solution 2:
The point 26.370 of both Part-26 and CS-26 are kept to shed light on ageing aircraft issues.

This is the only added value (that has been identified so far) to justify the duplication of requirements as it could be argued that reasons to put emphasis on this matter are not clear in comparison with similar matters resulting in both mandatory and recommended instructions for continued airworthiness.
Note: It is recommended to adapt the structure of Part-26/CS-26 to mirror the existing European Rulemaking Regulations structure: i.e. the points 26.370 of both Part-26 and CS-26 should be located in a subpart dedicated to continuing airworthiness management organisations. The other requirements should be located in a subpart dedicated to organisations approved under Part-21 (maybe two subparts: i.e. one for design organisations, one for production organisations). This would maintain a certain consistency and would keep the Rulemaking Regulations structure as simple to grasp as possible.

response

Not accepted.
The purpose of Part-26 is to have clear and unambiguous rules to address potential safety issues with regard to ageing aircraft both for operators as well as DAH's . Is it better to address them in a new Part-26 instead of updating Part-21 and Part-M (see comment 27).
The decision has already been taken with the Opinion on Part-26 to have a section on large aeoplanes addressing operators. As these ageing aircraft rules affect operators, these rules should be placed in the same location.

comment

89 comment by: *British Airways*

Ref:
Page 32, Part 26, subpart A, 26.330.
Comment Summary:
The STC requirements for DT data are to support Part M operators by making the DT data available for incorporation in the operator's maintenance Programme.
The rule applicability does not limit the DT data requirements to those changes incorporated on aeroplanes operated under Part M. This means that DAH's will be required to develop data for previous changes going back to 1958 no matter whether the aeroplane is in Part M or not. This is a huge burden on DAH's.
EASA have advised that under this proposed rule, operators who have inherited organisations who, in turn, had DAH's would assume responsibility for the inherited DAH's Major designs. This further complicates the requirement for organisations that have grown by merger or acquisition compared to those organisations that have grown organically.
Other complications include the differing Major classification definition and associated processes that existed in the NAA's of the member states prior to 2003. Knowledge of whether the STC has been subsequently removed or whether the aeroplane is stored or scrapped does not exist once the aeroplane has left the operator. (Most operators do not track their previous aircraft until they are scrapped and so would be unaware of the status. The situation is even worse for affected components. To track all the aircraft owned or leased since 1958, including inherited responsibilities would be a major undertaking by some of the large operators). What data would EASA use to audit compliance against?

Many non-EASA Part M operators would not need the data that has been developed.
The Regulatory Impact Assessment (RIA) infers that most Major changes would have been addressed as a result of the US Aging Airplane Safety Rule (AASR). This is not the case and as such is extremely misleading. The AASR was applicable to DAH's with STC's embodied on aeroplanes operating under US operating rules only.
The requirement should be for those changes that affect aeroplanes in Part M operation only.
The FAA produced a list of potentially affected STC's and also contacted each affected STCH. This list assisted DAH's and operators to focus on those changes that the FAA considered posed an increased risk. EASA should consider adopting a similar, proactive approach.
Aeroplanes subsequently imported into the EU would be addressed by EASA on a case-by-case basis at time of transfer.
Suggested resolution:
1/. The requirement should be for those changes that affect aeroplanes in Part M operation only. Part 26.370 (a) (4) refers to the Part M obligations.
2/. The requirement should exclude those major changes installed on Aeroplanes where there is no current EASA/EU NAA Type Certificate Data Sheet. (Basic Regulation EC216/2008 chapter II, Article 5 paragraph 2. (a) refers).
3/. EASA should consult with the NAA's and develop a list of Major changes that potentially require an evaluation for Damage tolerance. Once developed, make available to affected DAH's and use a similar process to that employed by the FAA to monitor progress and approval. This list should be publicly available.
4/. EASA should review the definition of Major used by each of the NAA's and compare it to that currently used by EASA. If the NAA definition categorised a change as major but the EASA would not, then the EASA definition should prevail and the DAH would not be required to develop DT data for that particular change. EASA should produce guidance to DAH's/operator's on how to address this aspect.

response

Partially accepted.
1. 26.330 has been revised.
2. If there is no EASA or NAA issued TCDS the STCH does not need to develop DTI as per the amended 26.330. Refer to the amended rule text and in particular Annex 1 of the proposed requirement.
3. Not accepted. The DAHs is in the best position to have or produce or obtain the required data.
4. Annex 5 of Appendix 3 of the AMC 20-20 provides a list of major changes that should be considered. Article 4 of the Regulation (EU) No 748/2012 (Part-21) states that any STC or change shall be deemed to have been issued under this regulation. Therefore, the classification of the adopted changes is considered unchanged. However, the assessment for some of the changes may be limited based on the nature of the change.

comment

96 comment by: *KLM Engineering & Maintenance*

The word "structural" has been omitted from the sentence "The LOV is commonly known as the limit of validity of the engineering data that support the maintenance programme".

	IV Background (14), page 5 of the NPA, shows the sentence as “Limit of validity of engineering data that supports the structural maintenance programme”. Insert “structural” before “maintenance programme”.
response	Accepted.

comment	*97* comment by: *KLM Engineering & Maintenance* The proposed text states: Repair evaluation guideline (REG) is a process to establish damage tolerance inspections for repairs that affect fatigue-critical structure to ensure the continued structural integrity of all relevant repaired and adjacent structure. FAA AC120-93 Appendix 2 Definition (S) Repair Evaluation Guidelines (REGs) provide a process to establish DTI for repairs that affect Fatigue Critical Structure The EASA REG is a more comprehensive process than required by the FAA. Non-harmonised elements will require revised compliance findings. Harmonise the EASA Repair Evaluation Guidelines (REG) definition with the FAA AASR requirement, or explain the benefits and impact of the deviation.
response	Partially accepted. See the response to comment 617.

comment	*98* comment by: *KLM Engineering & Maintenance* The proposed rule requires to include an LOV into the ALS, but does not provide a default value of the Limit of Validity (LOV) in case a DAH is not able to support the establishment of a LOV or in case of excluded aircraft. An operator is in these circumstances not able to comply with EASA Subpart 26.370. In case a TCH is not able to establish a LOV (within the compliance time) for a specific (excluded) large airplane, this airplane may still be operated beyond a life limit if no default is defined. Provide default LOV values like has been provided in FAR 26.21 table 1 (airplanes subject to §26.21) and in FAR subpart 26.21 table 2 (airplane excluded from §26.21).
response	Partially accepted. 26.370 and CS 26.370 have been amended to address other potential aircraft limits to be taken into account.

comment	*99* comment by: *KLM Engineering & Maintenance* The proposed rule requires establishing a process that ensures that unsafe levels of fatigue cracking will be precluded in service. This process must include periodic monitoring of operational usage with comparison to design assumptions; and a periodic assessment of the need for mandatory changes in cases where inspection alone is not reliable enough to ensure that unsafe levels of cracking are precluded. New monitoring requirements may require collection of proprietary data such as: flight

	lengths, fuel weights, payloads, altitudes. EASA has reporting and AD requirements in 21.A.3A/3B. TCH's are already required to have robust processes to report and resolve safety issues. A new redundant requirement is not necessary. Outside EC territory EASA does not have jurisdiction to mandate operators to provide feedback of operational usage to DAH's inside EASA territory. The requirement could therefore result in unbalanced mandatory feedback of operational usage. The proposed rule may increase operator reporting requirements and frequency of data collection and review. EASA is requested to delete 26.300 (f) requirement.
response	Partially accepted: 26.300(f) has been amended to allow more flexibility for the TCH to comply.

comment	*100* comment by: *KLM Engineering & Maintenance* Par. 26.300 (h)(2)(i) requires a compliance time of 18 months to develop the LOV and ALS amendment for older aircraft, while Par. 26.300 (h)(1) requires a compliance time of 24 months to develop the ALS. Change to compliance time in Par. 26.300 (h)(2)(i) to 24 months.
response	Not accepted. 26.300(h)(2)(i) is harmonised with the FAA rules. The additional six months is provided for compliance with 26.300(b) for cases where a complete new SID has to be generated.

comment	*101* comment by: *KLM Engineering & Maintenance* Part 26.320 (a) describes the requirements for a List of Fatigue Critical Modified Structure (FCMS). The FAA terminology for these structures is Fatigue Critical Alteration Structure (FCAS), as described in FAA AC 120-93 and FAR 26.45(b). To harmonise with the FAA terminology, please clarify in AMC 20-20 the relation between FCMS and FCAS.
response	Accepted. AMC 20-20 has been updated.

Comment	*102* comment by: *KLM Engineering & Maintenance* The proposed rule requires that the Repair Evaluation Guidelines (REG) and Repair Assessment Guidelines (RAG) must be approved by EASA. The requirement is contrary to the harmonization agreements contained in EU-US and other bilateral agreements and associated technical implementation procedures concerning mutual acceptance of design data and approval of repairs. To distinguish between FAA and EASA requirements it is suggested that it is made clear that the requirement is for EASA approved documents only (where EASA acts as the certifying authority), not for documents that are already approved by the FAA or other regulatory authorities that have a bilateral agreement with the EU (where EASA acts as

	the validating authority).
Response	Not accepted. This requirement is not contrary to the harmonisation agreement as the REG in itself is not approved repair data. The Agency will make arrangements with the FAA for assistance with compliance findings where appropriate.

comment	*103* comment by: *KLM Engineering & Maintenance* The proposed rule requires that the Repair Evaluation Guidelines (REG) and Repair Assessment Guidelines (RAG) must be approved by EASA. The requirement is contrary to the harmonization agreements contained in EU-US and other bilateral agreements and associated technical implementation procedures concerning mutual acceptance of design data and approval of repairs. To distinguish between FAA and EASA requirements it is suggested that it is made clear that the requirement is for EASA approved documents only (where EASA acts as the certifying authority), not for documents that are already approved by the FAA or other regulatory authorities that have a bilateral agreement with the EU (where EASA acts as the validating authority).
response	Not accepted. This comment is identical to comment 102.

comment	*108* comment by: *KLM Engineering & Maintenance* Part 26.330 applicability In the proposed rule Design Approval Holders are required to provide Damage Tolerant Data on Supplemental Type Certificates (STC) and major design changes (and repairs to Supplemental Type Certificates and major design changes) for airplanes that were previously operated under European NAA / EASA rules, but that are currently not operating under EASA Part M. Design Approval Holders are required to develop Damage Tolerance Data for changes going back to 1958, whether or not the airplane is still in EASA Part M. Operators did not have the EASA Part-21 recordkeeping requirements for the major changes which are deemed to be approved in accordance with Article 4 of Regulation 748/2012. Under local regulations (pre-EASA Part-21) operators transferred such data to the new owner/operator and had only limited recordkeeping requirements after a certain fleet type was phased out. The proposed wording of 26.330 would place an impracticable task at operators that obtained such approvals from their local authorities for aircraft which were phased out in the past. Make the rule applicable only to airplanes that operate under EASA Part M requirements. Also make Part 26.330 not applicable to major design changes and repairs to major changes that are deemed to be approved in accordance with Article 4 of Regulation 748/2012. Instead transfer this requirement to Part 26.370 (a)(5), which refers to the Part M obligations. Under Part 26.370 the current operator should be made responsible to evaluate whether major changes, that are deemed to be approved in accordance with Article 4 of Regulation

748/2012, are installed on its aircraft. In case such changes are installed, the current operator should take the responsibility to obtain DTI.

response

Partially accepted.
Test has been amended.
See also comment 89. Please note that the responsibility is shared between the DAH and the operator also for pre-EASA major changes. The operator must obtain DTI for all repairs and major changes and the STCH must support this if requested for changes deemed to be approved in accordance with Article 4 of Regulation (EU) No 748/2012.

comment

109 comment by: *KLM Engineering & Maintenance*

For the period in time between 1958 and 2003, there was no uniform definition of major changes within all countries that are now part of the EU. Therefore it may not be clear for certain changes that were approved by local NAA's between 1958 and 2003 whether they are major or minor, and would require additional DT data or not.
A definition of major changes for the purpose of Part 26.330 and CS 26.330 is not given in the proposed rule.
For the purpose of this rule, include a clear definition of major changes for changes that were approved by local NAA's between 1958 and 2003.

response

Noted.
Annex 5 of Appendix 3 to AMC 20-20 provides a list of major changes that should be considered. Article 4 of the Regulation (EU) No 748/2012 (Part-21) states that any STC or change shall be deemed to have been issued under this regulation. Therefore, the classification of the adopted changes is considered unchanged. However, the assessment for some of the changes may be limited. See also comment 89.

comment

110 comment by: *AIRBUS*

COMMENT IS RELATED TO page 27/203, Article 2 'Definition'
PROPOSED TEXT / COMMENT:
It is proposed to modify the Limit of validity' (LoV) to read:
Limite of validity (LOV) corresponds 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 airplane.
Note : This demonstration must include an evaluation of airplane structural configurations and be supported by test evidence and analysis at a minimum and, if available, service experience, or service experience and teardown inspection results, of high-time airplanes of similar structural design, accounting for differences in operating conditions and procedures.
RATIONALE / REASON / JUSTIFICATION:
LOV definition exists in the FAR Part 26.

response

Accepted.
LOV definitions have been harmonised with the FAA.

comment	*111* comment by: *KLM Engineering & Maintenance* Single list of Supplemental Type Certificates affected by Part 26.330: EASA have not shown an intention to create and publish a single list of all Supplemental Type Certificates that are affected by Part 26.330, and the compliance status of the Supplemental Type Certificate Holders. Such a list would be an effective tool for operators to manage the requirements for Damage Tolerant evaluations on Supplemental Type Certificates that are installed on their fleets. Note: The FAA have created and published a similar single list of FAA Supplemental Type Certificates and the compliance status of these Supplemental Type Certificates with FAA requirements. EASA is requested to create and publish a single list of all Supplemental Type Certificates that are affected by Part 26.330, and the actual compliance status of these Supplemental Type Certificates with Part 26.330 requirements. EASA is requested to frequently update this single list to reflect the current status of the Supplemental Type Certificates and major changes deemed applicable under the regulation.
response	Noted. The Agency currently has the list of STC's published for all STC's approved after 2003. Additionnally, it is expected that operators will get the necessary support by the DAHs under 26.330 as they will have to publish the list of their changes affecting FCS and make it available to operators who need to comply with 26.370.

comment	*112* comment by: *KLM Engineering & Maintenance* Widespread Fatigue Damage (WFD) on existing and future major structural changes and repairs up to the extended Limit of Validity (LOV): The proposed rule requires accomplishment of WFD evaluation on major structural changes and repairs up to the extended LOV, regardless of the certification basis of the aircraft. Part 26 only requires WFD evaluation of repairs up to the LOV if required by the certification basis of the airplane. The requirement for WFD evaluation on major structural changes and repairs up to the extended LOV would make an extended LOV only applicable to an individual airplane, instead of applicable to all airplanes of that particular airplane model. This would result in additional costs for operators that apply for an extended LOV for more than one airplane. There is no proportionality in the requirement. The requirement is the same whether an airplane is to exceed the LOV by 10 flights or 10,000 flights. There is no FAA requirement to perform WFD evaluation on major structural changes and repairs, unless the airplane certification basis requires it. The proposed NPA makes the operators responsible to obtain the WFD evaluations, but there is limited WFD evaluation capability outside the Type Certificate Holders. If the SRM has not been evaluated for WFD after extension of the LOV, it can not be used for many future repairs. Requiring WFD evaluation on major structural changes and repairs up to the extended LOV would not provide a significant increase of the level of safety, but instead would result in a significant compliance and economic burden on European Design Approval Holders and operators.

	The requirement from Part 26.350 to perform WFD evaluation on major structural changes and repairs should only be applicable when the certification basis of the airplane requires doing so. Please clarify this in the rule or AMC. Harmonise with FAA requirements.
response	Accepted. 26.350 has been harmonised with the FAA.

comment	*113* comment by: *KLM Engineering & Maintenance* Three stage repair approvals for Damage Tolerant Inspections: EASA allows Damage Tolerant deferral greater than 12 months provided that a temporary limitation was substantiated by sufficient fatigue and damage tolerance data and approved at the first stage of approval. Some Non-EU Type Certificate Holders hold FAA approval to approve repair designs for static strength for a period on 24 months, without the FAA requirement to perform a Damage Tolerant evaluation at the first stage of approval. The EASA proposal results in an additional burden to both the TCH and the operator, and could result in additional ground time of an airplane waiting for stage 1 approval with Damage Tolerant evaluation. If a Non-EU TCH provides a stage 1 approval with a threshold of 24 months that is only evaluated for static strength, then the EASA proposal makes the operator responsible to obtain a Damage Tolerant evaluation. There is limited Damage Tolerant evaluation capability outside the Type Certificate Holders. The FAA equivalent text contained in FAA AC120-93 Appendix 5 contains a sentence 'Unless the FAA agrees a longer period the DT data should be submitted no later than 12 months…' The underlined text is omitted from the EASA Annex. Harmonise with FAA requirements and clarify in AMC 20-20, Annex 1.
response	Noted. See the response to comment 436.

comment	*115* comment by: *KLM Engineering & Maintenance* Operators are required to ensure all installed repairs and modifications have been assessed for Damage Tolerance including Widespread Fatigue Damage (WFD) up to the proposed extended LOV. WFD assessment of repairs and modifications becomes an operator responsibility if the Design Approval Holder (DAH) cannot support or the DAH is no longer in business. The requirement is applicable to all large aeroplanes certified after the 1st January 1958. The FAA does not require WFD evaluation of repairs or changes, unless the aeroplanes certification basis requires it. The requirement is contrary to the harmonisation agreements contained in the EU-US bilateral and associated Technical implementation procedures concerning mutual acceptance of design data and approval of repairs. The proposed NPA makes the operators responsible to obtain the WFD evaluations, but

there is limited WFD evaluation capability outside the Type Certificate Holders (TCH).
Some aeroplane models have a stated Limit of Validity (LOV), which is relatively low (developed in accordance with the FAA rule that did not require repairs or Supplemental Type Certificates to be assessed for WFD if extending the LOV). For these models, the intention was for the TCH to extend the LOV at a later date. This rule would penalise operators of these models
The rule does not require the TCH to upgrade the RAG/REG/SRM for WFD. This further makes it difficult for operators to comply.
Transfer of airplane and certain components will be difficult with products coming from outside the EU due to the un-harmonised requirement.
It is likely that only the TCH will have sufficient data and knowledge to extend an LOV. If the aeroplane has non TCH STC's and repairs installed, the design data would need to be made available to the TCH. It is also likely the operator would encounter a number of problems regarding propriety data and intellectual property rights.
Harmonise with FAA requirements.

response

Noted.
LOV extension requirements (26.350) will now be harmonised with the FAA T therefore, the LOV extensions will need to be approved as a major change in accordance with Part-21.

comment

116 comment by: *KLM Engineering & Maintenance*

26.370 (b) (1) This paragraph concerns the extended LOV. Using the term "proposed LOV" may lead to confusion.
For clarification change the wording "proposed LOV" to "proposed extended LOV".

response

Noted.
26.370(b)(1) has been deleted after being revised.

comment

133 comment by: *AIRBUS*

Comment related to page 29 /203, paragraph, 26.300(f)
PROPOSED TEXT / COMMENT:
It is proposed to delete this paragraph
RATIONALE / REASON / JUSTIFICATION:
This is a process that overlaps continued airworthiness procedures (IR 21.3).
AMC 20-20 may detail acceptable process (e.g. STG, fleet survey, etc.)

response

Noted.
26.300(f) is reworded to focus more on the process to be followed rather than being prescriptive in terms of what data should be analysed. In addition additional wording has been added to the CS to 26.300(f) and to the AMC 20-20.

comment

134 comment by: *AIRBUS*

Comment related to page 29 /203, paragraph 26.300(g)

PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(g) Identify the fatigue-critical baseline structure and principal structural elements (PSEs) for all aircraft models and derivatives in the type certificate.
Submit to the Agency for approval a list of the structure identified under point (g) and, upon approval, make the lists available to operators and persons required to comply with Part 26.330, 26.360, 26.370.
RATIONALE / REASON / JUSTIFICATION:
The list must be submitted before to be approved.

response
Not accepted.
26.300(h)(7) already addresses this issue.

comment *135* comment by: *AIRBUS*

Comment related to page 29 /203, paragraph, 26.300(h)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(h)(1) requests development of an ALS 24 months from the entry into force of this rule.
(h)(2) requests development of an LoV not later than (i) 24 months...
RATIONALE / REASON / JUSTIFICATION:
24 months (h.1) and 18 months (h.2) seem to be not compatible.
For consistency, the time frame should be 24 months for both paragraph h.1 and h.2

response
Not accepted.
See response to previous comments 50 and 100.

comment *136* comment by: *AIRBUS*

Comment related to page 30/203, paragraph 26.300(h)(3)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(3) Submit the actions established according to point (d) to the Agency for approval, according to a schedule agreed with the Agency. The schedule must be submitted together with the LoV according to the compliance time of point (h)(2). The schedule covers the actions to be done before target dates given in (h)(2), but also the "binding" schedule for the actions to be performed between (h)(2) target dates an first A/C reaching its LOV.
RATIONALE / REASON / JUSTIFICATION
For clarification

response
Not accepted.
As the submission date is the same for the LOV and the schedule, no additional actions are currently required before the target dates in (h)(2).

comment *137* comment by: *AIRBUS*

Comment related to page 31/203, paragraph, 26.320(a)
PROPOSED TEXT / COMMENT:
Is should be explained in a “preamble” or in an annex/appendix to the AMC that there is a strict equivalent between the FAA FCAS and the EASA FCMS. This is to remove any possible ambiguity in the future.
RATIONALE / REASON / JUSTIFICATION:
For clarification

response

Accepted.
The definition has been updated.

comment *138* comment by: *AIRBUS*

Comment related to page 31/203, paragraph, 26.320(b)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(b) Existing published repair data in approved documentation.
RATIONALE / REASON / JUSTIFICATION:
The scope should be limited to published repair in approved documentation (SRM, SB, AD, RAG).
Repair published in AMM, CMM and concessions are excluded (see STG/AAWG) as AMM, CMM are not approved documents.

response

Not accepted.
Documentation can be approved by either the DOA or the Agency. An approved repair should be approved in accordance with Part-21 and the associated repair instructions may be published in documents available to the operators (such as AMM, CMM , SRM).

comment *139* comment by: *AIRBUS*

Comment related to page 31/203, paragraph, 26.320(c)(3)
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to clearly identified that there is one implementation schedule for the REG and implementation schedules for repair DTI.
There should be implementation periods for both.
RATIONALE / REASON / JUSTIFICATION:
For clarification

response

Partially accepted.
Wording has been clarified, however, AMC 20-20 provides sufficient information about implementation schedules for repair DTI (Apendix 3, 3.13 Implementation schedules).

comment *140* comment by: *AIRBUS*

Comment related to page 31/203, paragraph,26.320(b)(2)
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph as necessary to include:

	"…and, upon approval, make the DTE/DTI available to persons required to comply with sections 26.370(a)(3). RATIONALE / REASON / JUSTIFICATION: For clarification
response	Noted. In Part-21, the DAH is obliged to make the ICA available to the operators, 21.A.449 requires this. AMC 20-20 has been amended to further clarify this point.

comment	*141* comment by: *AIRBUS* Comment related to page 32/203, paragraph, 26.320(e)(3) PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph as necessary to include: "…and, upon approval, make the lists available to persons required to comply with sections 26.370(a)(3) RATIONALE / REASON / JUSTIFICATION: For clarification
response	See the response to comment 140. The REG are also considered ICA.

comment	*142* comment by: *AIRBUS* Comment related to page 32/203, paragraph, 26.350(a)(2) PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph to harmonise with current FAR 26 requirement ...The ALS must address the need for all design changes ~~and repairs~~ on an aircraft to be substantiated before the extended LoV can be adopted in the structural maintenance programme for that aircraft... RATIONALE / REASON / JUSTIFICATION: For harmonisation, repairs are not part of E.LOV in FAR part 26.
response	Accepted.

comment	*143* comment by: *AIRBUS* Comment related to page 33/203, paragraph, 26.350(b)(1) PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read: (1) A Fatigue and Damage Tolerance Evaluation of the changed or future approved and published repaired structure for which they hold the approval or application for the approval thereof, and of any other structure that is affected by that change or repair, must be performed. RATIONALE / REASON / JUSTIFICATION:
response	Noted.

	Subject paragraph has been deleted in the amended rule.

comment	*144* comment by: *AIRBUS* Comment related to page 33/203, paragraph, 26.360 PROPOSED TEXT / COMMENT: It is proposed to modify this title to read: Fatigue and Damage Tolerance Evaluation of future approved published repairs and changes RATIONALE / REASON / JUSTIFICATION: For clarification
response	Not accepted/understood. The paragraph is for applicants and it must include all the repairs not only the published ones.

comment	*167* comment by: *British Airways* **Reference:** Part 26, subpart A, 26.350 (a) (2) Page 32 & 26.350 (b) (2) Page 33 & CS26.350 (b) Page 37 **Comment summary:** **<u>WFD assessment of existing repairs and changes</u>** The requirement to accomplish a WFD assessment of repairs is not harmonised with the FAA rule that does not require a WFD assessment of repairs (unless the aeroplanes certification basis requires it). Some aeroplane models have a stated LOV, which is relatively low (perhaps developed for the FAA rule that did not require repairs or STC to be assessed for WFD if extending the LOV). For these models, the intention was for the TCH to extend the LOV at a later date. This rule would penalise operators of these models. There is very limited capability outside the TCH's to perform a WFD evaluation. The rule does not require the TCH to upgrade the RAG/REG/SRM for WFD. If these are not upgraded the operator would have extremely limited approved repair options. Transfer of aeroplanes & certain components will be difficult with products coming from outside the EU. The requirement is contrary to the harmonisation agreements contained in the EU-US bilateral and associated Technical implementation procedures concerning mutual acceptance of design data and approval of repairs. There is no proportionality in the requirement. The requirement is the same whether an aeroplane is proposed to exceed the LOV by 10 flights or 10,000. EASA approve the LOV, so would be best placed to establish and control the WFD requirements on a case-by-case basis (depending on the extension being sought). By requiring this in Part 26 removes the opportunity of negotiating any flexibility.

Suggested Resolution:
Delete the following from 26.350 (a) (2).
'. include consideration of WFD and..'
Delete the following from 26.350 (b) (2).
'..include consideration of WFD and..'

response

Partially accepted.
26.350 has been harmonised with the FAA.

comment

168

comment by: *British Airways*

Reference:

Part 26, subpart A, 26.350 (b) (3) Page 33

Comment Summary:

WFD assessment of future repairs and changes

Why does EASA require this statement for approval of future repairs and changes, which affect FCBS?
All changes that affect WFD are Major changes. Major changes/STC's are already approved by the Agency, either directly or via the EU/US bilateral arrangements.

Future repairs would be of SRM quality and under 26.320 (b), as such would have, as a minimum, been assessed for DT up to the LOV this will ensure airworthiness. The repair is approved for a life up to the first LOV.

If installed after the first LOV it should be airworthy up to the second LOV providing the second LOV does not exceed the first. The repair does not require an evaluation for WFD. is highly unlikely an aeroplane would go to two times LOV. Even if it did, EASA approve the LOV and can control this. This is a major burden on industry for an unclear safety benefit. Would EASA be able to cope with the approval of all repairs to FCS (assume it includes reinforcing and non-reinforcing) and changes to FCS? EASA levy a charge for the approval of Major repairs – this has not be reflected in the Regulatory Impact Assessment (RIA). This would be a cost to operators/DAH's and a revenue to EASA.
This requirement undermines existing practices, procedures and agreements. The requirement to accomplish a WFD assessment of repairs is not harmonised with the FAA rule that does not require a WFD assessment of repairs unless the aeroplanes certification basis requires it.
Some aeroplane models have a stated LOV contained in the ALS, which is relatively low (perhaps developed for the FAA rule that did not require repairs or STC to be assessed for WFD if extending the LOV). For these models, the intention was for the TCH to extend the LOV at a later date. This rule would penalise operators of these models.
There is very limited capability outside the TCH's to perform a WFD evaluation.
The rule does not require the TCH to upgrade the RAG/REG/SRM for WFD if the applicant is not the TCH. In this scenario the operator would not be able to use these documents. There is no specific wording included addressing the SRM even if the TCH is the applicant.
If the SRM were updated as a result of this rule, all operators would need to comply with repairs it contained. US operators who should be unaffected by the rule would incur

additional cost burdens as a result of the revised SRM as a result of increased inspections and maintenance programmes changes and other control costs. These should be accounted for in the regulatory impact assessment.
Transfer of aeroplane & certain components will be difficult with products coming from outside the EU.
The requirement is contrary to the harmonisation agreements contained in the EU-US bilateral and associated Technical implementation procedures concerning mutual acceptance of design data and approval of repairs.
There is no proportionality in the requirement. The requirement is the same whether an aeroplane is proposed to exceed the LOV by 10 flights or 10,000.
EASA approve the LOV, so are best placed to establish and control the WFD requirements on a case-by-case basis (depending on the extension being sought). By requiring this in Part 26 removes the opportunity of negotiating any flexibility.

Suggested resolution:

Delete 26.350 (b) (3).
If requirement remains unchanged, specific wording relating to approved documents such as the SRM should be included. Also, the RIA should reflect the imposition of additional requirements on US operators.

response

Accepted.
26.350 has been harmonised with FAA.

comment

169 comment by: *British Airways*

Reference:
Part 26, subpart A, 26.360 (b) (3) & (4) Page 33
Comment Summary:
26.360 (b)(3) allows the return to service for 12 months after initial repair approval (stage 1). Damage tolerance based thresholds and maintenance actions are required at this point (stage 2).
Certain, FAA TCH's are not required to provide the DT (stage 2) until 18 months.
This is a DAH requirement however will have a significant impact on operators.
Currently operators work to a Service Letter that states that EASA accept the FAA process and timescales. If the proposed rule is adopted, EU-operators of certain US certified aeroplanes will be out of compliance with the 26.370 (b) (1) and AMC 20-20 Appendix 3, paragraph 3.13.1 (c) [existing repairs] and AMC 20-20-Appendix 3 Annex 1 (b) [future repairs] which requires 12 months.
As 26.370 (b) (1) is a rule it will be hard to vary in the future unless this issue is addressed.
If EASA accept the FAA accepted process, it should be addressed in the AMC material.
If EASA do not accept the FAA process, grace periods should be established for those repairs already in the existing process.
Currently, there is no guidance available to operators on how EASA recommends them to deal with the situation where the FAA TCH does not alter the existing process. How would operators cope with this on future repairs.
Suggested resolution:
1/. If EASA accept the FAA process and timescales adopted by some US TCH's, it should be

recognised in the AMC material.
2/. If EASA do not accept the FAA process, grace periods should be established for those repairs already in the existing process.
3/. EASA should provide guidance to operators on acceptable means of compliance in the event of the FAA accepted process not changing to accommodate the proposed EASA rule. EASA has previously indicated the 12 months can be varied with Agency approval. It remains unclear to EU operators whether the 18 month stage 2 process does have Agency approval or not.

response

Noted.
26.360 is only applicable for future repairs which are approved after the date of entry into force. FAA stage 1 approval may be subject to 26.360 (b)(4).

comment

171 comment by: *British Airways*

References:
Part 26, subpart A, 26.370 (a) (3) Page 34
Comment Summary:
The paragraph requires the operator to revise the maintenance programme to include the REG. By making this a requirement of Part 26 it mandates the operator to incorporate the REG in its entirety. Any deviation would need to be approved by an Alternate Means of Compliance?
Under the FAA AASR, TCH's were required to produce a REG to assist operator compliance. The requirement should be for the operator to include procedures and practices to ensure repairs are assessed for Damage Tolerance. The REG is a way of demonstrating compliance but not the only way and would therefore be more appropriate in the guidance material to the rule rather than in the rule.
CS26.370 (d) already makes reference to the REG and would not need to be changed.
Suggested resolution:
Amend (3) to require the operator to revise the maintenance programme to,
'Include procedures and practices to ensure applicable repairs are assessed for Damage Tolerance'.

response

Accepted.
REG has been removed from the rule, flexibility has been built in 26.370 and its corresponding CS.

comment

173 comment by: *British Airways*

References:
Part 26, subpart A, 26.370 (b) (1) Page 34
Comment Summary:
The **operator** is required to ensure all installed repairs and modifications have been assessed for Damage Tolerance including WFD. If the DAH cannot support or the DAH is no longer in business the WFD assessment of repairs and modifications becomes an operator responsibility. The requirement is applicable to all large aeroplanes certified after the 1st January 1958.

Requiring a Damage Tolerance Evaluation already significantly enhances the level of safety. The requirement for a WFD evaluation introduces a considerable burden on industry (both in ability to achieve compliance and cost of compliance).
This aspect of the rule is not harmonised. The FAA does not require WFD evaluation of repairs or changes unless the aeroplanes certification basis requires it. The requirement is contrary to the harmonisation agreements contained in the EU-US bilateral and associated Technical implementation procedures concerning mutual acceptance of design data and approval of repairs.
Transfer of aeroplane & certain components will be difficult with products coming from outside the EU due to the un-harmonised requirement.
Some aeroplane models have a stated LOV, which is relatively low. It is low as it was possibly developed for the FAA rule that did not require repairs or STC to be assessed for WFD if extending the LOV. For these models, the intention of the TCH was for the LOV to be extended at a later date. This rule would penalise operators of these models.
The rule does not require the TCH to upgrade the RAG/REG/SRM for WFD. This further makes it difficult for operators to comply.
Few DAH's outside the TCH's are able to perform a WFD evaluation.
It is likely that only the TCH will have sufficient data and knowledge to extend an LOV. If the aeroplane has non TCH STC's and repairs installed, the design data would need to be made available to the TCH. It is also likely the operator would encounter a number of problems regarding propriety data and intellectual property rights.
By making subtle reference to Part 26.350 (which in turn requires the ALS to be amended to address future repairs for WFD) this aspect may not be immediately obvious to operators. This could lead to compliance issues.
Whilst it is understood why EASA would wish to include WFD assessment of repairs for an extended LOV, the practicalities of it and the associated cost burden compared to the perceived benefit is prohibitive. The AAWG studied this issue and concluded that whilst there is a theoretical possibility of WFD occurring as a result of a repair, there have been no recorded examples of it occurring in service.
WFD assessment of Future Repairs
The requirement to reassess existing repairs for WFD will be substantially more difficult to achieve than obtaining the DT due to the following reasons:
For DT requirement, a number of repairs could be assessed against the upgraded SRM, the REG and RAG (as applicable). The rule does not require the TCH to develop these documents for WFD, thus placing many more repairs in the category of having to be replaced or re evaluated.
Whoever (DAH) supports the LOV extension will have very little data to assess these repairs (especially if the TCH is not the DAH).
Most DAH's do not provide an ultimate threshold for a repair. They assess up to the current LOV. If a non-TCH DAH was to develop an extended LOV, such repairs would need to be re-evaluated (these would not be supported by the TCH unless they are extending the LOV eg would not support another DAH) and the category could change eg previous cat A (no additional insps) to cat B (supplemental insps).
It is also unclear how would this requirement work if an operator has already incorporated an EASA approved extended LOV into the maintenance programme?
Suggested resolution:

Delete 26.370 (b) (1)
Harmonise with the rule with the FAA. Follow the principles of the EU/US bilateral, and remove the requirement for a WFD assessment of repairs unless the aeroplanes original certification basis required it.
By including this requirement in Part 26 all Agency flexibility is removed to accommodate different situations (for example revising the LoV by a relatively small amount).

response

Accepted.
Thetext has been harmonised.

comment

176 comment by: *British Airways*

References:
Part 26, subpart A, 26.370 (b) (1) Page 34
Comment Summary:
The requirement is for '**all**' installed repairs and modifications. However, the actual requirement for DT is for reinforcing repairs affecting FCS. Also, not all modifications (changes?) are required to be assessed for DT. Regarding WFD assessment of changes and in accordance with previous comments to Part 21, B, I page 26,
FAA policy notice Air-100-12-10-05 refers to FAA AC 21.101-1A, Appendix A, page A-25 identifies an "airframe life extension" of a transport category airplane as a significant product level change. There has been confusion whether the application of LOV should be categorized as an "airframe life extension" in this context. The memorandum clarifies that AC 21.101-1A guidance for "airframe life extension" is not intended to apply to extending an LOV in accordance with 14 CFR 26.23. The FAA plans to clarify this point in the next revision of FAA AC21.101-1A. The FAA policy notice states:
Requirements: Establishing the Certification Basis:
Extending an LOV in accordance with 14 CFR 26.23 without a physical modification to the airplane is considered a "not significant" design change in accordance with AC 21.101. However, if extending the LOV requires a physical design change to the airplane, the design change is to be evaluated in accordance with 14 CFR 21.101. Use AC 21.101-1A for guidance to determine the level of significance of the design change and the corresponding certification basis.
The requirements for the operators are not consistent with those of the DAH. The wording of the rule for the operator could be interpreted to include many more repair and changes than the DAH will prepare data for.
CS26.370 does not provide sufficient clarification on this.
Transfer of aeroplane & certain components will be difficult with products coming from outside the EU due to the un-harmonised requirement.
It is likely that only the TCH will have sufficient data and knowledge to extend an LOV. If the aeroplane has non TCH STC's and repairs installed, the design data would need to be made available to the TCH. It is also likely the operator would encounter a number of problems regarding propriety data and intellectual property rights.
Suggested resolution:
Delete the word 'all' and revise the requirement to be consistent with the DAH aspects of the rule.

response	Noted. Part 26.370 is redrafted.

comment	*186* comment by: *UK CAA* **Page No:** 29/203 **Paragraph No:** 26.300(f) **Comment:** Would the requirement of this paragraph also apply to STCH? If so how would this be implemented?
response	Noted. However, at this point 26.300(f) will only be applicable for TCH.

comment	*187* comment by: *UK CAA* **Page No:** 29/203 **Paragraph No:** 26.300(g) **Comment:** Would the FCBS list already produced by TCHs for the FAA rule be acceptable to EASA without further showing?
response	Noted. Yes, however, the way this would be processed and made clear to operators will need to be defined, once the regulation is adopted.

comment	*189* comment by: *UK CAA* **Page No:** 30/203 **Paragraph No:** 26.310 Design Change impact on the LoV **Comment:** This paragraph requires the TCH to have a WFD assessment of design changes approved after entry into force of this rule. Is there a similar requirement for STCH to assess their modifications in a similar way?
response	Noted. No. This aspect is harmonised with FAA.

comment	*190* comment by: *UK CAA* **Page No:** 31/203 **Paragraph No:** 26.320(c) REG **Comment:** Are the published REGs that have been prepared for the FAA Ageing Aircraft rule, acceptable to EASA without further showing?
response	Noted. This is an implementation issue and it is expected that minimal revisions would be required to ensure clear acceptability and applicability for Part-M operators.

comment	*191* comment by: *UK CAA* **Page No:** 32/203

Paragraph No: 26.330
Comment: If the DAH holds a repair or modification approval for a component, and the component is on an a/c operating outside of the EU, is the DAH still liable to meet this rule? It is unclear how this is possible as the DAH will not have any means of tracking where the mod/repair is operating.

response

Noted.
26.330 has been amended to allow flexibility.

comment

192 comment by: *UK CAA*

Page No: 33, 37, 137/203
Paragraph No: 26.350(b), CS 26.350(b), AMC 20-20, paragraph 7 WFD Evaluation for mods & repairs
Comment: The requirement to assess all repairs on an a/c for WFD when an extension to the LoV is requested, is disproportionate when looking at the regulatory burden compared to the safety benefit gained.
Justification: Normally, aircraft will accrue more repairs as the aircraft ages, so reducing the probability of WFD up to the LoV extension. All repairs will have had a DTE, and so will be inspected at a threshold and repeat period. UK CAA are unaware of any recorded instances of WFD on a repair or repaired structure, and although the possibility exists, it is not proven that the safety benefit outweighs the regulatory burden. This position is also in disharmony with the FAA position, creating an unnecessary burden to operators when transferring aircraft across.

response

Accepted.
26.350 has been amended to harmonise with the FAA. The LOV extension will need to be approved as a major change/STC in accordance with Part-21.

comment

249 comment by: *BAE Systems Regional Aircraft*

26.300 (b): Older types have been certificated to requirements that pre-date JAR 25, using safe life principles. For example the British Aerospace Jetstream 31 has a Safe Life declared in the Maintenance Manual. The Safe Life is derived from component and full scale fatigue tests and the aircraft is not permitted to operate beyond this life. No SSID exists for these aircraft, nor is one needed as long as they operate within the published fatigue life. 26.300 (b) seems to suggest that DTE (published in a SSID) is required for all aircraft; BAE Systems suggests that DTE is not required as long as the aircraft operate within a Safe Life that is supported by analysis and test.
26.300 (e): A CPCP already exists or corrosion inspections are already contained in the MRBR for all BAE Systems civil types, so this proposal has minimum impact. The roles and responsibilities for approval of the CPCP and MRBR need to be considered carefully, to avoid confusion or duplication. Of particular interest is how compliance with 26.300 (e) is established, especially if the relevant MRB Working Group believes that the MRBR is acceptable while the Competent Authority believes that it is not – who makes the final decision?
26.300 (f): The extent of monitoring required is unclear. It is not practical for an OEM to

	monitor all operators of their product, especially as the fleet ages and disperses to a large number of smaller operators. In this case monitoring is likely to ad-hoc and patchy. It may be more practical to check if the scheduled inspections are returning more damage reports or more extensive damage than expected, indicating that the underlying assumptions need to be reviewed. 26.300 (g): BAE Systems believe that the introduction of a stand-alone PSE list is not necessary for our legacy products as the information intended to be captured is already available in the SRMs. 26.350: BAE Systems believes that the difference in FAA requirements and the EASA proposal in regard to extension of LoV, specifically the consequential requirement to carry out WFD analysis of repairs), will cause confusion for aircraft moving between jurisdictions and should be avoided by harmonising the requirements.
response	Partially accepted. 26.300(b) has been updated. Jetstream 31 is considered a commuter aircraft, therefore it is not subject to this rule. 26.300(e) A CPCP accepted through the MRB-process could be accepted to show compliance to 26.300(e). 26.300(f) will be reworded to focus more on the process to be followed rather than being prescriptive in terms of what data should be analysed. 26.300(g) Standard PSE list has been removed from Part 26. 26.350 has been amended to harmonise with the FAA. The LOV extension will need to be approved as a major change/STC in accordance with Part-21.

comment	*265* comment by: *LHT DO* page 31 & 83: The Terms FCS, FCMS,FCAS, FCBS are inconsistently used. It appears as if there is no harmonization with FAA wording FCA. Please harmonise with FAA (see AC120-93) wording and eventually add section to provide additional clarification .
response	Noted. FCAS is not used in the proposal. See previous responses regarding acceptability of FCAS for compliance with 26.330.

comment	*266* comment by: *LHT DO* Page 31, 83, 84: The term " FCMS" is not defined. Please define under App. I page 83 and incorporate into list of acronyms page 84.d
response	Accepted.

comment	*269* comment by: *LHT DO* page 32:

	STC holders obligations rely on listing that is required to be provided by TC holders under 26.300(g) and 26.320(a) within 12 month of entry into force of this rule. The same 12 month period given to STC holders may already be used-up by the TC holders to generate the list of FCBS necessary for the STC holders to finish their investigation. Please provided compliance period of additional 24 month for STC holders required under 26.330(c)(1) and (2).
response	Not accepted. Compliance times are harmonised with FAA and the lists are in general already available through the FAR 26 compliance.

comment	*282* comment by: *FedEx Aging Aircraft Structures* Even under the FAA system it has been difficult if not impossible to get sufficient data from the STC holder to perform DT analysis on repairs/modifications where the STC holder may be surrendering the STC. Often this is beyond the ability of the operator.
response	Noted. AMC 20-20 provides guidance on how to obtain DT when the STC holder is not providing it.

comment	*288* comment by: *AIR FRANCE* Part 26.350 : The proposed rule requires a more stringent evaluation to raise the LOV than to establish the initial LOV. The different level of scrutiny is not justified just based on whether it is an initial determination or a later extension. This approach will have significant financial impact by restricting the ability to raise the LOV of a type of airplanes. Extended LOV will require an assesment of all changes (repairs, alterations and modification) for extension. Delete section 26.350 because EASA requests additional requirements on the WFD assessment and the repair. FAA does not require it, harmonise with FAA requirements.
response	Accepted. 26.350 has been revised to harmonise with the FAA. The LOV extension will need to be approved as a major change/STC in accordance with Part-21.

comment	*289* comment by: *AIR FRANCE* Part 26.360 (b)(3) : Clarify if the FAA 8100-9 still valid under EASA requirement.
response	Noted. The EASA requirement has no impact on the validity of the FAA data for the purposes for which is was issued. However, where the approved FAA data is compliant with their Part-26, it constitutes a valid means of compliance with the EASA Part-26 requirement. Note: a Form 8100-9 is only acceptable for non critical components and an EASA STC is required for EASA approval of critical components. (TIP Rev 5) EASA may also produce a certification memorandum to clarify the acceptability of the FAA

	data.

comment	*290* comment by: *AIR FRANCE* Part 26.370 (a)(3) : EASA REG should be harmonised with FAA AASR requirement.
response	Noted. The requirement for the REGs are harmonised. At the AC and AMC level, the intent is to be harmonised with the FAA. However the EASA AMC is more specific regarding adjacent structure and non- reinforcing repairs. EASA may also produce a certification memorandum to clarify the acceptability of the FAA data.

comment	*309* comment by: *Dassault Aviation* **II. Draft Opinion Part-26:** · § Definitions: 7. "*'Limit of validity' (LoV) is the number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that widespread fatigue damage is unlikely to occur in the aeroplane structure"* DASSAULT-AVIATION remark that even the aeroplane age is a parameter for corrosion and possible initiator of WFD. Furthermore both the number of flight cycles and flight hours are important. So that the LoV definition has to be modified as: "*'Limit of validity' (LoV) is a number of total accumulated flight cycles* and *flight hours* ~~or both~~ and a maximal aeroplane age*, for which it has been demonstrated that widespread fatigue damage is unlikely to occur in the aeroplane structure".* In fact it would be in line with what is written in AMC 20-20 Appendix 4 §3.2.2: *"… corrosion becomes more widespread as aircraft age and that it is more likely to occur in conjunction with other damage such as fatigue cracking.*" and Appendix 5 §2.4: " *Particular attention should be paid to areas susceptible to WFD and also to potential interaction between corrosion and fatigue cracking, e.g. between fastener damage (due to stress corrosion or other factors) and fatigue cracking.*". · To note that definitions are also given in AMC 20-20. It could be the source of differences in the future. DASSAULT-AVIATION suggest to put the definitions in only one place. Why not in CS-Definitions? Moreover the list of definitions is not complete here. For example Fatigue-critical structure is not defined.
response	Noted. The definitions have been reviewed. The phrase 'flight cycles or flight hours or both' is harmonised with the FAA and does not prevent additional limitations being imposed should the Agency concludes with an applicant that this is necessary. Typically corrosion can be controlled even if the risk increases with age.

comment	*311* comment by: *Dassault Aviation* **II. Draft Opinion Part-26 ANNEX I PART-26 Subpart B – Large aeroplanes:** · §26.300 (a) & (b): o DASSAULT-AVIATION propose to add a criteria of exclusion in Appendix II i.e. aeroplanes

that have been certified before the application of Damage Tolerance and that have been tested in fatigue up to five lives with no evidence of WFD and that are either not operated above their fatigue safe life or if operated above have a specific SSIP (Supplemental Structural Inspection Program) determined applying damage tolerance approach. That concerns the Falcon 10, Falcon 20 and Falcon 50. Only Falcon 20 and Falcon 50 could be operated above their design fatigue goal (20000 flights) and so are submitted to SSIP for which specific inspections have been put in place to fly up to 40000 flights.

· §26.300 (c):
o As a reason exists to ask a LoV for the aeroplanes with a MTOW above 75000 lb only, why not consider it applicable to the whole condition ? For aeroplanes certified as safe-life when operated above their DSG a SSIP I defined.

· §26.300 (d):
o This paragraph seems linked to LoV, so to § (c). But LoV is not defined for A/C with MTOW lower than 75000 lb. Nevertheless DT analysis and inspections have to be defined for aeroplanes not listed in Appendix I. So for DASSAULT-AVIATION § (d) has to be rephrased or included in (c) as sub-paragraph (3). § (h)(3) leaves to suppose also that (d) and LoV are linked.

· §26.300 (f):
o To define what is the meaning of "*unsafe levels of fatigue cracking*" ? Is-it WFD?

· §26.300 (f)(1):
o For Business Jets for which quite as many customers as many A/C exist, periodic monitoring of operational usage is quite impossible to be organized. Furthermore quite no problem linked to fatigue cracking have been encountered in service (more than 11 x 10^6 FC).
o So, eliminate periodic monitoring from the rule and retain it as a recommendation (not a request) in the guidelines (i.e. part of AMC 20-20) but adding "if it is possible to be implemented". See also AMC 20-20 5. (a) comment.

· §26.320:
o As in the text the corresponding changes and repairs concern the ones affecting FCS, the title of the paragraph *"26.320 Damage Tolerance data for existing repairs, existing changes, and existing repairs to changes to Fatigue-Critical Structure"* has to be changed to be more explicit. DASSAULT-AVIATION propose *"26.320 Damage Tolerance data for* repairs, changes, and repairs to changes, existing and affecting or creating a *Fatigue-Critical Structure".*
o Why WFD is not addressed for existing repairs?

· §26.320 (b):
o What are "*Existing published repair*"? Aren't they shortly "Existing repairs"? If "existing non-published" repairs exist, they have to be identified and published… So only "Existing repairs" remain.

	· §26.320 (c) (3): o If the repair is sensitive to the corrosion the calendar time is also a parameter that has to be taken into account. · §26.330 : o To be homogeneous with 26.320 title, its title is proposed to be: "*DT data for existing STCs and* existing *repairs to STCs".* · §26.330 (a): o *"repairs to changes"* must be changed in "*repairs to* major *changes"* to be in line with the first part of the sentence that addresses major structural changes only. o DASSAULT-AVIATION propose to change "*published repairs to change*" to "existing *repairs to changes*". · §26.350: o Implicitly this applies only to the airplanes that have a mass higher than 75000 lb. To be explicitly written. · §26.350 (a) (ii): o What is the meaning of "*replacements of the aeroplane configurations*" compared to "*major structural changes*"? · §26.360: o The ALS (Airworthiness Limitation Section) is not listed there. Is-there a reason for that? · §26.370 (b): o Reference has to be added to §25.320 for the initial LoV in addition of 26.350 dedicated to LoV extension, so to write: "*…, including consideration of WFD up to the proposed LoV, according* to part 26.320 or Part 26.350.". (To notice that WFD has to be indicated in 26.320 as commented above.) · Appendix I to Part-26: o MF20, F10, MF50 and derivatives could be added to the list in case the criteria proposed above (cf. § 26.300 (a) & (b) comment) is retained. §
response	Partially accepted. 1. Not accepted. Note exclusion criteria and rule applicability have been revised. 2. Aircraft subject to changes requesting operation beyond the established safe life may be subject to special conditions. This includes aircraft not subject to these Part-26 requirements. 3. Partially accepted. 26.300(c) and (d) are linked and text has been revised for clarifications. 4. 'Unsafe' is a generic term used in Part-21 in relation to continued airworthiness and the need to take corrective actions.

5. Accepted. 26.300(f) was reworded to focus more on the process to be followed rather than being prescriptive in terms of what data should be analysed. See also the revised corresponding CS.
6. Not accepted. The requirement's title is drawing attention to a grouping of potentially affected structure. A specific retroactive requirement for WFD evaluation of existing repairs is not considered necessary at this time based on evidence of investigations made in the US into repairs and modifications and the mitigation of fatigue cracking by the damage tolerance based inspections. This approach is harmonised with other NAAs.
7. Existing published repairs are those repairs which are published in the SRMs, SBs, etc., prior to the entry into force of this requirement. It does not include repairs issued directly to a single operator. The burden on the TCH was reduced by asking them not to review all individual repairs, which may no longer be in place or the aircraft may not be in service.
8. Partially accepted. Text has been revised (more generic).
9. Accepted.
10. Not accepted.
11. Not accepted.
12. Accepted (for 26.350).
13. Replacement means where the original design standard for example a frame is replaced by the same part design and does not require a major change although its replacement is mandated by an AD.
14. Not fully understood. If the ALS is changed it requires a major change application.
15. The validity of the actions generated by 320 wil only be up to the LOV, based on the LOV definition. Therefore, a link in 320 to the LOV will be redundant.
16. Noted.

comment *312* comment by: *Gulfstream Aerospace Corporation*

Part 26.300(d)

This paragraph should only be applicable to aeroplanes with a maximum take-off weight (MTOW) above 34 019kg (75 000 lbs), but it is not identified as such. As written, this regulation would appear to apply to all large aeroplanes.

- Gulfstream recommends moving the requirements of Part 26.300(d) into Part 26.300(c) or adding a statement clarifying the applicability of CS 26.300(d) to aeroplanes with a MTOW above 34 019 kg (75 000 lbs).

Part 26.300(g)

It is not clear what improvement in safety will be provided by making lists of fatigue-critical baseline structure (FCBS) and principle structural elements (PSEs) available to operators beyond that provided by the Airworthiness Limitations Section (ALS). Lists are problematic in that they often remove the responsibility of judicious review from the repair applicant and place it on the Type Certificate Holder (TCH) that publishes the list.

For example, a TCH may omit the typical webs of monolithic wing spars from consideration as FCBS if they have no fastener holes or other fatigue risers, and only consider spar chords. However, the addition of a repair to a spar web could certainly impact the damage tolerance capability. Since the spar webs were not on the list, is the

TCH now responsible for the omission? Without control of the final design, the TCH is subjected to increased liability by providing this list.
Gulfstream recommends the FCBS and PSE list be provided to EASA who will oversee the activities of persons who must comply with Part 26.330, 26.360, and 26.370.

response

Partially accepted.
26.300(d): Accepted. Text revised.
26.300(g): Not accepted. The sparweb is typical example of a FCS.

comment

339 comment by: *All Nippon Airways*

ANA comments to NPA 2013-07
1) CS 26.300 (f) – Page 29/203 Continuing Structural Integrity for aging aircraft structures

Proposed rule requests a TC or restricted TC holder to establish a process that ensures that unsafe levels of fatigue cracking will be precluded in service per 26.300 (f), page 29/203. This is a requirement for a TC or restricted TC holder, however, operators are required to submit a data to TC or restricted TC holder periodically. This regulation might force operators to provide the data to TC or restricted TC holder without their concurrence regarding the schedule. In addition, this type of activities are already established in the industries after the Aloha accident 1988, this 26.300 (f) requirement to be deleted.

2) CS 26.350 (b) – Page 33/203 Extension of an LOV
Proposed rule requests the applicant to perform a fatigue and damage tolerance evaluation of the changed or repaired structure, including consideration of WFD. This evaluation cause huge burden for TC holder and operators, and extended LOV value will be an airplane unique number, not a fleet specific number as LOV. In addition, there is no requirement in the current FAA rule to perform evaluation of repairs for LOV extension. Requirements of FAA rules and EASA rules to be harmonised as much as possible to reduce burden for the industries.

response

Partially accepted.
26.300(f) has been re-written.
26.350 has been revised to harmonise with the FAA. The LOV extension will need to be approved as a major change/STC in accordance with Part-21.

comment

348 comment by: *DLH and LHT*

Part 26.370(a)(3) requires at rule level expressis verbis that the Repair Evaluation Guidelines have to be included in the Maintenance Program. This effectively mandates the content of the REG for the operator. Any deviation from the REG may then require approval by the National Authority and/or EASA (AMOC). Please note that the intent of the REG, as established by FAA FAR 26.43(e), is to *support* the operators in establishing compliance; the REG was thus intended to be an Acceptable Means of Compliance (but not mandatory and not the only means of compliance). Refer also to FAA 14 CFR Parts 26, 121, 129 Docket No. FAA-2005-21693 for further explanations of the REG intent, quote:

	"Specifically, 14 CFR 26.43, 26.45, and 26.47 require that the TC holders and STC holders develop certain information that will ***provide a means for operators*** to address the adverse effects of repairs and alterations. The information required by this final rule includes the following: • List of Fatigue Critical Structure (baseline and alteration). • Damage tolerance inspections (DTIs) for existing published repair data and all future repair data. • DTIs for all existing and future alteration data. • Repair evaluation guidelines (REGs), which include - Instructions for conducting airplane surveys; - Instructions an operator uses to obtain DTIs; and - An implementation schedule that provides timing for the above actions." Furthermore, the way the rule shall be implemented by the operator is also described in FAA 14 CFR Parts 26, 121, 129 Docket No. FAA-2005-21693, quotes: · "As amended by this final rule, § 121.1109(c)(2) of the AASFR requires operators to incorporate into their maintenance program a "means" for addressing the adverse effects that repairs and alterations may have on fatigue critical structure." · "The OIP would provide the means for addressing the adverse effects of repairs and alterations. Once this OIP is approved by the operator's principal maintenance inspector (PMI), the operator would comply with the AASFR by incorporating the OIP into its maintenance program and implementing the OIP by performing surveys of its airplanes, obtaining necessary damage tolerance inspections and procedures, and performing those inspections and procedures, all in accordance with the approved implementation schedule contained in the OIP." FAA regulation hence requires that the operator establishes procedures and policies (including timeline) – which are consolidated into the Operator Implementation Plan (OIP) – and seeks NAA approval of the OIP. The current EASA proposal is very different here: EASA does not require an OIP, but instead mandates the REG at Rule level. This means effectively an undue limitation of the flexibility for the airlines operating under Part M. DLH/LHT's proposal is to amend 26.370(a)(3) to the effect that it requires a "policy and an accomplishment schedule addressing the adverse effects that repairs and alterations may have on fatigue critical structure". CS26.370 (which is guidance only, not binding) may then refer to the REG as an acceptable means of compliance. This would harmonise the EASA Part 26 with FAA regulation. Please note that this is also in line with other aging strucures programmes in 26.370, such as CPCP which only requires that an operator shall have a CPCP, without detailing at rule level the content nor making a guidance material binding.
response	Partially accepted. 26.370 has been completely revised and is considered harmonised with the FAA.

comment	*349* comment by: *CAA-NL* **Subpart 26.300(c) – Page 29 of 203:** ... and include this LoV into the ALS. Comment: The rule does not provide a default value of the LoV in case a DAH is not able to support

	the establishment of a LoV or in case of excluded aircraft. An operator is in these circumstances not able to comply with Subpart 26.370. Proposal: Provide default LoV values like has been provided in FAR subpart 26.21 table 1 (airplanes subject to §26.21) and in FAR subpart 26.21 table 2 (airplane excluded from §26.21). Explanation: In case a TCH is not able to establish a LoV (within the compliance time) for a specific (excluded) large aeroplane, this aeroplane may still be operated beyond a life limit if no default is defined.
response	Not accepted. In the event an acceptable WFD evaluation cannot be completed on a timely basis, the Agency may impose service life, operational, or inspection limitations to assure structural integrity of the subject type design. As currently worded, if there is no approved LOV, there is actually no compliance requirement for the operator. Note: 26.370 has been revised to provide flexibility in the application of the most appropriate limitation on the use of the maintenance programme.

comment	*350* comment by: *DLH and LHT* a) 26.300(e) (and: CS26.300(e), CS25.571(a)(5), AMC25.571, AMC20-20 Para. 8, AMC20-20 Appendix 4, AMC M.A.302): These paragraphs are considered inconsistent with regards to establishing a baseline CPCP. NPA 2013-07 paragraph A.IV.28 explains: “New paragraph 25.571(a)(5) requires that the environmental and accidental damage assessments that have for many programmes been the remit of the Maintenance Review Board (MRB) alone, to be now clearly considered ***as part of compliance with CS 25.571. This paragraph also provides a definition of Level 1 corrosion*** and a requirement that the ALS must include a statement that requires the operator to include a CPCP in their maintenance programme that will ensure corrosion is controlled to Level 1 or better.” Whereas, at the same time 26.300(e) also requires the development of a baseline CPCP, without referring to CS25.571. Morover, CS26.300(e) explicitly refers to AMC20-20 for acceptable level definitions, and not to AMC 25.571. There is hence a duplication of requirements and of guidance for corrosion level definitions. It is proposed to amend this to establish the requirement only in one set of documents, preferably CS25.571(a)(5). The corrosion levels should then only be provided by one single AMC, which is either AMC 25.571 or AMC20-20. Preference is AMC20-20, as the acceptable corrosion level definitions must be available to the operator to comply with his obligation that his CPCP shall control corrosion based on his utilization and operation; the operator is usually not concerned with CS25.571, hence AMC20-20 would be appropriate. 26.300(e) and CS26.300(e) should then only refer to CS25.571, and not repeat the requirement to establish a CPCP (including statement in the ALS).
response	Not accepted. CS 25.571 is for new designs and changes to the type design whereas AMC 20-20 is

available for existing designs and not limited to large aeroplanes.

comment 351 comment by: *CAA-NL*

Subpart 26.300(f)(1)&(2) - Page 29 of 203: periodic monitoring of operational usage with comparison to design assumptions; and ...
{also applicable to AMC 20-20 Paragraph 5, paragraph 7 and Appendix 5}
Comment:
The proposed requirement to DAH's to periodically monitor operational usage, compare it to the design assumption and assess the need for mandatory changes to preclude unsafe levels of cracking could be an enormous burden to DAH's with unclear safety benefit, and it depends on the willingness of operators to provide feedback concerning their operational usage.
Proposal:
Reconsider to stay harmonised with FAA.
Explanation:
1. Operational usage information is considered by many operators as proprietary and confidential information.
2. Outside EC territory EASA does not have jurisdiction to mandate operators to provide feedback of operational usage to DAH's inside EASA territory. The requirement could therefore result in unbalanced mandatory feedback of operational usage.

response Partially accepted.
26.300(f) is revised to focus on the process to be followed rather than being prescriptive in terms of what data should be analysed.

comment 352 comment by: *CAA-NL*

Subpart 26.300(h)(2)(i) – Page 30 of 203: ... 18 months from entry into force ....
Comment:
The compliance time of 18 months to develop a LoV and **ALS amendment** for older aircraft, certificated prior to JAR 25.571 Change 7, is less than the compliance time of 24 months to develop the ALS based on DTE's and subsequent DTI's.
Proposal:
Use in subpart 26.300(h)(2)(i) at least the same compliance time as has been used in subpart 26.300(h)(1), which is 24 months.
Explanation:
Especially for older aeroplanes, certificated prior to JAR 25.571 Change 7, it would make sense to use an identical compliance time for both the initial ALS and the introduction of the LoV into the ALS.

response Not accepted.
See earlier comments (e.g comment 100)

comment 353 comment by: *CAA-NL*

Subpart 26.320(b)(1) – Page 31 of 203: Review the repair data ... and point (a)(1).
Comment:
Incorrect references to point (f) of Part 26.300 and to point (a)(1) have been used.
Proposal:
Change the references to point (f) of Part 26.300 and to point (a)(1) into references to point (g) of Part 26.300 and to point (a)(2).
Explanation:
Incorrect references.

Subpart 26.320(c)(1) – Page 31 of 203: establish a process ... and point (a)(1).
Comment:
Incorrect reference to point (a)(1) has been used.
Proposal:
Change the reference to point (a)(1) into point (a)(2).
Explanation:
FCS is identified for baseline structure in point (g) of Part 26.300 and for modified structure in point (a)(2).

response

Accepted.

comment

354 comment by: *CAA-NL*

Subpart 26.330(a)(1) – Page 32 of 203: ... review of existing major changes (STCs).
Comment:
Be aware that DAH of "older" STCs may not have had identical record keeping and traceability requirements as are defined today in COMMISSION REGULATION (EU) No 748/2012 annex I Part 21. It could be very difficult for the DAH of older STCs to comply with this requirement. Furthermore, the DAH may not be aware if the aircraft with the specific STC is still in operation. Performing the DTE and providing the DTI would be a redundant effort if it is no longer in operation.
Proposal:
DAH of "pre JAR21" STCs should only perform DTE and provide DTI to an operator of an aeroplane with the specific STC if it is still in operation and at the specific request of that operator, and when the DAH is still able and willing to take the responsibility as the DAH of this specific STC.
Explanation:
The DAH may not be aware if the aircraft with the specific STC is still in operation or if it is operated outside the territories of the EC.

response

Partially accepted.
26.330(c) has been revised (and re-numbered to (d)) to allow some STC holder flexibility for pre-EASA changes when to develop DTI.

comment

357 comment by: *DLH and LHT*

a) 26.320(a) (and: 26.330(a)):
The term FCMS seems not to be consistent with FCAS as per AC 120-93 and FAR

26.45(c)(1). AC 120-93 divides between alterations “that affect FCBS” (para. 305) and those alterations among these, which contain new FCS (para. 306). Only the latter is referred to as FCAS. The result of both reviews must be combined to a “List of Alterations” (para. 307). Hence, this list includes

• Alterations which affect FCBS

• Alterations which contains (new) FCS = FCAS

As an example: A cargo door installation may alter the fatigue behavior of the surrounding FCBS, hence “FCBS affected” without any change in the FCBS design. The cargo door itself may contain FCS, which is then referred to as “FCMS”.

The proposed wording for FCMS as per 26.320(a) is similar in content to AC 120-93 para. 307. Consequently, FCMS is seemingly not identical to FCAS.

Moreover, FAA AC 120-93 does not reserve the terms “FCAS” or “List of Alterations” to TC holders. They are applicable to both TC and STC holders, see AC 120-93 para.s 305 thru 307. Instead, EASA limits FCMS to TCHs (26.320) and does not include STCHs (26.330).

We propose the following amendments:

Introduce a paragraph similar in content to AC 120-93 para. 306. Use the term “FCMS” only for those modifications which contain (=add new) FCS, to be harmonised with FAA term “FCAS”.

Amend 26.320(a) to substitute the currently used term “FCMS” by the term “List of Modifications”, to be harmonised with FAA AC 120-93 para. 307, and explaining (potentially at CS26.320 level) the difference between FCMS and “FCBS affected by the modification”

Amend 26.330(a) as follows: “For existing structural changes approved under a supplemental type certificate, and published repair to these changes …”

Amend 26.330(a)(1) as follows: “Review the changes and repairs and identify those that affect fatigue critical structure identified under paragraph (g) of 26.300 or paragraph (a) of 26.320;”

response

Partially accepted.

26.320 does restrict the term FCMS to the new FCS. The List required is of the FCMS . This is harmonised with FAR 26.45. It is noted that the AC 120-93 adds a requirement to provide a list of all alterations affecting FCAS. The definition section has been revised to introduce a definition for FCMS. FCMS is also used now in 26.330.

TCH will provide all DTI for FCBS and FCMS to operators, so they need to provide a list of changes that did not include new FCS.

If an STCH chooses not to comply with the rule, the operator would receive neither the list of FCMS nor the DTI for all their modifications affecting FCBS.

All FCMS identified will be referenced to a specific TCH change. All FCS identified by an STCH will naturally be associated to that STC.

26.330 is amended to require a list of changes and new FCS.

comment

359 comment by: *DLH and LHT*

a) 26.300(c) (and: 26.310. 26.350, 26.370(b), AMC 25.571)

DLH/LHT are concerned about the potential interpretation of LoV establishment and extension rules. AMC 25.571 defines that the ‘Limit of Validity (LoV)’, or more explicitly

the limit of validity of the engineering data that supports the structural maintenance programme, is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that WFD is unlikely to occur in the aeroplane structure, and that the inspections and other maintenance actions and procedures resulting from this demonstration and the other elements of the fatigue and damage tolerance evaluation as provided for in the ALS and ICA are sufficient to prevent catastrophic failure of the aeroplane structure."

There is already an industry practice existing in which DAHs, in compliance with 25.571, promulgate relevant inspection data through ALS for new TCs, STCs or other major and significant changes, though only for a limited time of operation. This is to allow early entry into service of the new/changed product, whilst gaining time to accomplish the necessary testing and analysis to expand the engineering data to cover further operation.

With the given wording, this practice may be (mis-)understood to be an LoV Extension as per 26.350. This may have adverse implications for the operator, who under 26.370(b) and 26.350 is solely responsible to accomplish the necessary analysis (the DAH is not obliged to support the LoV extension!) for the baseline structure and the modification and repairs applied to it.

The rule should explicitly state that the LoV is a rather ultimate (high cycle) limit against the engineering data, and that an LoV extension is an uncommon additional certification step requiring extensive analysis to support this.

We propose the following:

Amend 26.300(c) (or CS 26.300(c)) to the effect that at the time the design approval is applied for only a "temporary" (or "preliminary", whatever term is considered more appropriate) LoV must be established and promulgated in the ALS; explain that the "Temporary LoV" is not necessarily the ultimate limit of the engineering data (as further testing and analysis may still be ongoing), and may be changed through ALS revision as soon as more engineering data becomes available. This revision is not to be confused with LoV extension.

26.300(h)(2) should be amended accordingly stating that these compliance times apply to the "Temporary LoV". The "final, initial" LoV should be promulgated by the DAH no later than DSG, in accordance with AMC20-20 Para 12.

If this proposal is not acceptable for EASA, and the above described industry practice is indeed considered to be an LoV extension, then provisions are required that the (repetitive) LoV Extension is under responsibility of the DAH, not the operator or the owner of the airplane, at least up to a reasonable operational life, which may be 1…1.25 DSG (for DSG definition, refer to AMC 20-20).

response

Not accepted.

the Agency can not dictate whether an LOV is a 'high cycle' limit or not. The operator is only obliged to consider further action under 26.370(a)(3) when wishing to incorporate an extended LOV into its maintenance program. An extended LOV will be recognised by the fact that it is EASA-approved as an extended LOV in compliance with 26.350. For aircraft where the TC has already been issued the first LOV approved under 26.300(c) will be the final LOV approved under 26.300. It is true that there may be temporary limits in the ALS but this is not considered as an LOV when it is not approved in accordance Part 26.300(c). Additionnally, as long as the (initial) LOV is not approved in accordance with 26.300(c) and

(h)(3), there is no need for the operators to take action in accordance with 26.370(a)(3). Consequently no LOV extension could be approved either. However, we will endeavour to ensure that when approvals are issued that is clear to the end user whether it is the initial LOV or an extended LOV. Ultimately it is the DAHs responsibility (in agreement with the operators) to establish commercially acceptable aircraft operational lives.

comment

361 comment by: *AIRBUS*

COMMENT IS RELATED TO: NPA 2013-07, page 27/203, definitions-12
PROPOSED TEXT / COMMENT:
It is proposed to modify this Article to read:
12. 'Damage tolerance inspections' (DTI) 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 acceptance and rejection criteria), the threshold, and any repetitive intervals associated with those inspections. ~~DTIs may specify a time limit when a repair or modification needs to be replaced or modified.~~
RATIONALE / REASON / JUSTIFICATION:
For harmonisation with FAA.

response

Not accepted.
It needs to be clear in the definition that a replacement or time limit may be an acceptable part of the compliance. This is consistent with the FAA AC 120-93 and the AMC 20-20 definition.

comment

362 comment by: *AIRBUS*

Comment related to page 31/203, paragraph 26.320(d)
PROPOSED TEXT / COMMENT:
It is proposed to modify this Article to read:
(d) For existing changes identified under point (a)(1), perform a damage tolerance evaluation and develop the damage tolerance inspections for the modification and fatigue-critical baseline structure that is affected by the change, and, upon approval, make the DTI/DTE available to persons required to comply with sections 26.370(a)(3).
RATIONALE / REASON / JUSTIFICATION:
For clarification

response

Not accepted.
See the response to comment 140.

comment

363 comment by: *AIRBUS*

Comment related to page 33-34/203, paragraph 26.360(b)(4)
PROPOSED TEXT / COMMENT:
It is proposed to modify this Article to read:
4) If prior to release into service an evaluation has been submitted that supports the interim 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~~ interim approval **RATIONALE / REASON / JUSTIFICATION:** For coherence with Annex 1 page 169
response	Not accepted. The 'interim' approval has to be based on a limitation which is reflected in the existing text.

comment	*376* comment by: *FAA* Definitions are not consistent with FAA's definitions (e.g., LOV). Suggested Resolution: Revise the definition of LOV to be harmonised with FAA's definition. Describe or define the difference between alterations (as used in USA) vs. modifications as used in Europe. Defining these terms would provide some context on they relate to each and are used somewhat interchangeably. Suggested Resolution: Add definitions of these terms.
response	Accepted. The rule text has been amended to ensure the LOV definition and FCMS definition are harmonised with the FAA.

comment	*377* comment by: *FAA* The definition for repair evaluation guideline (REG) is different from the FAA's definition. The addition of the term "integrity of all relevant repaired and adjacent structure" may be misunderstood to include non-reinforcing repairs that affect fatigue critical structure. 'Repair Evaluation Guidelines' (REG) is a process to establish damage tolerance inspections for repairs that affect fatigue-critical structure to ensure the continued structural integrity of all relevant repaired and adjacent structure. FAA definition: Repair Evaluation Guidelines (REGs) provide a process to establish DTI for repairs that affect Fatigue Critical Structure. Suggested Resolution: Harmonise definition with the FAA's definition.
response	Noted. Adjacent structure definition: in general the REG is addressing only reinforcing repairs. Such repairs may influence a loading and stress distribution in structure adjacent to repair, ie. not directly under the reinforcing elements of the repair. In the context of the repair the relevant adjacent structure is therefore structure whose fatigue and damage tolerance behaviour and justification(compliance demonstration) is altered by the repair. Definition of the REG has been revised as well as Chapter 9 of AMC 20-20 to clarify the meaning of adjacent structure.

comment	*378* comment by: *FAA* The structural configuration to be evaluated is defined from the date the EASA rule is effective. This will occur approximately four years after the FAA's WFD rule became effective. There most likely will be additional configurations for design approval holders to address. For the FAA's WFD rule, type certificate holders are required to address new changes under 26.21(c). The AMC 20-20 does not appear to address this issue. Suggested Resolution: Modify AMC 20-20 to clarify the steps required to comply for those products with an FAA-approved LOV.
response	Noted. This seems to be an implementation issue. The Agency may produce a certification memorandum to clarify the acceptability of the FAA data. A certification memorandum could clarify if compliance with 26.300 can be achieved by referring to FAA compliance shown to 26.21(c) (also for amendments). In any case, proper configuration identification shall be managed via the compliance plan which the Agency will introduce in the Part-26 rule as well.

comment	*379* comment by: *FAA* NPA would require that affected persons establish a process that ensures that unsafe levels of fatigue cracking will be precluded in service. As written, it may be difficult to show and determine if compliance is met. Applicants for type certificates are required to develop inspections or other procedures to prevent a catastrophic failure of the airplane. Suggested Resolution: Delete the requirement. There are existing requirements and guidance materials to address the continued operational safety of the fleet. See comment no. 4 for additional information. If requirement is retained, then revise it as follows: Establish a process to analyse continued operational safety data and monitor safety in aircraft fleets. The process must include: … Design approval holders that have an existing continued operational safety process along with structures task group meeting process, etc., to address in-service or test findings should be an acceptable means of compliance.
response	Partially accepted 26.300(f) is amended to focus on the process to be followed rather than being prescriptive in terms of what data should be analysed. Referring to existing STGs and associated processes could be considered as part of the means to comply.

comment	*380* comment by: *FAA* NPA requires the identification of both fatigue critical baseline structure and principal

structural elements (PSEs).
This requirement is not harmonised with the FAA's requirement. The additional requirement to have PSEs in the list may require design approval holders and operators to have multiple lists since the FAA's requirement is different than the NPA. It will also require additional work on part of the regulators, design approval holders, and operators to ensure compliance.
Suggested Resolution:
Harmonise the requirement by only requiring a list of fatigue critical structure be made available.

response

Accepted.
The requirement is amended.

comment

381 comment by: *FAA*

Compliance times. The NPA identifies compliance times based only on the certification date related to JAR 25.571, Change 7, or 14 CFR 25.571, Admt. 25-45. It is not clear how compliance times should be applied for those airplanes with derivative models that have a mixed certification basis (e.g., fuselage is at pre-amendment 25-45 and wing is at Admt. 25-45).
Suggested Resolution:
Provide guidance or revise the rule to address airplanes with mixed certification basis relative to § 25.571.

response

Accepted.
CS to 26.300 is ramended to provide guidance.

comment

382 comment by: *FAA*

The reference to US regulations should be Title 14 of the Code of Federal Regulations (14 CFR) 25.571, Amendment 25-XX at the first instance, then 14 CFR 25.571 thereafter.
Suggested Resolution:
Remove all references to "FAR" and replace it with "14 CFR".
Review the document to make similar or related changes.

response

Accepted.
The text is revised.

comment

384 comment by: *FAA*

One of the requirements for extending an LOV is that repairs and modifications must be assessed and the ALS must include any necessary maintenance actions to support operation to the extended LOV. This may be difficult to implement. In addition, the proposed requirement to extend an LOV is not harmonised with FAA's section 26.23.
Suggested Resolution:
Harmonise text with FAA's section 26.23.
For an extended LOV, section 26.350(b) will require that all repairs and changes affecting

	fatigue critical structure be evaluated be evaluated for WFD up to the extended LOV. This proposed requirement may be difficult for design approval holders and operates to comply with and for the regulatory authorities to enforce. It is not clear how EASA would implement this part of the rule. The proposed requirements and AMC 20-20 do not address a process for implementing a WFD evaluation up to the LOV extension for all changes and repairs affecting FCS. Moreover, the proposal is inconsistent with the draft opinion to require the development of repair evaluation guidelines (REG) [26.320(c)] for repairs affecting FCS. The REG is intended to provide a process that would (through means of a survey, and schedule for developing DTI) enable operators identify changes and repairs that affect fatigue critical structure and to provide instructions on how/when to obtain DT data and incorporate it into their maintenance program. However, the process identified in the REG does not require that repairs be evaluated beyond what the baseline FCS has been evaluated to. Section 26.350(b) will require that all repairs and changes affecting FCS be evaluated for WFD up to the extended LOV. This may result in a significant amount of rework that may not be necessary. There is no corresponding process (similar to that in the REG) to support/enable operators to effectively identify repairs or changes that affect FCS, and how to obtain any necessary ISP/SMP data up to the extended LOV. In addition, as the FAA's aging airplane safety rule (14 CFR 121.1109 & 26.43) requires operators to identify existing repairs that affect FCS and to develop/obtain any necessary DT data, there is no requirement in those rules to require that the damage tolerance analysis for repairs or alterations be shown good beyond the assessment (flight cycles/hours) of the airplanes baseline FCS. This would require that repairs and changes affecting FCS (and exiting maintenance actions) be re-evaluated for WFD up to the LOV extension. This would result in a significant amount of rework that may not be necessary (SEE COMMENT 2, regarding FAA position why 14 CFR 26.23 did not require repairs to be assessed for an extended LOV) To avoid the need to resurvey airplanes (those surveyed already under 14 CFR 26.43, 121.1109, AC-120-93), this NPA should allow those operators to use the results from those surveys. The NPA and associated AMC 20-20 do not require or define a process for implementing the proposed requirement. Without having an effective process to support operators compliance with this rule, compliance may be very difficult as well as the regulatory authorities ability to enforce the rule. Also, it is not clear if the design change is one approved by supplemental type certificate, or equivalent, or by TC holder. This is not harmonised with the FAA's rule. Suggested Resolution: Delete this requirement. If the requirement to address design changes and repairs is retained, then it should be applied to those operators wishing to incorporate the extended LOV. Propose that 26.350 address baseline configuration and create a new requirement, 26.355, for repairs and design changes (STCs). Revise Draft Opinion 26.320(c) or create a separate requirement to require design approval holders develop a process for evaluating repairs and changes for LOV extensions.
response	Accepted.

	The text is revised to harmonise with the FAA.

comment	*405* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **26.300 (c)(1):** Embraer proposes an harmonization of terminology (Changes/Modification/Alteration). **26.300 (e):** Embraer proposes to EASA states cleary that it is acceptable as a baseline CPCP program by DAH those CPCP programs already defined by MRB/MSG3 process. Embraer also proposes to EASA stablish a rule dependence between Part-26.300 (e) and Part-M (or EU-OPS). It means that Embraer proposes a paragraph in Part-M (or EU-OPS) in order to stablish by the rule the operators responsibility to comply with Part-26/CS-26. Embraer understands that AMC of Part-M is only a guidance material and has no rulemaking compliance obligation effects. The operators are required to comply with Part 26.370 and Part-M. The EC Regulation EU 2015/640 from 23 April 2015, amended the EU Comission Regulation 2012/965 and introduced the requirement for the operator to comply with Part-26. **26.300 (f)(1) and 26.300 (f)(2):** Embraer proposes to eliminate periodic monitoring from the rule and retain it in the guidelines (i.e. part of AMC 20-20). Periodic monitoring of operational usage and assessing of the need for mandatory modifications 26.300 (f) is problematic for manufacturers to comply due to current reporting requirements and lack of access to operators' proprietary data. TCH access to operational data is limited and there is no enforcement vehicle to require compliance from operators. Please note the FAA considered and then removed a similar requirement from their final rule concluding existing regulations \36\ that require both DAHs and operators to report structural defects should be adequate to enable us to determine whether the objectives of this final rule are being met. In order to allow TCH to perform with such EASA requirement, EASA must oblige Operators and Repair Shop to informs TCH about any relevant finding as it is already proposed by ICAO regulations. EASA then would revise the Operational and Part-M requirements.
response	Partially accepted. See also earlier comments. 26.300(e): AMC 20-20 already addresses this question. Additionally related CS text for 26.300(e) also addresses this specific request. 26.300(f)(1) and 26.300(f)(2): 26.300(f) was reworded to focus on the process to be followed rather than being prescriptive in terms of what data should be analysed.

comment	*406* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **26.320 (c)(1), 26.320 (c)(2) and 26.320 (c)(3):** There is no reference for the OIP (Operator Implementation Plan) to operators. Embraer suggests to EASA stablish in rule the link

	between REG and the OIP document (or Operator´s equivalent document).
response	Not accepted. This will not be harmonised with the FAA at rule level. operators have the flexibility to comply without a formal OIP.

comment	*407* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **26.370:** It is not clear in the set of affected rule the link with operators requirements x Part 21 x Part 26, i.e. in FAA aging aircraft rules there is a clear link for the operator´s obligation and the set of rules, starting from 14 CFR Part 21, 14 CFR Part 26 and 14 CFR Part 121. The only clear paragraphs for the operator´s obligation are the paragraphs 26.30 (b), 26.370 and the AMC of Part-M Note that AMC is not a regulation, it is an acceptable means of compliance. Embraer understands that a rule in Part-M or EU-OPS for the operators shall be necessary to link the Operators with Part-26.
response	Noted. EU operators will have to comply with all applicable requirements. Regulation (EU) 2015/640 from 23 April 2015, amended Regulation (EU) No 965/2012 and introduced the requirement for the operator to comply with Part-26.

comment	*429* comment by: *Europe Airpost* **26.370 (a)(5)** “a procedure to show how approved damage tolerance inspection data will be obtained and used to address the potential adverse effects of repairs and modifications to fatigue-critical structure” Could you please clarify what an “acceptable” procedure would be ? (need to be approved by the authorities?)
response	Noted. 26.370 has been amended although the concept is retained and CS-26 and Appendix 3 of AMC 20-20 are amended to provide acceptable means of compliance.

comment	*431* comment by: *Thomson Airways* 26.370 (b) (1) states “Ensure that all installed repairs and modifications have been subject to a fatigue and damage tolerance evaluation, including consideration of WFD up to the proposed LoV, according to Part 26.350” This requires the operator to review all existing repairs and changes have DTI and requires validation that individual repair maintenance is sufficient to preclude Fatigue Damage up until the extended LOV. Would existing repairs that already had a damage tolerance analysis accomplished in accordance with 14 CFR 25.571 need further approval for WFD? Hence would all approved existing repairs require further approval before reaching the LOV?

response

Noted.
26.350 has been amended to harmonise with the FAA. The LOV extension will need to be approved as a major change/STC in accordance with Part-21.
Second question: No. the text has been amended and harmonised with the FAA.

comment

432 comment by: *Thomson Airways*

Clarification is required what is meant by the 'Maintenance Programme', whether is it the approved and published Aircraft Maintenance Plan (AMP) or whether it is the complete maintenance plan including other parameters, ie, AD, SB, Mod control.

response

Noted:
Part-26 refers to the maintenance programme as required by Part-M.

comment

436 comment by: *Transavia*

Comment summary:
Three stage repair approvals for Damage Tolerant Inspections:
EASA allows Damage Tolerant deferral greater than 12 months provided that a temporary limitation was substantiated by sufficient fatigue and damage tolerance data and approved at the first stage of approval. Some Non-EU Type Certificate Holders hold FAA approval to approve repair designs for static strength for a period on 24 months, without the FAA requirement to perform a Damage Tolerant evaluation at the first stage of approval.

The EASA proposal results in an additional burden to both the TCH and the operator, and could result in additional ground time of an airplane waiting for stage 1 approval with Damage Tolerant evaluation.
If a Non-EU TCH provides a stage 1 approval with a threshold of 24 months that is only evaluated for static strength, then the EASA proposal makes the operator responsible to obtain a Damage Tolerant evaluation. There is limited Damage Tolerant evaluation capability outside the Type Certificate Holders.
The FAA equivalent text contained in FAA AC120-93 Appendix 5 contains a sentence 'Unless the FAA agrees a longer period the DT data should be submitted no later than 12 months…'
The underlined text is omitted from the EASA Annex.
Suggested resolution:
Harmonise with FAA requirements and clarify in AMC 20-20, Annex 1.

response

Noted.
The Agency accepts FAA approved repairs from US TCHs as per the current TIP.
The Agency is aware of the differences in wording, however, 26.360 (b)(4) does not require a full DT evaluation in order to support a period of safe operation prior to the second stage approval. It is understood that the FAA has evaluated and agreed the extended period referred to in the comment and has discussed this with the Agency. The Agency will continue to accept this aspect of this TCH's repair data until further notice.
The AMC applies to new repairs for which The Agency is the responsible Authority and the

amount of data that will be required of a TCH would be subject to agreement between the TCH and The Agency. Previous agreements between the FAA and the TCHs for which they are responsible are not affected by this guidance.
If agreement between the FAA and a US TCH are changed in the future the Agency will be consulted by the FAA as to whether any new period beyond the 12 months would also be accepted by the Agency.
As stated in the Annex, the applicant should inform the operator if this process is being used and the expected timeliness for the data delivery. There is no responsibility on the operator's part to obtain DTI unless agreed timelines or limitations could be exceeded. DAH must deliver it. US TCH repair data is accepted by the Agency (according to the current TIP), this includes the limitations and the delivery time scales of those limitations.
The wording 'Unless …' can not be used in Part-26 since the Agency can not change the implementation timing.

comment *437* comment by: *Transavia*

Comment summary:
Part 26.330 applicability
In the proposed rule Design Approval Holders are required to provide Damage Tolerant Data on Supplemental Type Certificates (STC) and major design changes (and repairs to Supplemental Type Certificates and major design changes) for airplanes that were previously operated under European NAA / EASA rules, but that are currently not operating under EASA Part M.

Design Approval Holders are required to develop Damage Tolerance Data for changes going back to 1958, whether or not the airplane is still in EASA Part M.
Operators did not have the EASA Part-21 recordkeeping requirements for the major changes which are deemed to be approved in accordance with Article 4 of Regulation 748/2012. Under local regulations (pre-EASA Part-21) operators transferred such data to the new owner/operator and had only limited recordkeeping requirements after a certain fleet type was phased out. The proposed wording of 26.330 would place an impracticable task at operators that obtained such approvals from their local authorities for aircraft which were phased out in the past.
suggested resolution:
Make the rule applicable only to airplanes that operate under EASA Part M requirements.

Also make Part 26.330 not applicable to major design changes and repairs to major changes that are deemed to be approved in accordance with Article 4 of Regulation 748/2012. Instead transfer this requirement to Part 26.370 (a)(5), which refers to the Part M obligations.

Under Part 26.370 the current operator should be made responsible to evaluate whether major changes, that are deemed to be approved in accordance with Article 4 of Regulation 748/2012, are installed on its aircraft. In case such changes are installed, the current operator should take the responsibility to obtain DTI.

response	Partially accepted. See the response to comment 108.

comment	*440* comment by: *Thomson Airways* Propose to remove the requirement to provide periodic monitoring of operation usage to the OEM. Operators already provide the OEM with flight hour and flight cycle data from reliability analysis, repairs accomplished outside of the SRM, etc
response	Partially accepted. See also previous responses. 26.300(f) was reworded to focus more on the process to be followed rather than being prescriptive in terms of what data should be analysed.

comment	*443* comment by: *Swiss International Air Lines Ltd.* Swiss International Air Lines Ltd. suggests to harmonise EASA Part 26 with FAA FAR 26. Therefore Swiss International Air Lines Ltd. follows DLH/LHT to amend Part 26.370(a)(3) to the effect that it requires a "policy and an accomplishment schedule to ensure the fatigue and damage tolerance evaluation of repairs" instead of a compliance with the REG. CS26.370 may then refer to the REG as an acceptable means of compliance.
response	Accepted. Greater flexibility is required. 26.370 has been amended.

comment	*446* comment by: *Thomson Airways* The term adjacent structure (listed throughout this NPA) needs to be clarified. If a repair is found at a specific location a specific distance should be defines when referencing adjacent structure otherwise issues can arise when reporting adjacent damage on structure (where would an operator draw the line on adjacent structure?)
response	Noted. See also comments 293, 556, 459, 617, 623. Additionally, the term is used with respect to the person doing the DTE and is not applicable to damage reporting.

comment	*449* comment by: *AIRBUS* Comment related to page 29 /203, paragraph 26.300(g) **PROPOSED TEXT / COMMENT:** It is proposed to modify this paragraph to read: (g) Identify the fatigue-critical baseline structure and principal structural elements (PSEs) for all aircraft models and derivatives in the type certificate. Submit to the Agency for approval a list of the structure identified under point (g) and, upon approval, make the lists available to operators and persons required to comply with Part 26.320, 330, 26.360, 26.370. **RATIONALE / REASON / JUSTIFICATION:** The FCBS list is also needed for persons having to comply with 26.320.

response	Not accepted. The data is already available to the TCH by definition.

comment	*453* comment by: *Thomson Airways* For 26.370 (a) (3) exclude airplanes already certified to EASA CS 25 (e.g. B787-8) from a REG as these airplanes have been certified to the damage tolerance requirements: where all future repairs accomplished to published and unpublished data will also be damage tolerant approved repairs.
response	Partially accepted. 26.320(c) has been amended to exclude aircraft certificated after a certain point in time (in accordance with CS 25.571 Amdt 1 or later).

comment	*457* comment by: *Aerospace Industries Association* The proposed text states: (f) Establish a process that ensures that unsafe levels of fatigue cracking will be precluded in service. This process must include: (1) periodic monitoring of operational usage with comparison to design assumptions; and (2) a periodic assessment of the need for mandatory changes in cases where inspection alone is not reliable enough to ensure that unsafe levels of cracking are precluded. Requested Change: Eliminate periodic monitoring from the rule and retain it in the guidelines (i.e. part of AMC 20-20). Justification: Periodic monitoring of operational usage and assessing of the need for mandatory modifications 26.300(f) is problematic for manufacturers to comply due to current reporting requirements and lack of access to operators' proprietary data. TCH access to operational data is limited and there is no enforcement vehicle to require compliance from operators. Please note the FAA considered and then removed a similar requirement from their final rule concluding that existing regulations (i.e. 14 CFR 21.3 and 121.703) require both DAHs and operators to report structural defects. The FAA concluded these requirements should be appropriate to enable us to determine whether the objectives of this final rule are being met.
response	Partially accepted. 26.300(f) has been amended to focus on the process to be followed rather than being prescriptive in terms of what data should be analysed.

comment	*459* comment by: *Aerospace Industries Association* The proposed text (Paragraph 13) states: Repair evaluation guideline (REG) is a process to establish damage tolerance inspections for repairs that affect fatigue-critical structure to ensure the continued structural integrity

of all relevant repaired and adjacent structure.
Requested Change:
Harmonise the EASA Repair Evaluation Guidelines (REG) definition with the FAA AASR requirement, or explain the benefits and impact of the deviation.
FAA AC120-93 Appendix 2 Definition (S)
Repair Evaluation Guidelines (REGs) provide a process to establish DTI for repairs that affect Fatigue Critical Structure
Justification:
The EASA REG is a more complex process than required by the FAA. Non-harmonised elements will require revised compliance findings that may not provide additional safety benefits.
Example 1: There are differences in airplane survey requirements in that they do not specifically exclude non-reinforcing repairs from consideration as the FAA AC 120-93 page 25 does.
AMC 20-20, 3.13.2 pg. 158
This typically excludes maintenance actions such as blend-outs, plug rivets, trim-outs, etc., unless there are known specific risks associated with these actions in specific locations.
FAA AC 120-93 Section 218
This typically excludes maintenance actions such as blend-outs, plug rivets, trim-outs, etc.

Example 2: There is lack of clarity in the NPA concerning the definition of the term adjacent structure, which is not included in either FAA requirements or guidance. The term is not clearly defined, but is used 30 times throughout the document.

AMC 20-20 Amdt 1 pg.101:
Repair Evaluation Guidelines (REG) are intended to assure the continued structural integrity of all relevant repaired and adjacent structure, based on damage tolerance principles, consistent with the safety level provided by the SSID or ALS as applied to the baseline structure. To achieve this, the REG should be developed by the TCH and implemented by the operator to ensure that an evaluation is performed of all repairs to structure that is susceptible to fatigue cracking and could contribute to a catastrophic failure.

Example 3: EASA Draft Opinion 26.370 (a)(3) requires the operator to adopt the TCH/EASA approved REG as the only available means to comply; whereas, the FAA approved REG is presented as a means to comply.
This will require TCH's to significantly revise the REG to provide guidance for possible appropriate deviations to the current text. The EASA REG should be harmonised with the FAA AASR requirement.

response

Partially accepted.
Example 1: Not accepted (See also comment 617, 672.)
Example 2: Partially accepted (See also comments:293, 556, 459, 623)
Example 3: Accepted see previous responses on flexibility.

comment *460* comment by: *Aerospace Industries Association*

Page: 32-33, Paragraph: 26.350 – Extension of a LoV

The proposed text (Paragraph 26.350) states:
The evaluation must include consideration of WFD and establish the DTI and any necessary maintenance actions required to preclude catastrophic failure up to the proposed LoV. The inspections and other maintenance actions and procedures resulting from this evaluation must be included in a revision to the ALS or a supplement to the ALS as appropriate. The ALS must address the need for all design changes and repairs on an aircraft to be substantiated before the extended LoV can be adopted in the structural maintenance programme for that aircraft…
Requested Change:
Harmonise Extended LoV with 14 CFR 26.23, or explain the reasoning for the deviation.
Justification:
The proposed rule will require a more stringent evaluation to raise the LoV than to establish the LoV initially. The different level of scrutiny is not justified and does not provide additional safety benefits; it is just based on whether it is an initial determination or a later extension. This approach will have significant financial impact by restricting the ability to raise the LoV of a fleet of airplanes.

- Extended LoV will require all changes (repairs, alterations and modification) assessment for extension.
- Extended LoV will be airplane unique number and not feasible to provide as a fleet value.

response

Accepted.
26.350 has been ramended to harmonise with the FAA. The LOV extension will need to be approved as a major change/STC in accordance with Part-21.

comment

461 comment by: *AIRBUS*

COMMENT IS RELATED TO: NPA 2013-07, page 32/203, 26.330 (a)(1)
PROPOSED TEXT / COMMENT:
It is proposed to modify this Article 26.330(a) to read:

Modify the text of 26.330 as follows:(a) For existing major structural changes and published repairs to changes:
(1) review the changes and repairs and identify those that affect fatigue-critical structure identified under point (g) of Part 26.300 or point (a)(2) of Part 26.320 or that introduce new fatigue-critical structure; and
(2) develop and submit to the Agency for review and approval a list of the changes and structures identified under point (a)(1) and upon approval make this list available to persons required to comply with Part 26.360 and 26.370.
(3) review the repairs affecting the changes identified in (a)(1)

(b) For existing changes identified under point (a)(1) and published repairs identified under point (a)(3), unless previously accomplished, perform a damage tolerance evaluation and develop the damage tolerance inspection for the change and repairs and the fatigue-critical structure that is affected by the change.

RATIONALE / REASON / JUSTIFICATION:
The text of §(a)(1) is confusing as it could be understood that it is required to identify repairs affecting FCS identified under point (g) of Part 26.300 or point (a)(2) of Part 26.320. However, according to the title, the targeted repairs are those affecting the major changes that affect, include or create new FCS. The proposed change corrects this.

response: Accepted. The text has been amended.

comment: *462* comment by: *AIRBUS*

COMMENT IS RELATED TO: NPA 2013-07, page 33/203, 26.350 (b)(2)
PROPOSED TEXT / COMMENT:
It is proposed to modify this Article 26.350(b)(2) to read:
"…and, upon approval, make the lists available to persons required to comply with sections 26.370(b).
RATIONALE / REASON / JUSTIFICATION:
For clarification.

response: Noted.
The text has been amended.

comment: *472* comment by: *S.A. Morshed, Emirates*

Part 26 Article 26.320 Para (a) (Page 31)
To harmonise with the FAA terminology, please clarify in AMC 20-20 the relation between FCMS and FCAS.

response: Accepted:

	The definition of FCMS has been introduced. FCMS is equivalent to FCAS.

comment	*475* comment by: *S.A. Morshed, Emirates* **Part 26 Article 26.330 (Page 32)** · - Make the rule applicable only to airplanes that operate under EASA Part M requirements. Also make Part 26.330 not applicable to major design changes and repairs to major design changes that were approved prior 24 September 2003 (pre -EASA) under local NAA authority. Instead transfer this requirement to Part 26.370. Part 26.370 (a)(4) refers to the Part M obligations. · - For the purpose of this rule, include a clear definition of major changes that were approved local NAA's between 1958 and 2003. · - EASA is requested to create and publish a single list of all Supplemental Type Certificates that are affected by Part 26.330, and the actual compliance status of these Supplemental Type Certificates with Part 26.330 requirements. EASA is requested to frequently update this single list to reflect the current status of the Supplemental Type Certificates.
response	Partially accepted. See revised text. Flexibility has been introduced for changes approved up to 2003. Regarding the list of STCs, under Part-21 the DAH's are responsible to manage the list of their STC's and the associated records. It is also under their responsibility that an assessment should be made whether the STC/major changes need a DTE.

comment	*478* comment by: *S.A. Morshed, Emirates* **Part 26.350 (a)(2) and Part 26.350 (b) (Page 32)** The requirement from Part 26.350 to perform WFD evaluation on major structural changes and repairs should only be applicable when the certification basis of the aircraft requires doing so. .Please clarify this in the rule or AMC. Harmonise with FAA requirements.
response	Accepted. The requirement has been harmonised with the FAA.

comment	*479* comment by: *S.A. Morshed, Emirates* **Part 26 Article 26.360(b) (3), (4) (Page 32)** Harmonise with FAA requirements under 26.43 which allow the agency to approve a process and the necessary safeguards.

Proposed Text:
(3) For repairs, a damage tolerance evaluation defining thresholds for maintenance actions that allow continued safe operation must be submitted to the Agency 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 submitted 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.
Justification:
The requirement is onerous and would require the development of data prior to a Stage 1 approval which would, by definition, satisfy a Stage 3 approval negating the need for an extension in the first place.

response

Noted.
(b)(3) is defining the submittal date for the second stage. The provision of (b)(4) allows an evaluation that only has to be sufficient to extend this period beyond 12 months to the limit approved and therefore is not a full DT Evaluation. As such, the FAA and EASA requirements are harmonised. FAA has not allowed periods longer than 12 months without justification. Such periods when granted are effectively a new limit for the provision of the second stage data.

comment

480 comment by: *Jet Aviation Basel*

26.330 (C) (2) requires that "...the damage tolerance data required by point (b) is submitted to the agency within 24 months..." of the ruling. There are limited numbers of aircraft within the private categories that have very low utilisation rates. The DAHs' will incur the cost of the full analysis of previous alterations in circumstances where the thresholds will never be approached. In many cases, the operators in these circumstances are not within the EU oversight and therefore will not be required to maintain compliance to the ruling.
It is requested that a staged approach be included into point 26.330 (b) and 26.330 (c) (2), similar to that for 26.360 (b) (4) to alleviate the 24 month requirement for the provision of all DTI data where a temporary limitation can be established permitting operation up to an already determined threshold. It is proposed that the equivalent requirement for 26.360 b) 5 for "the approval of the inspections and other procedures required by 26.3***6***0(a) must be granted before the first approved inspection threshold is reached" be replicated into 26.330 with required editorial changes.
This amendment would reduce a large burden of analysis from STCH DAH's whilst maintaining an equivalent level of safety, to ensure that any inspection thresholds are identified and only accomplish further analysis to produce the full DTI in instances when it will be relevant.

response

Not accepted.
The 2- or 3-stage process is not applicable to design changes. Nonetheless, some of the concerns regarding generation of data that may not be required are addressed by the changes to 26.330 compliance for changes approved up to 2003.

comment	*481* comment by: *S.A. Morshed, Emirates* **Section 26.370 Maintenance programme Para (b) (Page 34)** Revise (b)(1) Ensure that all installed repairs and modifications have been cleared for operation up to LOV, according to Part 26.350. **Proposed text:** (b) Prior to incorporating an EASA-approved extended LoV into a maintenance programme, an operator shall: (1) Ensure that all installed repairs and modifications have been subject to a fatigue and damage tolerance evaluation, including consideration of WFD up to the proposed LoV, according to Part 26.350. (2) Amend the aircraft maintenance programme required by M.A.302 to incorporate the approved DTI and other maintenance actions established as a result of these evaluations and any other associated. **Justification:** EASA's position is significantly different than the FAA's position in that it requires the operator to essentially revalidate that all existing repairs and changes have DTI and requires validation that individual repair/change maintenance program will be sufficient to preclude WFD up until the extended LOV. Placing these requirements on the operator, instead of an applicant seems out of place.
response	Accepted. 26.350 has been harmonised with the FAA, therefore, 26.370(b)(1) is not applicable anymore.

comment	*482* comment by: *Jet Aviation Basel* Further to comment 480, the option for the staged approach is also important for instances where the current DAH has inhereted an STC by merging of companies, and may not have been responsible for the original design and installation although now assumes this responsibilty.
response	Not accepted. See the response to comment 480.

comment	*484* comment by: *S.A. Morshed, Emirates* **Section 26.370 Para (a) (Page 34)** Revise 26.370 (a) (3) For aircraft which are not certified to EASA CS 25, the REG and associated DTI issued by the TCH in compliance with Part 26.320 for the repairs embodied to the aircraft. **Proposed text:** 26.370 Maintenance programme. The operator/owner of large aeroplanes shall comply with the following: (a) Revise the maintenance programme to include: (1) Applicable inspections or maintenance procedures issued by the TCH in compliance with Part 26.300(b), (c) and (d).

(2) A CPCP that takes into account the baseline CPCP issued by the TCH in compliance with Part 26.300(e).
(3) The REG and associated DTI issued by the TCH in compliance with Part 26.320 for the repairs embodied to the aircraft.
(4) The DTI issued ...
Reason:
Aircraft that have been certified to EASA CS 25 (such as 777F,747-8/-8F,787-8) have been certified to the damage tolerance requirements of CS 25.571 and have published repair data (SRM's and Service Bulletins) and ALS that are in compliance with CS 25.571. Unpublished repairs approved by the TCH have also been evaluated for the damage tolerance requirements of CS 25.571. Therefore, a REG is not required for these airplanes.
In addition, an operator survey of these airplanes for noncompliant repairs should not be required.

response

Partially accepted.
A reference to the CS-25 certification basis has been included in the amended 26.320(c). Additionally, 26.370 has been amended to allow for more flexibility for operators to use a means for addressing the adverse effects repairs, mods, STC's may have on FCS.

comment

498 comment by: *Boeing*

Page: 27
Paragraph: Article 2, Definitions, #7

The proposed text states:
"7. Limit of validity' (LoV) is the number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that widespread fatigue damage is unlikely to occur in the aeroplane structure; and that the inspections and other maintenance actions and procedures resulting from this demonstration *and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aeroplane structure.* The LoV is commonly known as the limit of validity of the engineering data that support the maintenance programme."
REQUESTED CHANGE:
Delete the highlighted text from all LoV definitions in the NPA:

JUSTIFICATION:
The highlighted text is not definitive as to what constitutes other elements of fatigue and damage tolerance, and it does not harmonise with the FAA's definition. The proposed definition establishes a redundant requirement; DT of non-WFD structure is already required, or will be required by SSIDs; 26.300(a); 14 CFR §25.571 at Amendment 25-45 or CS 25.571 at Change 7; and to repairs via 14 CFR §26.43 or CS 26.320.
The LoV definition is significantly different from the FAA's definition and may result in unnecessary conflicting requirements.
In addition, we noted that definitions appear in eight separate areas of this NPA and the definitions that appear there are not necessarily consistent with one another.

response

Accepted.

The definition has been harmonised with the FAA.

comment

500 comment by: *Boeing*

Page:29
Paragraph: 26.300(c)(2)

The proposed text states:
"(2) all structural changes and replacements to the aircraft structural configurations specified in point (c)(1), mandated by airworthiness directives as of the entry into force of this rule; and …"
REQUESTED CHANGE:
"(2) all structural ~~changes~~ **modifications** and replacements to the aircraft structural configurations specified in point (c)(1), mandated by airworthiness directives as of the entry into force of this rule; and …"

JUSTIFICATION:
The proposed text could be interpreted to include a greater expanse of affected structure than the FAA rule, in particular if the word change extends to repairs. Revising the word will harmonise with the FAA rule.

response

Noted.
A design change does not include repairs in EASA terminology which are addressed separately under Part-21. The understanding for a TCH is that a design change is approved under Part-21, and a modification results when it is implemented on a aircraft under Part-M.

comment

501 comment by: *Bombardier Aerospace*

The proposed text states:
26.360 Fatigue and Damage Tolerance Evaluation of future repairs and changes
The applicant for a repair or change approval to large aeroplanes, which is approved after the entry into force of this rule, shall comply with the following....
Comment:
The difference in the applicability requirements for Para. 26.320 and 26.360 are not harmonised with FAR 26.43 (a). This is Noted as Item 7 in the differences table on page 11 of the NPA with the following note:

> *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.

We do not agree that this will not be a substantial burden for certain OEMs., especially if no DTA has been performed for repairs and alterations in the past (pre-JAR Change 7/Amdt 45 aircraft) and is not required retroactively for existing repairs and alterations based on the payload limits specified in 26.320/26.43.
In effect 26.360 as written without harmonization with FAR 26.43 would require the development of a substantial amount of data in order to perform DTA for the same repairs on aircraft which are exempted by the payload applicability of 26.320, thereby

nullifying any harmonization with FAR 26.43 (a).
Furthermore, we are not aware that service history on these older, smaller aircraft has shown that existing repair practices are deficient.
Finally, any repairs made to pre-amdt-45 aircraft will be exposed to considerably fewer fatigue cycles than existing repairs which have been exempted under 26.320. If a justification can be made to exempt existing repair designs, the same justification can be used with even more confidence for future repairs.

Proposed Change

Harmonise applicability requirements of 26.360 with those of 26.320 such that they both apply to large aeroplanes certified after 1 January 1958 and, with 30 or more passengers or that have a payload of 3401,9 kg (7 500 lbs) or more, except as stated in Appendix I to Part-26.

response

Accepted.
See amended text of 26.300(b).

comment

502 comment by: *Boeing*

Page: 30
Paragraph: 26.300(h)(2)(i)

The proposed text states:
"(i) 18 months from the entry into force of the rule, for aircraft certified according to JAR 25.571 Change 7 or FAR 25.571 Amdt 45 or earlier amendments;"

REQUESTED CHANGE:

Revise paragraph (2)(i) as follows:
"(i) 18 months from the entry into force of the rule, for aircraft certified ~~according~~ **prior** to JAR 25.571 Change 7 or FAR 25.571 Amdt 25-45. ~~or earlier amendments~~; …"

JUSTIFICATION:

The initial block of airplanes are those that are certified failsafe (pre-Amendment 25-45 and Change 7). Airplanes certified post Amendment 25-45 and JAR 25.571 have a damage tolerance program in place. The requested change would allow a compliance time greater than 24 months per (h)(2)(ii) or (iii).

response

Accepted.
The text has been amended.

comment

503 comment by: *Boeing*

Page: 30
Paragraph: 26.300(h)(5)

The proposed text states:

"(5) Submit the process required by point (f) to the Agency within 24 months from the entry into force of this rule or prior to the TC issue, if later. Implement the process within 6 months after the approval by the Agency."

REQUESTED CHANGE:

Delete 26.300(h)(5).

JUSTIFICATION:

[Consistent with our previous comment to delete 26.300(f).]

EASA has reporting and AD requirements in IR 21.A.3A. and 21.A.3B. Therefore, the TCHs already are required to have robust processes to report and resolve safety issues. A new redundant requirement is not necessary and creates additional burden without added safety benefit.

response

Not accepted.

See the responses related to 26.300(f).

comment

504 comment by: *Boeing*

Page: 30

Paragraph: 26.310

The proposed text states:

"26.310 Design changes impact on the LoV

…

Perform a widespread fatigue damage (WFD) evaluation of all type design changes approved after the entry into force of this rule and assess the impact of each design change on the LoV and existing maintenance actions established in accordance with Part 26.300."

REQUESTED CHANGE:

"26.310 Design changes impact on the LoV

…

Perform a widespread fatigue damage (WFD) evaluation of all type design changes **that affect or introduce new WFD susceptible structure** approved after the entry into force of this rule and assess the impact of each design change on the LoV and existing maintenance actions established in accordance with Part 26.300."

JUSTIFICATION:

The wording in the NPA does not define what design changes need be evaluated. Our suggested change limits the need for evaluation and compliance submittals to type design changes to structure that is susceptible to WFD, thus reducing burden to TCHs without affecting the improvement in safety.

response

Partially Accepted.

The text has been amended.

comment

505 comment by: *Boeing*

Page: 31
Paragraph: 26.320

The proposed paragraph addresses "***Damage Tolerance data for existing repairs, existing changes, and existing repairs to changes to Fatigue-Critical Structure.***"

REQUESTED CHANGE:
We suggest that EASA state in this section that the Bi-lateral Agreements will be revised to allow a means for a foreign TCH to achieve compliance for repair approvals.

JUSTIFICATION:
For clarity and additional pertinent information.

response

Not accepted.
Facilitation of repair acceptance under the bilateral is a subject for the TIP.

comment

506 comment by: *Boeing*

Page: 31
Paragraph: 26.320(c)

The proposed text states:
"(c) Develop Repair Evaluation Guidelines (REGs) that:
(1) establish a process for conducting surveys of affected aircraft that will enable identification and documentation of all existing repairs that affect fatigue-critical structure identified under point (g) of Part 26.300 and point (a)(1);
(2) establish a process that will enable operators to obtain the DTI for repairs identified under point (c)(1); and
(3) establish an implementation schedule for repairs addressed by the repair evaluation guideline. The implementation schedule must identify times when actions must be taken, defined in terms of aircraft flight hours, flight cycles, or both."
REQUESTED CHANGE:
Change to read as follows::
"(c) **For airplanes that are not certified to EASA CS 25,** develop Repair Evaluation Guidelines (REGs) that:
(1) establish a process for conducting surveys of affected aircraft that will enable identification and documentation of all existing repairs that affect fatigue-critical structure identified under point (g) of Part 26.300 and point (a)(1);
(2) establish a process that will enable operators to obtain the DTI for repairs identified under point (c)(1); and
(3) establish an implementation schedule for repairs addressed by the repair evaluation guideline. The implementation schedule must identify times when actions must be taken, defined in terms of aircraft flight hours, flight cycles, or both.
Surveys for repairs are not required on airplanes certified to CS 25 or for any airplanes that are delivered after the damage tolerance requirements are required to be incorporated into the operators' maintenance programs."

JUSTIFICATION:
Airplanes that have been certified to EASA CS 25 (such as 777F, 747-8/-8F,787-8) have been certified to the damage tolerance requirements of CS 25.571 and have published repair data (SRM's and Service Bulletins) and ALS that are in compliance with CS 25.571. Unpublished repairs approved by the TCH have also been evaluated for the damage tolerance requirements of CS 25.571. Therefore, a REG is not required for these airplanes. In addition, an operator survey of these airplanes for non-compliant repairs should not be required.
Additionally, other airplanes that are delivered after the Damage Tolerance requirements are required to be incorporated into the operator's maintenance program, should not require surveys for non-compliant repairs.

response

Partially accepted.
See the amended text.

comment

507 comment by: *Boeing*

Page: 32
Paragraph: 26.350

The proposed text states:
"**26.350 Extension of an LoV**
…
(b) The applicant for approval of a change or a repair which affects the fatigue-critical structure of a large aeroplane with an approved extension to an LoV, and the holder of an approval of a change or repair which affects the fatigue-critical structure of a large aeroplane, supporting an operator wishing to implement an extended LoV, shall comply with the following:
(1) A Fatigue and Damage Tolerance Evaluation of the changed or repaired structure for which they hold the approval or application for the approval thereof, and of any other structure that is affected by that change or repair, must be performed.
(2) The evaluation must include consideration of WFD and establish the DTI and any necessary maintenance actions required to preclude catastrophic failure up to the proposed LoV.
(3) The DTI and any necessary maintenance actions established according to point b(2) must be submitted to the Agency for approval."
REQUESTED CHANGE: *This comment is being submitted on behalf of the Boeing Company, Airbus, Bombardier, Dassault Aviation and Embraer:*
Delete paragraph (b) in its entirety.
Alternatively, harmonise Extended LoV with 14 CFR §26.23, or explain the reasoning for the deviation.

JUSTIFICATION:
The proposed rule will require a more stringent evaluation to raise the LOV than to establish the LOV initially. The different level of scrutiny is not justified based on whether

it is an initial determination or a later extension. This approach will have significant financial impact by restricting the ability to raise the LOV of a fleet of airplanes; it creates additional burden without added safety benefit.
-- Extended LOV will require all changes (repairs, alterations and modification) assessment for extension.
-- Extended LOV will be an airplane-unique number and not feasible to provide as a fleet value.

response

Accepted.
26.350 has been harmonised with the FAA.

comment

508 comment by: *Boeing*

Page: 33
Paragraph: 26.360(a)

The proposed text states:
"(a) For all repairs and changes that affect or include fatigue-critical structure, perform a damage tolerance evaluation and develop the inspections and other procedures that will preclude catastrophic failure due to fatigue throughout the operational life of the aeroplane. Identify any new principal structural elements and fatigue-critical structure introduced or created by the change and include these new principal structural elements and fatigue-critical structure in the instructions for continuing airworthiness."
REQUESTED CHANGE:
"(a) For all repairs and changes that affect or include fatigue-critical structure, perform a damage tolerance evaluation and develop the inspections and other procedures that will preclude catastrophic failure due to fatigue ~~throughout the operational life of the aeroplane. Identify any new principal structural elements and fatigue-critical structure introduced or created by the change and include these new principal structural elements and fatigue-critical structure in the instructions for continuing airworthiness.~~"

JUSTIFICATION:
(1) The introduction of the phrase *"throughout the operational life of the airplane"* introduces the thought that a WFD assessment would be required for all future repairs and changes, which is not supported in AMC 20-20, Appendix 3, Para 3.12.

(2) For clarity in understanding the requirements, the last sentence should be deleted. It should be clear that repairs do not establish new FCS. In lieu of deleting the last sentence, repairs and changes could be addressed in separate paragraphs.

response

(1) Not accepted. The phraseology comes from 25.571 appropriate to the damage tolerance evaluation required
(2) Not accepted. The last sentence applies to changes only.

comment

509 comment by: *Boeing*

Page: 33

Paragraph: 26.360

The proposed text states:
“(3) For repairs, a damage tolerance evaluation defining thresholds for maintenance actions that allow continued safe operation must be submitted to the Agency 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 submitted 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 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.”

REQUESTED CHANGE:
Revise these paragraphs to harmonise with FAA requirements under §26.43, which allow the agency to approve a process and the necessary safeguards.

JUSTIFICATION:
The proposed requirement is onerous and would require the development of data prior to a Stage 1 approval, which would, by definition, satisfy a Stage 3 approval, negating the need for an extension in the first place. This creates additional burden without added safety benefit.

response

Noted.
See the response to comment 479.

comment

510 comment by: *Boeing*

Page: 34
Paragraph: 26.370(a)(3)

The proposed text states:
"(3) The REG and associated DTI issued by the TCH in compliance with Part 26.320 for the repairs embodied to the aircraft"

REQUESTED CHANGE:
Change (a)(3) to read as follows:
“(3) **For airplanes that are not certified to EASA CS 25, t**he REG and associated DTI issued by the TCH in compliance with Part 26.320 for the repairs embodied to the aircraft.”

JUSTIFICATION:
Airplanes that have been certified to EASA CS 25 (such as Boeing Models 777F, 747-8/-8F,787-8) have been certified to the damage tolerance requirements of CS 25.571 and have published repair data (SRMs and Service Bulletins) and ALS that are in compliance with CS 25.571. Unpublished repairs approved by the TCH have also been evaluated for the damage tolerance requirements of CS 25.571. Therefore, a REG is not required for these airplanes. In addition, an operator survey of these airplanes for non-compliant

repairs should not be required.

response

Partially accepted.
See amended text.

comment

511 comment by: *Boeing*

Page: 34
Paragraph: 26.370(b)

The proposed text states:
"(1) Ensure that all installed repairs and modifications have been subject to a fatigue and damage tolerance evaluation, including consideration of WFD up to the proposed LoV, according to Part 26.350."
REQUESTED CHANGE:
Revise (b)(1) to state:
"(1) Ensure that all installed repairs and modifications have been ~~subject to a fatigue and damage tolerance evaluation, including consideration of WFD~~ **cleared for operation** up to ~~the proposed~~ LoV, according to Part 26.350."

JUSTIFICATION:
EASA's position is significantly different from the FAA's position in that it requires the operator to essentially revalidate that all existing repairs and changes that have DTI and, further, that they are validated such that the individual repair/change maintenance program will be sufficient to preclude WFD up until the extended LOV. Placing these requirements on the operator, instead of an applicant, seems inappropriate and out of place.

response

Partially accepted.
26.350 has been harmonised with CFR 14 Part 26. 26.370 has been amended accordingly.

comment

638 comment by: *S.A. Morshed, Emirates*

Part 26 Article 26.320 Para (c) (Page 31)
For aircraft that are not certified to EASA CS 25,
“Develop Repair Evaluation Guidelines (REGs) that:
(1).....
(2)....
(3)..... “
Add the following text after (3) "establish an implementation schedule ...defined in terms of aircraft flight hours, flight cycles or both. Surveys for repairs are not required on aircraft certified to CS 25 or for any aircraft that are delivered after the damage tolerance requirements are required to be incorporated into the operators' maintenance programs.
Proposed Text:
26.320 (c) Develop Repair Evaluation Guidelines (REGs) that:
(1) establish a process for conducting surveys of affected aircraft that will enable identification and documentation of all existing repairs that affect fatigue critical structure

identified under point (g) of Part 26.300 and point (a)(1);
(2) .....
(3) establish an implementation schedule for repairs addressed by the repair evaluation guideline. The implementation schedule must identify times when actions must be taken, defined in terms of aircraft flight hours, flight cycles, or both.

Justification:

Aircraft that have been certified to EASA CS 25 (such as 777F, 747-8/-8F,787-8) have been certified to the damage tolerance requirements of CS 25.571 and have published repair data (SRM's and Service Bulletins) and ALS that are in compliance with CS 25.571. Unpublished repairs approved by the TCH have also been evaluated for the damage tolerance requirements of CS 25.571. Therefore, a REG is not required for these aircraft. In addition, an operator survey of these aircraft for noncompliant repairs should not be required.

Additionally, other aircraft which are delivered after the Damage Tolerance requirements are required to be incorporated into the operator's maintenance program should not require surveys for non-compliant repairs.

response

Partially accepted.

See the amended text.

comment

650 comment by: *AEA*

WFD assessment of existing repairs and changes

The requirement to accomplish a WFD assessment of repairs is not harmonised with the FAA rule. The FAA does not require a WFD assessment of repairs unless the aeroplanes certification basis requires it.

Some aeroplane models have a stated LOV, which is relatively low (developed in accordance with the FAA rule that did not require repairs or STC to be assessed for WFD if extending the LOV). For these models, the intention was for the TCH to extend the LOV at a later date. This rule would penalise operators of these models.

There is very limited capability outside the TCH's to perform a WFD evaluation.

The rule does not require the TCH to upgrade the RAG/REG/SRM for WFD.

Transfer of aeroplane & certain components will be difficult with products coming from outside the EU.

The requirement is contrary to the harmonisation agreements contained in the EU-US bilateral and associated Technical implementation procedures concerning mutual acceptance of design data and approval of repairs.

There is no proportionality in the requirement. The requirement is the same whether an aeroplane is to exceed the LOV by 10 flights or 10,000.

EASA approve the LOV, so are best placed to establish and control the WFD requirements on a case-by-case basis (depending on the extension being sought). By requiring this in Part 26 removes the opportunity of negotiating any flexibility.

response

Accepted.

The text has been amended to harmonise with the FAA.

comment	*651* comment by: *AEA* **<u>WFD assessment of Future repairs and changes</u>** Future repairs should not be assessed for LOV, as the risk posed by these repairs will be low due to the limited duration the aeroplane will then remain in service. There is little cost benefit in future repairs. There is no proportionality in the requirement. The requirement is the same whether an aeroplane is to exceed the LOV by 10 flights or 10,000. EASA approve the LOV, so are best placed to establish and control the WFD requirements on a case-by-case basis (depending on the extension being sought). By requiring this in Part 26 removes the opportunity of negotiating any flexibility. If the SRM has not been evaluated for WFD it cannot be used for many repair scenarios. The FAA does not require WFD evaluation of future repairs or changes unless the aeroplanes certification basis requires it. The requirement is contrary to the harmonisation agreements contained in the EU-US bilateral and associated Technical implementation procedures concerning mutual acceptance of design data and approval of repairs. Few DAHS' outside the TCH's are able to perform a WFD evaluation.
response	Partially accepted. The text has been amended to harmonise with FAA. Note: 14 CFR Part 26 is imposed despite the bi-lateral agreement. The comment regarding DAH capability is also noted.

comment	*652* comment by: *AEA* 26.360 (b)(3) allow return to service for 12 months after initial repair approval (stage 1). Damage tolerance based thresholds and maintenance actions are required at this point (stage 2). Certain, FAA TCH's are not required to provide the DT (stage 2) until 18 months. This is a DAH requirement however, it will affect operators who require the data under 26.370 (b) (1) and AMC 20-20 Appendix 3, paragraph 3.13.1 (c) [existing repairs] and AMC 20-20-Appendix 3 Annex 1 (b) [future repairs]. If EASA accept the FAA process, it should be addressed in the AMC material.
response	Not accepted. This is a DAH requirement with the same intent as the FAA implementation of the CFR 14 Part 26 requirement and associated AC material. The TIP addresses acceptable FAA repair data.

comment	*653* comment by: *AEA* The operator is required to ensure all installed repairs and modifications have been assessed for Damage Tolerance including WFD. WFD assessment of repairs and modifications becomes an operator responsibility if the DAH cannot support or the DAH is no longer in business. The requirement is applicable to all large aeroplanes certified after the 1st January 1958. The FAA does not require WFD evaluation of repairs or changes unless the aeroplanes

certification basis requires it.
The requirement is contrary to the harmonisation agreements contained in the EU-US bilateral and associated Technical implementation procedures concerning mutual acceptance of design data and approval of repairs.
Few DAH's outside the TCH's are able to perform a WFD evaluation.
Some aeroplane models have a stated LOV, which is relatively low (developed in accordance with the FAA rule that did not require repairs or STC to be assessed for WFD if extending the LOV). For these models, the intention was for the TCH to extend the LOV at a later date. This rule would penalise operators of these models
The rule does not require the TCH to upgrade the RAG/REG/SRM for WFD. This further makes it difficult for operators to comply.
Transfer of aeroplane & certain components will be difficult with products coming from outside the EU due to the un-harmonised requirement.
It is likely that only the TCH will have sufficient data and knowledge to extend an LOV. If the aeroplane has non TCH STC's and repairs installed, the design data would need to be made available to the TCH. It is also likely the operator would encounter a number of problems regarding propriety data and intellectual property rights.

response

Accepted.
The rule has been amended to harmonise with the FAA.

comment

663 comment by: *AEA*

Part 26.370(a)(3) requires at rule level expressis verbis that the Repair Evaluation Guidelines have to be included
in the Maintenance Program. This effectively mandates the content of the REG for the operator. Any deviation from
the REG may then require approval by the National
Authority and/or EASA (AMOC). Please note that the intent of the REG, as established by FAA FAR 26.43(e), is to support the operators in establishing compliance; the REG was thus intended to be an Acceptable Means of Compliance (but not mandatory and not the only means of compliance). Refer also to FAA 14 CFR Parts 26, 121, 129
Docket No. FAA-2005-21693 for further explanations of the
REG intent, quote:
"Specifically, 14 CFR 26.43, 26.45, and 26.47 require that the TC holders and STC holders develop certain information that will provide a means for operators to address the adverse effects of repairs and alterations. The information required by this final rule includes the following:
• List of Fatigue Critical Structure (baseline and alteration).
• Damage tolerance inspections (DTIs) for existing published repair data and all future repair data.
• DTIs for all existing and future alteration data.
• Repair evaluation guidelines (REGs), which include
- Instructions for conducting airplane surveys;
- Instructions an operator uses to obtain DTIs;
and

- An implementation schedule that provides timing for the above actions."

Furthermore, the way the rule shall be implemented by the operator is also described in FAA 14 CFR Parts 26, 121, 129 Docket No. FAA-2005-21693, quotes:

· "As amended by this final rule, § 121.1109(c)(2) of the
AASFR requires operators to incorporate into their maintenance program a "means" for addressing the adverse effects that repairs and alterations may have on fatigue critical structure."

· "The OIP would provide the means for addressing the adverse effects of repairs and alterations. Once this OIP is approved by the operator's principal maintenance inspector (PMI), the operator would comply with the AASFR by
incorporating the OIP into its maintenance program and
implementing the OIP by performing surveys of its airplanes, obtaining necessary damage tolerance inspections and procedures, and performing those inspections and procedures, all in accordance with the approved implementation schedule contained in the OIP."

FAA regulation hence requires that the operator establishes procedures and policies (including timeline) – which are consolidated into the Operator Implementation Plan (OIP) – and seeks NAA approval of the OIP. The current EASA proposal is very different here: EASA does not require an OIP, but instead mandates the REG at Rule level. This means effectively an undue limitation of the flexibility for the airlines operating under Part M.

AEA's proposal is to amend 26.370(a)(3) to the effect that it requires a "policy and an accomplishment schedule addressing the adverse effects that repairs and alterations may have on fatigue critical structure". CS26.370 (which is guidance only, not binding) may then refer to the REG as an acceptable means of compliance. This would harmonise the EASA Part 26 with FAA regulation. Please note that this is also in line with other aging strucures programmes in
26.370, such as CPCP which only requires that an operator shall have a CPCP, without detailing at rule level the
content nor making a guidance material binding.

response

Accepted.
See the response to comment 348.

comment

666 comment by: *Marshall Aerospace and Defence Group*

1. Paragraph 26.300.f.1 requires the holder of a TC or restricted TC to establish a process that includes periodic monitoring of operational usage with comparison to design assumptions. As recognized in AMC 20-20 Amdt 1 part 5.a, the monitoring of operational usage is best achieved in cooperation with the operators. This requirement places an open burden on the TC to conduct operational usage evaluations at proposed 5 yr. intervals for all operators. Marshall ADG (Marshall of Cambridge Aerospace) suggests that the Continuing Airworthiness (CAW) program provided by the TCH to operators include all the usage parameters and assumptions used to identify existing maintenance actions listed in part 26.300.d. Marshall ADG also suggests that the periodic monitoring of operational usage to ensure operation within design assumptions be carried out as part of the Structural Task Group (STG) under the responsibility of the

operators and included in AMC 20-20 Amdt 1 part 5.e.

2. Although 26.300.e requires TCH to establish a baseline CPCP and operators to implement a CPC program taking into account the TCH baseline plan (26.370.a.2), there is no direct mandate for the TCH to make the CPCP available to operators, this could be an oversight (there is an indirect reference in 26.300.h.4). In order to remove ambiguity Marshall ADG may suggest the addition of language similar to Para. 26.300.g "*and upon the approval of the plan make it available to operators and persons required to comply with Part 26.330, 360 and 370*" to Para. 26.300.e

response

Partially accepted.

(1) Partially accepted: 26.300(f) is amended to focus on the process to be followed rather than being prescriptive in terms of what data should be analysed.

2) The action is actually already addressed via Part-21 in which any (update) of the manuals/ICA should be made available.

comment

667 comment by: *Marshall Aerospace and Defence Group*

- Ref. 26.320 a). Suggest the term "*Fatigue-Critical Modified Structure (FCMS)*" in paragraph a) is replaced with "*Fatigue critical alteration structure (FCAS)*" in order to maintain consistency with FAA 14 CFR Part 26 Subpart E: "26.45 Holders of type certificates—Alterations and repairs to alterations".
- Ref. 26.320 b)1). It appears to be a typo on the text for part 26.320.b.1 "*the data that affects fatigue-critical baseline structure and fatigue-critical modified structure identified under point **(f)** of Part 26.300 and point (a)(1)"* should refer to point ***(g)*** instead of (f).

response

Partially accepted.

First comment: Not accepted. However a definition for FCMS has been introduced to state that FCMS = FCAS.

Second comment: Accepted.The text has been amended.

comment

668 comment by: *Marshall Aerospace and Defence Group*

1)Ref 26.330. Marshall ADG (Marshall of Cambridge Aerospace) finds the proposed compliance times are likely insufficient to provide the requested data given the potentially large number of repairs and modifications that need be evaluated and analyzed given the retroactive scope of the rule. Therefore, Marshall ADG would like to request that the requirement be subsumed (at least for repairs) into the Repair Assessment Programme (as many Major repairs may no longer be on the aircraft).

2)Ref. 26.330. The preparation of the list of changes and fatigue-critical structure required by point (a)(2) is dependent on the completion of requirement 26.300.g by the TCH. As indicated in part 26.300.h.6 the list of the structure identified under point (g) may be submitted to the Agency for approval by the TC within 6 months from the entry into force of this rule. Therefore it is requested that the period of compliance for points (a).(1) and (b) of rule 26.330 be made contingent on the completion of part 26.g by the TCH and be extended to 18 and 30 months

respectively from the entry into force of this rule.

response

Not accepted.

- 1). Unpublished repairs to STCs are already subsumed to 26.370 (Using e.g.REG). It is unclear if the commenter would have published a significant number of published repairs (SRM or SBs)
- 2) Not accepted. Most FCS list are already available and the timescales are harmonised with FAA.

comment

669 comment by: *Marshall Aerospace and Defence Group*

- Ref 26.370. Marshall ADG (Marshall of Cambridge Aerospace) would like to request that the requirement to fulfil point b) be subsumed into the Repair Assessment Programme (as many Major repairs may no longer be on the aircraft).

response

Noted.
The text has been amended. The RAP does not provide for WFD assessment.

comment

672 comment by: *USAA*

REG definition is more ambiguous and open-ended than the FAA definition. The EASA definition includes the portion " ... all relevant repaired and adjacent structure" as part of the definition. This ambiguous language will be troublesome for ALL operators when dealing with regulatory personnel interpretation.
The EASA equivalent language regarding the airframe survey does NOT exclude "non-reinforcing" repairs from being captured as does the FAA requirements. Provisions must be added to exclude non-reinforcing repairs.

The EASA definition of the REG must be harmonised with the FAA definition (see FAA Ac 120-93, Appendix 2, definition S).
The EASA requirements seem to indicate that the REG is the ONLY means of compliance where as the FAA simply presents the REG as one means of compliance. This interpretation could lead to a revision of the FAA approved REGs which in turn could lead to changes is already accomplished surveys.

response

Partially accepted.
See previous comments.
Non-reinforcing repairs are not specifically excluded by either FAA requirement or by EASA proposal. Conversely EASA is not requiring non-reinforcing repairs to be systematically considered.
In general the REG is addressing only reinforcing repairs. Such repairs may influence a loading and stress distribution in structure adjacent to repair, ie. not directly under the reinforcing elements of the repair. Relevant adjacent structure is therefore structure whose fatigue and damage tolerance behaviour and justification is altered by the repair.
EASA definition of the REG has been clarified in Part-26 and in Chapter 9 of AMC 20-20.
The text of 26.370 has been amended. REG is not the only mean to comply as per the amended 26.370.

comment | *680* | comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
The STC requirements for DT data are to support Part M operators by making available the required DT data for incorporation in the operators' maintenance Programme.
The rule applicability does not limit the DT data requirements to those changes incorporated on aeroplanes operated under Part M. DAH's will be required to develop data for previous changes going back to 1958 no matter whether the aeroplane is in Part M or not.
This is a huge burden on DAH's. Many operators have or have inherited DAH responsibilities. Operators of used airplanes also have inherited a "previous repair and modification life" of those aircraft with limited control over the associated DAHs. Even if not an DAH, operators with such STCs or repairs installed will have the burden as costs for the accomplishment of DTEs and WFD evaluation will be passed on by the DAHs.
The requirement should be for those changes that affect aeroplanes in Part M operation only. Part 26.370 (a) (4) refers to the Part M obligations. For clarification and reasons of transperency EASA should publish a complete list of the affected STC allowing operators under Part M the possibility for compliance.
SUGGESTED RESOLUTION:
EATL propose that EASA fully harmonise this rule with the existing FAA requirements. This means that a WFD assessment of STCs and repairs to STCs will only be required for aircraft certified to 14 CFR 25 Amendment 96 or EASA CS 25.
If EASA does not concur, then EATL would propose that the requirement for WFD evaluations and DTE for STCs will be valid for aircraft operated under Part M only. To reduce the economic impact on the european operators, taking into account that this rule-making is more stringent then the FAA counterpart and eventually makes the operator responsible, EATL propose that EASA publish a full list of the affected STC to allow operators the possibility to review and demand the required data from the respective DAH or whoever has inherited the responsibility.

response | Partially accepted.
WFD assessment of existing STCs is not required. In addition 26.330 has been amended to provide some alleviation on the STCH of the burden to develop DTE for it affected STC's by limiting it only to those A/C operated under Part-M.
It will be the STC holders responsibility as specified under 26.330 to develop DTI and make them available to the operators as per the applicable Part-21 rules.

comment | *681* | comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
<u>WFD assessment of existing repairs and changes</u>
The requirement to accomplish a WFD assessment of repairs is not harmonised with the FAA rule. The FAA does not require a WFD assessment of repairs unless the aeroplanes certification basis requires it.
Some aeroplane models have a stated LOV, which is relatively low (developed in accordance with the FAA rule that did not require repairs or STC to be assessed for WFD if

extending the LOV). For these models, the intention was for the TCH to extend the LOV at a later date. This rule would penalise operators of these models.
There is very limited capability outside the TCH's to perform a WFD evaluation.
The rule does not require the TCH to upgrade the RAG/REG/SRM for WFD.
Transfer of aeroplane & certain components will be difficult with products coming from outside the EU.
The requirement is contrary to the harmonisation agreements contained in the EU-US bilateral and associated Technical implementation procedures concerning mutual acceptance of design data and approval of repairs.
There is no proportionality in the requirement. The requirement is the same whether an aeroplane is to exceed the LOV by 10 flights or 10,000.
EASA approve the LOV, so are best placed to establish and control the WFD requirements on a case-by-case basis (depending on the extension being sought). By requiring this in Part 26 removes the opportunity of negotiating any flexibility.
SUGGESTED RESOLUTION:
EATL propose that EASA fully harmonise this rule with the existing FAA requirements. This means that a WFD assessment of repairs will only be required for aircraft certified to 14 CFR 25 Amendment 96 or EASA CS 25.
The impact on European operators both financially and organisationally would put European operators in clear market disadvantage compared to competitors und FAA governance. In addition, the impact in a globalized market ruled by leasing companies and the reuqirement for world-wide transfers of spare parts would be significant.

response

Accepted.
See previous comments.

comment

682 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
<u>WFD assessment of Future repairs and changes</u>
Future repairs should not be assessed for LOV, as the risk posed by these repairs will be low due to the limited duration the aeroplane will then remain in service. There is little cost benefit in future repairs.
There is no proportionality in the requirement. The requirement is the same whether an aeroplane is to exceed the LOV by 10 flights or 10,000.
EASA approve the LOV, so are best placed to establish and control the WFD requirements on a case-by-case basis (depending on the extension being sought). By requiring this in Part 26 removes the opportunity of negotiating any flexibility.
If the SRM has not been evaluated for WFD it cannot be used for many repair scenarios.
The FAA does not require WFD evaluation of future repairs or changes unless the aeroplanes certification basis requires it.
The requirement is contrary to the harmonisation agreements contained in the EU-US bilateral and associated Technical implementation procedures concerning mutual acceptance of design data and approval of repairs.
SUGGESTED RESOLUTION:
Same as with the requirement for existing repairs, EATL propose that EASA fully

harmonise this rule with the existing FAA requirements. This means that a WFD assessment of repairs will only be required for aircraft certified to 14 CFR 25 Amendment 96 or EASA CS 25. If a cost vs benefit analysis had actually been peformed, then the negligible increase in safety considering the ever-reducing remaining in service life would stand in no comparison to the costs imposed on the entire industry.

response

Accepted.
The rule has been harmonised with the FAA.

comment

683 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
26.360 (b)(3) allow return to service for 12 months after initial repair approval (stage 1). Damage tolerance based thresholds and maintenance actions are required at this point (stage 2).
Certain FAA TCH's are not required to provide the DT (stage 2) until 18 months.
This is a DAH requirement however, it will affect operators who require the data under 26.370 (b) (1) and AMC 20-20 Appendix 3, paragraph 3.13.1 (c) [existing repairs] and AMC 20-20-Appendix 3 Annex 1 (b) [future repairs].
SUGGESTED RESOLUTION:
EATL proposes that EASA accepts the established FAA process. This shall prevent EU operators from imposed higher costs and create an "even playing field". Although this is a DAH requirement agreed with the respective local authority, EASA is asked to accept this procedure and addressthis in the AMC material.

response

Noted.
The FAA process is already accepted. See the response to comment 652.

comment

684 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
The operator is required to ensure all installed repairs and modifications have been assessed for Damage Tolerance including WFD. WFD assessment of repairs and modifications becomes an operator responsibility if the DAH cannot support or the DAH is no longer in business. The requirement is applicable to all large aeroplanes certified after the 1st January 1958.
The FAA does not require WFD evaluation of repairs or changes unless the aeroplanes certification basis requires it.
The requirement is contrary to the harmonisation agreements contained in the EU-US bilateral and associated Technical implementation procedures concerning mutual acceptance of design data and approval of repairs.
Few DAH's outside the TCH's are able to perform a WFD evaluation.
Some aeroplane models have a stated LOV, which is relatively low (developed in accordance with the FAA rule that did not require repairs or STC to be assessed for WFD if extending the LOV). For these models, the intention was for the TCH to extend the LOV at a later date. This rule would penalise operators of these models
The rule does not require the TCH to upgrade the RAG/REG/SRM for WFD. This further

makes it difficult for operators to comply.
Transfer of aeroplane & certain components will be difficult with products coming from outside the EU due to the un-harmonised requirement.
It is likely that only the TCH will have sufficient data and knowledge to extend an LOV. If the aeroplane has non TCH STC's and repairs installed, the design data would need to be made available to the TCH. It is also likely the operator would encounter a number of problems regarding propriety data and intellectual property rights.
SUGGESTED RESOLUTION:
EATL propose that EASA fully harmonise this rule with the existing FAA requirements.

response

Accepted.
26.350 has been harmonised with the FAA.

B. Draft Opinion(s) and/or Decision(s) — III. Draft Decision CS-26 p. 35-38

comment

28 comment by: *CAA-NL*

In our opinion it is better keep all requirements to the maintenance program of an aircraft in one place and thus to transfer the relevant texts of Part 26.370 and CS 26.370 to Part M.A.302 and its AMC material.
· We suggest to include proposed CS 26.370(c)/(d)/(e) into a new AMC to the new M.A.302(f) with the following text:
(1) Compliance with M.A.302(f)(1) is demonstrated when the operator holds evidence from the repair or design approval holder that the repair or modification data for any repair or modification installed on the aircraft is in compliance with Part 26.350(b).
(2) Compliance with M.A.302(f)(2) is demonstrated when a plan has been established to address additional DT data for modifications and repairs not addressed by the TCH or STC holder's documents that shows how the additional data will be obtained by the operator and approved by the Agency and the plan has been incorporated into the maintenance programme for approval by the competent authority.
· We suggest to delete the rest of the proposed texts as these are already covered by the amended M.A.302(g) and the amended AMC to M.A.302.

response

Not accepted.
See the response to comment 27.

comment

146 comment by: *AIRBUS*

Comment related to page35 /203, paragraph, CS 26.300(c)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
The ALS includes the LoV of each aircraft structural configuration required by Part 26.300 points (c) and (d) and each LoV is supported by sufficient test evidence, analysis and, if available, service experience and teardown inspection results of high time aircraft of similar structural design, accounting for differences in operating conditions and procedures..

RATIONALE / REASON / JUSTIFICATION:
For clarification

response

Accepted.
The text has been amended.

comment

180 comment by: *AIRBUS*

Comment related to page 35/203 Appendix 1 to Part-26
PROPOSED TEXT / COMMENT:
The following aeroplanes are excluded from compliance with Part 26.3XX.
Airbus submit the list of affected aeroplanes, in accordance with criteria defined in comment 185:
- A300-600 ST (Beluga)
- A400M
- A330 modified to replace the Beluga
- Any future aircraft complying with agreed criteria

response

Partially accepted.
For excluded aircraft, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

comment

261 comment by: *LHT DO*

page 87 effected as well:
LHT DO does propose to grant an exemption of FAA validated EASA STC's which have demonstrated FAR 26 compliance. This will avoid further paperwork and formal efforts on DOA and authority side. (May be excluding pre Amdmt. 45 a/c).
Since EASA fatigue & DTE does not require the consideration of aspects beyond the FAR 26 assessment no impact on the equivalent level of safetyis expected.
Please introduce exemption policy to AMC20-20; C; A pp., e .g.as
"FAA validated and FAR 26 compliant EASA STC's are considered compliant with EASA Part 26 without further assessment or documentation"

response

Not accepted.
In such cases the burden of demonstrating compliance is considered to be minimal. The Agency may also produce a certification memorandum to clarify the acceptability of the FAA data for EASA Part-26 compliance demonstration.

comment

262 comment by: *LHT DO*

FAA validated EASA STC's have been exempted for a certain group of aeroplanes in the course of FAR26 assessment. The exemption takes type of operation (VIP; non commercial; restriction on STC) into account as well as utilization aspects. For the very limited amount of a/c (single MSN STC's) EASA should adopt FAA rational for exemption.

DOAs should not be obliged to perform DTE on this class of a/c .
Single MSN STC's; VIP operated; mostly not even Part M operation.
Statistically negligible contribution to the level of safety
Proposal:
Introduction of exemption policy to AMC20-20; C; App. II for FAA validated EASA STC's which have been previously exempted by FAA from FAR 26 compliance finding.
App. II amendment: "FAA validated EASA STC's which have been previously exempted also are exempted from EASA Part 26 compliance finding. No further assessment or documentation necessary."

response

Not accepted.
Application of the same criteria will not automatically result in the same exemptions when it is an EU operation. However the text of 26.330 has been amended to provide STCHs some flexibility (e.g. aircraft is not operated under Part-CAT regulations)

comment

264 comment by: *LHT DO*

It is LHT understanding that DOAs are not obliged to perform DTE and produce associated documents if not required by an operator. For STC's which are limited to a single MSN and non part M operation, shall be exemptible from Part 26 Req. on request by DOAs in case of statistically negligible contribution to the level of safety. (Single MSN STC's; VIP operated; low level of utilization).
Proposal of LHT DO:
Introduction of exemption policy to AMC20-20; C; App. II for EASA STC's utilized by non Part M operators.
App. II: "EASA STC's for which the DOA can show that all affected MSN are presently operating outside of EASA Part M requirements and where a Part M operation is very unlikely in future an exemption can be granted on substantiated application of DOA".

response

Partially accepted.
26.330 has been amended to allow some flexibility on the STCH's when the aircraft is not operated under Part CAT.

comment

313 comment by: *Dassault Aviation*

III. Draft Decision CS-26:
§ CS 26.300 (c):
· *"… if available, service experience and teardown inspection results of high time aircraft of similar structural design, accounting for differences in operating conditions and procedures."* DASSAULT-AVIATION do not think that service experience showing no appearance of WFD is sufficient to prove the absence of it on similar airplanes. In fact fatigue phenomenon is scattered and a minimum of 3 times the design service goal has to be performed to prove the WFD absence through teardown or application of residual strength loads.

§ CS 26.310 (b):

· *"The extent of the test evidence required in support of the WFD evaluation is agreed by the Agency…"* As LoV could also be supported by analysis, DASSAULT-AVIATION suggests to modify the sentence as: *"The extent of the* analysis or *test evidence required in support of the WFD evaluation is agreed by the Agency…".*

§ CS 26.320:
· Title to be modified in line with the comment made above for §26.320 title.

§ CS 26.350:
· Same comment than for CS 26.300 (c).

response

Noted.
§ CS 26.300 (c): Noted. The point of mentioning service experience and teardown results is to ensure they are taken into account.
§ CS 26.310 (b): Not accepted. The evaluations will include some analysis by definition and it is the extent of testing in support of this analysis that must be agreed.
§ CS 26.320: Not accepted. See the response to comment 311.

comment

356 comment by: *CAA-NL*

CS 26.320(b) – Page 36 of 203: For aircraft certified to a requirement earlier than JAR-25 Amdt 7, ...
{Also applicable to CS 26.330(b) and CS 26.350(d)}
Comment:
The certification requirement refers to JAR 25 Amdt 7 only.
Proposal:
Add: "... or prior to FAR 25 amdt 25-45 and use this amdt as a minimum standard". Or add: "... or equivalent"
Explanation:
Equivalent FAR 25 amdt level would be beneficial when a TC is based on FAR certification basis.

response

Partially accepted.
The wording 'or equivalent' has been added to CS-26.

comment

385 comment by: *FAA*

Paragraph (a) requires the inclusion of the supplemental structural inspection document (SSID) in the ALS.
For aircraft structure certified prior to JAR 25.571 Change 7 or FAR 25.571 Amdt 45 or equivalent, a fatigue and damage tolerance evaluation according to JAR 25.571 Change 7 or equivalent exists and either a Supplemental Structural Inspection Document (SSID) exists and is included in the ALS for approval, or a reference provided in the ALS to an existing approved SSID or equivalent document…..
This requirement is not harmonised with FAA requirements.
In addition, item 3 on table on page 10 of NPA, it states "Requires additional information in the ALS e.g. SSID by reference. This ensures SSID availability and implementation by the

	operator through Part M." This will require additional work by other regulatory authorities and design approval holders for SSIDs that have been mandated by AD. Suggested Resolution: Delete the requirement to have existing SSIDs be included in the ALS or to have the SSID referenced in the ALS.
response	Partially accepted. The text has been changed to reflect the acceptability of an EASA mandated SSID.

comment	*387* comment by: *FAA* The requirement for extending an LOV is not harmonised with the FAA's requirement. Suggested Resolution: Harmonise with FAA's requirements.
response	Accepted. 26.350 has been amended in order to harmonise with the FAA.

comment	*408* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **CS 26.370:** It is not clear in the set of affected rule the link with operators requirements x Part 21 x Part 26, i.e. in FAA aging aircraft rules there is a clear link for the operator´s obligation and the set of rules, starting from 14 CFR Part 21, 14 CFR Part 26 and 14 CFR Part 121. The only clear paragraphs for the operator´s obligation are the paragraphs 26.30 (b), 26.370 and the AMC of Part-M Note that AMC is not a regulation, it is an acceptable means of compliance. Embraer understands that a rule in Part-M or EU-OPS for the operators shall be necessary to link the Operators with Part-26.
response	Noted. There is a link between Operator's requirement and Part 26. In addition another link to PART 26 has been introduced in Part M. (M.A.301)

comment	*433* comment by: *Europe Airpost* **26.360 (c)** "The evaluation ..... is submitted to the Agency" Currently, for Boeing airplanes, The Boeing Company (TBC) has received a FAA Organization Designation Authorization delegation for repairs to comply with FAA 14 CFR § 26.43. Will TBC have the same delegation from the EASA for Part 26 ? Getting two approvals (from Boeing and from the EASA) will certainly have an impact on airplane scheduled return to service date. Will the bilateral agreement (DECISION NO 2004/04/CF) be applicable to Part 26 for repairs ?
response	Noted. Boeing approved repairs which are FAR 26 compliant could be accepted as per the BASA with the FAA. The Agency may produce a certification memorandum to further clarify the acceptability of the FAA data. On the second point, FAA and the Agency will consider whether the TIP needs further

	revision as a consequence of this rulemaking.

comment	*470* comment by: *AIRBUS* **COMMENT IS RELATED TO:** NPA 2013-07, page 36/203, CS26.300 (e) **PROPOSED TEXT / COMMENT:** (e) A baseline programme ~~is~~ should be established according to AMC 20-20 and it includes a statement that requires the operator to control corrosion to Level 1 or better and is submitted to the Agency.(e) A baseline programme is established according to AMC 20-20 and it includes a statement that requires the operator to control corrosion to Level 1 or better and is submitted to the Agency. **RATIONALE / REASON / JUSTIFICATION:** AMC 20-20 is guidance material ; it is not a part of the rule.
response	Partially accepted. Note that 'is' is used in the CS to explicitly confirm compliance with the specific acceptable means provided. Flexibility is introduced in the revised text of CS 26.300(h)&(i).

comment	*512* comment by: *Boeing* Page: 36 Paragraph: CS 26.300(f) The proposed text states: "(f) A baseline programme already exists for the type that is either approved by the Agency through the Maintenance Review Board (MRB) Industry Steering Committee (ISC) using existing procedures for EASA Maintenance Review Board Report (MRBR) approval or through an existing EASA Airworthiness Directive." **REQUESTED CHANGE:** Delete 26.300(f) as a requirement. **JUSTIFICATION:** This change is needed to harmonise with the FAA. The FAA-concluded existing requirements should be appropriate to enable us to determine whether the objectives of this final rule are being met.
response	Not accepted. The proposed text referred to in the comments is regarding CPCP, however, 26.300(f) is referring to the monitoring process.

comment	*513* comment by: *Boeing* Page: 37 Paragraph: CS 26.350 The proposed text states:

"(b) The ALS revision or supplement includes clear instructions to the operator, declaring that in order for the LoV to be approved in the structural maintenance programme under Part-M requirements, the operator is responsible for ensuring that all installed repairs and modifications affecting fatigue-critical structure have been subject to a fatigue and damage tolerance evaluation, including consideration of WFD, and are supported by maintenance actions approved by the Agency and established in accordance with point (c)."

REQUESTED CHANGE:

"(b) The ALS revision or supplement includes clear instructions to the operator, declaring that in order for the LoV to be approved in the structural maintenance programme under Part-M requirements, the operator is responsible for ensuring that all installed repairs and modifications affecting fatigue-critical structure have been subject to a fatigue and damage tolerance evaluation, ~~**including consideration of WFD,**~~ and are supported by maintenance actions approved by the Agency and established in accordance with point (c)."

JUSTIFICATION:

The proposed text creates redundant requirements and additional burden without added safety benefit. CS 26.320 establishes damage tolerance requirements for existing repairs and existing changes to Fatigue Critical Structure, and 26.260 establishes damage tolerance for future repairs and future changes to Fatigue Critical Structure. The proposed rule will require a more stringent evaluation to raise the LOV than to establish the LOV initially. The different level of scrutiny is not justified based only on whether it is an initial determination or a later extension. This approach will create significant financial impact by restricting the ability to raise the LOV of a fleet of airplanes.

-- Extended LOV will require all changes (repairs, alterations and modification) assessment for extension.

-- Extended LOV will be an airplane-unique number and not feasible to provide as a fleet value.

response

Noted.

See the response to comment 460.

comment *704* comment by: *USAA*

The EASA rule will increase operator reporting requirements and therefore monitoring requirements.

response

Noted.

26.300(f) is reworded to focus on the process to be followed rather than being prescriptive in terms of what data should be analysed.

B. Draft Opinion(s) and/or Decision(s) — IV. Draft Decision CS-25 p. 39-43

comment *117* comment by: *KLM Engineering & Maintenance*

	Requires operators and TCH's to have "Inspection programmes for environmental damage and service-induced accidental damage must be established to protect the structure against catastrophic failure. " Programs have historically been developed through the MSG-3 process. CS 25 Appendix H and similar 14 CFR 25 Appendix H) already require the TCH provide a maintenance manual that includes "… an inspection programme that includes the frequency and extent of the inspections necessary to provide for the continued airworthiness of the aeroplane …". Therefore, the requirement for these programs already exists in the EASA regulations and the EASA proposal is to introduce a redundant regulation. Those programs have historically been developed through the MSG-3 process and provided in the maintenance manuals as required by Appendix H. No compelling safety reason has been provided that justifies the inclusion of this requirement in CS 25.571 and the proposal is not harmonised. In addition, it would place additional burden on the TCH and operators in obtaining approval for these programs and revision to these programs from multiple different organizations within the regulatory agencies that are responsible for type certification and operator maintenance programs for no real safety benefit. Existing CS 25.1529, Instructions for Continued Airworthiness, already requires operators and TCH's to prepare instructions for Continued Airworthiness in accordance with Appendix H. There is no compelling safety reason to include compliance in CS 25.571. Delete: "Inspection programmes for environmental damage and service-induced accidental damage must be established to protect the structure against catastrophic failure. "
response	Not accepted. This requirement is applicable to the TCH not the operator. The program approval is not affected.

comment	*118* comment by: *KLM Engineering & Maintenance* Corrosion Prevention and Control Programme (CPCP): The new paragraph 25.571(a)(b) includes a requirement to include in the ALS a statement that requires the operator to include a CPCP in their maintenance program that will ensure corrosion is controlled to Level 1 or better. Please clarify if Level 2 or 3 corrosion findings would result in non-compliance with the ALS.
response	Noted. Compliance with the ALS is established once the CPCP is in place. Compliance with the CPCP will result in changes to the program when Level 2 findings occur in order to ensure Level 1 or better in the future. Text has been changed to state that CPCP will control the corrosion in lieu of ensure the corrosion is Level 1 or better.

comment	*147* comment by: *AIRBUS* Comment related to page 39/203, paragraph, Cs 25.571(a)

PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
An evaluation of the strength, detail design, and fabrication must show that catastrophic failure due to fatigue, ~~environmental~~ corrosion or accidental damage,
RATIONALE / REASON / JUSTIFICATION:
Environmental is nowhere mentioned (FAR25 nor NPA25C-292), should remain corrosion, no reason to deviate from FAR25 am 132 text.

response

Not accepted.
25.571 applies to all types of structure and materials therein. Environmental damage is applicable to more than corrosion of metallic structure.

comment

148 comment by: *AIRBUS*

Comment related to page 39/203, paragraph,25.571(a)(1)(i)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(i) the ~~determination of~~ typical loading spectra, temperatures, and humidity expected in service;
RATIONALE / REASON / JUSTIFICATION:
For clarification.
Book cases could also be part of the typical load spectra, they are not "determined".

response

Accepted.

comment

149 comment by: *AIRBUS*

Comment related to page 39/203, paragraph, CS 25571(a)(1)(ii)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(ii) the identification of principal structural elements and detail design points, the failure of which could cause ~~contribute~~ to a catastrophic failure of the aeroplane; and
RATIONALE / REASON / JUSTIFICATION:
The word “contribute” widens the scope of components to be considered as PSE, should remain **cause**. No reason the deviate from FAR25 am 132 text.

response

Not accepted.
‘Contribute’ is consistent with the paragraph (a) that also uses the wording ‘contribute’ to a catastrophic failure. The use of the word ‘cause’ was partially responsible for the over restrictive identification of PSEs in some evaluations that led to the FAA introducing the term FCS.

comment

150 comment by: *AIRBUS*

Comment related to page 39/203, paragraph,CS 325.571(a)(3)
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to harmonise with current FAR 26 requirement

RATIONALE / REASON / JUSTIFICATION:
FAR LoV is uniquely linked to WFD assessment, see FAR25 definition.
No reason to deviate from FAR25 amdt 132 definition.
This is an harmonization issue.

response

Noted.
EASA and the FAA LOV definitions are harmonised.

comment

151 comment by: *AIRBUS*

Comment related to page 39/203, paragraph,CS 25.571(a)(4)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
If the results of the evaluation show that damage tolerance-based inspections are practical, then inspection thresholds must be established ~~for all PSEs and detail design points.~~
RATIONALE / REASON / JUSTIFICATION
According to NPA25C-292 tex "When special inspections are required to prevent catastrophic fatigue failure, inspection thresholds must be established", this is not required to develop inspection thresholds in all cases.
No reason the deviate from FAR25 am 132 text.

response

Noted.
This is a misunderstanding of the intent of the statement. The intent of the requirement is to determine the threshold and if it is beyond the LOV it would not have to be included in the ALS.

comment

152 comment by: *AIRBUS*

Comment related to page 40/203, paragraph,CS 25.571(a)(5)
PROPOSED TEXT / COMMENT:
It is proposed to delete this new paragraph
RATIONALE / REASON / JUSTIFICATION:
This is a new subparagraph created with proposed CS25.571 compared to FAR25, but no reason to deviate from FAR25 am 132 text.
AC25.571-1D excludes the accidental damages.
This an harmonization issue.

response

Noted.
The comment is not understood. AC 25.571-D does not exclude the accidental damage. All TCHs have some form of accidental damage inspection program.

comment

153 comment by: *AIRBUS*

Comment related to page 40/203, paragraph, 25.571(b)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:

	The evaluation must include a determination of the probable locations and ~~all~~ modes of damage due to fatigue, RATIONALE / REASON / JUSTIFICATION All is a new wording created with proposed CS25.571 compared to FAR25, but no reason to deviate from FAR25 am 132 text.
response	Accepted. However, it should be understood that for example, damage modes leading to WFD should be addressed.

comment	*154* comment by: *AIRBUS* Comment related to page 40/203, paragraph, 24.571(b) PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read: The evaluation must include a determination of the probable locations and ~~all~~ modes of damage due to fatigue, ~~environmental (e.g.~~ corrosion~~), manufacturing defects~~ or accidental damage RATIONALE / REASON / JUSTIFICATION environmental is a new wording created with proposed CS25.571 compared to FAR25, but no reason to deviate from FAR25 am 132 text. manufacturing defects is a new wording created with proposed CS25.571 compared to FAR25, but no reason to deviate from FAR25 am 132 text.
response	Noted. See previous comment(on environmental). Manufacturing defect wording is there for clarification. The applicant has to understand the range and types of acceptable defects and their influence on the DTE. The AMC provides further guidance.

comment	*155* comment by: *AIRBUS* Comment related to page 40/203, paragraph, 24.571(b) PROPOSED TEXT / COMMENT: Quote : ~~The determination must be by analysis~~ Repeated load and static analyses supported by test evidence and (if available) service experience must be incorporated in the evaluation. Unquote. RATIONALE / REASON / JUSTIFICATION The verb "must" now applies to analysis and to test in the EASA NPA. "Must" used to apply to analysis only. This is a significant change with the FAA rule, and then it creates a dis-harmonization.
response	Not accepted. The term ‘must’ applied to the phrase analysis supported by test evidence, not just to analysis. This is just more explicit with respect to the type of analysis expected.

comment	*156* comment by: *AIRBUS* Comment related to page 40/203, paragraph, 24.571(b) PROPOSED TEXT / COMMENT: It is proposed to modify the sentence, to read Repeated load and static analyses supported by sufficient test evidence and (if available) service experience must be incorporated in the evaluation RATIONALE / REASON / JUSTIFICATION For clarification/harmonisation with NPA25C-292 wording : by sufficient full-scale fatigue test evidence that widespread fatigue damage is unlikely to occur in the aeroplane structure
response	Not accepted. The text is harmonised with the FAA.

comment	*157* comment by: *AIRBUS* Comment related to page 40/203, paragraph, 24.571(b) PROPOSED TEXT / COMMENT: It is proposed to revise the folowing sentence, to consider the current FAA definition of LOV. An LoV must be established that is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that WFD is unlikely to occur in the aeroplane structure. RATIONALE / REASON / JUSTIFICATION For harmonisation with FAR part 26 definition and with the AC 25-571-1D that is not applicable to FAR 26 A/C. This is then a definite difference between FAR 25 and Part/CS 25.
response	Accepted. The LOV definition is harmonised with the FAA. The text has been amended.

comment	*158* comment by: *AIRBUS* Comment related to page 40/203, paragraph, 24.571(b) PROPOSED TEXT / COMMENT: It is proposed to modify the following text to read The type certificate may be issued prior to completion of the full-scale fatigue testing, provided that the Agency has approved a plan for completing the required tests and analyses, and that at least one calendar year of safe operation has been substantiated at the time of type certification. In addition, the ALS must specify an interim limitation restricting aircraft operation to not more than half the number of the flight cycles or flight hours accumulated on the fatigue test article, until such testing is completed. ~~and freedom from widespread fatigue damage has been established.~~ RATIONALE / REASON / JUSTIFICATION For harmonisation: New compared to FAA, and interim limitation become an interim LOV.

response

Noted.
Proof of freedom from WFD does not apply to the interim limitation but only when the fatigue test has been completed.
However, the text has been clarified.

comment

159 comment by: *AIRBUS*

Comment related to page 40/203, paragraph, 25.571(b)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
~~The type certificate may be issued prior to completion of the full-scale fatigue testing, provided that the Agency has approved a plan for completing the required tests and analyses, and that at least one calendar year of safe operation has been substantiated at the time of type certification~~
If full-scale fatigue testing is conducted as part of the type certification program, then the type certificate may be issued prior to completion of full-scale fatigue testing.
RATIONALE / REASON / JUSTIFICATION:
For consistency with NPA 25-292

response

Not accepted.
The requirement for one calendar year of safe operation is not new as it already is incorporated in the current CS-25 (AMC 25.571(a), (b) and (e), Chapter 1.5). The FAA AC 25.571-1D contains the same requirement.

comment

160 comment by: *AIRBUS*

Comment related to page 41/203, paragraph, 25.571(b)(5)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(5) For pressurised cabins, the following conditions:
(i) The normal operating differential pressure combined with the expected external aerodynamic pressures applied simultaneously with the flight loading conditions specified in subparagraphs (b)(1) to (b)(4) of this paragraph if they have a significant effect.
(ii) The maximum normal operating differential pressure multiplied by a factor of 1.15, combined with the expected external aerodynamic pressures during 1g level flight, omitting other loads.
RATIONALE / REASON / JUSTIFICATION:
paragraph, 25.571(b)(5)(ii) is not identified as a change.
This was not discussed during the working groups.

response

Noted.
The text has been harmonised, so there is need to highlight it anymore. See also comment 614.

comment

161 comment by: *AIRBUS*

Comment related to page 41/203, paragraph, 25.571(b)(6)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(6) For landing gear and ~~other~~ directly-affected airframe structure, the limit ground loading conditions specified in CS 25.473, 25.491, and 25.493.
RATIONALE / REASON / JUSTIFICATION:
paragraph, 25.571(b)(6) is not identified as a change.
No reason to deviate from harmonised current text

response

Partially accepted.
'Other affected' text is the correct version. The text is now highlighted as a change. However the word 'directly' will be removed. The intent is that any other structure for which the specified conditions are critical should be addressed. The use of the term 'directly' does not help identify what the affected structure may be.

comment *162* comment by: *AIRBUS*

Comment related to page 41/203, paragraph, 25.571(b)(6)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
If significant changes in structural stiffness or geometry, or both, follow from a structural failure, or partial failure, the effect on damage tolerance must be further ~~evaluated~~ investigated. (See AMC 25.571 (b) and (e).) The residual strength requirements of this sub-paragraph (b) apply, where the critical damage is not readily detectable. On the other hand, in the case of damage which is readily detectable within a short period, smaller loads than those of subparagraphs (b)(1) to (b)(6) inclusive may be used by agreement with the Authority. A approach may be used in these latter assessments, substantiating that catastrophic failure is extremely improbable.(See AMC 25.571 (a), (b) and (e) paragraph 2.1.2.)
RATIONALE / REASON / JUSTIFICATION:
"Evaluated" is not identified as a change.
No reason to deviate from current CS 25.571(b) text, to use the readily detectability option

response

Noted.
'Evaluated' was taken from GSHWG text and aligns with the fact that the paragraph is a residual strength evaluation. 'Evaluated' will be identified as a change.
Regarding to the deleted text that discusses alternative approaches relating to probability, this text does not exist In the FAR. Deleted text will be added at the end of (b)(6). (and marked with ~~strikethrough~~). An equivalent level of safety would need to be justified if an applicant wishes to use a similar approach in the future. The applicant would need to approach his/her National Authority.

comment *163* comment by: *AIRBUS*

Comment related to page 41/203, paragraph, 25.571(c)
PROPOSED TEXT / COMMENT:

It is proposed to modify this paragraph to read
c) Fatigue (safe-life) evaluation
Compliance with the damage tolerance requirements of subparagraph (b) of this paragraph is not required if the applicant establishes that their application for the particular structure is impractical. This structure must be shown by analysis, supported by test evidence, to be able to withstand the repeated loads of variable magnitude expected during its service life without detectable cracks. Appropriate safe-life scatter factors must be applied. ~~Until such time as all testing that is required for compliance with this subparagraph are completed, the replacement times provided in the ALS must be based upon the currently completed test life divided by the applicable scatter factor.~~
RATIONALE / REASON / JUSTIFICATION (1/3):
No reason to deviate from current CS 25.571(c) text, and this new text has never been presented to MDM028 members

response

Not accepted.
This text was introduced to align with the similar text related to testing in support of the LOV.
This is common practice for compliance with the current CS. Enforcement of this practice is an issue on some programmes if it is only AMC

comment *164* comment by: *AIRBUS*

Comment related to page 43/203, paragraph, H25.4(a)(4)
PROPOSED TEXT / COMMENT:
EASA H25.4(a)(4)
(4) An LoV of the engineering data that supports the structural maintenance programme, stated as a total number of accumulated flight cycles or flight hours or both, approved under CS 25.571. Until the full-scale fatigue testing is completed, the ALS must specify an interim limitation restricting aircraft operation to not more than half the number of the flight cycles or flight hours accumulated on the fatigue test article.
FAA H25.4(a)(4)
(4) A limit of validity of the engineering data that supports the structural maintenance program (LOV), stated as a total number of accumulated flight cycles or flight hours or both, approved under § 25.571. Until the fullscale fatigue testing is completed and the FAA has approved the LOV, the number of cycles accumulated by the airplane cannot be greater than 1⁄2 the number of cycles accumulated on the fatigue test article.
RATIONALE / REASON / JUSTIFICATION:
There are subtle differences between the EASA wording and the FAA wording.
For harmonisation.

response

Partially accepted.
The text has been amended.

comment *181* comment by: *British Airways*

Reference:

CS 25.571 (a)(5) Page 40

Comment Summary:

The new paragraph requires the ALS to include a statement for the operator to include a CPCP in their maintenance program that will ensure corrosion is controlled to Level 1 or better.

Whilst it understood that the aspiration is to control to level 1 or better what happens if there is a level 2 corrosion finding? The use of the word 'ensure' would make it difficult for operators to comply. The ALS is mandatory and therefore the operator would be out of compliance with a mandatory requirement. It is unclear how this would be handled. Would the operator need to apply for an alternative means of compliance? Can EASA grant a one off deviation from the ALS?

Currently, corrosion is controlled to level 1 or better by operator specific procedures. On the occasions that corrosion does exceed level 1, the procedures define what actions should be considered to prevent further occurrences. These existing procedures could still be used, but the problem would be that the ALS had not been complied with.

Suggested resolution:

Replace the word 'ensure' with 'endeavour'.

response

Partially accepted.

See the response to comment 118. The text has been amended to replace 'ensure' with 'control'.

comment *182* comment by: *British Airways*

Reference:

H25.4 (a) (4) Page 43

Comment Summary:

Some TCH's are currently using the term LOV to describe an interim limitation. If the proposed rule is accepted, when it becomes effective, it is likely to be interpreted as an LOV extension (even though the LoV was not developed under these rules). The definition of LoV is not consistant with the FAA and so create a situation where LoV's developed under the auspices of the FAA rules could be different to that developed under the EASA proposals. Both could be contained in the ALS. This would result in a significant unintended burden for the TCH, operator and Agency due to the Major change/repair WFD requirements.

Suggested resolution:

In these situations, and to avoid confusion, recommend EASA use a term such as interim Limit or initial operating limit in lieu of LoV.

response

Not accepted.

If the ALS contains a value which is not approved in compliance with 26.300 the TCH will be fully aware whether they need to comply with 26.300 and 26.350.

comment *258* comment by: *LHT DO*

The use of not harmonised terms (such as LoV) and the alteration of an essential rule text without harmonization initiation provides potential for misunderstanding in project certification and validation process.

	We propose to define/ harmonise LoV; prior to release of §25.571 and do not change §25.571 until harmonization with FAA has been completed.
response	Accepted. The LOV definition was harmonised with the FAA.

comment	*281* comment by: *FedEx Aging Aircraft Structures* As a purchaser and operator of used aircraft, frequently we are finding level 2 corrosion that obviously resulted in this condition after 20+ years of operation with no evidence of prior treatment. The CPCP program should require adjustment of the maintenance program after multiple aircraft are identified with level 2 corrosion in the same location; and to require the application of CIC's.
response	Noted. The implementation of the CPCP would result in this or an equivalent action.

comment	*291* comment by: *AIR FRANCE* CS25.571 (a)(5) : paragraph to delete already covered through CS 25 appendix H.
response	Not accepted. Appendix H refers to 25.1529 and provides information on ICAs. However (a)(5) provides the source requirement for having an inspection program for ED and AD and the statement regardin corrosion control in the ALS. This requirement is not described in Appendix H. If (a)(5) is deleted it is implied that compliance with Appendix H could produce all ICA including mandatory ICA without a source requirement.

comment	*314* comment by: *Dassault Aviation* **IV. Draft Decision CS-25:** CS 25.571 (a): "*An evaluation of the strength, detail design, and fabrication must show that catastrophic failure due to fatigue, environmental ~~corrosion~~ or accidental damage,…"* DASSAULT-AVIATION propose instead of eliminating corrosion to leave it as an example and extend to other examples as moisture for composite. The proposed text is: "*An evaluation of the strength, detail design, and fabrication must show that catastrophic failure due to fatigue, environmental* (e.g. corrosion for metallic, moisture for composite or lightning damages…) *or accidental damage,…"* CS 25.571 (a)(1)(ii): · *"the identification of principal structural elements and detail design points,…"* Detail design points are points of PSEs prone to fatigue cracking, environmental or accidental damage the failure of which will lead to a catastrophic failure. The exception are points outside PSEs as undercarriage door attachments the fatigue strength of which have to be verified as their failure could lead to a subsequent failure and as such classified as DDPs, the element itself to which they belong being not a PSE. So DASSAULT-AVIATION propose

to modify the sentence by: *"the identification of principal structural elements and detail design points* of those PSEs or some DDPs outside PSEs as undercarriage door attachments*, …".* Idem for other sections of the text as 25.571 (a)(1)(iii), 25.571 (a)(4)…

· *"…the failure of which could ~~cause~~ contribute to a catastrophic failure of the aeroplane…"* DASSAULT-AVIATION do not agree as "contribute" is too vague and could lead to consider more numerous elements as PSEs. For example the failure of one frame could be not catastrophic but with the failure of the adjacent one it will become catastrophic, so contributing to. So DASSAULT-AVIATION ask to stay to the original sentence: *" the failure of which could* cause *~~contribute to~~ a catastrophic failure of the aeroplane…".*

§ CS 25.571(a)(3): "*The LoV of the engineering data that supports the structural maintenance programme, stated as a number of total accumulated flight cycles or flight hours or both, established…*" The age of the aeroplane is also a parameter for corrosion. Furthermore, both the number of flight cycles and flight hours are important. So DASSAULT-AVIATION propose to modify the sentence as: "*The LoV of the engineering data that supports the structural maintenance programme, stated as a number of total accumulated flight cycles ~~or~~* and *flight hours ~~or both~~* and aeroplane maximal age, *established…*" Idem for other sections of the text as 25.571 (b), H25.4 (a)(4), AMC 25.571 4.(l)…

§ CS 25.571(a)(4): *"(ii) multiple load path 'fail-safe' structure and crack arrest 'fail-safe' structure, where it cannot be demonstrated that the resulting load path failure or partial failure (including arrested cracks) will be detected and repaired during normal maintenance, inspection, or operation of an aeroplane prior to failure of the remaining structure.*" DASSAULT-AVIATION do not understand the restriction to "where it cannot be demonstrated… prior to failure of the remaining structure". In fact, if it can be demonstrated that the first load path failure will be detected and repaired during normal maintenance (…), crack growth can be applied too. So DASSAULT-AVIATION propose to suppress that restriction, writing: *"(ii) to multiple load path 'fail-safe' structure and crack arrest 'fail-safe' structure~~, where it cannot be demonstrated that the resulting load path failure or partial failure (including arrested cracks) will be detected and repaired during normal maintenance, inspection, or operation of an aeroplane prior to failure of the remaining structure~~.*" Applicable to AMC 25.571 Appendix 3 (b) too.

§ CS 25.571(a)(5):

· *"Inspection programmes for environmental damage and service-induced accidental damage must be established … "* CS 25.571 (a) distinguishes fatigue, environmental and accidental damages. So to be complete DASSAULT-AVIATION propose to add fatigue ones with the modified sentence: *"Inspection programmes for* fatigue*, environmental damage and service-induced accidental damage must be established … "*

§ CS 25.571(b):

· Title: Why to suppress "fail-safe". It corresponds here exactly to the definition of AMC 25.571 (4)(o)? DASSAULT-AVIATION propose to leave it and to rewrite the title as*: "Fatigue and Damage Tolerance* (fail-safe) Evaluations*".*

· "*The type certificate may be issued prior to completion of the full-scale fatigue testing, provided that the Agency has approved a plan for completing the required tests and analyses, and that at least one calendar year of safe operation has been substantiated at the time of type certification. In addition, the ALS must specify an interim limitation restricting aircraft operation to not more than half the number of the flight cycles or flight hours accumulated on the fatigue test article, until such testing is completed and freedom from widespread fatigue damage has been established.*" DASSAULT-AVIATION do not understand from where comes the one year safe operation criteria. What is important is that the number of flights already performed by the fatigue test covers sufficiently the flying A/C. Furthermore, the interim limitation as the fatigue test is not finished should be coherent with the final minimal LoV i.e. the number of flights performed divided by 3 as the possible WFD areas have not been identified and it is not assured that their inspection will be reliable). So DASSAULT-AVIATION propose to change the text as: "*The type certificate may be issued prior to completion of the full-scale fatigue testing, provided that the Agency has approved a plan for completing the required tests and analyses~~, and that at least one calendar year of safe operation has been substantiated at the time of type certification~~. In addition, the ALS must specify an interim limitation restricting aircraft operation to not more than ~~half~~* one third *the number of the flight cycles or flight hours accumulated on the fatigue test article, until such testing is completed and freedom from widespread fatigue damage has been established.*" Idem for other sections of the text as H25.4 (a)(4)(here for the second sentence), AMC 25.571 11. (d)…
· The fact there are two sub-paragraphs (1) and two (2) could lead to some confusion.

§ CS 25.571(b)(5)(ii):
· *" (ii) The maximum normal operating differential pressure multiplied by a factor of 1.15, combined with the expected external aerodynamic pressures during 1g level flight, omitting other loads."* Compared to actual 25.571(b)(ii) and to FAR corresponding paragraph the 1g external aerodynamic pressures are no more multiplied by the 1.15 factor. DASSAULT-AVIATION ask to return to the original version and stay harmonised with FAR. Otherwise an explanation has to be added and harmonization with FAR has to be found again.

CS 25.571(e):
· Title: Why put out "Damage-tolerance". It corresponds effectively here to evaluate the discrete source damage tolerance i.e. the ability to withstand the required loads after a damage resulting from a discrete source. It is in line with the "damage-tolerance" definition given in AMC 25.571 4.(a). DASSAULT-AVIATION ask to stay to the previous title: *"*Damage-tolerance (Discrete source) evaluation*".*

· Why to suppress the sudden decompression as a discrete source? In fact in case of sudden decompression a damage can occur and the structure have to sustain the load at the time of occurrence and for the completion of the flight. It seems to DASSAULT-AVIATION that the requests of section 25.365 (e) and (f) do not cover those points. DASSAULT-AVIATION ask to maintain it as a discrete source and even to extend the list of discrete source to other ones as engine & APU burst, fire, lightning, …

response

Partially accepted.

IV. Draft Decision CS-25:

CS 25.571 (a):

Partially accepted. See AMC 25.571.

CS 25.571 (a)(1)(ii):

Partially accepted. The technical content of the comment is in line the Agency's position, however, it is preferred to address this level of detail in the AMC; Chapter 7 Paragraph (f) of AMC 25.571 provides more clarification.

"…the failure of which could ~~cause~~ contribute to a catastrophic failure of the aeroplane…"

Not accepted. See previous comments (e.g. 305).

§ CS 25.571(a)(3):

Noted. LOV definiton is now harmonised with the FAA. LOV defintion is directly linked with WFD. Corrosion is addressed by 26.300(e).

§ CS 25.571(a)(4):

Not accepted. The text is harmonised with the FAA. (a)(4) establishes the minimum requirements.

§ CS 25.571(a)(5):

Noted. The fatigue aspect is already adressed in other paragraph (a)(4), (b) and (c).

§ CS 25.571(b):

Noted. The proposed text is harmonised with the FAA. The title was updated to better reflect the content.

"*The type certificate may be issued prior to completion of the full-scale fatigue testing, provided that the Agency has approved a plan for completing the required tests and analyses, and that at least one calendar year of safe operation has been substantiated at the time of type certification….*''

Not accepted. The requirement for one calendar year of safe operation is not new as it already is incorporated in the current CS-25 (AMC 25.571(a), (b) and (e), Chapter 1.5). The FAA AC 25.571-1D contains the same requirement.

The factor of 2 to determine the interim limitation is harmonised with FAR 25.571 and is considered adequate to protect the structure up to the determination of the LOV, normally for a period of a few years.

The final point on this paragraph is accepted.

§ CS 25.571(b)(5)(ii):

Accepted. The text has been amended.

CS 25.571(e):

· Title: Why put out “Damage-tolerance”. …
Accepted. The text has been amended.

· Why to suppress the sudden decompression as a discrete source? …
Not accepted. See explanation in the NPA.

comment *315* comment by: *Gulfstream Aerospace Corporation*

CS 25.571(a)(3) & (a)(4)
It is not clear why the wording of the proposed CS 25.571(a)(3) and added rule (a)(4) cannot be harmonised with 14 CFR Part 25.571(a)(3). CS 25.571(c) already includes the provision that a damage tolerance evaluation is not required if shown to be impractical. The only significantly new concept in CS 25.571(a)(4) is the following statement:
“… inspection thresholds must be established for all PSEs and detail design points.”
This statement and the discussion of detail design points in the proposed AMC are confusing and a literal reading would imply that a threshold inspection is mandatory regardless of evaluation of the results. This does not appear to be the intent; however, the clarification is buried in the AMC, paragraph 8(c):
“All inspections necessary to detect fatigue cracking must be included in the ALS unless the threshold is established to occur after the LoV.”

Gulfstream recommends harmonization of CS 25.571(a)(3) with 14 CFR Part 25.571(a)(3) and deletion of the proposed CS 25.571(a)(4). Add wording to the proposed AMC that the evaluations of all PSEs must include a determination of inspection thresholds and that those inspections must be included in the ALS unless shown to be beyond the LoV.

response Not accepted.
The commentator’s interpretation of the Agency’s intent with respect to establishing threholds is correct. The term ‘establish’ in this case was not intended to include the determination as to whether it was necessary to include the threshold established in the ALS.

comment *316* comment by: *Gulfstream Aerospace Corporation*

CS 25.571(a)(5)
The following requirement within CS 25.571(a)(5) does not appear to be applicable for the design and certification of new aircraft structure:
“…In addition, the ALS must include a statement that requires the operator to include a CPCP in their maintenance programme that will ensure that corrosion is controlled to Level 1 or better.”
All new TC programs for large aircraft already require a Maintenance Review Board Report (MRBR) be developed and approved through a formal EASA Flight Standards process (PR.MRB.00001). That MRBR is already required to address corrosion to Level 1 or better, but additionally includes the means to meet the requirement and the corrective actions necessary if more advanced corrosion is detected. The proposed requirement in the ALS would appear to require some undefined TC/EASA engineering involvement in the

development of the maintenance program which is already managed by Flight Standards. Note that this wording also exists in AMC 25.571 6(a)(1).

- Gulfstream recommends EASA reword CS 25.571(a)(5) in entirety as follows (or similar):

"Inspection programmes for environmental damage and service-induced accidental damage must be established to protect the structure against catastrophic failure. ~~*In addition, the ALS must include a statement that requires the operator to include a CPCP in their maintenance programme that will ensure the corrosion is controlled to Level 1 or better.*~~ *These inspections must be included in the ALS unless it can be shown that they are adequately addressed in the approved MRBR."*

- Gulfstream also recommends EASA reword AMC 25.571 6(a)(1) accordingly.

CS 25.571(b)

The numbering of these 2 items will cause confusion as the same numbers are also used to define the residual strength conditions:

"…(1) by full-scale fatigue test evidence that widespread fatigue damage is unlikely to occur in the aeroplane structure;

(2) that the inspections and other maintenance actions and procedures resulting from the fatigue and damage tolerance evaluation and provided in the ALS and ICA are sufficient to prevent catastrophic failure of the aeroplane structure."

Gulfstream recommends EASA restate these requirements in paragraph form or renumber the residual strength conditions.

response

Partially accepted.

CS 25.571(a)(5)

Not accepted. The MRBR could be an acceptable means of compliance, however it is not appropriate to refer to it in CS 25 Book 1. The objective of requiring a statement in the operator's maintenance programme regarding corrosion control, ensures that corrosion is controlled and the operator has flexibility to adapt their programme outside of the MRBR.

CS 25.571(b)

Issue with the numbering has been addressed since the second point has been deleted.

comment

317 comment by: *Gulfstream Aerospace Corporation*

CS H25.1

AMC 20-20 is primarily intended to support compliance with Part 26.300 thru 26.370 which apply to existing aircraft. CS 25 is intended for certification of new aircraft. It is not clear why AMC 20-20 would be referenced in CS H25.1(c).

- Gulfstream recommends EASA remove this new paragraph or revise it to reflect the current requirements for an approved ALS and MRBR.

response

Not accepted.

As the aircraft ages, it is expected that the TCH reviews the aircraft service experience and operation to ensure the ICA generated in compliance with CS 25.571 remains adequate. As part of this process, additional ICA such as fleet leader programme requirements and reporting requirements, may be generated. AMC 20-20 provides acceptable means of

compliance for ensuring a continued validity of the continued structural integrity programme developed at TC.

comment *340* comment by: *All Nippon Airways*

ANA comments to NPA 2013-07

CS 25.571 (a)(5) – Page 40/203
Proposed rule requires inspection programs for environmental damage and service-induced accidental damage. However, these programs are established by the MSG-3 process and the ALS is mandated by an individual AD. In addition, there is no requirement in the current FAR 25.571. To reduce any additional approval for current MPD programs, this paragraph to be deleted and related paragraph of AMC 25.571 to be deleted.

response Not accepted.
Paragraph (a)(5) simply highlights the link between paragraph (a) and the need to have such programs in addition to those generated by performing fatigue and fracture mechanics analysis and testing. FAA has a similar means of compliance.

comment *364* comment by: *AIRBUS*

Comment related to page 41 paragraph 25.571(c)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(c) Fatigue (safe-life) evaluation
Compliance with the damage tolerance requirements of subparagraph (b) of this paragraph is not required if the applicant establishes that their application for the particular structure is impractical. This structure must be shown by analysis, supported by test evidence, to be able to withstand the repeated loads of variable magnitude expected during its service life without detectable cracks. Appropriate safe-life scatter factors must be applied. ~~Until such time as all testing that is required for compliance with this subparagraph are completed, the replacement times provided in the ALS must be based upon the currently completed test life divided by the applicable scatter factor.~~
RATIONALE / REASON / JUSTIFICATION (2/3):
The safe-life requirements of subparagraph (c) of CS 25.571 have remained unchanged since the initial issue of the Certification Specifications for large aeroplanes, on 17th October 2003. Indeed, precisely the same text appeared in Amendment 45 of the Federal Aviation Regulations, which became effective on 1st December 1978. Nevertheless, EASA Notice of Proposed Amendment 2013-07 “Ageing aircraft structures”, on 23rd April 2013, includes addition to CS 25.571(c).
However, Airbus contends that the Certification Specifications should not require life limits in the ALS to be based directly on the extent of the Full-Scale Fatigue Test (FSFT). JAR NPA 25C-271 “Fatigue Scatter Factors”, which was published on 22nd April 1996, includes the following introduction:
BACKGROUND TO THE PROPOSALS
In reviewing the history of Safe Life component testing, the requirement had been to

reflect the Scatter Factor developed in design/analysis in the substantiating test. Due to the "fixed" values of 3.0 (US) and 5.0 (Europe) that have been traditionally used, the actual scatter in loads, material properties, *etc*. for each specific component may have been underestimated or overestimated. The European value of 5.0 was based upon an estimate of load and material scatter, which was subsequently fixed without further reference to actual conditions, although some alleviation of this value has been granted for testing of more than one specimen. When examining the service history of Safe Life items (more particularly undercarriages), it appears that these traditional values of Scatter Factors have produced an acceptable level of safety.

However this may be a false conclusion. The majority of undercarriage manufacturers apply a large design factor on the Design Life Goal (DLG) of the component, often in the order of 10 – 20. Such a large value serves many purposes, including a commercial liability safety net and an assurance against costly failures during testing. As we are working in the high-cycle-low-fatigue region of the S-N (stress versus cycles) curve, this large design factor may be achieved by a relatively small decrease in working stress levels. This implies that the increased weight needed to lower the stress levels is small and worth the cost penalty. So when testing to only 3.0 or 5.0 x DLG, we may not be fully investigating the substantiation of the design.

Airbus fully concurs with the previous JAA position. Fatigue testing is essential as a demonstration of the robustness of the design; the FSFT provides useful information to support the analysis, by identifying design faults (*e.g.* missed "hot spots") and other issues not taken into account in the analysis (*e.g.* fretting, residual stresses, machining abuse, *etc*.). However, the FSFT does not substantiate the safe life. A fatigue test to only 5×DSG is unlikely to fail if the mean fatigue performance of the structure is designed to be in excess of 10×DSG or 20×DSG.

Hence, the safety of the in-service fleet is maintained primarily by the large design factors applied in the structural analysis. Nevertheless, the proposed amendment to CS 25.571(c) specifies that the ALS replacement times for safe-life structures should be based only on the extent of the FSFT, without reference to the analysis. By introducing this requirement directly into the rule, the EASA will promote the erroneous view that the cornerstone of safe-life substantiation is a full-scale test to a factor of 5 times the service life, and will undermine the central role of analysis, supported by test evidence, in the justification process. The proposed amendment would perhaps be logical if there was evidence that analytical methods had become less reliable. However, this is contrary to experience. In fact, the fidelity of the "state of the art" in fatigue analysis has improved significantly in the years since the safe-life requirements of 25.571(c) were first introduced, as in the extensive use of full-field Finite Element Analysis, which has greatly reduced the possibility of missing a fatigue-sensitive feature. Airbus therefore maintains that an emphasis on qualification by test is a retrograde step, which may have unintended consequences. For example, given such a clear regulatory directive from the EASA, there would be a strong incentive to limit any design factor applied to the Design Service Goal, in keeping with the minimum requirements of the new rule. Similarly, the proposed amendment would suggest that the replacement time may be increased by simply extending the FSFT, without making any modifications to the structure, and despite the heightened risk of failure indicated by analysis.

A reliable definition of safe-life replacement times in the ALS should involve an accurate

assessment of the mean fatigue life of the component, using validated analysis techniques. This is reflected in the current certification specifications for safe-life structures, which require that compliance is based on analysis, supported by test evidence. The proposed amendment to CS 25.571(c) would remove the link to the analytical justification, and ensure that the ALS is established through qualification testing only. Airbus is not aware of any safety issue that would warrant such a change, and further believes that the amendment will have consequences that run counter to the desired effect.

response

Partially accepted.
Until the testing is completed, it is acceptable to propose lower limitations based on appropriate analysis. The text has been amended accordingly.

comment

365 comment by: *AIRBUS*

Comment related to page 41 paragraph 25.571(c)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(c) Fatigue (safe-life) evaluation
Compliance with the damage tolerance requirements of subparagraph (b) of this paragraph is not required if the applicant establishes that their application for the particular structure is impractical. This structure must be shown by analysis, supported by test evidence, to be able to withstand the repeated loads of variable magnitude expected during its service life without detectable cracks. Appropriate safe-life scatter factors must be applied. ~~Until such time as all testing that is required for compliance with this subparagraph are completed, the replacement times provided in the ALS must be based upon the currently completed test life divided by the applicable scatter factor.~~
RATIONALE / REASON / JUSTIFICATION (3/3):

In previous certifications, compliance with the damage-tolerance requirements of subparagraph (b) of CS 25.571 has not been required if the applicant establishes that their application for a particular structure is impractical, within the limitations of geometry, inspectability, and good design practice. Consequently, the landing gear and landing gear attachment structure on all large commercial transport aircraft are certified to the safe-life requirements of CS 25.571(c). This position is supported within the new paragraph 6(a)(2)(i) of AMC 25.571 “Damage tolerance and fatigue evaluation of structure”, as introduced by EASA NPA 2013-07:
(i) Inspection or replacement
Compliance with CS 25.571(b) is required unless it can be demonstrated to the satisfaction of the authority that compliance cannot be shown due to practical constraints. Under these circumstances, compliance with CS 25.571(c) is required. The only common example of structure where compliance with the requirements of CS 25.571(c), in lieu of CS 25.571(b), might be accepted, would be the landing gear and its local attachments.

However, the new paragraph CS 25.571(a)(4) of EASA NPA 2013-07 includes the following:
(4) If the results of the evaluation required by subparagraph (b) show that damage tolerance- based inspections are impractical, then an evaluation must be performed in accordance with the provisions of subparagraph (c).
With this rule change, the applicant may only demonstrate that damage-tolerance inspections are impractical through the results of a damage-tolerance assessment, as per CS 25.571(b). Therefore, a damage-tolerance assessment would be required on all aircraft structures, including the landing gear and landing gear attachments. Airbus does not understand the need to perform a damage-tolerance assessment on structures for which the EASA has previously accepted that damage-tolerance based inspections are impractical.

response

Not accepted.
Thescope and depth of the evaluation can be based upon similarity where appropriate. The intent is to ensure that materials that are extremely susceptible to damage are not used, as well as to address the use of composites and other materials that could contribute to a practical damage tolerant design. The issue of practicality led in the past to components other than landing gear being evaluated to safe life, and the amended wording helps ensure that no retrograde step is taken.

comment

388 comment by: *FAA*

Section 25.571(b)(5)(ii) identifies the condition as the following: “The maximum normal operating differential pressure multiplied by a factor of 1.15, combined with the expected external aerodynamic pressures during 1g level flight, omitting other loads.”
Although the paragraph was not identified as being changed, it is not consistent with the EASA existing rule text and FAA’s text.
(ii) The maximum value of normal operating differential pressure (including the expected external aerodynamic pressures during 1 g level flight) multiplied by a factor of 1.15, omitting other loads.
Suggested Resolution:
Do not change the existing regulatory text, since it is already harmonised.

response

Accepted.
The text has been changed.

comment

400 comment by: *FAA*

This paragraph requires the following:
Inspection programmes for environmental damage and service-induced accidental damage must be established to protect the structure against catastrophic failure. In addition, the ALS must include a statement that requires the operator to include a CPCP in their maintenance programme that will ensure that corrosion is controlled to Level 1 or

better.
This requirement is not harmonised with FAA requirements.
This will require additional work by other regulatory authorities and design approval holders. This is not required because CPCPs and SSIDs have been mandated by AD. See preamble to 121.1109 and 26.43, and to CPCP operational rule which was withdrawn.
Suggested Resolution:
Delete the requirement to have existing CPCPs be included in the ALS or to have them referenced in the ALS.

response

Not accepted.
The Agency wishes to ensure the means of compliance with 25.571 is clearly linked to an operational requirement to control corrosion starting from the moment the TC has been issued. There is no requirement to include or reference existing CPCPs in the ALS Nonetheless, the Agency wishes to make clear for new designs the minimum compliance requirement at the level of the CS.

comment

422 comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.*

CS 25.571:

The entire CS 25.571 should be harmonised with 14 CFR 25.571. If it is not, the following comments should be applied.

CS 25.571 (a)(1)(ii) - Replacing "cause catastrophic failure" by "contribute to a catastrophic failure" gives a broader and somewhat vague sense to the requirement. It should be kept as is.

CS 25.571 (a)(3) - The requirement for an LoV should be harmonised with 14 CFR 25.571 (a)(3).

CS 25.571 (a)(4) - The portion referring to 25.571 (c) if damage tolerance is impractical is redundant and dispensable. It should be removed. The remainder of subparagraph (a)(4) should be reincorporated to subparagraph (a)(3), which should not be changed.

CS 25.571 (a)(5) - This subparagraph should be removed. CS 25.1529 and Appendix H already address inspection programmes for environmental and accidental damages, as well as the contents of the ALS..

CS 25.571 (b) - Determinations of all modes of damage may be impractical. Previous text should not be changed: "(...) determination of the probable locations and modes of damage due to fatigue".

CS 25.571 (b) - Subparagraph (a) already establishes that maintenance actions and procedures to prevent catastrophic failure must be provided in the ALS. Subparagraph (b)(2) is redundant and should be removed.

	CS 25.571 (b) - If there is an interim limitation restricting aircraft operation to not more than half the the cycles or hours accumulated on fatigue test article, the one calendar year of safe operation substant iated at the time of type certification is dispensable and should be removed.
response	Partially accepted. *The entire CS 25.571 should be harmonised with 14 CFR 25.571. If it is not, the following comments should be applied.'* Partially accepted. There are still differences , although they were reduced. Note that some of the differences are outside the scope of this task. *CS 25.571 (a)(1)(ii) - Replacing "cause catastrophic failure" by "contribute to a catastrophic failure" …* Not accepted. See reply to comment 305. *CS 25.571 (a)(3) - The requirement for an LoV should be harmonised with 14 CFR 25.571 (a)(3).* Accepted. LOV requirements have been harmonised. *CS 25.571 (a)(4) - The portion referring to 25.571 (c) if damage tolerance is impractical is redundant and dispensable. It should be removed. The remainder of subparagraph (a)(4) should be reincorporated to subparagraph (a)(3), which should not be changed.* Not accepted. See reply to comment 310. *CS 25.571 (a)(5) - This subparagraph should be removed. CS 25.1529 and Appendix H already address inspection programmes for environmental and accidental damages, as well as the contents of the ALS.* Not accepted. Appendix H is not explicitly on these programmes. *CS 25.571 (b) - Determinations of all modes of damage may be impractical. Previous text should not be changed: "(...) determination of the probable locations and modes of damage due to fatigue".* Accepted. See the response to comment 153. *CS 25.571 (b) - Subparagraph (a) already establishes that maintenance actions and procedures to prevent catastrophic failure must be provided in the ALS. Subparagraph (b)(2) is redundant and should be removed.* Not accepted. It provides a finite objective for the content of the ALS. *CS 25.571 (b) - If there is an interim limitation restricting aircraft operation to not more than half the the cycles or hours accumulated on fatigue test article, the one calendar year of safe operation substant iated at the time of type certification is dispensable and should be removed.* Not accepted. The requirement for one calendar year of safe operation is not new as it

already is incorporated in the current CS-25 (AMC 25.571(a), (b) and (e), Chapter 1.5). The FAA AC 25.571-1D contains the same requirement.

comment

452 comment by: *Aerospace Industries Association*

The proposed text states:
CS 25.571 addresses damage tolerance and fatigue evaluation of structure
Requested Change:
Remove proposed changes to CS 25.571 and associated AMC material. Reconvene the industry working group to establish the benefit to the fleet and clarify non-harmonised requirements.
Justification:
More time is required to review and fully understand the potential impact on future designs and certification. The changes in the rule and associated AMC material go beyond the addition of widespread fatigue damage and Limit of Validity. These changes create further non-harmonization with 14 CFR 25.571 and 25 – 132, which have not been vetted within the industry and were not a focus of discussion at the EASA Aging Aircraft Workshop held in Cologne, Germany on April 24-25, 2013. The changes to CS 25 need to be fully understood as these changes can affect future designs.

Example 1: CS 25.571(b) (5) (pg 41) The proposed change excludes the aerodynamic pressure from the application of the 1.15 factor. This would increase compliance costs since this isn't harmonised and it is not apparent that this difference from the existing FAA rule provides any improvement in safety.

response

Not accepted.
The changes bring clarification and increased harmonisation necessary with the adoption of the proposed Part-26. Example provided was an error and derived from a previous request. Removing the changes will be a step to de-harmonise with the current FAA requirement.

comment

454 comment by: *Aerospace Industries Association*

The proposed text states:
CS 25.571 addresses damage tolerance and fatigue evaluation of structure
Requested Change:
Remove proposed changes to CS 25.571 and associated AMC material. Reconvene the industry working group to establish the benefit to the fleet and clarify non-harmonised requirements.
Justification:
More time is required to review and fully understand the potential impact on future designs and certification. The changes in the rule and associated AMC material go beyond the addition of widespread fatigue damage and Limit of Validity. These changes create further non-harmonization with 14 CFR 25.571 and 25 – 132, which have not been vetted within the industry and were not a focus of discussion at the EASA Aging Aircraft

Workshop held in Cologne, Germany on April 24-25, 2013. The changes to CS 25 need to be fully understood as these changes can affect future designs.

Example 2: 3.5/Re CS 25.571(a) (5) (Pg 40)
Delete: "Inspection programmes for environmental damage and service-induced accidental damage must be established to protect the structure against catastrophic failure. "

Reason: CS 25 Appendix H and similar 14 CFR 25 Appendix H already require that the TCH provide a maintenance manual and "… an inspection programme that includes the frequency and extent of the inspections necessary to provide for the continued airworthiness of the aeroplane …"

Therefore, the requirement for these programs already exists in the EASA regulations and the EASA proposal is to introduce a redundant regulation. Those programs have historically been developed through the MSG-3 process and provided in the maintenance manuals as required by Appendix H. No compelling safety reason has been provided that justifies the inclusion of this requirement in CS 25.571 and the proposal is not harmonised. In addition, it would place additional burdens on the TCH and operators in obtaining approval for these programs and revision to these programs from multiple different organizations within the regulatory agencies that are responsible for type certification and operator maintenance programs.

response

Not accepted.
See above responses.
For Example 2: Not accepted. Appendix H is not explicitly on these programmes.

comment

486 comment by: *S.A. Morshed, Emirates*

Section 25.571(a)(5) (Page 40)
Delete the text: "that will ensure that corrosion is controlled to Level 1 or better." Change to: In addition, the ALS must include a statement that requires
the operator to include a CPCP in their Maintenance Programme.
Proposed Text:
"…In addition, the ALS must include a statement that requires the operator to include a CPCP in their maintenance programme that will ensure that corrosion is controlled to Level 1 or better. …"
Reasons:
Level 1 is only defined in the AMC material and not the regulation. Since the AMC is not mandatory, the regulation is not well defined. In practice, to obtain an approved CPCP programme will generally include such a statement within the program itself. Corrosion exceeding Level 1 does not, by itself constitute a safety issue.

response

Not accepted.
Level 1 must be defined in the CPCP baseline programme by definition of a CPCP. The location of the definition in the AMC facilitates the acceptance of the TCHs allowable limits, which can not be defined by the Agency apriori.

comment	*514* comment by: *Boeing* Page: 40 Paragraph: CS 25.571(a)(5) The proposed text states: (5) Inspection programmes for environmental damage and service-induced accidental damage must be established to protect the structure against catastrophic failure. In addition, the ALS must include a statement that requires the operator to include a CPCP in their maintenance programme that will ensure that corrosion is controlled to Level 1 or better." **REQUESTED CHANGE:** Delete paragraph (a)(5). **JUSTIFICATION:** CS 25, Appendix H, and similar 14 CFR Part 25, Appendix H, already require the TCH to provide a maintenance manual that includes *"… an inspection programme that includes the frequency and extent of the inspections necessary to provide for the continued airworthiness of the aeroplane … ."* Therefore, the requirement for these programs already exists in the EASA regulations, and this new proposal would introduce a redundant regulation. Those programs have historically been developed through the MSG-3 process and provided in the maintenance manuals as required by Appendix H. No compelling safety reason has been provided that justifies the inclusion of this requirement in CS 25.571, and the proposal is not harmonised with FAA regulations. In addition, it would place additional burdens on the TCH and operators in obtaining approval for these programs and revision to these programs from multiple organizations within the regulatory agencies that are responsible for type certification and operator maintenance programs. Further, regarding the last sentence of (a)(5), Level 1 is only defined in the AMC material and not the regulation. Since the AMC is not mandatory, the regulation is not well-defined. In practice, to obtain an approved CPCP programme will generally include such a statement within the program itself. Corrosion exceeding Level 1 does not, by itself, constitute a safety issue.
response	Not accepted. See responses to previous related comments.

comment	*515* comment by: *Boeing* Page: 40 Paragraph: CS 25.571(b) The proposed text states: "...An LoV must be established that is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been

demonstrated: …"
REQUESTED CHANGE:
State the specific definition of Limit of Validity within the regulation. There are multiple definitions for it within the NPA.

JUSTIFICATION:
This change is needed to ensure that the terms used in the regulation are clearly defined within the regulation.

response

Partially accepted.
The LOV definition will be harmonised with the FAA. Aadditionally, a consistent LOV definition across Part-26 CS-25 and related AMC material will be introduced. However, definitions in CS-25 are typically provided in the applicable AMC unless they are generic and may be provided in CS-definition.

comment

516 comment by: *Boeing*

Page: 40
Paragraph: CS 25.571(b)(2)

The proposed text states:
"(2) that the inspections and other maintenance actions and procedures resulting from the fatigue and damage tolerance evaluation and provided in the ALS and ICA are sufficient to prevent catastrophic failure of the aeroplane structure. "
REQUESTED CHANGE:
"(2) that the inspections and other maintenance actions and procedures resulting from the fatigue and damage tolerance evaluation and provided in the ALS and ICA **(or identified service information)** are sufficient to prevent catastrophic failure of the aeroplane structure.

JUSTIFICATION:
Allow for potential use of service bulletins or equivalent documents to define the required actions. This is particularly necessary where the required actions have a large number of detailed steps and many different variants for different models or line numbers.

response

Partially accepted.
For harmonisation purposes, 25.571(b)(2) has been removed in the proposed update to CS 25.571. However, similar text remains in CS 25.571 (a)(3) and the clear expectation for current CS 25.571 and this amendment is for all inspection and other procedures (maintenance actions such as replacements and modification) related to fatigue to be included in the ALS of the ICA prior to its approval. SBs and other detailed information can be used in the cascade of ICA that is triggered by the ALS requirement.

comment

517 comment by: *Boeing*

Page: 41
Paragraph: CS 25.571(b)(5)(ii)

The proposed text states:
"(ii) The maximum normal operating differential pressure multiplied by a factor of 1.15, combined with the expected external aerodynamic pressures during 1g level flight, omitting other loads."

REQUESTED CHANGE:

Revert to the existing text in CS 25.571(b)(5)(ii) at CS-25 Amdt. 13 (10 June 2013), which states:

"(ii) The maximum value of normal operating differential pressure (including the expected external aerodynamic pressures during 1 g level flight) multiplied by a factor of 1•15 omitting other loads."

JUSTIFICATION:

The proposed change de-harmonises that which is already harmonised. The resulting change has very little benefit for the industry. It excludes the aero pressure from the application of the 1.15 factor. EASA has not provided the rationale for this. Lack of harmonization creates additional burden without added safety benefit.

response

Accepted.
The text was not intended to differ and will be amended.

comment

518 comment by: *Boeing*

Page: 41
Paragraph: CS 25.571(c)

The proposed text states:
"(c) Fatigue (safe-life) evaluation
Compliance with the damage tolerance requirements of subparagraph (b) of this paragraph is not required if the applicant establishes that their application for the particular structure is impractical. This structure must be shown by analysis, supported by test evidence, to be able to withstand the repeated loads of variable magnitude expected during its service life without detectable cracks. Appropriate safe-life scatter factors must be applied. Until such time as all testing that is required for compliance with this subparagraph are completed, the replacement times provided in the ALS must be based upon the currently completed test life divided by the applicable scatter factor."

REQUESTED CHANGE:

Change the last sentence to
"…Until such time as all testing that is required for compliance with this subparagraph ~~are~~ **is** completed, the replacement times provided in the ALS must be based upon the ~~currently completed~~ **total accumulated flight cycles on the test article** divided by the applicable scatter factor."

JUSTIFICATION:

This change is needed to be consistent with similar language used in 25.571(b) and to clarify the requirement.

response | Accepted.

comment | *519* comment by: *Boeing*

Page: 43
Paragraph: H25.1(c) General

The proposed text states:
"(c) The applicant must consider the effect of ageing structures in the Instructions for Continued Airworthiness (see AMC 20-20)."
REQUESTED CHANGE:
Delete the proposed H25.1(c).

JUSTIFICATION:
The proposed change is vague and appears to be attempting to mandate compliance with AMC 20-20, which is stated not to be mandatory [refer to Section 1(d) of the AMC].

response | Not accepted.
As the aircraft ages, it is expected that the TCH review the aircraft service experience and operation to ensure the ICA generated in compliance with CS 25.571 remain adequate. As part of this process, additional ICA such as fleet leader programme requirements and reporting requirements may be generated. AMC 20-20 provides acceptable means of compliance for developing a process that ensures the continued validity of the continued structural integrity programme developed at the time of type certificationc..

comment | *520* comment by: *Boeing*

Page: 43
Paragraph: H25.4(a)(4)

The proposed text states:
"(4) An LoV of the engineering data that supports the structural maintenance programme, stated as a total number of accumulated flight cycles or flight hours or both, approved under CS 25.571. Until the full-scale fatigue testing is completed, the ALS must specify an interim limitation restricting aircraft operation to not more than half the number of the flight cycles or flight hours accumulated on the fatigue test article."
REQUESTED CHANGE:
Spell out LOV in the regulation, not just AMC 25.571. Add the following text to H25.4(a)(4) or to a definitions section within the regulation:
(The proposed definition, shown below, is consistent with other Boeing comments related to LoV definition.)
Limit of validity' (LoV) is the number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that widespread fatigue damage is unlikely to occur in the aeroplane structure; and that the inspections and other maintenance actions and procedures resulting from this demonstration and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of

the aeroplane structure.

JUSTIFICATION:
This change is needed to ensure the terms used in the regulation are clearly defined within the regulation.

response

Partially accepted.
The LOV definition has been harmonised with the FAA. Please note that under the EASA regulatory system definitions can be provided where needed including at the AMC level.

comment

521 comment by: *Boeing*

Page: 43
Paragraph: H25.4(b)

The proposed text states:
"(b) If the ICA consist of multiple documents, the section required by this paragraph must be included in the principal manual. This section must contain a legible statement in a prominent location that reads: 'The Airworthiness Limitations Section is approved and variations must also be approved'."
REQUESTED CHANGE:
1. Insert "EASA" before the word "approved" in two places:
"(b) If the ICA consist of multiple documents, the section required by this paragraph must be included in the principal manual. This section must contain a legible statement in a prominent location that reads: 'The Airworthiness Limitations Section is **EASA-**approved and variations must also be **EASA-**approved'."
2. Clarify what is intended by the term *"principal manual"* in the fiorst sentence.
3. Add, in the case of post-delivery modifications/alterations/repairs, that the DTI may be provided in Service Bulletins or the repair documents and not in the AWL Document.

JUSTIFICATION:
The proposed approval statement would otherwise be confusing and in conflict with wording required in the same material for FAA regulatory compliance. The requirements for the ALS are not rational for all cases. For example, post-delivery modifications/alterations/repairs contain 25.571 DTI ICAs in SBs and not in the AWL Document. It would be a significant burden for the TCH to include all that data in the basic ALS document as no one (including the TCH) is able to predict all the repairs / alterations / modifications in advance of their occurrence. In addition, there is no requirement for the operators to use the TCH to obtain approval of all repairs/alterations/modifications.

response

Noted.
This is existing text and was not changed by the current proposal nor is it part of the scope.

comment

685 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:

	"…In addition, the ALS must include a statement that requires the operator to include a CPCP in their maintenance programme that will ensure that corrosion is controlled to Level 1 or better. …" The concept of Level 1 corrosion shows slight different even between the two major TCHs. In addition, Level 1 is only defined in the AMC material and not the regulation. Since the AMC is not mandatory, the regulation is not well defined. In practice, to obtain an approved CPCP programme will generally include such a statement within the program itself. Corrosion exceeding Level 1 does not, by itself constitute a safety issue. Its evaluation in case of repetitive occurances should lead to changes in a self-adjusting CPCP programme. SUGGESTED RESOLUTION: Delete the text: "that will ensure that corrosion is controlled to Level 1 or better." Change To: In addition, the ALS must include a statement that requires the operator to include a CPCP in their maintenance programme
response	Not accepted. The understanding should be that Level 1 is included in the certification specification in order to ensure corrosion is controlled to an acceptable level. Level 1 exceedance typically means that the type design standard is no longer met and although this is not usually an immediate airworthiness concern, there is no substantiating data to ensure the continued validity of the CofA without repair or other interventions.

B. Draft Opinion(s) and/or Decision(s) — V. Replace AMC 25.571(a), (b) and (e), and AMC 25.571(b) and (e) by a new AMC 25.571 p. 44-81

comment	*8* comment by: *DDUMORTIER* Could you clarify this paragraph ? Does this means : • it may be envisageable not to publish non-metallic structure (composite) ALS candidates when it is demonstrated that such ALS candidates required for AD and ED are generated by the MSG3 process or, • it is necessary to dupplicate in ALS requirement generated by the MSG3 process when they are considered as necessary to prevent catastrophic failure of the a/c ?
response	Noted. Reference to the paragraph is missing. It is common practice to generate AD and ED inspections and other procedures using the MSG-3 process Including TCH input and for these to be included in the ICA outside the ALS. Nonetheless, if an inspection or other procedure is considered essential to the extent that no flexibility at the operator level is appropriate, it should be included In the ALS.

comment	*9* comment by: *DDUMORTIER* Page 53 § (g) : you well recall that safe-life structure is also due to CPCP. In that frame, there is a need to highlight that safe life item when they are being remove (and discard) from the a/c in reference to their life limits, an assessment of their condition

	(particularly in reference to corrosion level 1 exceedance) shall be made otherwise we suffer a lack of in service feed back to validate/review the CPCP instructions.
response	Noted. However, the current in-service reporting system under 21.A.3 is considered adequate to handle any unexpected corrosion related problems to safe-life items.

comment	*119* comment by: *KLM Engineering & Maintenance* FAA AC 25.571-1D (7e) states that the requirement to assess repairs and changes for WFD is applicable to Amendment 25-96 or later. The requirement in the proposed AMC is not clear. Please clarify in the AMC that the requirement is applicable to amendment X of the CS only.
response	Not accepted. There is no need to introduce the amendment level since the CS (Book 1)and AMC (Book 2) are plublished together as CS-25. Therefore, if the AMC material is updated it becomes applicable to the CS amendment level which was published with the updated AMC.

comment	*120* comment by: *KLM Engineering & Maintenance* Definition of Level 1 corrosion: The definition of Level 1 corrosion is given in both AMC 25.571 and AMC 20-20. Using more than one location for definitions may cause discrepancies after future changes to definitions. Create one location for definitions such as Level 1 corrosion. In other documents refer to that location for the definition. Note: This comment is applicable to all definitions that are used in the proposed rule.
response	Noted. However as both AMC's will be used in different contexts (retro-active versus new design) it is considered practical to have the definition in each document given for ease of use.

comment	*122* comment by: *KLM Engineering & Maintenance* Full-scale fatigue testing of repairs: The term "extensive major repairs" is introduced, but not defined or clarified. Provide definition or clarification of the term "extensive major repairs".
response	Accepted. The wording 'extensive' has been removed from the text and the paragraph is amended to clarify what differences in design may lead to the need for testing.

comment	*123* comment by: *KLM Engineering & Maintenance* Full-scale fatigue testing of repairs: If repairs meet CS-25 in other aspects, then a full-scale fatigue testing to support freedom

from WFD up to the LOV is not required.
Would full-scale fatigue testing be required if the airplane certification basis that is not conform CS-25, but that are in compliance with requirements higher than FAR amendment 25-45 or JAR change 7?
Clarify in the AMC that the requirements for full-scale-fatigue testing of repairs are only applicable for airplanes with a certification basis that is CS-25 post amendment X.

response

Noted.
Since the AMC and CS are plublished together (Book 1 and Book 2 of CS-25) when the AMC material is updated it becomes applicable to the CS Amendment which was published with the updated AMC. For repairs to aircraft with a certification basis prior to CS-25 Amendment X, normally no WFD assessment is needed unless the repair's certification basis or CS 26.360 would require so.

comment

165 comment by: *AIRBUS*

Comment related to page 44- 81/203, new AMC 25.571
PROPOSED TEXT / COMMENT:
It is proposed to revise this AMC 25.571 to harmonise with current AC 25.571-1D
RATIONALE / REASON / JUSTIFICATION:
Industry interest is to have common AMC/AC as much as possible, exactly like was done for AMC20-29 and AC20-107B.
Airbus would propose to start with AC25.571-1D and see where EASA wish to deviate (additional, revised) data instead of writing something completely different and sometimes new as is proposed today in the draft NPA.
Airbus don't see any reason why the 2 AC/AMC should be so different.

response

Partially accepted.
The AMC takes full account of existing material where it is considered directly applicable to the CS text.

comment

183 comment by: *British Airways*

References:

AMC25.571 4. (e) Page 44

AMC25.571 appendix 5 (b) (1) Page 80

Comment summary:

The definition for Principal Structural Element (PSE) should not be changed. By adding the word 'Contributes' would include a broader range of structure than existing definition.
This is an unharmonised position (with the FAA) and is contrary to the intention of the EU-US bilateral. The increase in scope of the revised definition has not be justified. It is likely to lead to a significant degree of complexity and ambiguity being introduced as a result. The current definition has existed for many years and is harmonised.
Although the definition is altered, the specific guidance has not so it is unclear why EASA require the change. It is also unclear how this would be handled by non-EASA TCH/STCH (DAH's) as they are unlikely to use the revised definition.
The ambiguity and potential issues in the demonstration of the showing of compliance is

likely to lead to increased certification costs that will ultimately be borne by EU operators. In addition, this has not be accounted for in accompanying Regulatory Impact Assessment.
It is unclear if the revised definition is to be applied retrospectively. This needs clarification. If it is to be applied retrospectively, how does this affect existing structural programmes eg CPCP and SSID? Does it only apply if the programme is revised? What about repairs – would DAH's use the revised definition or the definition that existed at type certification? Would TCH's be required to re-analyse existing, certified models? (And revise their SRM's?).
How would the definition change affect existing AD's that use the PSE definition? There is also likely to be further, unforeseen consequences if the definition is changed. EASA should provide guidance on all these aspects.
The definition is not consistent with the PSE definition contained in Appendix 5 (b) (1), which does not contain the word 'contributes'.
Suggested resolution:
Keep definition harmonised with the FAA and consistent with Appendix 5, (b) (1) of the AMC.
If not, provide guidance in AMC 25.571 on the applicability of the definition on existing products & new repairs/changes to existing products.
Clearly state how DAH's/operators should handle the bilateral and whether it applies or not eg. Will EASA operators still be able to purchase and incorporate both existing and future STC's that have been developed and certified under the auspices of the FAA? Also, can EASA operators accept FAA approved repairs?

response

Not accepted.
See the response to comment 305. Additionally, any new amendment to CS-25 is not applied retroactively. The new amendment would be applicable to an aircraft subject to Subpart B (New TC) or D,E,M (New changes/repairs) when the applicable certification basis includes the new amendment.

comment

184 comment by: *British Airways*

References:

CS 25 AMC 25.571 (4)(q) Page 46
AMC 20-20, Appendix 4, 2 Page 186

Comment summary:

The Level 1 corrosion definition is provided twice AMC 25.571 and AMC 20-20 refer. The definition should only be provided once. In addition, the definition should be consistent with current MSG3 programmes. If inconsistent then it will make the transfer of aeroplanes more difficult and could result in compliance issues. Regulatory agencies are represented on MSG3 working groups and therefore have the opportunity to influence the outcome of analysis if they have concerns. It will lead to ambiguity for industry as to what definition they should follow for existing programmes.

Suggested resolution:

Continue to recognize the MSG3 definition of level 1 corrosion.
If EASA does decide to provide a new level 1 corrosion definition, detail this in the AMC 20-20 only and also provide guidance related to whether the new definition does or does

not have an impact on existing programmes.

response

Accepted.
The definition ‘corrosion Level 1’ has been harmonised with the MSG 3 defintion. In addition Appendix 4 of AMC 20-20 has been revised to provide guidance on the impact and applicability to existing programmes of new and existin corrosion level definitions.

comment

188 comment by: *British Airways*

Reference:

CS25, AMC25.571, 11 (e) Page 67

Comment summary:

The equivalent section in the FAA AC related to repairs & changes clearly states that the requirement to assess repairs/changes for WFD is applicable for Amendment 25-96 or later (AC25.571-1D 7. e. refers).
To make sure the requirement is clear and unambiguous a similar clarification is recommended for the EASA AMC. It is not clear that the AMC is applicable to amendment X of the CS only.
EASA provided a Frequently Asked Question response on this issue during the EASA workshop dated 24/25 April 2013 in Cologne. This highlight’s EASA is aware of the ambiguity. If another regulator has recognised the need to provide the clarification in the AC material (FAA) why is the situation different for EASA? AMC material is intended to provide guidance to the user and clarification here would enhance the guidance.
Rather than rely on an FAQ, EASA should take this opportunity to clarify this in the AMC, using a similar approach adopted by the FAA.

Suggested resolution:

Add similar (to FAA AC 25.571D) clarification statement to repairs/changes section eg ‘this section only applies to amdt X as a whole’.

response

Not accepted.
There is no need as the CS (Book 1) and AMC (Book 2) are always published together unlike the FAA AC material. (note that the preamble of the CS-25 publication provides a clear revision history with effective dates). The amemdment (X for the time being) which will introduce WFD will require repairs/changes to be evaluated for WFD if their certification basis would include this amendment level (see e.g. CPR as per 21A.101). Thus, a repair/change with a certification basis prior the CS-25 Amdt X (WFD) will not require WFD analysis.

comment

194 comment by: *British Airways*

Reference:

CS25, AMC25.571, Appendix 2, (c) (5) Page 75

Comment summary:

To clarify that all repairs do not require a full-scale fatigue test, it is suggested to add a comment to the repair paragraph stating that the requirement is for CS 25 Post change X only.
EASA provided a Frequently Asked Question response on this issue during the EASA

workshop dated 24/25 April 2013 in Cologne. This highlight EASA is aware of the ambiguity. Rather than rely on an FAQ, EASA should a similar approach adopted by the FAA and clarify that the section is only applicable to amdt X in the AMC.

AMC material is intended to provide guidance to the user and clarification here would enhance the guidance.

Suggested resolution:

Add similar (to FAA AC 25.571D) clarification statement to repairs/changes section eg 'this section only applies to amdt X as a whole'.

response

Not accepted.

See the response to comment 188

comment

195 comment by: *British Airways*

Reference:

CS25, AMC25.571, Appendix 4, (a) (10) Page 79

Comment summary:

NPA wording states, 'a modification that changes areas of the fuselage from being externally inspectable using visual means to be inspectable …'

This sentence does not make sense. Suggest the wording should be 'uninspectable'.

Suggested resolution:

Change the second use of the word 'inspectable' to 'uninspectable'.

response

Accepted.

The text has been changed.

comment

196 comment by: *British Airways*

Reference:

CS25 AMC25.571, Appendix 5 (c) (1) Page 80

Appendix I & Appendix 5 (c) (1) AMC20-20 4. (a), Pages 83 & 92

Comment summary:

'Fatigue-Critical Structure' is defined as aircraft structure that is susceptible to fatigue cracking, which could contribute to a catastrophic failure. Fatigue-critical structure also includes structure, which, if repaired or modified, could be susceptible to fatigue cracking and contribute to a catastrophic failure. Structure is most often susceptible to fatigue cracking when subjected to tension-dominated repeated loads during operation. Such structure may be part of the baseline structure or part of a modification.

Fatigue-Critical Structure (FCS) is structure that is susceptible to fatigue cracking that could lead to a catastrophic failure of an aircraft. For the purposes of this AMC, FCS refers to the same class of structure that would need to be assessed for compliance with paragraph 25.571(a) at Amendment 25-45, or later. The term FCS may refer to fatigue-critical baseline structure **(FCBS),** fatigue-critical modified structure **(FCMS),** or both.

REG guidance (AMC 20-20 App 3 – survey for all repairs to FCBS lacks FAA AC120-96 qualification: Identification of repairs that need DTI's should encompass only existing repairs that reinforce the FCBS.

Suggested resolution:

	The EASA definition should be consistent and should include 'if repaired or altered' in the rule definition.
response	Partially accepted. See responses to previous comments. Definition of FCS is updated and consistent with the FAA text.

comment	*198* comment by: *AIRBUS* Comment related to page 44- 81/203, new AMC 25.571 PROPOSED TEXT / COMMENT: It is proposed to revise this AMC 25.571 to consider normal rulemaking process RATIONALE / REASON / JUSTIFICATION: All changes in proposed CS25.571 and AMC updates that are not related to ageing aircraft but related to GSHWG proposals, are not in the ToR of the MDM.028WG and should be handled by a separate WG consisting of Authority and Industry F&DT experts. These F&DT experts are a different group of specialist people within Industry as the ones discussing pure ageing aircraft topics. Airbus strongly recommend to discuss these non ageing aircraft updates first in the appropriate forum. These changes should not be presented as "agreed" by MDM.028WG.
response	Noted. The majority of the changes relate to ageing aircraft or harmonisation with the current FAA requirement. Should the current ARAC metallic and composite structures working group activity (in which indsutry and Authorities are participating) lead to further recommendations for CS 25.571, the Agency will consider them.

comment	*205* comment by: *AIRBUS* Comment related to page 45/203, new AMC 25.571(4)(i) PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read (l) 'Limit of Validity (LoV)', or more explicitly the limit of validity of the engineering data that supports the structural maintenance programme, is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that WFD is unlikely to occur in the aeroplane structure, ~~and that the inspections and other maintenance actions and procedures resulting from this demonstration and the other elements of the fatigue and damage tolerance evaluation~~ as provided for in the ALS and ICA are sufficient to prevent catastrophic failure of the aeroplane structure. RATIONALE / REASON / JUSTIFICATION: For harmonisation LOV definition different from the FAA definition and FAA AC571-1D does not includes F&DT in the LOV definition.

response	Accepted. LOV definition is harmonised with the FAA's definition.

comment	*209* comment by: ***AIRBUS***
	Comment related to page 45/203, paragraph (j) and (l) PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph to harmonise the definitions with current AC 25.571-1D RATIONALE / REASON / JUSTIFICATION: Harmonization issue. There is no need to deviate from existing AC definitions.
response	Partially accepted. The LOV definitions are harmonised with the FAA. The WFD definitions are essentially the same.

comment	*210* comment by: ***AIRBUS***
	Comment related to page 45/203, paragraph (f) PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read: (f) 'Detail Design Point (DDP)' is an area ~~of structure that contributes to the susceptibility of the structure to fatigue cracking or degradation such that the structure cannot maintain its load carrying capability, which could lead to a catastrophic failure.~~ within a PSE where fatigue cracking is likely to occur and where the damage tolerance assessment is made REASON / JUSTIFICATION: Wording in NPA25C-292 represents need and is very clear
response	Not accepted. Appendix V to subparagraph (c) of AMC 25.571 provides the rationale for why the DDP could be in some cases outside of the PSE.

comment	*212* comment by: ***AIRBUS***
	Comment related to page 48/203, paragraph 6.(a)(1) PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph "Environmental and accidental damage inspections and associated procedures" to harmonise with current AC 25.571-1D RATIONALE / REASON / JUSTIFICATION: No need to deviate from existing AC. Details and need to be discussed in appropriate forum.
response	Not accepted. Regarding the Level 1 corrossion statement in the ALS please refer to the responses to

previous related comments. In addition to that, the AMC provides clarification on when the ED and AD related inspection should be part of the ALS.

comment *214* comment by: *AIRBUS*

Comment related to page 48/203, paragraph (1)
PROPOSED TEXT / COMMENT:
It is proposed to modify the paragraph to read:
CS 25.571(a)(5) — Environmental and accidental damage inspections and associated procedures
Inspections for ED and AD must be defined. Special consideration should be given to those areas where past service experience indicates a particular susceptibility to attack by the environment or vulnerability to impact and/or abuse. It is intended that these inspections will be effective in discovering ED or AD soon after it appears or occurs, and that the ED or AD will, therefore, be removed/repaired before it presents a significant risk. Typically these inspections are largely defined based on past service experience using a ~~qualitative~~ process in combination with the Maintenance Steering Group (MSG-3) process.
RATIONALE / REASON / JUSTIFICATION:
Alternate method can be used, depending on the manufacturer experience.
Airbus use crack growth analysis for AD, which is a quantitative assessment

response Partially accepted.
The text has been revised to also add ‘quantitative’.

comment *215* comment by: *AIRBUS*

Comment related to page 48/203, paragraph 6.(a)(1), *Environmental and accidental damage inspections and associated procedures*
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to harmonise with current AC 25.571-1D.
The paragraph "Any special inspections required for AD and ED, i.e. ones in addition to those that would be generated through the use of the MSG-3 process for AD and ED, or the CPCP development for ED, and which are necessary to prevent catastrophic failure of the aeroplane, must be included in the ALS of the ICA required by CS 25.1529. If a location is prone to accidental or environmental damage and the only means for detection is one that relies on the subsequent development of a fatigue crack from the original damage, then that inspection must be placed in the ALS of the ICA." is different from AC25.571-1D.
RATIONALE / REASON / JUSTIFICATION:
No reason to deviate from the AC25.571-1D text.
Details and need have to be discussed in appropriate forum.

response Not accepted.
See the response to comment 212.

comment *218* comment by: *AIRBUS*

Comment related to page 48 /203, paragraph,(d) Analyses and tests
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to harmonise with current AC 25.571-1D
Fatigue and damage tolerance analyses should be conducted unless it is determined that the normal operating stresses are of such a low order that crack initiation and, where applicable, significant damage growth is extremely improbable. Any method used in the analyses should be supported by test or service experience. Typical (average) values of fracture mechanics material properties may be used in residual strength and crack growth analyses. The effects of environment on these properties should be accounted for if significant.
RATIONALE / REASON / JUSTIFICATION:
FAA indicated in AC25.571-1D that typical values may be used as well for damage detection analyses and for discrete source damage. No reason to deviate from AC25.571-1D.

response

Not accepted.
The relationship between damage detection analysis and material properties may lead to misunderstanding.

comment

220 comment by: *AIRBUS*

Comment related to page 51/203, paragraph, (e) probabilistic evaluations
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to harmonise with current AC 25.571-1D
RATIONALE / REASON / JUSTIFICATION:
Quote : Clarification must be done regarding the use of probabilistic assessment.
No guidance is provided in this AMC on probabilistic evaluation.
Normally, damage tolerance assessments consist of a deterministic evaluation of design features described in paragraphs 7d(1), (2) and (3). Paragraphs (f) to (k) below provide guidelines for this approach. Unquote.
This is different as the text in AC25.571-1D par 6b) which clearly gives the possibility to use the probabilistic approach. The EASA wording seems to close the door to using probabilistic assessment.
Text is not same as in AC25.571-1D. No reason to deviate from the AC25.571-1D text.

response

Noted.
The AMC cannot exclude an applicant to apply a probabilistic assessment. However at this time no specific guidance has been developed.

comment

221 comment by: *AIRBUS*

Comment related to page 51/203, paragraph, (f) PSEs, detail design points, and locations to be evaluated
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to harmonise with current AC 25.571-1D
RATIONALE / REASON / JUSTIFICATION:
Text is not same as in AC25.571-1D. No reason to deviate from the AC25.571-1D text.

	Details and need to be discussed in appropriate forum.
response	Not accepted. See responses to previous comments.

comment	*222* comment by: *AIRBUS* Comment related to page 52/203, paragraph, (f) (2) Examples of Principal Structural Elements (PSEs) PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read: (ii) Fuselage (a) circumferential frames and adjacent skin; (b) pilot window posts; (c) pressure bulkheads; (d) skin and any single frame or stiffener element around a cut-out; (e) skin or skin splices, or both, under circumferential loads; (f) skin or skin splices, or both, under fore and aft loads; (g) skin and stiffener combinations under fore and aft loads; (h) door skins, frames, and latches; (i) window frames; and ~~(j) floor beams~~ RATIONALE / REASON / JUSTIFICATION Addition and need of floor beams text is not same as in AC25.571-1D. No reason to deviate from the AC25.571-1D text. Details and need to be discussed in appropriate forum. Floor beams are mainly designed by crash and rapid decompression loading
response	Not accepted. Floor beams could be an example of a PSE. This is explained in footnote no 4 page 53 of the original published NPA.

comment	*223* comment by: *AIRBUS* Comment related to page 53/203, PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph for harmonisation regarding h) wing **ribs and bulkheads** (j) engine mounts **and struts** (v) Thrust reverser components, RATIONALE / REASON / JUSTIFICATION: Broader scope than AC25.571-1D. Details and need to be discussed in appropriate forum
response	Not accepted. Service expereince has shown frequent occurences of fatigue failures to these structural elements requiring AD action to address the unsafe condition.

comment	*225* comment by: *AIRBUS* Comment related to page 53/203, paragraph (g), Inaccessible areas PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph for clarification RATIONALE / REASON / JUSTIFICATION: New wording proposed for inaccessible areas. Inconsistent with the statement that safe life is restricted to landing gears. It is proposed to be discussed and agreed it in appropriate forum
response	Accepted. The text has been amended to remove inconsistencies.

comment	*226* comment by: *AIRBUS* Comment related to page 54/203, paragraph, 7(i)(3) PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read (i) Damage tolerance analysis and tests (1) It should be determined by analysis, supported by test evidence, that: (i) the structure, with the extent of damage established for residual strength evaluation, can withstand the specified residual strength loads (considered as ultimate loads); and (ii) the crack growth life under the repeated loads expected in service (between the time the damage becomes initially detectable and the time the extent of damage reaches the value for residual strength evaluation) provides a practical basis for development of the inspection programme and procedures described in paragraph 8 of this AMC. (2) The repeated loads should be as defined in the loading, temperature, and humidity spectra. The loading conditions should take into account the effects of structural flexibility and rate of loading where they are significant. (3) The damage tolerance characteristics can be shown analytically by reliable or conservative methods such as the following: (i) By demonstrating quantitative relationships with structure already verified as damage-tolerant; or (ii) By demonstrating that the repeated loads and residual strength load stresses do not exceed those of previously verified designs of similar configuration, materials, and inspectibility. (iii) by *demonstrating that the damage would be detected before it reaches the value for residual strength evaluation*. RATIONALE / REASON / JUSTIFICATION: Analytical approach for damage tolerance characteristics: the FAA AC provides an additional option, which has been removed in this AMC Details to be discussed in appropriate forum
response	Not accepted. The text simply repeats the intent of the requirement and the MOC provided in the preceeding paragraph.

comment	*227* comment by: *AIRBUS*

Comment related to page 54/203, paragraph, 8 (b) Environmental and accidental damage inspection programmes
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to harmonise with current AC 25.571-1D
RATIONALE / REASON / JUSTIFICATION:
Text is not same as in AC25.571-1D. No reason to deviate from the AC25.571-1D text. Details and need to be discussed in appropriate forum.

response

Not accepted.
See responses to previous comments.

comment

228 comment by: *AIRBUS*

Comment related to page 56/203, paragraph, 8 (c) Inspection threshold for fatigue cracking
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to harmonise with current AC 25.571-1D
RATIONALE / REASON / JUSTIFICATION:
In this context, normal maintenance includes general visual structural inspections for accidental and environmental damage derived from processes such as the MRB application of MSG-3.
Also zonal inspections are to be included as normal maintenance
Text is not same as in AC25.571-1D. No reason to deviate from the AC25.571-1D text. Details and need to be discussed in appropriate forum.

response

Not accepted.
See the response to comment 525.

comment

229 comment by: *AIRBUS*

Comment related to page 54/203, paragraph, 8 (c) Inspection threshold for fatigue cracking
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to harmonise with current AC 25.571-1D
<u>For the locations addressed by CS 25.571(a)(4) that are also susceptible to accidental damage, the assumed initial flaw size for crack growth determination of the threshold should not be less than that which can be supported by service experience or test evidence.</u>
RATIONALE / REASON / JUSTIFICATION:
Following NPA25C-292 text should be taken into account:
1) <u>Structure for Which No Special Inspection is Required</u>
.....
2) <u>Structure for Which Special Inspection is Required</u>
.....
Text is not same as in AC25.571-1D. No reason to deviate from the AC25.571-1D text. Details and need to be discussed in appropriate forum.

response

Not accepted.
The choice of text reflects many years of experience since the FAA introduced this threshold determination requirements.

comment

230 comment by: *AIRBUS*

Comment related to page 56/203, paragraph, 8 (c) Inspection threshold for fatigue cracking
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph
If this supporting data is not available (e.g. for a completely new design where no specific investigation of the accidental damage threats or their influence on fatigue has been made), then the fatigue cracking inspection threshold should be set equal to the repeat interval derived for a crack detectable by general visual inspection means, since the initial damage and its growth is not well defined and could occur at any time.
RATIONALE / REASON / JUSTIFICATION:
Detailed Visual Inspections may be used in localised areas, do not restrict to GVI
This is not in accordance with last current CRIs.
AD could determined with alternatives methods (e.g. statistic)

response

Partially accepted.
The concern relates to the lack of knowledge regarding the type of damage and how quickly it may progress to a crack greater than the lower bound of the DVI. It is, however, accepted that for some localised areas, DVI and the associated longer interval that results may be justifiable. Please note this discussion addresses fatigue thresholds for inspections to be included in the ALS and not AD inspections for which experience justifies their inclusion in the structures programme of the MRBR only.
Regarding the use of statistics for establishing inspection intervals for AD, it may not be adequate for a new type, especially with respect to the metallic structure. For composite AMC 20-29 provides further guidance.

comment

231 comment by: *AIRBUS*

Comment related to page 56/203, paragraph, 8 (c) Inspection threshold for fatigue cracking
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to harmonise with current AC 25.571-1D
All inspections necessary to detect fatigue cracking must be included in the ALS unless the threshold is established to occur after the LoV.
RATIONALE / REASON / JUSTIFICATION:

Inspections may also be defined in Service Bulletins, consequently it is suggested to align to AC25.571-1D where this is not mentioned.
Not harmonised.

Text should be amended to at least refer to SB.

response

Not accepted.
For new programmes the inspections shall be in the ALS which is aligned with AC 25.571-1D.

comment

232 comment by: *AIRBUS*

Comment related to page 57/203, paragraph, 8 (d) Inspection requirements
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph to harmonise with current AC 25.571-1D
Long periods of exposure to residual strength levels only just above the load limit should be avoided. This applies in particular to crack arrest structure. It should be borne in mind that CS 25.305 is the principle requirement for strength of the airframe, and that CS 25.571 is primarily intended to provide an inspection programme that will ensure the timely detection and repair of damage in order to restore the aircraft to the required (CS 25.305) strength capability and preserve this capability throughout the majority of the aircraft's operational life.
RATIONALE / REASON / JUSTIFICATION:
Text is not same as in AC25.571-1D. No reason to deviate from the AC25.571-1D text. Details and need to be discussed in appropriate forum.

response

Not accepted.
The intention is only to provide clarification on the link between 25.571 and the principle requirement of 25.305 for airframe strength. The clarification does not introduce anything controversial as it is based on past experience.

comment

233 comment by: *AIRBUS*

Comment related to page 57 /203, paragraph, 9.2.1(e)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(e) Evaluating the possibility of fatigue initiation from sources such as corrosion, stress corrosion, disbaonding, accidental damage and manufacturing defects based on a review of the design, quality control and past service experience; and
RATIONALE / REASON / JUSTIFICATION:
Typo

response

Accepted.

comment

234 comment by: *AIRBUS*

Comment related to page 59 /203, paragraph, 9.2.2(d)ii
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(ii)

	Spectrum severity. Test load spectrum should be derived based on a spectrum sensitive analysis accounting for variations in both utilisation (i.e. aircraft weight, cg, etc.) and occurrences/size of loads. The test loads spectrum applied to the structure should be demonstrated to be conservative when compared to the usage expected in-service. RATIONALE / REASON / JUSTIFICATION: For clarification
response	Accepted.

comment	*235* comment by: *AIRBUS* Comment related to page 59/203, paragraph, 9.2.2(f) PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph to harmonise with current AC 25.571-1D RATIONALE / REASON / JUSTIFICATION: Examples of how to reduce the test loading spectrum have been removed. Text is not same as in AC25.571-1D. No reason to deviate from the AC25.571-1D text. Details and need to be discussed in appropriate forum.
response	Accepted. Examples are added to the AMC.

comment	*236* comment by: *AIRBUS* Comment related to page 61-62/203, paragraph, 10(a) PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read: In defining these load conditions, consideration has been given to the expected post-event damage to the aeroplane, the anticipated response of the pilot at the time of the incident, RATIONALE / REASON / JUSTIFICATION: For clarification: This should be limited to the discrete source and not to pre-existing damage
response	Noted. However adding post-event does not preclude consideration of all damage that exists post-event. The text is left unchanged and it is agreed that the intent is to evaluate the damage due to the discrete source impact.

comment	*237* comment by: *AIRBUS* Comment related to page 64/203, paragraph 11(c) Steps for establishing an LoV PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph to harmonise with current AC 25.571-1D RATIONALE / REASON / JUSTIFICATION:

	Refer to previous comments regarding LOV definition
response	Accepted. The text has been amended.

comment	*238* comment by: *AIRBUS* Comment related to page 65/203, paragraph Step 4 — Finalise LoV PROPOSED TEXT / COMMENT: It is proposed to revised this paragraph 1) the final LoV may be equal with the candidate LoV. However, this would result in maintenance actions, design changes prior to entry into service, or both, maintenance actions and design changes ,to support operation of aircraft up to LoV. RATIONALE / REASON / JUSTIFICATION: For clarification Underlined sentence is not in AC 25.571-1D and prevent the use of the binding schedule to define associated maintenance actions or design change
response	Accepted. The text has been amended.

comment	*239* comment by: *AIRBUS* Comment related to page 65/203, paragraph Step 4 — Finalise LoV PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read For MSD/MED, the applicant may use damage tolerance-based inspections to ~~supplement~~ supersede the replacement or modification required to preclude WFD when those inspections have been shown to be practical and reliable RATIONALE / REASON / JUSTIFICATION: For clarification
response	Not accepted. The DTI are not always superceeded by replacement or modifications. The existing DTI could remain in place or be replaced by new DTI following the implementation of the modification.

comment	*240* comment by: *AIRBUS* Comment related to page 66/203, paragraph 11 (d) - ALS (1) - Fatigue testing is not completed. PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read At the time of type certification, the applicant should also show that at least one calendar year of safe operation has been substantiated by the fatigue test evidence agreed to be necessary ~~to support other elements of the damage tolerance and safe life substantiations~~

RATIONALE / REASON / JUSTIFICATION:
New wording compared with AC25.571-1D, explain rationale to appropriate forum.
It seems than LOV is justified by DT, WFD and SL, which is different of FAA definition of LOV.

response

Not accepted.
The requirement for one calendar year of safe operation is not new as it already is incorporated in the current CS-25 (AMC 25.571(a), (b) and (e), Chapter 1.5). The FAA AC 25.571-1D contains the same requirement.
Compliance to the LOV requirement is only demonstrated by completing the FSFT + analysis which ensures the structure is free of WFD.

comment

241 comment by: *AIRBUS*

Comment related to page 69/203, paragraph, appendix 1 **Crack growth analysis and tests** (b) tests
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
Where fatigue test crack growth data is used, the results should be corrected to address expected operational ~~environmental~~ conditions.
RATIONALE / REASON / JUSTIFICATION:
The term "environmental" is embiguous and need clarification if maintained.

response

Accepted.
The text has been amended.

comment

242 comment by: *AIRBUS*

Comment related to page 81/203, Appendix 5, PSE, FCS, and WFD-susceptible structure (d) Detail Design Point
PROPOSED TEXT / COMMENT:
It is proposed to to revise this paragraph for clarification
(d) Detail Design Points (DDP)
'Detail Design Point' is an area of structure that contributes to the susceptibility of the structure to fatigue cracking or degradation such that the structure cannot maintain its load carrying capability, which could lead to a catastrophic failure.
RATIONALE / REASON / JUSTIFICATION:

While very clear explanations are provided on PSE and FCS, the definition of DDP would require some further clarification. For instance it is unclear whether DDP is a subset of PSEs.

response

Not accepted.
Appendix V to para (c) of AMC 25.571 provides the rationale for why the DDP could be in some cases outside of the PSE. See the response to comment 210.

comment	*292* comment by: *AIR FRANCE* Appendix II (c) (5) : Provide definition or clarification of the term “extensive major repairs”.
response	Accepted. The wording ‘extensive’ has been removed from the text and the paragraph is revised to clarify what differences in design may lead to the need for testing.

comment	*318* comment by: *Dassault Aviation* **V. AMC 25.571:** § 4.(a): *“‘Damage tolerance’ 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, environmental, accidental, or discrete source damage.”* “Without detrimental structural deformation” associated with residual strength loads is a new criteria. The residual strength loads are equivalent to Ultimate Loads for which no detrimental deformation criteria exists nor detrimental permanent deformation, only associated to Limit Loads (cf. 25.305). CS 25.571 already addresses the effects of significant structural stiffness or geometry change. It is more likely that that criteria is defined to cover the avoidance of detrimental deformations for the accomplishment of the flight under nominal loads (in the absence of limit loads associated with residual strength loads). So DASSAULT-AVIATION propose to modify the sentence as: *“‘Damage tolerance’ is the attribute of the structure that permits it to retain its required residual strength* without failure and under nominal loads *without detrimental structural deformation for a period of use after the structure has sustained a given level of fatigue, environmental, accidental, or discrete source damage.”* § 4.(c): *“‘Safe-life’ of a structure is that number of events such as flights, landings, or flight hours, during which there is a low probability that the strength will degrade below its design ultimate value due to fatigue cracking.”* To demonstrate that after fatigue life the structure is able to withstand the Ultimate Loads is a new request that has never existed. To demonstrate that it would be necessary to apply Ultimate Loads at the end of fatigue testing. That is not the case today for metallic structures (except DASSAULT-AVIATION after 2 lives). Moreover flights and landings are the same and flight hours contribute too fatigue life limit. So DASSAULT-AVIATION propose the following modification: *“‘Safe-life’ of a structure is that number of events such as flights* cycles~~, landings, or~~ and *flight hours, during which* ~~there is a low probability that the strength will degrade below its design ultimate value~~ the structural strength will not degrade due to fatigue cracking below residual strength loads*”.* § 4.(d): *“‘Design Service Goal (DSG)’ is the period of time in flight hours/cycles or calendar years, established…”* DASSAULT-AVIATION make the remark that DSG is defined by the total flight hours plus flight cycles and calendar years. So DASSAULT-AVIATION propose the modification: “‘*Design Service Goal (DSG)’ is the period of time in flight hours/cycles* ~~or~~ and *calendar years, established…”.*

§ 4.(f): *"'Detail Design Point (DDP)' is an area of structure that contributes to the susceptibility of the structure to fatigue cracking or degradation such that the structure cannot maintain its load carrying capability, which could lead to a catastrophic failure."* So if a failure occur at the level of a DDP the failure at that point of the structure element(s) on which it belongs will lead to a catastrophic failure. The corresponding structure element(s) so correspond(s) to 4.(e) PSE definition. This is true except for some points as undercarriage door attachments, those elements being not PSEs. So DASSAULT-AVIATION propose the modification to be clearer: *"'Detail Design Point (DDP)' is an area of* ~~structure~~ PSEs or some areas outside PSEs as undercarriage door attachments *that contributes to the susceptibility of the structure to fatigue cracking or degradation such that the structure cannot maintain its load carrying capability, which could lead to a catastrophic failure."*. On the point of view of DASSAULT-AVIATION, with this definition it becomes in line with the AC 25.571-1D spirit.

4.(i): *"In 'multiple load path structure' the applied loads are distributed through redundant structural members so that the failure of a single structural member does not result in the loss of structural capability to carry the applied loads..."* If a first load path is failed the level of load that passes through the remaining member(s) is modified. Using "applied loads" let think that the same level of load can pass. So DASSAULT-AVIATION propose the modification to be more accurate: "*In 'multiple load path structure' the applied loads are distributed through redundant structural members so that the failure of a single structural member does not result in the* complete *loss of structural capability to carry the* ~~applied~~ *loads...".*

§ 4.(l): *"'Limit of Validity (LoV)', or more explicitly the limit of validity of the engineering data that supports the structural maintenance programme, is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that WFD is unlikely to occur in the aeroplane structure…*" The corrosion linked to the age of the structure is also a factor that limits the structure performance. So DASSAULT-AVIATION propose in agreement with previous remarks on the subject to modify the definition as: *"'Limit of Validity (LoV)', or more explicitly the limit of validity of the engineering data that supports the structural maintenance programme, is not more than the period of time, stated as a number of total accumulated flight cycles* ~~or~~ and *flight hours* ~~or both~~ and aeroplane maximal age*, for which it has been demonstrated that WFD is unlikely to occur in the aeroplane structure…*".

§ 6.(a):

· *"…Taken together, they result in a structure where the combination of design characteristics and maintenance actions will serve to preclude any failure due to FD, ED, or AD."* The WFD is not listed. It is the new type of damage taken into account in 25.571. So even if WFD is part of FD, DASSAULT-AVIATION think WFD has to be listed and so propose the following modification: *"…Taken together, they result in a structure where the combination of design characteristics and maintenance actions will serve to preclude any failure due to FD, WFD, ED, or AD."*.

· *"CS 25.571(a)(3) requires the applicant to establish inspections or other procedures (herein also referred to as maintenance actions) as necessary to avoid catastrophic failure during the operational life of the aeroplane based on the results of the prescribed fatigue and damage tolerance evaluations."* The LoV even being newly addressed in the section 25.571(a)(3) is not reminded there. DASSAULT-AVIATION propose to remind it with the following modification:*"CS 25.571(a)(3) requires the applicant to establish inspections or other procedures (herein also referred to as maintenance actions) as necessary to avoid catastrophic failure during the operational life of the aeroplane based on the results of the prescribed fatigue and damage tolerance evaluations* up to the LoV.*"*

· *"The LoV is established based on WFD considerations and it is intended that all maintenance actions required to address fatigue, environmental (corrosion), and accidental damage up to the LoV are identified in the structural maintenance programme."* As WFD is the main point that define the LoV and could request if practicable specific inspections, DASSAULT-AVIATION suggests to modify the sentence as referring to WFD inspections if any: *"The LoV is established based on WFD considerations and it is intended that all maintenance actions required to address fatigue*, widespread fatigue*, environmental (corrosion), and accidental damage up to the LoV are identified in the structural maintenance programme."*.

· DASSAULT-AVIATION suggest to order more distinctly the sub-paragraphs in relation with CS 25.571(a), (b), (c), (d) and (e) order.

§ 6.(a)(2):
· *"…Full-scale fatigue test evidence is required to support the evaluation of structure that is susceptible to WFD."* Not only WFD evaluation is supported by the full-scale fatigue testing but also the fatigue analysis of all PSE DDPs to determine FCS. So DASSAULT-AVIATION propose to modify the text as: *"…Full-scale fatigue test evidence is required to support the evaluation of structure that is susceptible to WFD* and the FCS classification*."*.

· (i): The paragraph title comprises "replacement" and that item is not addressed in the paragraph. Either "replacement" is suppressed of the title or an explanation is added on the subject. DASSAULT-AVIATION choose the second alternative proposing the modified text as follows: *"…The only common example of structure where compliance with the requirements of CS 25.571(c), in lieu of CS 25.571(b), might be accepted, would be the landing gear and its local attachments.* Moreover the replacement times are determined under CS 25.571(c)."

§ 6.(b):
· *"…For pressurised cabins, the loading spectrum should include the repeated application of the normal operating differential pressure and the superimposed effects of flight loads and aerodynamic pressures."* Pressurised cabins are addressed not the fuel tanks. DASSAULT-AVIATION propose to add them in the text as being of the same importance in the following modified sentence: *"…For pressurised cabins* (and fuel tanks)*, the loading spectrum should include the repeated application of the normal operating differential pressure* (and fuel tank pressurisation) *and the superimposed effects of flight loads and*

aerodynamic pressures (if significant).*"*

§ 6.(d):

· *"…Typical (average) values of fracture mechanics material properties may be used in residual strength and crack growth analyses."* Even for fatigue average values can be used. So DASSAULT-AVIATION propose to modify the text as: *"…Typical (average) values of* fatigue respectively *fracture mechanics material properties may be used in* fatigue analysis respectively *residual strength and crack growth analyses."*

§ 7.(a):

· *"…, the structure will be capable of withstanding the loading conditions specified in CS 25.571(b)(1) through (b)(6) without failure or detrimental structural deformation until the damage is detected.*" Cf. 4.(a) remark. The "detrimental structural deformation" under residual strength loads criteria is new. Under those loads no failure shall occur, as they are equivalent to Ultimate Loads for which "no detrimental deformation" criteria does not existed. CS 25.571 already addresses the effects of significant structural stiffness or geometry change. That new criteria is defined more likely to cover the avoidance of detrimental deformations for the accomplishment of the flight under nominal loads. So DASSAULT-AVIATION propose to modify the text as: *"…, the structure will be capable of withstanding the loading conditions specified in CS 25.571(b)(1) through (b)(6) without failure or* under nominal loads *detrimental structural deformation until the damage is detected.*"

· *"…Although this process applies to either single or multiple load path structure, the use of multiple load path structures should be given high priority in achieving a damage-tolerant design."* DASSAULT-AVIATION make the objection that sometimes multiple load path structure in splices for examples leads to hide some structure component becoming difficult to inspect, so in that case single load path is preferable. Furthermore, it is not possible to duplicate each time the load path that would lead to an excessive structure weight incompatible with range objectives. Nevertheless it is the rule inside DASSAULT-AVIATION to take a greater safety factor for SLP inspection interval determination than for MLP in order to cover the possible lesser strength of a SLP compared to a MLP. So DASSAULT-AVIATION propose to modify the words as: *"…Although this process applies to either single or multiple load path structure, the use of multiple load path structures* ~~*should be given high priority*~~ could be preferable *in achieving a damage-tolerant design."*

§ 7.(f):

· *"…A DDP is an area at higher risk of fatigue cracking than other areas, and may warrant specific actions such as special inspections."* As shown in 4.(f) a DDP is an area of a PSE. In consequence a structure element is a PSE if it contains at a minimum one DDP (except for areas as undercarriage door). So DASSAULT-AVIATION propose to modify the sentence as follows: *"…A DDP is* the *area* of a PSE or areas outside PSEs as undercarriage door attachments *at higher risk of fatigue cracking than other areas, and may warrant specific actions such as special inspections."*

· *"(1)* <u>*Locations requiring evaluation*</u> *can be determined by analysis or by fatigue tests on*

complete structures or subcomponents." It concerns possible locations of DDP. Furthermore, selection criteria address also static tests. So to be clearer, DASSAULT-AVIATION propose the following modifications: *"(1) Locations requiring evaluation* i. e. DDPs *can be determined by analysis or by* static or *fatigue tests on complete structures or subcomponents.*".

· *"(2)(ii)(h) door skins, frames, and latches"* Normally door latches do not work in flight but door stops do. So DASSAULT-AVIATION propose the modification: *"(h) door skins, frames, and* stops or *latches* (if they assure a load transfer in flight)*"*

§ 8.(b):
· "*Subsequently, provided the operator has an NAA approved MP that controls corrosion to Level 1 or better,…*" The acronym MP (Maintenance Programme probably) is not defined neither in the text nor in the Appendix I: Definitions and acronyms. This definition has to be added in Appendix I.

§ 8.(c):
· "*CS 25.571(a)(4) requires inspection thresholds for certain structure to be derived from crack growth analysis or tests assuming that the structure contains an initial flaw of the maximum probable size that could exist as a result of manufacturing or service-induced damage.*" The words "for certain structure" let think that it is not applicable to all PSEs. For DASSAULT-AVIATION it is the general way of proceeding and applied to all PSEs except when residual fatigue method is used. Furthermore it concerns also inspection intervals not only threshold. So DASSAULT-AVIATION propose the following modification of the sentence: "*CS 25.571(a)(4) requires inspection thresholds* ~~for certain structure~~ and inspection intervals, except if the residual fatigue method is acceptable and used, *to be derived from crack growth analysis or tests assuming that the structure contains an initial flaw of the maximum probable size that could exist as a result of manufacturing or service-induced damage.*"

· *"(2) to multiple load path 'fail-safe' structure and crack arrest 'fail-safe' structure, where it cannot be demonstrated that the resulting load path failure or partial failure (including arrested cracks) will be detected and repaired during normal maintenance, inspection, or operation of an aeroplane prior to failure of the remaining structure.*" Idem CS 25.571(a)(4): DASSAULT-AVIATION do not understand the restriction to "where it cannot be demonstrated… prior to failure of the remaining structure". In fact, if it can be demonstrated that the first load path failure will be detected and repaired during normal maintenance (…), it will be as if it is a single load path structure and crack growth can be applied too. So DASSAULT-AVIATION propose to suppress the restriction writing: *"(2) to multiple load path 'fail-safe' structure and crack arrest 'fail-safe' structure*~~, where it cannot be demonstrated that the resulting load path failure or partial failure (including arrested cracks) will be detected and repaired during normal maintenance, inspection, or operation of an aeroplane prior to failure of the remaining structure~~."

· *"…Inspections should begin early enough to ensure that there is a high confidence of*

detecting cracks before they could lead to a catastrophic structural failure, including cases where the structure is of a lower bound manufacturing quality or susceptible to accidental damage." DASSAULT-AVIATION make the remark that damage tolerance computation do not take into account the minimum material characteristics nor the minimum thicknesses that could let understand to be considered by the word "including cases where the structure is of lower bound manufacturing quality" but mean for characteristics and nominal for thicknesses ones. Safety coefficients are taken to establish threshold and inspection interval that covers any uncertainty as lower bound manufacturing quality. So DASSAULT-AVIATION propose the following modification: *"…Inspections should begin early enough to ensure that there is a high confidence of detecting cracks before they could lead to a catastrophic structural failure, including cases where the structure is of a lower bound manufacturing quality* (through sufficiently high safety coefficients to derive thresholds) *or susceptible to accidental damage.".*

· "*The remaining areas of the structure evaluated under CS 25.571(b), i.e. multiple load path 'fail-safe' structure and crack arrest 'fail-safe' structure, where it can be demonstrated that the resulting load path failure, partial failure, or crack arrest will be detected and repaired during normal maintenance, inspection, or operation of an aeroplane prior to failure of the remaining structure must also have thresholds established for fatigue cracking. For these locations, methods that do not account for worst-case damage may be used in lieu of crack growth analysis if desired. For example, fatigue SN analysis and tests with an appropriate scatter factor or slow crack growth analysis based on appropriate initial manufacturing damage, i.e. typical manufacturing flaws as opposed to the maximum probable flaw (e.g. a 0.127 mm corner crack representing a typical manufacturing flaw in a fastener hole versus a 1.27 mm crack representing the maximum probable flaw).*" CS 25.571(a)(4) remark and 8.(c) second remark suppress the MLP distinction. Furthermore, DASSAULT-AVIATION think that the recommended methods can be applied to inspection interval too. So DASSAULT-AVIATION propose the following modification of the text.: "~~*The remaining areas of the structure evaluated under CS 25.571(b), i.e. multiple load path 'fail-safe' structure and crack arrest 'fail-safe' structure, where it can be demonstrated that the resulting load path failure, partial failure, or crack arrest will be detected and repaired during normal maintenance, inspection, or operation of an aeroplane prior to failure of the remaining structure must also have thresholds established for fatigue cracking.*~~ *For* ~~these~~ multiple load path 'fail-safe' structure and crack arrest 'fail-safe' structure *locations, methods that do not account for worst-case damage may be used in lieu of crack growth analysis if desired* to derive thresholds*. For example, fatigue SN analysis and tests with an appropriate scatter factor* (i.e. residual fatigue) *or slow crack growth analysis based on appropriate initial manufacturing damage, i.e. typical manufacturing flaws as opposed to the maximum probable flaw (e.g. a 0.127 mm corner crack representing a typical manufacturing flaw in a fastener hole versus a 1.27 mm crack representing the maximum probable flaw).* Those methods are also applicable to determine the MLP inspection intervals.*".*

§ 9.3.2:

· "*Recorded load and stress data entails instrumenting aeroplanes in service to obtain a representative sampling of actual loads and stresses experienced. The data to be*

measured includes airspeed, altitude and load factor versus time data; or airspeed, altitude and strain ranges versus time data; or similar data. This data, obtained by instrumenting aeroplanes in service, provides a basis for correlating the estimated loading spectrum with the actual service experience." Same remark than for 25.300 (f)(1). For Business Jets for which quite as many customers as many A/C exist, periodic monitoring of operational usage is quite impossible to be organized. Fatigue spectrum is estimated from literature data (ESDU, RAé) and different missions usage occurrences. This methodology has been applied for more than 60 years on Falcon. Furthermore quite no problem linked to fatigue cracking have been encountered in service (more than 11 x 10^6 FC).

§ 10.(a):
· CS 25.903(d) is listed here. But no reference to AMC 25.571 is made in 25.903(d). Furthermore 25.903(d) is divided in sub-paragraph (1) and (2) and moreover (1) addresses engine rotor failure but also engine case burn though fire. Which of the three events are concerned by AMC? It is a fact that 10.(b) indicates that it is rotor burst that is concerned. Rejoining the remark made for 25.571(e), DASSAULT-AVIATION ask to extend the list of discrete source to other ones as engine & APU burst, fire, lightning, … to define exactly the events to be considered.

10.(c)(1):
· *"(i) the maximum normal operating differential pressure, multiplied by a 1.1 factor, combined with 1.0 g flight loads including the external aerodynamic pressures;" Similar remark than for CS 25.571(b)(5)(ii),"* Compared to actual AMC corresponding paragraph the 1g external aerodynamic pressures are no more multiplied by the 1.1 factor. DASSAULT-AVIATION ask for an explanation to be added. In fact it is already included in AC 25.571-1D.

10.(c)(2):
-
· *"(2) For the continuation of the flight, the maximum appropriate cabin differential pressure (including the external aerodynamic pressure), combined with:*
(i) seventy per cent (70 %) of the limit flight manoeuvre loads as specified in 25.571(b) and, separately;
(ii) at the maximum operational speed, taking into account any appropriate reconfiguration and flight limitations, the 1.0 g loads plus incremental loads arising from application of forty per cent (40 %) of the limit gust velocity and turbulence intensities as specified in 25.341 at Vc."
Compared to actual AMC, it seems that it is no more permitted to consider the reduction of the speed and altitude following the incident for maneuvers but allowed for gusts. DASSAULT-AVIATION position is that as the event is obvious, following the incident the pilot will apply the AFM procedure and reduce its speed and altitude before performing 70% of limit maneuvers. Furthermore for high lift devices, the § 25.345 is not addressed for gust. So DASSAULT-AVIATION propose this new redaction of total 10.(c)(2):
"(2) For the continuation of the flight, at the maximum operational speed, *taking into account any appropriate reconfiguration and flight limitations, the maximum appropriate cabin differential pressure (including the external aerodynamic pressure), combined with:*

(i) seventy per cent (70 %) of the limit flight manoeuvre loads as specified in 25.571(b) and, separately;
(ii) ~~at the maximum operational speed, taking into account any appropriate reconfiguration and flight limitations,~~ *the 1.0 g loads plus incremental loads arising from application of forty per cent (40 %) of the limit gust velocity and turbulence intensities as specified in* ~~25.341 at Vc~~25.571(b).".

§ 11.(c):

· "*To support the establishment of the LoV the applicant must demonstrate by test evidence and analysis at a minimum and, if available, service experience and teardown inspection results of high-time aircraft, that WFD is unlikely to occur in that aircraft up to the LoV.*" DASSAULT-AVIATION has a doubt on the fact that service experience could help due to the fact that fatigue phenomenon is scattered. So if WFD appeared in service the already defined LoV is not correct and would have to be reduced by a scatter factor of 2 at a minimum.

· Step 1:

_ *"…and set a design service objective to have structure remain relatively free from cracking,…*" Typo error: "remain" => "remaining". So: *"…and set a design service objective to have structure* remaining *relatively free from cracking*,…"

· Step 4:

_ Fatigue is a scattered phenomenon. So it seems to DASSAULT-AVIATION that this must be underlined here too to finalize the LoV. In fact the LoV cannot be the full fatigue life demonstrated by fatigue testing to be without WFD or supporting the RSL at the end. So DASSAULT-AVIATION indicate that it is necessary to remind there that the LoV has to be determined from the fatigue cycle demonstrated to be free from WFD using fatigue test results divided by a scatter factor of:

ü 2 (in coherence with AMC 25.571 Appendix 2 (a): *"In general, sufficient full-scale test evidence to support an LoV consists of full-scale fatigue testing to at least two times the LoV, followed by specific inspections and analyses to determine that widespread fatigue damage has not occurred."*) if the WFD zones inspection are shown reliable.

ü or 3 if the inspections of those zones are not reliable.

_ Design changes: *"The applicant may determine that developing design changes to prevent WFD in future production aircraft is to their advantage. The applicant must substantiate the design changes according to the guidance contained in this AMC (see Appendix 2)."* Appendix 2 concerns only fatigue testing. As a fatigue testing will have been done already for the original design, design change substantiation could be made by analysis supported by the already performed test. So the reference to Appendix 2 is too restrictive. In fact the substantiation of the design change has to be made applying the whole requirement and the reference is useless. So DASSAULT-AVIATION propose to suppress that reference: *"The applicant may determine that developing design changes to prevent WFD in future production aircraft is to their advantage. The applicant must substantiate the design changes according to the guidance contained in this AMC* ~~(see Appendix 2)~~.".

11.(d):

· "*Until the full-scale fatigue testing is completed and EASA has approved the LoV, the type certificate holder must establish a limitation that is equal to not more than one half of the number of cycles accumulated on the test article supporting the WFD evaluation. Under Appendix H to CS-25, the ALS must contain the limitation preventing operation of the aircraft beyond one half of the number of cycles accumulated on the fatigue test article approved under CS 25.571. This limitation is an airworthiness limitation. No aircraft may be operated beyond this limitation until fatigue testing is completed and an LoV is approved. As additional cycles on the fatigue test article are accumulated this limitation may be adjusted accordingly. Upon completion of the full-scale fatigue test, applicants should perform specific inspections and analyses to determine whether WFD has occurred. Additional guidance on post-test WFD evaluations is included in Appendix 2 to this AMC. At the time of type certification, the applicant should also show that at least one calendar year of safe operation has been substantiated by the fatigue test evidence agreed to be necessary to support other elements of the damage tolerance and safe-life substantiations.*" Refer to CS25.571 (b) remarks. DASSAULT-AVIATION propose to use a factor 3 instead of 2 to define the operational limit before the fatigue test is finished as the WFD absence as not been demonstrated yet. Furthermore DASSAULT-AVIATION do not understand from where comes that limitation to one calendar year of safe operation. The limit defined has being one third the performed number of flights seems to be sufficient for DASSAULT-AVIATION. So DASSAULT-AVIATION propose the following modifications: *"Until the full-scale fatigue testing is completed and EASA has approved the LoV, the type certificate holder must establish a limitation that is equal to not more than one* ~~half~~ third *of the number of cycles accumulated on the test article supporting the WFD evaluation* (as the WFD evaluation has not been accomplished yet)*. Under Appendix H to CS-25, the ALS must contain the limitation preventing operation of the aircraft beyond one* ~~half~~ third *of the number of cycles accumulated on the fatigue test article approved under CS 25.571. This limitation is an airworthiness limitation. No aircraft may be operated beyond this limitation until fatigue testing is completed and an LoV is approved. As additional cycles on the fatigue test article are accumulated this limitation may be adjusted accordingly. Upon completion of the full-scale fatigue test, applicants should perform specific inspections and analyses to determine whether WFD has occurred. Additional guidance on post-test WFD evaluations is included in Appendix 2 to this AMC.* ~~At the time of type certification, the applicant should also show that at least one calendar year of safe operation has been substantiated by the fatigue test evidence agreed to be necessary to support other elements of the damage tolerance and safe-life substantiations.~~*"*

§ 11.(e)(2):

· "*develop maintenance actions to preclude WFD from occurring before the aircraft reaches the LoV;*" DASSAULT-AVIATION do not understand how a maintenance action other than a repair could preclude WFD to occur as we are in the case where WFD is likely to occur. Consequently we are in the situation of 11.(e)(1) and (2) can be suppressed.

§ Appendix 1:

· "*However, due to the large number of detail design points that are typically evaluated*

and the practical limitations involved with testing, analyses are generally relied on to determine crack growth at the detail design point." It must be added that the methodology used for the analyses has to be demonstrated reliable by comparison with tests. So DASSAULT-AVIATION propose the following modification: "*However, due to the large number of detail design points that are typically evaluated and the practical limitations involved with testing, analyses are generally relied on to determine crack growth at the detail design point* using methods proved reliable by comparison with test results.".

§ Appendix 2:
· "***Full-scale fatigue test evidence***" Title to be corrected as "***Full-scale fatigue test* WFD *evidence"*** due to the fact it concerns WFD evidence.

· "*Factor 3: The extent of post-test teardown inspection and analysis for determining if widespread fatigue cracking has occurred".* It is not the only means to determine that no WFD has appeared or not; the successful application of residual strength loads is also a way to demonstrate it. So DASSAULT-AVIATION ask for the following addition: "*Factor 3: The extent of post-test teardown inspection and analysis for determining if widespread fatigue cracking has occurred* or the successful application of residual strength loads*".*

· "*If the test article sustains the loads it can be concluded that the point of WFD has yet to be reached for any areas.*" Typo error. It must be written: "*If the test article sustains the loads it can be concluded that the point of WFD has* not *yet* ~~*to*~~ *be reached for any areas.*"

· "*The residual strength capability may be evaluated indirectly by performing teardown inspections to quantify the size of any MSD/MED cracks that might be present or to establish a lower bound on crack size based on inspection method capability. Once this is done the residual strength capability can be estimated analytically.*" It is not what DASSAULT-AVIATION think. In fact, it will be difficult to demonstrate the residual strength capability after a teardown inspection. Some non detectable cracks may exist that could preclude that.

· "*A test duration of a minimum of twice the design service goal for the aeroplane model would normally be necessary…*" It is the will to demonstrate the LoV by test. So instead of the design service goal, it is the LoV that as to be tested 2 times (or 3 if the inspection of WFD zones are not reliable). So DASSAULT-AVIATION propose to modify the sentence as follows: "*A test duration of a minimum of twice* (or three times, in case of not reliable WFD zones inspection) *the* ~~design service goal~~ LoV *for the aeroplane model would normally be necessary…*"

· (4)(i) and (ii):
_ Change Design service goal by LoV.

· (4)(i):
_ *"…have received two full design service goals of fatigue testing, under realistic loads, and have received a thorough post-test inspection that either did not detect any widespread*

fatigue damage or the ALS includes from the outset details of modifications required to address WFD." In case of non reliable WFD zones inspection, it is three full LOV to be applied. Moreover, WFD can be demonstrated by the successful application of RSL. So DASSAULT-AVIATION propose the following modification: *"…have received two full* ~~design service goals~~ LoVs (or three in case of unreliable inspection in WFD zones) *of fatigue testing, under realistic loads, and have received a thorough post-test inspection that either did not detect any widespread fatigue damage* or have been submitted successfully to RSL tests *or the ALS includes from the outset details of modifications required to address WFD.*"

§ Appendix 3:

· "*Different approaches have been used to calculate inspection thresholds, although these are essentially variants of one of two methods, viz."* Inspection intervals also are concerned. So DASSAULT-AVIATION propose the following modification: "*Different approaches have been used to calculate inspection thresholds* and intervals*, although these are essentially variants of one of two methods, viz.*:*"*

· *"In lieu of other data, an acceptable threshold for inspection …and the total crack growth life is divided by 2.*" In case of MLP or SLP, DASSAULT-AVIATION take a factor 3 instead of 2 for the threshold. For the inspection interval, for MLP the factor is taken to 2 and for SLP the factor taken is 3. So DASSAULT-AVIATION propose the following corrected text: *"In lieu of other data, an acceptable threshold for inspection …and the total crack growth life is divided by* 3."

§ Appendix 4:

· "(*8) any modification that affects three or more stiffening members (e.g. wing stringers and fuselage frames);*" What is the reason for retaining "three"? DASSAULT-AVIATION propose to suppress it rewriting the sentence as: "(*8) any modification that affects* ~~three or more~~ *stiffening members (e.g. wing stringers and fuselage frames);"*

· *"(9) a modification that results in operational-mission change, which significantly changes the original equipment manufacturer's load/stress spectrum (e.g. extending the flight duration from 2 hours to 10 hours);"* DASSAULT-AVIATION propose to suppress the example as even a less important modification can significantly affect the load spectrum rewriting the sentence as: *"(9) a modification that results in operational-mission change, which significantly changes the original equipment manufacturer's load/stress spectrum* ~~(e.g. extending the flight duration from 2 hours to 10 hours)~~*;"*

response

Partially acccepted.

V. AMC 25.571:

§ 4.(a): *"'Damage tolerance' 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, environmental, accidental, or discrete source damage."* …

Not accepted. The definition is harmonised FAA AC 120-104.

§ 4.(c): *"'Safe-life' of a structure is that number of events such as flights, landings, or flight hours, during which there is a low probability that the strength will degrade below its design ultimate value due to fatigue cracking."* …

Not accepted. The definition is harmonised with the FAA. Residual strength loads are not applicable to safe life items, for which the ultimate loads shall apply (at any stage of their life).

§ 4.(d): *"'Design Service Goal (DSG)' is the period of time in flight hours/cycles or calendar years, established…"*

Not accepted. The DSG definition is harmonised with the FAA and through the use of 'or' it is incumbent upon the applicant to select the criteria most appropriate to the subject being discussed. (e.g. if the concern is ED, then the calendar years may ne most appropriate).

§ 4.(f): *"'Detail Design Point (DDP)' is an area of structure that contributes to the susceptibility of the structure to fatigue cracking or degradation such that the structure cannot maintain its load carrying capability, which could lead to a catastrophic failure."*

Not accepted. Appendix V to para (c) of AMC 25.571 provides the rationale for why the DDP could be in some cases outside of the PSE.

4.(i): *"In 'multiple load path structure' the applied loads are distributed through redundant structural members so that the failure of a single structural member does not result in the loss of structural capability to carry the applied loads..."* …

Not accepted. The definitions are harmonised with the FAA.

§ 4.(l): *"'Limit of Validity (LoV)', or more explicitly the limit of validity of the engineering data that supports the structural maintenance programme, is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that WFD is unlikely to occur in the aeroplane structure…*

Not accepted. LOV is linked to WFD which is primarily caused by fatigue damage and this is typically expressed by flight hours/cycles.

§ 6.(a):

· *"…Taken together, they result in a structure where the combination of design characteristics and maintenance actions will serve to preclude any failure due to FD, ED, or AD."* …

Accepted.

· *"CS 25.571(a)(3) requires the applicant to establish inspections or other procedures (herein also referred to as maintenance actions) as necessary to avoid catastrophic failure during the operational life of the aeroplane based on the results of the prescribed fatigue and damage tolerance evaluations."* …
Noted. LOV is already described in the next paragraph.

· *"The LoV is established based on WFD considerations and it is intended that all maintenance actions required to address fatigue, environmental (corrosion), and accidental damage up to the LoV are identified in the structural maintenance programme."* …
Not accepted. No need to list WFD separately since it is recorgnised that WFD is a subset of the FD.

· DASSAULT-AVIATION suggest to order more distinctly the sub-paragraphs in relation with CS 25.571(a), (b), (c), (d) and (e) order.
Noted. Due to the additional information provided in the AMC it is preferred to leave the order of the AMC as is.

§ 6.(a)(2):
· *"…Full-scale fatigue test evidence is required to support the evaluation of structure that is susceptible to WFD."* …
Not accepted. CS 25.571 does not require a full scale fatigue in order to classify the FCS. AMC 25.571 would not not require that either.

· (i): The paragraph title comprises "replacement" and that item is not addressed in the paragraph. Either "replacement" is suppressed of the title or an explanation is added on the subject. DASSAULT-AVIATION choose the second alternative proposing the modified text as follows: …
Not accepted. The text is explicit enough. 'Replacement' refers to safe life evaluations.

§ 6.(b):
· *"…For pressurised cabins, the loading spectrum should include the repeated application of the normal operating differential pressure and the superimposed effects of flight loads and aerodynamic pressures."* …
Not accepted. The text provides AMC for 25.571(b)(5) which only addresses pressurised cabins.

§ 6.(d):
· *"…Typical (average) values of fracture mechanics material properties may be used in residual strength and crack growth analyses."* Even for fatigue average values can be used. So DASSAULT-AVIATION propose to modify the text as: *"…Typical (average) values of* fatigue respectively *fracture mechanics material properties may be used in* fatigue analysis respectively *residual strength and crack growth analyses."*
Accepted.

§ 7.(a):

· *"…, the structure will be capable of withstanding the loading conditions specified in CS 25.571(b)(1) through (b)(6) without failure or detrimental structural deformation until the damage is detected."* …

Not accepted. The text is harmonised with the FAA.

· *"…Although this process applies to either single or multiple load path structure, the use of multiple load path structures should be given high priority in achieving a damage-tolerant design."*

Partially accepted. The word 'high' has been removed.

§ 7.(f):

· *"…A DDP is an area at higher risk of fatigue cracking than other areas, and may warrant specific actions such as special…*

Partially accepted. The text has been amended.

· *"(1) Locations requiring evaluation can be determined by analysis or by fatigue tests on complete structures or subcomponents."…*

Not accepted. Data from static tests should be considered in addition to the core fatigue analysis and testing programme for identification of the DDPs. See f(1), (c) and (d).

· *"(2)(ii)(h) door skins, frames, and latches"* Normally door latches do not work in flight but door stops do. So DASSAULT-AVIATION propose the modification: *"(h) door skins, frames, and* stops or *latches* (if they assure a load transfer in flight)*"*

Partially Accepted. 'Stops' have been added.

§ 8.(b):

· "*Subsequently, provided the operator has an NAA approved MP that controls corrosion to Level 1 or better,…*"…

Partially accepted. 'MP' has been added.

§ 8.(c):

· "*CS 25.571(a)(4) requires…*

Not accepted. Certain structure refers to the structure to be evaluated under the CS 25.571(a)(4)(i) and (ii). All other types of structure do also require a threshold to be evaluated, but may use approaches other than crack growth analysis.

· *"(2) to multiple load path 'fail-safe' structure and crack arrest 'fail-safe' structure, where it cannot be demonstrated that the resulting load path failure or partial failure (including arrested cracks…*

Not accepted. The rule establishes the type of structure to be analysed with the crack growth analysis. For some other structure with multiple load paths, the threshold inspection could be determined based on fatigue analysis.

· *"…Inspections should begin early enough to ensure that there is a high confidence of*

detecting cracks before they could lead to a catastrophic structural…
Not accepted. The lower bound manufacturing consideration could also refer to the rogue flaw size to be taken into account when performing a crack growth analysis.

· *"The remaining areas of the structure evaluated under CS 25.571(b), i.e. multiple load path 'fail-safe' structure and crack arrest 'fail-safe' structure,…*
Not accepted, based on previous responses to the referenced comments.

§ 9.3.2:
· *"Recorded load and stress…*
Not accepted. This harmonised text is not being reconsidered under this RMT.

§ 10.(a):
· CS 25.903(d) is listed here…
Not accepted. A specific link to 25.571 is made in AMC 20-128A and is currenty considered sufficient for compliance purposes with CS 25.903(d)

10.(c)(1):
· *"(i) the maximum normal operating differential pressure, multiplied…*
Noted. This RMT did not intend to change the AMC condition. The existing AMC text is retained.

10.(c)(2):
-
· *"(2) For the continuation of the flight, the maximum appropriate cabin differential pressure (including the external aerodynamic pressure), combined with: …*
Noted. Although the fatigue phenomenon could be scattered,it would still be considered usefull to include service experience (only when available) to support the minimum required actions such as test and analysis. In case WFD appears in service a reduction of the (candidate) LOV could be considered. The reduction factor to be applied should depend on the probable cause of the WFD (e.g. differenc in usage,loading, etc…).

· Step 1:
_ *"…and set a design service objective to have structure remain relatively free from* cracking,…"
Not accepted.Please note that this is not a typing error.

· Step 4:
_ Fatigue is a scattered phenomenon
… Noted. In fact step 3 refers to Appendix 2 of the AMC which already covers the issue highlighted by the commenter.

_ Design changes: *"The applicant may determine*
Accepted. The reference has been removed.

11.(d):
Not accepted:
The Agency has no indication for the current proposed factor of 2 to be underconservative and, therefore, there is no reason to make the rule more restrictive.
The requirement for one calendar year of safe operation is rather related to the principle requirement for DTE to ensure no catastrophic failure due to fatigue cracking will occur. The requirement is not new as it already is incorporated in the current CS-25 (AMC 25.571(a), (b) and (e), Chapter 1.5). The FAA AC 25.571-1D introduces the same requirement

§ 11.(e)(2):
· "*develop maintenance actions to preclude WFD from occurring before the aircraft reaches the LoV;*"
Not accepted. Mainteance actions could include inspections, modifications, replacements, or any combination thereof.

§ Appendix 1:
· "*However, due to the large number of detail design points that are typically evaluated and the practical limitations involved with testing, analyses are generally relied on to determine crack growth at the detail design point.*"
Not accepted. Paragraph a of Appendix 1 already discusses which crack growth algorithms and crack growth rate data are acceptable.

§ Appendix 2:
· *"Full-scale fatigue test evidence"…*
Not accepted. The FSFT is indeed needed to demonstrate no WFD occurs within the LOV, however it should also be used for general compliance demonstrated with CS25.571 (e.g. validation of hot spots, areas of complex loading etc.) therefore the title is considered to be adequate.

· *"Factor 3: The extent of post-test teardown inspection and analysis for determining if widespread fatigue cracking has occurred".*
Accepted. See the response to comment 335.

"If the test article sustains the loads it can be concluded that the point of WFD has yet to be reached for any areas."
Not accepted. The Agency does not believe this is a typing error.

· *"The residual strength capability may be evaluated indirectly by performing teardown inspections to quantify the size of any MSD/MED cracks that might be present or to establish a lower bound on crack size based on inspection method capability…*
Noted. Howeve,r although non-detectable cracks may exist, the applicant could take these cracks as a worst-case scenario into account when doing the analytical evaluation.

· *"A test duration of a minimum of twice the design service goal for the aeroplane model would normally be necessary…"*

Accepted. The text has been amended.

· *(4)(i) and (ii):*
_ *Change Design service goal by LoV.*
Accepted. The text has been amended.

· *(4)(i):*
_ *"…have received two full design service goals of fatigue testing, under realistic loads, and have received a thorough post-test inspection that either did not detect any widespread fatigue damage or the ALS includes from the outset details of modifications required to address WFD."…*
Partially accepted. The wording is changed to "'at least 2 LOV….' to cover the fact the a factor of 3 may also have been applied. No need to refer to RSL tests as this is implicit.

§ *Appendix 3:*
· *"Different approaches have been used to calculate inspection thresholds, although these are essentially variants of one of two methods, viz."…*
Not accepted. However, the proposed approach would also be acceptable.

§ *Appendix 4:*
· "(*8) any modification that affects three or more stiffening members (e.g. wing stringers and fuselage frames);*"…
Not accepted. The text is harmonised and intended to minimise the test burden for structure that is deterministic with respect to damage originating at similar sites.

· *"(9) a modification that results in operational-mission change, which significantly changes the original equipment manufacturer's load/stress spectrum (e.g. extending the flight duration from 2 hours to 10 hours);"*
Accepted.

comment

319 comment by: *Gulfstream Aerospace Corporation*

AMC 25.571 – 4. Definitions of Terms Used In This AMC
Fatigue Critical Structure is not defined.

- Gulfstream recommends EASA add the definition of Fatigue Critical Structure.

(m) 'Normal Maintenance' – this definition is not consistent with current MSG-3 wording. For the purposes of this AMC, normal maintenance are the procedures defined in the MRBR.

- Gulfstream recommends EASA make the definition consistent with MSG-3 wording.

response

Partially accepted.
FCS added. The definition of 'normal maintenance' is provided for the specific purposes related to inspection threshold determination.

comment

320 comment by: *Gulfstream Aerospace Corporation*

AMC 25.571 – 7. Damage Tolerance Evaluation, paragraph (f), (f)(1)(o) and Appendix 5

The proposed use of the Detail Design Point (DDP) concept appears to establish new policy concerning retention of doors and fairings. There is no similar concept in AC 25.571-1D nor in previous versions of AMC 25.571. The definition of DDP listed in the above paragraphs is confusing.

It is not appropriate to extend the damage tolerance requirements to areas outside of Subpart C without additional rulemaking. Landing gear doors are part of mechanical systems that must comply with CS 25.1301 and 25.1309. A damage tolerance assessment according to CS 25.571 implies "safety by inspection" which often conflicts with the "safety by design" philosophy of CS 25.1309. The prescribed fail-safe and reliability requirements of these rules are not typically addressed through a damage tolerance based inspection program.

Furthermore, the strength (limit loads) requirements for landing gear doors are defined by CS 25.729(a), but there is no associated requirement to consider these loads in the residual strength evaluation of CS 25.571(b).

- Gulfstream recommends that if the concept is still needed, a DDP should be defined as those portions of a PSE that are susceptible to fatigue damage. The expected evaluation process (identify PSEs, perform DTE of the associated DDPs, determine fatigue critical structure, etc.) should be clearly defined in a manner similar to the flowchart given in Appendix 2 of AC 25.571-1D.
- Gulfstream recommends EASA remove discussions recommending landing gear door hinges be treated as DDPs. Fatigue and damage tolerance evaluations of landing gear doors should be conducted in a manner that supports compliance with CS 25.1301 and 25.1309, not 25.571. Such evaluations should be conducted on a case-by-case basis as required for a particular design.

response

Not accepted.

See previous related comments. In Appendix 5 examples of DDPs outside the PSEs are provided. See the response to comment 242 and 210.

The Agency considers that a hinge has to be analysed according to 25.571 if failure of the hinge could lead to a catastrophic event due to loss of the door and subsequent impact with the aircraft.

comment *321* comment by: *Gulfstream Aerospace Corporation*

AMC 25.571 – 7. Damage Tolerance Evaluation, paragraph (f)(2)(v) Thrust Reverser Components

The requirements applicable to structural elements of the thrust reverser components are specified in CS 25.933(a)(1) which is a Powerplant regulation. For the purposes of certification, these installations are generally treated as mechanical systems and subject to safety analysis and the requirements of 25.1309. Damage tolerance assessment according to 25.571 implies "safety by inspection" which often conflicts with the "safety by design" philosophy of CS 25.1309.

This criterion is derived from guidance material recently developed by ARAC for use in the proposed revision to Arsenal Draft of AC/AMC 25.1309, Section 9.c.(6). This guidance states:

"The use of periodic maintenance or flight crew checks to detect significant latent failures when they occur is undesirable and should not be used in lieu of practical and reliable failure monitoring and indications. Where this is not accomplished, the system safety assessment should highlight all those significant latent failures that leave the airplane one failure away from a failure condition classified as catastrophic. These cases should be discussed with the FAA/JAA as early as possible after identification."

If periodic inspections are required, they are generally governed by the rules for Certification Maintenance Requirements (CMRs). In addition, the MGS-3 evaluation generally treats the thrust reverser as a Systems & Powerplant component, not structure. Inclusion of fatigue based inspections in the ALS to address the performance of the system is not expected and is in conflict with the priorities governed by mechanical system design.

There is no similar instruction to consider thrust reverser components in the FAA AC 25.571-1D.

- Gulfstream recommends EASA remove the thrust reverser components from the list of PSE examples in AMC 25.571. Fatigue and damage tolerance evaluations of thrust reverser elements should be conducted in a manner that supports compliance with CS 25.933(a)(1) and 25.1309, not 25.571. Such evaluations should be conducted on a case-by-case basis as required for a particular design.

response

Not accepted.

Thrust reverser may be seen as PSE in conjunction with the reliability option. AMC 25.933 already refers to CS 25.571.

comment

341 comment by: *All Nippon Airways*

ANA comments to NPA 2013-07

AMC 25.571 11.(e) – Page 67/203

A major repair is addressed in the paragraph, but definition is not clearly addressed. Definition of the major repair (especially for composite structures) to be clarified.

Applicant for a major repair must demonstrate that any affected structure is free from WFD up to the LOV. However, it is not clarified when the justification to be completed. As most of operators have no capability to perform WFD evaluation, we have a concern that operators have to ground the airplane until the WFD evaluation is completed. Regarding WFD evaluation, interim process which enables operators to return the airplane into service is required as same as a damage tolerance stage approval process.

response

Noted.

For Major Repair, the definition is provided in Part-21. Generally If a major repair is needed, the operator should contact the TCH or have demonstrated capability to perform a major repair (e.g. DOA). The 3-stage process applies for all aspects of fatigue and damage tolerance including WFD.

comment

355 comment by: *DLH and LHT*

a) AMC 25.571 (and: AMC20-20 Appendix 4):

The documents contain corrosion level definitions. Besides the fact that there should be only one single source of corrosion levels (see other DLH/LHT comment), we have the following comments:
Corrosion Level 1 definition is not considered beneficial in CS25.571 nor AMC20-20, as other entities, like AAWG, MPIG/A4A SWG and MSG are more appropriate to define corrosion levels and associated requirements. Please note that the A4A MSG3 definition of level 1 is industry-wide commonly agreed and understood. Please note futher that there are ongoing activities at AAWG and MPIG/A4A SWG to revise and harmonise CPCP (including level definitions) at industry-level and propose these to A4A MSG-3.
Neither AMC 25.571 nor ACM20-20 should hence define corrosion levels. Instead, it should be stated that the usage of industry standards like MSG corrosion level definitions is an acceptable means of compliance. If the Agency still considers it necessary that EASA provides its own corrosion level definitions (which we do not recommend, as industry-level harmonization is currently under work), AMC 20-20 would be the more appropriate place. AMC 20-20 should in any case refer to A4A MSG-3 for Level Definitions as being acceptable.

response

Partially accepted.
Since Level 1 is called in the CS 25.571(a)(5), the definition should be provided within the CS. The Level 1 definition is now aligned with the MSG-3 2015 definition.

comment

366 comment by: *AIRBUS*

Comment related to page 63 paragraph AMC 25.571.11(a)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
When inspections are focused on details in small areas and have a high probability of detection, they may be used by themselves to ensure continued airworthiness, unless or until there are in-service findings. Based on findings, these inspections may need to be modified~~, and it may be necessary to modify or replace the structure rather than continue with the inspection alone.~~
RATIONALE / REASON / JUSTIFICATION:
Not harmonised with the FAA (refer to comment 361)

response

Not accepted.
See the reponse to comment 361. It can not be assumed that safe operation with inspections alone will be possible. It will always depend on the findings themselves (For example if the inspection requirement becomes impractical).

comment

367 comment by: *AIRBUS*

Comment related to page 64 paragraph AMC 25.571.11(c)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
(c) Steps for establishing an LoV
An LOV applies to an airplane structural configuration common to a fleet.
The LoV is established as an upper limit to aeroplane operation with the inspections and

	other procedures provided under CS 25.1529 and Appendix H. RATIONALE / REASON / JUSTIFICATION: The LOV is an airplane level notion, not a component level. (Refer to AC 25.571-1D
response	Not accepted. No additional wording is necessary, the LOV is understood as an aeroplane level value.

comment	*368* comment by: *AIRBUS* Comment related to page 67 paragraph AMC 25.571.11(e) PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read: (e) ~~Repairs and~~ type design changes Any person applying for a change to a type certificate (TC) or a supplemental type certificate (STC) must demonstrate that any affected structure is free from WFD up to the LoV. (*Note:* It is possible that the STC applicant may generate a new LoV for the aeroplanes as part of the STC limitations). ~~Applicants for a major repair to the original aircraft or to an aircraft modified under a major change or an STC must demonstrate that any affected structure is free from WFD up to the LoV.~~ RATIONALE / REASON / JUSTIFICATION: Not harmonised with the FAA Repair is not considered in AC 25.571-1D: it is considered if repair adds or affect WFD-susceptible structure only.
response	Partially accepted. Repairs are subject to WFD evaluation which in some cases may only need to go as far of confirming that the repair does not affect WFD susceptible structure.

comment	*389* comment by: *FAA* Cite proper FAA rule reference. Suggested Resolution: Replace FAR 25 Amdt 134 with 14 CFR 25.571, Admt. 25-132.
response	Accepted.

comment	*390* comment by: *FAA* 10.(d) provides guidance related to discrete source damage and flutter/aeroelastic stability. “At any time, the aeroplane must be shown by analysis to be free from flutter up to the boundary of the aeroelastic stability envelope described in CS 25.629(b)(2)… Suggested Resolution: Change the text “flutter” to “flutter and other aeroelastic instabilities.” This is more accurate and addresses the range of possible aeroelastic instabilities.
response	Accepted.

comment	*391* comment by: *FAA* Section 11 describes the steps for establishing an initial LOV for new certification programs. Paragraph (c) includes discussion on revising the LOV (extended LOV) and addressing repairs and alterations. This discussion appears to be misplaced. Suggested Resolution: Revise the discussion to address the steps for establishing an LOV for certifying an airplane. Move any discussion related to repairing or modifying the airplane after it has been delivered to the operator to another section of the AMC. Also, include the discussion on extending LOVs and addressing repairs and alterations in a different section – i.e., a section on those topics.
response	Partially accepted. Subpagraph (f) was created for the LOV extension.

comment	*392* comment by: *FAA* Paragraph (a) makes a reference about further guidance in Appendix 4 on crack growth – initial size and shape and cracking scenario. This is an incorrect reference. Also, it is not clear as to which Appendix or Annex or AMC is the correct reference. Suggested Resolution: Change Appendix 4 to the correct reference if it exists or delete the paragraph if it does not.
response	Accepted. The reference has been deleted.

comment	*393* comment by: *FAA* Paragraph (c)(1) states “If the conformance to Factors 1 through 3 is less than ideal, a significantly longer test duration would be needed to conclude with confidence that WFD will not occur within the design service goal.” “Less than ideal” is a general term that provides no additional guidance on how long the test duration should be. Guidance given earlier in the appendix is more clear on the test duration when paragraph (b)(3) discussion test duration and how factors of 2 and 3 are applicable depending on the desired scope of the maintenance actions related to WFD inspections and modifications. The term “design service goal” is incorrect. Suggested Resolution: Change the text within Paragraph (c)(1) to point to paragraph (b)(3) for test duration. Change “design service goal” to LOV.

response	Partially accepted. 'Change the text within Paragraph (c)(1) to point to paragraph (b)(3) for test duration.': Not accepted. Change "design service goal" to LOV.: Accepted.

comment	*409* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **AMC 25.571:** **4.(a), (b), (c) and (d):** In order to prevent misunderstandings, terms, definitions and wording should be fully harmonised with FAA ones. They should be exactly the same. (i.e. Definition in AC-25.571-1D - Damage tolerance — The attribute of the structure that permits it to retain its required residual strength for a period of use after the structure has sustained a given level of fatigue, corrosion, or accidental or discrete source damage).
response	Not accepted. The definition is consistent with the expected level of safety, DT evaluation should provide in conjunction with other applicable requirements such as 25.305 and 25.629.

comment	*410* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **AMC 25.571:** **4.(l):** This definition is confusing. Everything from "is not more than" should be removed. Harmonization should prevail. (i.e. Definition in AC-25.571-1D-i. Limit of validity (of the engineering data that supports the structural maintenance program) - The period of time (in flight cycles, flight hours, or both), up to which it has been demonstrated by test evidence, analysis and, if available, service experience and teardown inspection results of high-time airplanes, that widespread fatigue damage will not occur in the airplane structure).
response	Partially accepted. The definition has been updated which incorporate elements from AC 20-104 Appendix 2 and Part 26.21.

comment	*411* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **AMC 25.571:** **6.(a)(1):** This is what § 25.571 is all about. Locations prone to damage that could lead to catastrophic failure and whose inspection is based on crack growth are the object of damage tolerance analyses and, consequently, of § 25.571, leading to ICAs in the ALS. Embraer proposes to EASA clarify the relation between AD and ED damages with structure catastrophic damage.
response	Noted.

The AD and ED inspections are typically designed to detect damage prior to fatigue crack growth initiation. Most TCH DT analysis does not account for interaction between the ED or AD with fatigue, leading to potential shortfalls in the effectiveness of the programme, unless interaction is prevented by early detection of AD and corrosion is limited to Level 1.

comment

412 comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.*

AMC 25.571:

8.(b):

Paragraph: "... It is important to explain to operators the link between the AD and ED inspection programmes and CS 25.571 and CS 25.1529 compliance..."

Comment: Is the DAH supposed to explain it to operators? Shouldn't operational requirements do so? Compliance with CS 25 is DAH responsibility. Embraer understands that this is already discussed in MSG-3 process and proposes to remove from the AMC.

response

Noted.
If the TCH is utilising an MRB following the MSG-3 approach, the operators should be aware of the link, otherwise the need for a programme will need further explanation in for example maintenance manual.

comment

413 comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.*

AMC 25.571:

8.(b):

Paragraph: "... A check of the continued validity of the certification assumptions can be achieved through fleet leader programmes and robust reporting requirements..."

Comment: Is the DAH supposed to be responsible for that? If the DAH establishes in MRBR the applicability of the inspection programme, the operator knows if it is operating accordingly and besides that, there is an Embraer´s Continued Airworthiness process meetings (Service Dificult meetings). Embraer proposes to remove this paragraph.

response

Noted.
The TCH is responsible for checking that certification assumptions remain valid. AMC 25.571 proposes a means to do this by collecting feedback from the operators. For the CPCP, this has already been included in Chapter 8 of AMC 20-20.

comment

414 comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.*

AMC 25.571:

11.(c) - Step 4 (1):

Paragraph: "Final LOV may equal the candidate LOV. However, this would result in maintenance actions, design changes prior to entry into service,..."

Comment: Embraer believes that the design changes to address LOV prior to entry into service may be impractical. The limit to design changes should be the SMP.

response

Partially accepted. Prior to entry into service text is removed.

comment

415 comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.*

AMC 25.571:

11.(d)(1):

Paragraph: "...At the time of type certification, the applicant should also show that at least one calendar year of safe operation has been substantiated by the fatigue-test evidence agreed to be necessary to support other elements of the damage tolerance and safe-life substantiations..."

Comment: Embraer believes the limitation to half the cycles accumulated in FSFT suffices. The substantiation for one year of operation should be removed.

response

Not accepted.
The need for one calendar year of safe operation is not new as it already is incorporated in the current CS-25 (AMC 25.571(a), (b) and (e), Chapter 1.5). The FAA AC 25.571-1D contains the same requirement. Since an update to the maintenance program needs time or further substantiation data needs time to be approved, one calendar year is used to avoid operational issues.

comment

416 comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.*

AMC 25.571:

11.(d)(1):

Paragraph: "...Some of these tests may require application of scatter factors greater than 2 resulting in more restrictive operating limitations on some parts of the structure."

Comment: What situation may lead to another scatter factor? Please Embraer would appreciate if EASA clarified.

response

Noted. In tests of safe life components or where material variability is higher than typical or when the test has shown unexpected results compared with the analysis, a higher scatter factor may be required.

comment	*417* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **AMC 25.571:** **Appendix 2.(e):** **Paragraph:** "...It would also be necessary to have a credible record of the operational loading experienced by the subject structure up to the time it was taken out of service..." **Comment:** Credible record of the operational loading experienced by the structure is impractical. It should not be considered necessary, but desirable. Having record of the aeroplane usage is more reasonable. There is no rule to the operators to keep the credible loading record or aeroplane usage available to DAH or Authorities. Embraer understands that a revision in Part-M or EU-OPS will be necessary to have this as a rule for operators.
response	Noted. However, this is just an example of how to use the in-service data to support the WFD evaluation.

comment	*418* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **AMC 25.571:** **Appendix 2.(e):** **Paragraph:** "...Prior to using in-service data any physical and **loading differences** that exist between the structure of the in-service or retired aircraft and the structure being certified should be identified and reconciled as discussed above." **Comment:** Loading differences should be replaced by usage differences. There is no rule to the operators to keep the credible loading record or aeroplane usage available to DAH or Authorities. Embraer understands that a revision in Part-M or EU-OPS will be necessary to have this as a rule for operators.
response	Accepted. 'Usage/loading' was introduced.

comment	*419* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **AMC 25.571:** **Appendix 5:** Although the concepts are the same, except for Detail Design Points, in order to prevent misunderstandings, terms, definitions and wording should be fully harmonised with FAA ones. They should be exactly the same.
response	Noted. However, the Agency prefers to maintain the definition of DDP.

comment	*420* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **AMC 25.751:** **Appendix 5.(c)(2):** The exception should be removed. If the failure of an item could result in a catastrophic failure (due to excessive deformation, aeroelastic instability or loss of essential system), it should be considered a PSE, regardless of its contribution to carrying load.
response	Not accepted. See responses to previous comments. DDPs can exist outside the PSEs.

comment	*421* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **AMC 25.571:** **Appendix 5.(d):** Inexistent in AC 25.571-1D, the DDP is dispensable. The comment above (Appendix 5.(c)(2)) leads to the WFD susceptible structure definition.
response	Noted. DDP is only for one structural element while the WFD related to issues at multiple elements/sites. Note that CFR 25.571 FAA uses the term detail design point.

comment	*448* comment by: *Thomson Airways* If all repairs are to have a WFD evaluation, the WFD evaluation should be able to be accomplished after repair is accomplished and returned to service (post static strength approval), similar to the 12-24 grace period for damage tolerance analysis.
response	Noted. Procedures for the timescales related to compliance with 25.571 are to be found in Part-21, Subpart M and AMC 20-20. 12 months for DT analysis is already allowed by the initial proposal. Where a WFD evaluation is performed as part of the FDT evaluation, the compliance timescales are the same.

comment	*451* comment by: *Thomson Airways* Define "extenive major repairs" that would require full scale testing.
response	Accepted. The wording ‘extensive’ has been removed from the text and the paragraph is amended to clarify what differences in design may lead to the need for testing.

comment	*455* comment by: *Aerospace Industries Association* The proposed text states:

CS 25.571 addresses damage tolerance and fatigue evaluation of structure
Requested Change:
Remove proposed changes to CS 25.571 and associated AMC material. Reconvene the industry working group to establish the benefit to the fleet and clarify non-harmonised requirements.
Justification:
More time is required to review and fully understand the potential impact on future designs and certification. The changes in the rule and associated AMC material go beyond the addition of widespread fatigue damage and Limit of Validity. These changes create further non-harmonization with 14 CFR 25.571 and 25 – 132, which have not been vetted within the industry and were not a focus of discussion at the EASA Aging Aircraft Workshop held in Cologne, Germany on April 24-25, 2013. The changes to CS 25 need to be fully understood as these changes can affect future designs.

Example 3: Limit of Validity Definition (pg. 45)
The proposed definition of LoV differs from the existing FAA definition by including a statement regarding "…the other elements of the fatigue and damage tolerance evaluation as provided for in the ALS…" The additions to the FAA definition appear to require additional compliance activity for fatigue and damage tolerance aspects that are met via the existing EASA compliance requirements regarding fatigue and damage tolerance, specifically, JAR 25.571 change 7 and the Supplemental Structural Inspection Document airworthiness directive for airplanes certified prior to change 7. This will drive additional cost to the industry meeting redundant compliance requirements that make no improvement in safety.

response

Noted.
Regarding the example given for the LOV definition, this has been accepted and the definitions have been harmonised with the FAA. Overall the texts are much better harmonised now than prior to this rulemaking.

comment

487 comment by: *S.A. Morshed, Emirates*

CS 25, AMC 25.571 (4)(q), AMC 20-20
Create one location for definitions such as Level 1 corrosion.

response

Not accepted. Generally EASA prefers the have the definitions within the applicable document for ease of use.

comment

488 comment by: *S.A. Morshed, Emirates*

AMC 25.571 Par 11(e)
Change to: "…For repairs, the applicant must identify and include these actions as part of the damage tolerance evaluation of the repair…."
Also, change to: "For major changes and STCs, the applicant must identify and include these actions as airworthiness limitation items in the applicant's ALS of the ICA."
Proposed Text:
"…For repairs, the applicant must identify and include these actions as part of the

repair…."
" For major changes and STCs, the applicant must identify and include these actions as airworthiness limitation items in the ALS of the ICA."
Justification:
To allow the WFD evaluation to be done as part of the DTE when a staged approval process is used. This allows airplanes to be repaired and returned to service in a safe condition while the WFD evaluation is conducted. The WFD evaluation can take substantial time that could otherwise delay the airplane return to service even though it is in a safe condition for operation. Also, it is the responsibility of the STC holder to provide the required 25.571/25.1529 ICAs to the operators in their documentation.

response

Not accepted.
First comment: It would be allowed under the provision of Subpart M of Part-21 to release a repair subject to a limitation for a limited period of time. The limitation in this case could be related to the fact that the WFD evaluation is pending completion.
Second comment: In principle we agree with the commentato., However, we consider it to be implicit as it both could cover the ALS presented as a supplement to the TCH ALS (for STCH) or as a revision to the TCH ALS (for the TCH).

comment

489 comment by: *S.A. Morshed, Emirates*

AMC 25.571 Appendix 2 (c) (5) (Page 40)
Full-scale fatigue testing of repairs:
The term "extensive major repairs" is introduced, but not defined or clarified.
Provide definition or clarification of the term "extensive major repairs".

response

Accepted.
The wording 'extensive' has been removed from the text and the paragraph is amended to clarify what differences in design may lead to the need for testing.

comment

490 comment by: *S.A. Morshed, Emirates*

AMC 25.571 Appendix 2 (c) (5) (Page 75)
Clarify in the AMC that the requirements for fullscale fatigue testing of repairs are only applicable for airplanes with a certification basis that is CS-25 post amendment X.

response

Not accepted.
Book 1 and Book 2 (AMC) are published together. an CS amendment therefore could either related to the certification specification or the AMC or both. The amendment history provides the reader the information when the changes made to the text became effective.

comment

522 comment by: *Boeing*

Page:44
Paragraph: AMC 25.571 - para 1.

The proposed text states:
"...It also provides rational guidelines for the evaluation of scatter factors for the determination of life for parts categorised as safe-life. …"

REQUESTED CHANGE:
"...It also provides rational guidelines for the evaluation of scatter factors for the determination of life **limits** for parts categorised as safe-life. …"

JUSTIFICATION:
There is a missing word in the sentence. The indicated correction is needed to match the intent.

response

Accepted.
The text has been amended.

comment

523 comment by: *Boeing*

Page: 44.
Paragraph: AMC 25.571 - para 4.(d)

The proposed text states:
"(d) 'Design Service Goal (DSG)' is the period of time in flight hours/cycles or calendar years, established at design and/or certification that represents the initially anticipated operational life of the aeroplane, during which the principal structure is expected to be reasonably free from significant cracking."

REQUESTED CHANGE:
Revise this proposed definition of DSG to be consistent with the FAA's definition.

JUSTIFICATION:
Unneeded confusion is created when terms are redefined. In addition, the use of DSG should no longer be required since the term "initial LOV" more accurately reflects the intent being expressed by the definition.

response

Not accepted.
The calendar years' difference is needed to reflect that some TCHs already provide a DSG in calendar years. This value can be relevant to the implementation thresholds for corrossion programmes in particular. DSG in general remains a relevant factor in setting thresholds for other programmes such as SSIPs and the REG.

comment

524 comment by: *Boeing*

Page: 45
Paragraph: AMC 25.571 - para. 4.(f) and 4.(l)

The proposed text states:
"(f) 'Detail Design Point (DDP)' is an area of structure that contributes to the susceptibility of the structure to fatigue cracking or degradation such that the structure cannot maintain its load carrying capability, which could lead to a catastrophic failure.

…
(l) ‘Limit of Validity (LoV)’, or more explicitly the limit of validity of the engineering data that supports the structural maintenance programme, is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that WFD is unlikely to occur in the aeroplane structure, and that the inspections and other maintenance actions and procedures resulting from this demonstration and the other elements of the fatigue and damage tolerance evaluation as provided for in the ALS and ICA are sufficient to prevent catastrophic failure of the aeroplane structure.”

REQUESTED CHANGE:

1. Delete paragraph (f) and remove the term DDP in all places in these documents.
2. Revise paragraph (l) as follows:

‘Limit of Validity (LoV)’, or more explicitly. “the limit of validity of the engineering data that supports the structural maintenance programme, is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that WFD is unlikely to occur in the aeroplane structure, and that the inspections and other maintenance actions and procedures resulting from this demonstration ~~and the other elements of the fatigue and damage tolerance evaluation~~, as provided for in the ALS and ICA (or identified Service Information), are sufficient to prevent catastrophic failure of the aeroplane structure.”

JUSTIFICATION:

1. The addition of a new term, “DDP”, on top of SSI, PSE, and FCS, will add confusion, since these are all using somewhat overlapping definitions. In some cases, these have been defined differently even within the proposed regulations and AMC material (illustrating the confusion). The additional lists of DDPs required to be created and tracked will result in increased cost to the industry with no benefit in safety.
2. Change the LoV definition to allow for potential use of service bulletins or equivalent documents to define the required actions. This is especially necessary where the required actions have a large number of detailed steps and many different variants for different models or line numbers.

Response

1. Not accepted. See responses to previous related comments. In addition pleasee note that the term ‘detail design point’ is used both in CS.571 and FAR 25.571 and, therefore, it would not be appropriate to remove it from the AMC material.
2. Not accepted. Inspections shall be in the ALS which is aligned with AC 25.571-1D

Comment

525 comment by: *Boeing*

Page: 45
Paragraph: AMC 25.571 - para 4.(m)

The proposed text states:
“(m) ‘Normal maintenance’ is understood to be those scheduled maintenance checks during minor or base maintenance inputs, normally associated with a zonal programme, requiring general visual inspections. …”

REQUESTED CHANGE:
Change to :
"(m) 'Normal maintenance' is understood to be those scheduled maintenance checks during minor or base maintenance inputs, ~~normally~~ **including those** associated with a zonal programme **or with the structural maintenance program,** requiring general visual inspections, **detailed inspections, or special detailed inspections.**"

JUSTIFICATION:
It is incorrect to suggest that normal maintenance excludes the structural maintenance program, which includes GVI and detailed and special detailed inspections. It is also an undue burden to require those inspections to satisfy 25.1529, but then not allow credit for those inspections to satisfy 25.571.

Response

Noted.
The normal maintenance definition is used to determine whether or not crack growth analysis should be used for inspection threshold determination (See 25.571(a)(4)(ii)).
It should be noted that for fatigue damage evaluation MSG-3 depends almost entirely on the results of the certification process and the data developed in compliance with CS 25.571as reflected in the following extract 'Inspections related to FD detection in metals are applicable after a threshold, which is established during the aircraft type certification process. The fatigue related inspections are based on the manufacturer's approved damage tolerance evaluations and changes or adjustments by the operators require use of an approved procedure.'

The fact detailed/special detailed inspections are developed to satisfy 25.1529 and the AD and ED aspects of 25.571 is another discussion as it is not related to determining the DT analysis method to be applied.
There is a concern that a special detailed inspection or even a detailed inspection derived through the MSG-3 process, could result in a threshold beyond that, which would result from compliance with the proposed (a)(4), which is the same requirement as the FAR 25.571.

Comment

526 comment by: *Boeing*

Page: 47
Paragraph: AMC 25.571, para 5.(b)

The proposed text states:
"(b) ... EASA AMC 20-20, 'Continuing Structural Integrity Programme,' introduced the 'Limit of Validity (LoV)' concept in 2007. AC 25.571-1D issued on 13.1.2011 provides guidance in support of FAR 25 Amdt 134 which introduced the LoV requirement. …
REQUESTED CHANGE:
Change "Amdt 134" to "**Amdt. 25-132**."

JUSTIFICATION:
Correction is needed to cite the actual amendment number being discussed by the text.

Response	Accepted. The text has been corrected.

Comment	*527* comment by: *Boeing* Page: 47 Paragraph: AMC 25.571, para 6.(a) [4th paragraph] The proposed text states: "… All inspections and other procedures (e.g. modification times, replacement times) that are necessary to prevent a catastrophic failure due to fatigue, up to the LoV, must be included in the ALS of the ICA, as required by CS 25.1529, along with the LoV." **REQUESTED CHANGE:** "…All inspections and other procedures (e.g. modification times, replacement times) that are necessary to prevent a catastrophic failure due to fatigue, up to the LoV, must be included in the ALS of the ICA **(or identified Service Documents)**, as required by CS 25.1529, along with the LoV." **JUSTIFICATION:** Change is needed to allow for potential use or service bulletins or equivalent documents to define the required actions. This is especially necessary where the required actions have a large number of detailed steps and many different variants for different models or line numbers.
Response	Not accepted. See responses to previous related comments.

Comment	*528* comment by: *Boeing* Page: 48 Paragraph: AMC 25.571, para 6.(a)(1) The proposed text states: "... It is intended that these inspections will be effective in discovering ED or AD soon after it appears or occurs, and that the ED or AD will, therefore, be removed/repaired before it presents a significant risk. ..." **REQUESTED CHANGE:** "... It is intended that these inspections will be effective in discovering ED or AD ~~soon after it appears or occurs~~ **during normal maintenance**, and that the ED or AD will, therefore, be removed/repaired before it presents a significant risk. ..." **JUSTIFICATION:** There is no reason to assume ED or AD will be detected soon after it appears. That is one of the main reasons for a maintenance program.
Response	Partially accepted. The text has been changed. Howeve, it avoids reference to normal maintenance since this

is not defined as part of the MSG-3 process that leads to the AD and ED inspections of the scheduled structural maintenance.

Comment *529* comment by: *Boeing*

Page: 48
Paragraph: AMC 25.571, para 6(a)

The proposed text states:
"CS 25.571(d) requires the structure to be designed such that sonic fatigue cracking will not result in a failure. CS 25.571(e) requires the structure to be designed to withstand damage caused by specified threats such that the flight during which the damage is sustained can be completed."
REQUESTED CHANGE:
"CS 25.571(d) requires the structure to be designed such that sonic fatigue cracking will not result in a **catastrophic** failure. CS 25.571(e) requires the structure to be designed to withstand damage caused by specified threats such that the flight during which the damage is sustained can be completed."

JUSTIFICATION:
Text change is needed to agree with the rule and to ensure the rules are focused on safety, not economic issues.

Response Accepted.

Comment *530* comment by: *Boeing*

Page: 49
Paragraph: AMC 25.571, para 6.(d)

The proposed text states:
"… Structural areas such as attachment fittings, major joints, changes in section, cut-outs and discontinuities almost always require almost always some level of testing in addition to analysis. When less than the complete structure is tested, care should be taken to ensure that the internal loads and boundary conditions are valid. Any tests conducted to support the identification of areas for evaluation should be conducted at least two times to the design service goal to obtain information on crack initiation times and locations.
REQUESTED CHANGE:
"… Structural areas such as attachment fittings, major joints, changes in section, cut-outs and discontinuities almost always require ~~almost always~~ some level of testing in addition to analysis. When less than the complete structure is tested, care should be taken to ensure that the internal loads and boundary conditions are valid. Any tests conducted to support the identification of areas for evaluation should be conducted at least two times ~~to the design service goal~~ **the proposed Limit of Validity** to obtain information on crack initiation times and locations.

JUSTIFICATION:
1. Delete duplicate *"almost always."*
2. Change to be consistent with the proposed regulation.

Response: Accepted.

Comment *531* comment by: *Boeing*

Page: 50
Paragraph: AMC 25.571, para 7.(a)

The proposed text states:
"… The principle analytical tool used for metallic materials to perform a damage tolerance evaluation is based on Linear Elastic Fracture Mechanics Principles. A discussion of this approach is presented in Appendix 1 of this Advisory Material. The means of establishing the LoV and maintenance actions specifically associated to WFD is addressed in detail in Section 11 of this AMC."
REQUESTED CHANGE:
Remove the words "Linear Elastic" and "Principles" so that the text reads:
"… The principle analytical tool used for metallic materials to perform a damage tolerance evaluation is based on Fracture Mechanics. A discussion of this approach is presented in Appendix 1 of this Advisory Material. The means of establishing the LoV and maintenance actions specifically associated to WFD is addressed in detail in Section 11 of this AMC.

JUSTIFICATION:
Methods that account for local inelasticity and/or non-linearity are often used and are acceptable when appropriately validated.

Response: Accepted.

Comment *532* comment by: *Boeing*

Page: 54
Paragraph: AMC 25.571, para 8.(b)

The proposed text states:
For ED and AD programmes developed under the auspices of the MRB, the minimum ALS content associated with AD and ED may generally be limited to a reference to the documents that contain the MRBR derived maintenance tasks for AD and ED; and the need to incorporate and maintain an effective CPCP in the operators' programme; and a statement requiring operators to control corrosion to Level 1 or better. It is important to explain to operators the link between the AD and ED inspection programmes and CS 25.571 and CS 25.1529 compliance. Inspections that are designed to detect fatigue cracking resulting from AD or ED where the originating damage cannot otherwise be demonstrated to be detected prior to the development of the fatigue cracks must also be directly included in the ALS. For new structure where there is limited supporting data from service experience, the MRB will depend heavily on input from the analyses and test

programmes conducted by the TCH during certification, and for this reason significant cooperation is required between those involved directly in certification and those participating in the MRBR development...

REQUESTED CHANGE:

Delete the highlighted text.

JUSTIFICATION:

The technology to accurately address fatigue/corrosion interaction is not mature. The effect is addressed by having a robust AD/ED and CPCP inspection program, and service experience has shown this to be appropriate.

Response

Not accepted.

This is addressing cases where by designing the programme is allowing the resulting crack to be the assumed starting point for the definition of the programme and the initiating damage by AD or ED is not considered detectable by practical means. The remark regarding interaction is noted and would be considered on a case by case basis.

Comment *533* comment by: *Boeing*

Page: 55

Paragraph: AMC 25.571, para 8.(b) [last sentence of paragraph]

The proposed text states:

"…Changes and STCs must also be provided with inspection programmes that address ED and AD."

REQUESTED CHANGE:

"…Changes and STCs must also be provided with inspection programmes that address ED and AD **when adjustment of the existing programs are required to maintain safety for the changed design."**

JUSTIFICATION:

Changes are only required when necessary for safety.

Response

Not accepted.

Certain STCs require a supplemental programme without the need to adjust the existing programme.

Comment *534* comment by: *Boeing*

Page: 56

Paragraph: AMC 25.571, para 8.(c)

The proposed text states:

"…In this context, normal maintenance includes general visual structural inspections for accidental and environmental damage derived from processes such as the MRB application of MSG-3…."

REQUESTED CHANGE:
"…In this context, normal maintenance includes ~~**general visual**~~ structural inspections for accidental and environmental damage derived from processes such as the MRB application of MSG-3…."

JUSTIFICATION:
It should also include (take credit for) detailed or special detailed visual inspections that are part of the MRBR Structural Maintenance Program. There are many specific details that are directed to be inspected with more than just GVI attention.

Response

Noted.
Please see the response to comment 525.

Comment

535 comment by: *Boeing*

Page: 57

Paragraph: AMC 25.571, para 9.2.1.(e)

The proposed text states:
"(e) Evaluating the possibility of fatigue initiation from sources such as corrosion, stress corrosion, disbanding, accidental damage and manufacturing defects based on a review of the design, quality control and past service experience; and …"
REQUESTED CHANGE:
"(e) Evaluating the possibility of fatigue initiation from sources such as corrosion, stress corrosion, ~~disbanding~~ **disbonding,** accidental damage and manufacturing defects based on a review of the design, quality control and past service experience; and …"

JUSTIFICATION:

Change to reflect intent.

Response

Accepted.

Comment

536 comment by: *Boeing*

Page: 60
Paragraph: AMC 25.571, para 9, Figure 1

REQUESTED CHANGE:
In Figure 1:
-- Change the wording in boxes 14 & 16 from *"Safe Life = Test Cycles/Adjusted BSF"* to **"Safe Life = Test Cycles/Scatter Factor"**
-- Add the following note: **"*Scatter Factor = BSFx X Adjustment"**

JUSTIFICATION:
The wording in the proposal is not consistent with the equivalent Figure in the FAA's AC

	25.571D and does not reflect the title of the Figure, “Scatter Factor Flow Chart.” Change is necessary to harmonise and to convey intent.
Response	Not accepted. The proposed figure has not been changed by this NPA and the intent of the phrase adjusted BSF is considered clear enough.

Comment	*537* comment by: *Boeing* Page: 61 Paragraph: AMC 25.571, para 9.4 The proposed text states: “For design developments, or design changes, involving structural configurations similar to those of a design already shown to comply with the applicable provisions of CS 25.571(c), it might be possible to evaluate the variations in critical portions of the structure on a comparative basis. Typical examples would be redesign of the wing structure for increased loads, and the introduction in pressurised cabins of cut-outs having different locations or different shapes, or both. This evaluation should involve analysis of the predicted stresses of the redesigned primary structure and correlation of the analysis with the analytical and test results used in showing compliance of the original design with CS 25.571(c).” **REQUESTED CHANGE:** For design developments, or design changes, involving structural configurations similar to those of a design already shown to comply with the applicable provisions of CS 25.571(c), it might be possible to evaluate the variations in critical portions of the structure on a comparative basis. Typical examples would be redesign of the ~~wing~~ landing gear structure for increased loads~~, and the introduction in pressurised cabins of cut-outs having different locations or different shapes, or both~~. This evaluation should involve analysis of the predicted stresses of the redesigned primary structure and correlation of the analysis with the analytical and test results used in showing compliance of the original design with CS 25.571(c).” **JUSTIFICATION:** These examples are consistent with AC 25.571-1D, but both the AC and this section of the AMC seem inconsistent with safe-life certification requirements. The type of examples provided as “typical examples” would not qualify as structure that can use the safe-life approach to compliance with 25.571.
Response	Accepted.

Comment	*538* comment by: *Boeing* Page: 67 Paragraph: AMC 25.571, para 11.(e) The proposed text states: “…For repairs, the applicant must identify and include these actions as part of the repair.

For major changes and STCs, the applicant must identify and include these actions as airworthiness limitation items in the ALS of the ICA."

REQUESTED CHANGE:

"…For repairs, the applicant must identify and include these actions as part of the **damage tolerance evaluation** of the repair. For major changes and STCs, the applicant must identify and include these actions as airworthiness limitation items in the **applicant's** ALS of the ICA."

JUSTIFICATION:

Change to allow the WFD evaluation to be done as part of the DTE when a staged approval process is used. This allows airplanes to be repaired and returned to service in a safe condition while the WFD evaluation is conducted. The WFD evaluation can take substantial time that could otherwise delay the airplane's return to service even though it is in a safe condition for operation.

Also, it is the responsibility of the STC holder to provide the required 25.571/25.1529 ICAs to the operators in their documentation.

Response

Not accepted.

See the response to comment 488.

Comment *539* comment by: *Boeing*

Page: 73

Paragraph: Appendix 2, para (c)

The term, "design service goal," appears in multiple places on page 73.

REQUESTED CHANGE:

Replace "design service goal" with "**Limit of Validity**" in this section.

JUSTIFICATION:

Change is needed to be consistent with the proposed regulation.

Response

Accepted.

Comment *540* comment by: *Boeing*

Page: 74

Paragraph: Appendix 2, para (c)(4)(i)

The proposed text states:

"(1) … they may assume that the basic structure was shown to comply with the regulation, unless EASA has taken, or intends to take, Airworthiness Directive action to alleviate a WFD condition or inspections or modifications exist in the ALS relating to WFD conditions. This assumption implies that sufficient full-scale fatigue test evidence exists, demonstrating that WFD will not occur within the design service goal of the aeroplane. …"

"…For the purpose of the STC applicant's demonstration, it may be assumed that model types certified under CS 25.571, and which are not subject to Airworthiness Directive

action to alleviate a WFD condition, have received two full design service goals of fatigue testing, under realistic loads, and have received a thorough post-test inspection that either did not detect any widespread fatigue damage or the ALS includes from the outset details of modifications required to address WFD. …"

REQUESTED CHANGE:
"(1) … they may assume that the basic structure was shown to comply with the ~~regulation~~ **Limit of Validity as stated in the ALS,** unless EASA has taken, or intends to take, Airworthiness Directive action to alleviate a WFD condition or inspections or modifications exist in the ALS relating to WFD conditions. This assumption implies that sufficient full-scale fatigue test evidence exists, demonstrating that WFD will not occur within the ~~design service goal~~ **Limit of Validity** of the aeroplane. …"
"… For the purpose of the STC applicant's demonstration, it may be assumed that model types ~~certified under CS 25.571, and which are not subject to Airworthiness Directive action to alleviate a WFD condition, have received two full design service goals~~ **that have a Limit of Validity published in the ALS have received the equivalent of two times the Limit of Validity** of fatigue testing, under realistic loads, and have received a thorough post-test inspection that either did not detect any widespread fatigue damage or the ALS includes from the outset details of modifications required to address WFD."

JUSTIFICATION:
The assumption that all airplanes have been certified to the latest version of the regulation is incorrect. The original release of CS 25.571 did not include a requirement to test to two DSG or two LOV.

Response

Partially accepted.
See amended text that satisfies the intent of the comments.

Comment

541 comment by: *Boeing*

Page: 78
Paragraph: Appendix 3

The proposed text states:
"In lieu of other data, an acceptable threshold for inspection for the maximum probable manufacturing flaw may be obtained for aluminium alloy airframe structure if an initial corner crack of radius 0.05**'** (1.27 mm) is assumed at a single typical fastener hole and the total crack growth life is divided by 2."
REQUESTED CHANGE:
"In lieu of other data, an acceptable threshold for inspection for the maximum probable manufacturing flaw may be obtained for aluminium alloy airframe structure if an initial corner crack of radius ~~0.05'~~ **0.05"** (1.27 mm) is assumed at a single typical fastener hole and the total crack growth life is divided by 2."

JUSTIFICATION:
Correct the unit of measurement to match the intent.

response	Accepted.

comment	*542* comment by: *Boeing* Page: 79 Paragraph: Appendix 4 -- title and para (a) <u>The proposed text states</u>: “Examples of changes that may require full-scale fatigue testing” **<u>REQUESTED CHANGE</u>:** "Examples of ~~changes~~ **<u>modifications</u>** that may require full-scale fatigue testing" **<u>JUSTIFICATION</u>:** Our requested change would make the text more closely harmonised with Appendix 4 of AC 120-104.
response	Not accepted. The change is aligned with the Part-21 terminology.

comment	*654* comment by: *AEA* The equivalent section in the FAA AC related to repairs & changes clearly states that the requirement to assess repairs/changes for WFD is applicable to for Amendment 25-96 or later (AC25.571-1D 7. e. refers). To make sure the requirement is clear and unambiguous a similar clarification is recommended for the EASA AMC. It is not clear that the AMC is applicable to amendment X of the CS only. EASA provided a Frequently Asked Question response on this issue during the EASA workshop dated 24/25 April 2013 in Cologne. This highlight EASA is aware of the ambiguity. Rather than rely on an FAQ, EASA should clarify this in the AMC, using a similar approach adopted by the FAA.
response	Noted. However, this AMC applies to Amdt X as it will be published in the same amendment with the corresponding CS-25.571.

comment	*655* comment by: *AEA* To clarify that all repairs do not require a full-scale fatigue test, it is suggested to add a comment to the repair paragraph stating that the requirement is for CS 25 Post change X only. EASA provided a Frequently Asked Question response on this issue during the EASA workshop dated 24/25 April 2013 in Cologne. This highlight EASA is aware of the ambiguity. Rather than rely on an FAQ, EASA should clarify this in the AMC, using a similar approach adopted by the FAA.

response

Noted.
See the response to comment 654.

comment

686 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
The equivalent section in the FAA AC related to repairs & changes clearly states that the requirement to assess repairs/changes for WFD is applicable to for Amendment 25-96 or later (AC25.571-1D 7. e. refers).
To make sure the requirement is clear and unambiguous a similar clarification is recommended for the EASA AMC. It is not clear that the AMC is applicable to amendment X of the CS only.
EASA provided a Frequently Asked Question response on this issue during the EASA workshop dated 24/25 April 2013 in Cologne. This highlights EASA is aware of the ambiguity. Rather than rely on an FAQ, EASA should clarify this in the AMC, using a similar approach adopted by the FAA.
SUGGESTED RESOLUTION:
Clarify that this requirement only applies to aeroplanes post EASA CS 25 amendment X

response

Noted.
See the response to comment 654.

comment

688 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
The subject paragraph states that a WFD evaluation for repairs is to be performed by the Part 21 organisation as part of the repair. This is unprecise as the tie consuming evaluation for avoidance of wide-spread fatigue should be performed as part of the damage tolerance evaluation after accomplishment of the repair rather than befor eaircraft return to service.
SUGGESTED RESOLUTION:
Change To: "…For repairs, the applicant must identify and include these actions as part of the damage tolerance evaluation of the repair…."

response

Accepted.
The text has been amended to clarify the intent.

comment

689 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
To clarify that all repairs do not require a full-scale fatigue test, it is suggested to add a comment to the repair paragraph stating that the requirement is for CS 25 Post change X only.
EASA provided a Frequently Asked Question response on this issue during the EASA

	workshop dated 24/25 April 2013 in Cologne. This highlight EASA is aware of the ambiguity. Rather than rely on an FAQ, EASA should clarify this in the AMC, using a similar approach adopted by the FAA. SUGGESTED RESOLUTION: Clarify the requirement for full scale fatigue test in AMC 25.571 is for airplanes post EASA CS 25 amendment X only. In addition, and as mentioned before with previous definitions, please provide a clear definition of "extensive major repairs". EATL would also propose to create one director as part of the ongoing rule-making in order to provide definitions and explanations of specific expressions.
response	Noted. See the response to comment 654. For the second part: The wording 'extensive' has been removed from the text and the paragraph is revised to clarify what differences in design may lead to the need for testing.

comment	*706* comment by: *USAA* The EASA approach to require all repairs, modifications and alterations to be analyzed to WFD requirements is contrary to the FAA requirements. This is only a requirement by the FAA for aircraft certified post Amendment 25-132. Could be a significant cost impact to US operators of ALL repairs and alterations common to the Airbus fleet require WFD analysis prior to return to Leasers. With limited WFD certified engineers or agencies; this too could pose a significant cost impact to operators of Airbus fleet types. D. As stated previously; US operators will be at a competitive disadvantage without harmonization between the EASA & FAA rules in regards to components and airframes.
response	Noted. The NPA proposed WFD for repairs only for extending the LOV. The requirement to have WFD for repairs, for LOV extension, has been removed from the text. It should be noted that the FAA requires WFD evaluation for post Amdt 96. Any EASA DAH requirement applies to all types with an EASA TC and not just Airbus products. EASA guidance material for 25.571 and provided in AMC 20-20 has, however, always recommended consideration of damage arising at multiple sites or in adjacent structural elements.

B. Draft Opinion(s) and/or Decision(s) — VI. Draft Decision AMC 20-20 p. 82

comment	*656* comment by: *AEA*
response	N/A

B. Draft Opinion(s) and/or Decision(s) — VII. Draft Decision AMC to Part-M p. 82

comment	*29* comment by: *CAA-NL*

	· We suggest to add some words referring to Part 26 into Appendix I to AMC M.A.302 'Content of the Maintenance Programme' … 1.1.13 If applicable, details of specific structural maintenance programmes where issued by the TC/STC or other approval holders including, but not limited to: (a) Damage Tolerance-based Inspection Programmes, such as Supplemental Structural Inspection Programme (SSIP); (b) Structural Maintenance Programme resulting from the Service Bulletin Review performed by the TC holders; (c) The applicable documents supplied by TCH and STC holders in compliance with Part 26.300, 26.320, and 26.330, including a Corrosion Prevention and Control Programme (CPCP); (d) Damage Tolerance Evaluation of repairs and modifications, Repair Evaluation Guidelines and Repair Assessment Programmes; (e) Maintenance actions arising from the WFD evaluation. The applicable details of the specific structural maintenance programmes mentioned in subparagraphs (a) to (e) are found in AMC 20-20.
response	Partially accepted. A link to Part-26 has been introduced at a higher level (M.A.301).

comment	*104* comment by: *KLM Engineering & Maintenance* The proposed rule requires that the Repair Evaluation Guidelines (REG) and Repair Assessment Guidelines (RAG) must be approved by EASA. The requirement is contrary to the harmonization agreements contained in EU-US and other bilateral agreements and associated technical implementation procedures concerning mutual acceptance of design data and approval of repairs. To distinguish between FAA and EASA requirements it is suggested that it is made clear that the requirement is for EASA approved documents only (where EASA acts as the certifying authority), not for documents that are already approved by the FAA or other regulatory authorities that have a bilateral agreement with the EU (where EASA acts as the validating authority).
response	Noted. Work already approved under the FAA process will be taken into account. A certification memorandum or other means may be used to clarify the acceptability of the already approved FAA data. 26.370 has been revised to replace the REG with a more general means to comply. Documents issued to demonstrate compliance with EASA Part-26 are for the EASA requirement only, however, credit can be taken from the compliance with the FAA Part 26. This may constitute the subject of a certification memorandum.

comment	*124* comment by: *KLM Engineering & Maintenance* The minimum requirement should be for Mandatory Service Bulletins resulting from the Structural maintenance Programme that have been subject to the normal Proposed

Airworthiness Directive (PAD) process.
As the requirement is currently written, Service Bulletins would need to be adopted by operators if they were recommended by the TCH (following the review) but this approach avoids the requirement for an Proposed Airworthiness Directive (PAD), preventing Industry the opportunity to comment.
State that the minimum requirement should be for Mandatory Service Bulletins resulting from the Structural maintenance Programme that have been subject to the normal Proposed Airworthiness Directive (PAD) process.

response

Not accepted.
The text proposed does not change the intent of the current text which is to provide the typical content of a maintenance programme. The need to review all ICA and maintenance instructions promulgated by the DAH and considered them for inclusion in the maintenance programme, is addressed elsewhere in Part-M and is not part of this rulemaking task.

comment

125 comment by: *KLM Engineering & Maintenance*

The requirement should be to add the Limit of Validity limitation to the maintenance programme only.
Maintenance actions will consist of service bulletins, which should be mandated individually, and providing the industry with an opportunity to comment using the Proposed Airworthiness Directive (PAD) process. As the requirement is currently written, it could require operators to incorporate the SB's without the opportunity for public comment.
Change the requirement to include the Limit of Validity limitation into the maintenance programme.

response

Not accepted.
Although the maintenance actions may eventually be mandated, it is still appropriate to mention the maintenance actions in the AMC.

comment

197 comment by: *British Airways*

References:

VII Draft Decision AMC to Part M 1.1.13 (b) Page 82

Comment summary:

The requirement should be for Mandatory Service Bulletins resulting from the Structural maintenance Programme review that have been subject to the normal Notice of Proposed Amendment (NPA) process.
It is unclear exactly what is required. As the requirement is currently written, Service Bulletins would need to be adopted by operators if they were recommended by the TCH (following the review). Also, the regulatory agency may not agree with the TCH recommendation. This may result in unnecessary work. If the SB is made mandatory, all EASA Part M operators would not to incorporate the SB instructions so it is unclear why EASA need this requirement.
There is a potential that this approach could avoid the requirement for an NPA, preventing

Industry the opportunity to comment.

Suggested resolution:

Change wording to say, 'Mandated Service Bulletins resulting from the Structural Maintenance Programme review'.

response

Not accepted.

See responses to previous comments. The appendix only provides guidance on potentially applicable programmes which should be considered by the operator.

comment

199 comment by: *British Airways*

Reference:

VII Draft Decision AMC to Part M 1.1.13 (d), Page 82

Comment summary:

EASA has stated that they will need to approve RAG's and REG's. To distinguish between FAA and EASA requirements it is suggested that it is made clear that the requirement is for EASA approved documents only, not FAA or other regulatory authority approved.

Previously, the Agency has agreed to add the words 'Agency approved…' at the beginning of the requirement however, the NPA does not include this clarification

Suggested resolution:

Start requirement with 'Agency approved…'

response

Not accepted.

See the response to comment 104.

comment

200 comment by: *British Airways*

Reference:

VII Draft Decision AMC to Part M

1.1.13 (e) Page 82

Comment summary:

The requirement should be to add the LoV limitation to the maintenance programme only.

Maintenance actions will consist of service bulletins, which should be mandated individually (NPA Page 11 Table, No 10 also refers to this). This allows industry an opportunity to comment using the NPA process. As the requirement is currently written, it requires operators to incorporate the SB's without the opportunity and scrutiny for public comment.

The product of the WFD evaluation is the Limit of Validity. Part M already requires Operators to incorporate Mandatory SB's. Therefore the only outstanding requirement for the operator is to include the Limit of Validity in the approved Maintenance Programme.

Suggested resolution:

Revise the text to read, 'The limit of Validity arising from the WFD evaluation.'

response

Not accepted.

The AMC is intended to reflect the typical contents of a maintenance programme and, therefore, should reflect that whether or not the bulletin or other means of promulgation

	is eventually mandated. Please note that 26.370 has been amended.

comment	*296* comment by: *AIR FRANCE* VII Draft Decision AMC to Part M 1.1.13 (b) : Add precision about the level of service bulletin, do we talk about Recommended or Mandatory ?
response	Noted. Please refer to Chapter 7 of the AMC20-20 for clarifications.

comment	*347* comment by: *DLH and LHT* DLH is concerned about the fact that with introduction of Part 26 and related CS26 the operator requirements are dispersed along several rules (Part-M, Part 26) and guidance material (CS26, AMC20-20, AMC M.A.302), and intermingled with Part 21 and Part 25 requirements in the same documents. Please note that this is not harmonised with FAA regulation, which establishes the operator requirements in the operational rules (i.e. FAR 121, 129, as applicable), whereas the FAR 26 contains only requirements for the Design Approval Holder (Part21, Part 25) to support the operator's compliance. Please refer to FAA 14 CFR Parts 26, 121, 129 Docket No. FAA-2005-21693 Paragraph II.B.1, which clearly states that FAR 26 was established to complement FAR 25, and the means to enforce these requirements is Part 21. Whereas, Paragraph II.B.2 explains that the operational airworthiness requirements are established in Parts 121 and 129, respectively. The proposed EASA Part 26 is not following this strict yet reasonable separation. DLH proposes two options, with clear preference on option A: OPTION A: Not only AMC M.A.302 will be revised, but also M.A.302 itself will be revised to add the Part 26.370 requirements; this would harmonise the rulemaking with the FAA regulation. All detailed terms and conditions of the NPA with relevance for the operator/CAMO (incl. CS26.370) will be entirely consolidated into only one single source document, preferably a further revised AMC 20-20. This solution would be the prerequisite for accepting the simplified NPA approach for VII. Draft Decision AMC to Part M „*The applicable details of the specific structural maintenance programmes mentioned in subparagraphs (a) to (e) are found in AMC 20-20*". In this context, Part 26 and CS26 will become purely Part 25/CS25 and Part 21 related, harmonizing the rulemaking also with FAR 26. OPTION B: All detailed terms and conditions of the NPA with relevance for the operator/CAMO remain dispersed in different documents (Part 26, CS26, AMC 20-20, AMC M.A.302,…), as currently envisioned in the NPA. Then the simplified NPA approach for VII. Draft Decision AMC to Part M „*The applicable details of the specific structural maintenance programmes mentioned in subparagraphs (a) to (e) are found in AMC 20-20*" cannot be sustained and needs revision, e.g. "*The applicable details of the specific structural maintenance programmes mentioned in*

subparagraphs (a) to (e) are found in AMC 20-20, Part 26 and CS26."

response

Partially accepted.
Part-26 has been introduced to facilitate all additional airworthiness requirements for operators. The Link to Part-26 has been added in M.A.301. -The guidance in AMC 20-20 refers to the applicable Part-26 paragraphs.

comment

369 comment by: *AIRBUS*

Comment related to page 82 paragraph draft Decision AMC to Part M
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
e) Maintenance actions arising from the Widespread Fatigue Damage (WFD) evaluation.
RATIONALE / REASON / JUSTIFICATION:

Indeed the full text should be added at this stage as the abbreviation 'WFD' is not used elsewhere within the Part M.

response

Accepted.

comment

383 comment by: *AIRBUS*

Comment related to page 82 paragraph draft decision AMC (d)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:

(a) Damage Tolerance-based Inspection Programmes, such as Supplemental Structural Inspection Programme (SSIP) and ALS;

RATIONALE / REASON / JUSTIFICATION:
ALS is also a document providing mandatory inspection, on top of the SSIP.

response

Not accepted.
ALS is not limited to a DT Inspection programme. This paragraph only lists typical specific structural inspection program details.

comment

491 comment by: *S.A. Morshed, Emirates*

VII Draft Decision AMC to Part M 1.1.13 (b)
State that the minimum requirement should be for Mandatory Service Bulletins resulting from the Structural maintenance Programme that have been subject to the normal Notice of Proposed Amendment (NPA) process.
VII Draft Decision AMC to Part M 1.1.13 (e)
Change the requirement to include the Limit of Validity limitation into the maintenance

programme.

response

Not accepted.
SBs mandated by ADs must always be adopted and it is expected that the majority of SBs proposed as terminating action following the guidance of AMC 20-20 may be subject to the PAD process. Nonetheless, the AMC is providing guidance on the typical content of a programme. As with all ICA promulgated by the TCH, the operator is responsible for deciding if it is applicable to their fleet and incorporating it into the maintenance programme when appropriate.

Noted.
However, the LOV is already addressed by 1.1.15.

comment

657 comment by: *AEA*

The minimum requirement should be for Mandatory Service Bulletins resulting from the Structural maintenance Programme that have been subject to the normal Notice of Proposed Amendment (NPA) process.
As the requirement is currently written, Service Bulletins would need to be adopted by operators if they were recommended by the TCH (following the review) but this approach avoids the requirement for an NPA, preventing Industry the opportunity to comment.

response

Noted.
See the response to comment 491.

comment

658 comment by: *AEA*

EASA has stated that they will need to approve REG's and RAG's. To distinguish between FAA and EASA requirements it is suggested that it is made clear that the requirement is for EASA approved documents only, not FAA or other regulatory authority approved.

response

Noted.
As with all ICA promulgated by the TCH, the operator is responsible for deciding if it is applicable to their fleet and incorporating it into the maintenance programme when appropriate.

comment

659 comment by: *AEA*

The requirement should be to add the LoV limitation to the maintenance programme only.
Maintenance actions will consist of service bulletins, which should be mandated individually, and providing industry an opportunity to comment using the NPA process. As the requirement is currently written, it could require operators to incorporate the SB's without the opportunity and scrutiny for public comment.

response

Noted.
See the response to comment 491.

comment

690 comment by: *European Air Transport Leipzig GmbH / DHL*

VII Draft Decision AMC to Part M 1.1.13 (b)
SUMMARY:
The minimum requirement should be for Mandatory Service Bulletins resulting from the Structural maintenance Programme that have been subject to the normal Notice of Proposed Amendment (NPA) process.
As the requirement is currently written, Service Bulletins would need to be adopted by operators if they were recommended by the TCH (following the review) but this approach avoids the requirement for an NPA, preventing Industry the opportunity to comment.
SUGGESTED RESOLUTION:
EATL propose that EASA clearly state that implementation of mandatory SBs will follow existing PAD process. Proposed language: "Implementation of mandatory Service Bulletins resulting from Service Bulletin Review performed by the TC holders"

response

Noted.
See the response to comment 491.

comment

691 comment by: *European Air Transport Leipzig GmbH / DHL*

VII Draft Decision AMC to Part M 1.1.13 (d)
SUMMARY:
EASA has stated that they will need to approve REG's and RAG's. To distinguish between FAA and EASA requirements it is suggested that it is made clear that the requirement is for EASA approved documents only, not FAA or other regulatory authority approved.
SUGGESTED RESOLUTION:
EATL propose that EASA accept FAA approved data under bilateral agreement. EATL also propse that EASA harmonise the requirements to avoid disadvantages for both European TCHs, DAHs and operators.

response

Noted.
See the response to comments above. The Agency may also produce a certification memorandum to clarify the acceptability of the FAA data.

comment

692 comment by: *European Air Transport Leipzig GmbH / DHL*

VII Draft Decision AMC to Part M 1.1.13 (e)
SUMMARY:
The requirement should be to add the LoV limitation to the maintenance programme only.
Maintenance actions will consist of service bulletins, which should be mandated individually, and providing industry an opportunity to comment using the NPA process. As the requirement is currently written, it could require operators to incorporate the SB's

without the opportunity and scrutiny for public comment.
SUGGESTED RESOLUTION:
EATL propose that EASA change paragraph 1.1.13 (e) to "Implementation of the LOV in the operator maintenance programme". Any additional mandatory actions resulting from SB review are covered by the existing PAD process allowing comments, any additional requirements resulting from existing repairs will be covered by revised repair approvals.

response | Not accepted.
See the response to comment 491.

C. Appendices — Appendix I: Definitions and acronyms p. 83-86

comment | *257* comment by: *LHT DO*

Acronym RAG (repair assessment guideline) used throughout the document but not explained.
Please add RAG into acronym section (page 85,94)

response | Accepted.
RAG definition added for AMC 20-20.

comment | *270* comment by: *LHT DO*

Please perform alphanumerical sorting of definitions.

response | Accepted.

comment | *322* comment by: *Dassault Aviation*

C. Appendices:
§ Appendix I: Definitions and acronyms
· Some definitions are already given in AMC 25.571. It seems to DASSAULT-AVIATION necessary to avoid any duplication.
· *"**Damage Tolerance (DT)** is the attribute of the structure that permits it to retain its required residual strength without detrimental structural deformation…"* Residual strength loads are considered as Ultimate condition for which it must be demonstrated that there is no failure. No deformation criteria is associated with Ultimate loads. The non detrimental deformation criteria is more likely applicable to normal loads. so DASSAULT-AVIATION propose to modify the definition as: *"**Damage Tolerance (DT)** is the attribute of the structure that permits it to retain its required residual strength without* failure and without *detrimental structural deformation* under nominal loads*…"*. Refer also to previous remarks of AMC 25.571 – 4.(a) and 7.(a).

· *"**Limit of Validity (LoV)** is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both,…"* Knowing the influence that can have the corrosion on fatigue damage, the age of the A/C itself is a parameter to be taken into

account too: Cf. "Widespread corrosion" Appendix 4 §2. Page 188. Furthermore the number of flight cycles as well as flight hours are both important. So DASSAULT-AVIATION proposal is to modify the definition as: *"**Limit of Validity (LoV)** is not more than the period of time, stated as a number of total accumulated flight cycles* ~~*or*~~ and *flight hours* ~~*or both*~~ and maximal aeroplane age*,…".* Cf. also AMC 20-20 §7: "*However, as aircraft age the probability of fatigue cracking becomes more likely."* and AMC 20-20 Appendix 4 §3.2.2: *"… corrosion becomes more widespread as aircraft age and that it is more likely to occur in conjunction with other damage such as fatigue cracking.*". Cf. previous comments II. Draft Opinion Part-26 §7, 25.571 (a) (3), AMC 25.571 4.(l).

· "***Primary Structure*** *is structure that carries flight, ground, crash or pressurisation loads.*" Crash is an "emergency" case the loads of which being Ultimate Loads. Other "emergency" cases as bird strike, rotor burst, ditching ,… exist the loads of which are also sustained thanks of primary structures. It is recognized to substantiate those cases without taking into account any defect or damage. It is logic that those cases do not appear on the list. So reference to crash loads has to be suppressed. Consequently DASSAULT-AVIATION propose the following modification: "***Primary Structure*** *is structure that carries flight, ground*~~*, crash*~~ *or pressurisation loads.*"

· **Acronyms**: Signification of MP to be listed.

response

Noted. See responses to previous comments.

Not accepted. LOV definition is harmonised with the FAA's definition.

Not accepted. While the definition of primary structure could be debated, it should be recognised that an effective CPCP should address structural items upon the passengers' safety is dependant.

comment

543 comment by: *Boeing*

Page: 83

Paragraph: Appendix I: Definitions and acronyms

<u>The proposed text states</u>:

Damage Tolerance (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.

<u>REQUESTED CHANGE</u>:

Change the word "*and"* where highlighted to **<u>"or"</u>**.

<u>JUSTIFICATION</u>:

The probability of accidental or discrete source damage occurring simultaneously on an airplane with the maximum extent of fatigue damage is extremely remote. FAA's AC 120-104 ("Establishing and Implementing Limit of Validity to Prevent Widespread Fatigue Damage") defines these conditions as separate. To comply with the proposal would require the industry to develop methodologies to predict fatigue cracking in the presence of accidental or environmental damage. Corrosion prevention programs limit the extent of

allowable corrosion far below the residual strength level whereby fatigue cracking can be evaluated as a separate event. Wording should be harmonised with FAA to limit the burden for both operators and TCHs. The new requirement creates additional burden without added safety benefit.

response

Partially Accepted.
The text has been changed. 'and' has been deleted.

comment

544 comment by: *Boeing*

Page: 83
Paragraph: Appendix I: Definitions and acronyms

The proposed text states:
Limit of Validity (LoV) is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that widespread fatigue damage is unlikely to occur in the aeroplane structure; and that the inspections and other maintenance actions and procedures resulting from this demonstration and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aeroplane structure.
REQUESTED CHANGE:
Limit of Validity (LoV) is not more than the period of time, stated as a number of total accumulated flight cycles or flight hours or both, for which it has been demonstrated that widespread fatigue damage is unlikely to occur in the aeroplane structure; and that the inspections and other maintenance actions and procedures resulting from this demonstration ~~**and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aeroplane structure.**~~

JUSTIFICATION:
The suggested deleted text is not definitive as to what constitutes other elements of fatigue and damage tolerance and does not harmonise with the FAA definition. The proposed definition establishes a redundant requirement; DT of non-WFD structure is already required, or will be required by SSIDs; 26.300(a); 14 CFR §25.571 at Amendment 25-45, or CS 25.571 at Change 7; and to repairs via 14 CFR §26.43 or CS 26.320.

response

Accepted.
The LOV definition is harmonised with the FAA's definition.

C. Appendices — Appendix II: Excluded aeroplanes p. 87

comment

2 comment by: *Fokker Services*

Attachment #7

Fokker Services proposes to include the older F27 and F28 models on the list of excluded aircraft for (the applicable parts of) part 26.300-370.

It should be noted here that both the F27 and the F28 (although both CAR 4b certified) have mandatory Structural Inspection Programs containing retirement lives and fatigue and stress corrosion related inspection thresholds and intervals. Furthermore, CPCPs are available. Structural modifications required for safety reasons have been mandated by AD's. Both models have an aircraft life restriction similar to the LOV.
Fokker Services uses the same Repair Design Approval Sheet procedure (minor/major classification and DTE if required) for the F27 and F28 repairs as for the Fo50, Fo70 and Fo100 repairs.
Fokker Services and, in the past Fokker Aircraft, has always acted on service experience by investigating root causes and introducing recommended inspections and modification. This work is (and will continue to be) controlled by the Fokker Services Safety Board in accordance with an approved DOA process.
For the older F27 and F28 models no REG and FCBS/PSE lists are available. For the F28 however, in 2003 a RAP has been developed in response to the requirement for a Repair Assessment Program for repairs to the pressurized fuselage hull. Note that, notwithstanding the mandatory status of this RAP (ref. CAA-NL AD 2003-140), the program has been accomplished only on one F28 aircraft.
Development of a REG is costly and therefore only sensible if it will be used. However, it is doubtful if the present or future F27 and F28 operators would carry out repair evaluations according to such a REG, considering the time horizon, limited utilization and earning potential of these aircraft, refer also to the F28 RAP experience mentioned above.
Repair evaluation according to part 26.320 is required at the "earliest convenient opportunity" after approval of the REG but ultimately at the design service goal. The requirement of "earliest convenient opportunity" (AMC20-20) is open for discussion. The DSG for the F27 and F28 models is 90,000 FC. For both aircraft types the (mandatory) SIP states that the SIP is not valid beyond 90,000 FC and therefore the aircraft will be grounded before the REG becomes effective. Note: The 7 year limit is not applicable for Fokker aircraft because it is lower than the limit of the DSG in the SIP.
Further data to support the request of Fokker Services to include the F27 and F28 models on the list of exempted aircraft is detailed in the attached letter with ref. TS13.51725.

response

Partially accepted.
The exclusion request has been considered. In addition the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.
The Agency does not concur with the discussion regarding earliest convenient opportunity and the Fokker consideration that the REG would not be required until the DSG.

comment

35 comment by: *(Bombardier Aerospace) Short Bros PLC*

Appendix II
Additional criteria presented during the development of the NPA remain valid grounds for seeking a exclusion/exemption, and thus should be included. Compliance with the rule is based around publishing data for operators use, by the compliance date of the rule, whereas the product safety aspect of the rule should actually be based on the Design

Service Goal of the product and the liklihood of aircraft remaining in service to that point.
Text to be added:
"In addition to the above exclusion criteria, EASA may take into account the number of aircraft subject to the rule, the type of operation and their likely remaining service life."

response

Noted.
The exclusion requests and the various proposed criteria have been considered. After review, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

comment

126 comment by: *KLM Engineering & Maintenance*

Excluded airplanes.
EASA requires the industry to propose aeroplanes that should be excluded.
EASA is requested to include the following airplanes in Appendix II (excluded aeroplanes). These airplanes used to be previously operated by KLM, but are now no longer operating under EASA operating requirements and are unlikely to do so in the future.
Airbus Model A310-203F, serial nos. A0245, A0248, A0264, A0283, A0297, A0362, A0364, A0394
Boeing Model DC8-63, serial no. 45999
Boeing Model DC9-15, serial no. 45718
Boeing Model DC9-32, serial nos. 47132, 47133, 47190
Boeing Model DC9-33RC, serial nos. 47191, 47193, 47194, 47462, 47476
Boeing Model 737-300, serial nos. 23541, 28719, 28720
Boeing Model 737-400, serial nos. 24231, 24232, 24814, 24857, 24959, 25355,25412, 27232, 27233
Boeing Model 747-200BSF, serial no. 21110
Boeing Model 767-300EREM, serial nos. 27611, 27612, 27614, 27957, 27959, 27960, 28098, 28884, 30393

response

Partially accepted.
It is believed this comment is linked with the application of 26.330. The text has been amended to relieve the STCH from the burden to develop DTI for aircraft not operated under Part-M. In addition, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

comment

175 comment by: *AIRBUS*

Comment related to page 87/203 Appendix II Excluded aeroplanes
PROPOSED TEXT / COMMENT:
The following aeroplanes are excluded from compliance with Part 26.3XX.
Airbus submit the list of affected aeroplanes, in accordance with criteria defined in comment 185:
- A300-600 ST (Beluga)
- A400M

- A330 modified to replace the Beluga
- Any future aircraft complying with agreed criteria

response

Partially accepted.
The exclusion requests and the various proposed criteria have been considered. In addition, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

comment

193 comment by: *UK CAA*

Page No: 87/203
Paragraph No: Appendix II Excluded Aeroplanes
Comment: It is unclear how EASA will deal with a/c whose design originates within the EU, that are exempted by FAA and not operated in the EU?

response

Noted.
The exclusion requests and the various proposed criteria have been considered. In addition, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26. For each element of the rule for which the associated safety benefit would not be implemented in any of the states in which the aircraft is operated, requests for exclusion were considered.

comment

201 comment by: *British Airways*

References:
Appendix II Page 87
Comment summary:
Excluded aeroplanes
EASA require industry to propose aeroplane models that should be excluded.
Operators and DAH's should also be aware this list could also include models that they may no longer operate but do have EASA Part 21 or, prior to 2003 NAA, responsibility for repairs and/or changes/major modifications.
It is unclear whether responsibility is inherited if airlines with DOA's have been acquired or merged. What happens if the acquiring airline does not have DOA capabilities?
If required to develop the data, it is extremely unlikely DOA's will have access to the required data (eg SRM, drawings etc) for all models going back to 1958.
if a previous organisation had such responsibility. Large transport aeroplanes certified after 01 Jan 1958 are affected.
When the rule is published, it will be extremely difficult to amend the excluded aeroplane list. A generic caveat stating that all aircraft models where is no current EASA/EU NAA TC should be exempt. This supports Part M compliance and prevents the proposed rule constantly being amended as aircraft models are removed from active service.
Aircraft types should be excluded if they do not have a current EASA or EU NAA Type certificate. This should be stated in Appendix II page 87.
EU Basic Regulation Reg EC 216/2008 of the European Parliament & of the council of 20

Feb 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency Chapter II Article 5, 2. (a) requires products to have a type certificate.
If the TC has been withdrawn/surrendered, the STCH should not be required to continue to support their STC embodied on that particular aircraft/model.
As stated at the EASA workshop in Cologne April 2013, the DAH required is to support the Part M operator. If there are no aircraft of a particular model operating under Part M then these models should be excluded.
If an operator subsequently required a model to be operated under Part M, EASA could address this under the transfer requirements. This scenario will occur rarely.
Suggested resolution:
Add the following exclusion statement:
Aeroplanes are excluded if they do not have a current EASA or EU Member State Type Certificate.
Aeroplane models are excluded if they are not in EASA Part M operation at the rule effective date.
The following models should be excluded as they do not have a current EASA or EU member state TC:
AS57 Ambassador 2, Avro 685 York C1, AW650 Argosy, BAC One-Eleven, Boeing 377, Boeing 707, Boeing 727, Bristol 170 & 171, Britania, Canadair DC-4M2, Concorde, Dart Herald 101 & 214, DH.104 Dove 8, DH.106 Comet (all models), DH.114 Heron 1B, DH/HS 121 Trident (all models), Douglas C47 Dakota, Douglas C54A, Douglas DC7C, Lockheed L729A-79, Vanguard 951 & 953, VC10 (all models), Viscount, Airbus A300B4-103/-203, Airbus A310-204
The following models should be excluded as they are not operating in the EU under Part M and unlikely to do so:
Airbus A300B4 including –103/-203, Airbus A310 including –203/-204, Airbus A320-111, Avro 748-1, BAe 146-100, Boeing 737-236/2E7/2L9/2Q8/2T4/37Q/46B/528/53A, Boeing 747-136/148/211B/230B/236/236B/236F/243B/283B/287B/2D3B, Boeing 757-23A/23B, Boeing 767-33AER, DC10, DC9-14/32/83/, DHC-7-102/110, DHC-8-100, Fokker F27-200, Fokker F28-70/100, HS 748-2/2A/2B, Lockheed L1011.

response

Partially accepted.
The Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26. Some of the commenter's proposals may meed those criteria.

comment

224 comment by: *BAE Systems Regional Aircraft*

BAE Systems holds the Type Certificates for HS748 and British Aerospace ATP aircraft, which were both exempted from compliance with 14 CFR Part 26, Subpart E 26.43, 26.45, 26.49 on the basis of public benefit (reduced demand on public resources) and no adverse impact on safety (very small number of aircraft operated infrequently in FAR 121 and 129 operation).
There is no such exemption procedure available within EASA and the exclusion criteria

proposed in Appendix II do not accommodate a similar argument. Therefore BAE Systems will be obliged to comply with 26.320, to produce a REG and to carry out damage tolerance evaluation of repairs for which there is no realistic prospect of recovering costs from operators, as there are very few HS748 and ATP aircraft being operated in passenger carrying roles under EASA jurisdiction.
BAE Systems is a commercial entity and must be able to recover the costs of complying with CS26; otherwise they may be obliged to surrender the Type Certificate, which is unlikely to improve safety for the Type.
In the case of HS748 the cost of producing DTE and the EASA resources required to approve the REG are a disproportionate cost when compared with the safety improvement. Likewise for ATP, which are predominately operated in freighter roles, the safety benefit to the travelling public is small and the cost of producing a REG is disproportionately high.
BAE Systems requests that the exclusion criteria should be expanded to allow other factors (as described above) to be considered.

response

Partially accepted.
The exclusion requests and the various proposed criteria have been considered. In addition, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

comment

279 comment by: *FedEx Aging Aircraft Structures*

Exclude the MD10 and 727 since the number of these aircraft in commercial operation is shrinking rapidly and are unlikely to be introduced except in specialized operations such as fighting forest fires, etc.

response

Partially accepted.
The exclusion requests and the various proposed criteria have been considered. In addition, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26. Please note that the MD10 is a derivative of the DC10 and is not certified in Europe.

comment

323 comment by: *Gulfstream Aerospace Corporation*

C. Appendices – Appendix II: Excluded Aeroplanes
The Gulfstream G-159 and G-1159 series of aircraft (GI, GII, GIIB, and GIII) should be excluded due to the following:

- None of these aircraft are operated under the EASA requirements and it is unlikely that any will do so in the future
- All models have life-limited wings, aft fuselage, engine mounts, and tail which effectively eliminates operation beyond the design service goal
- The current maintenance program addresses fatigue and a CPCM is available
- These aircraft typically operate only 300 landings per year and are operated as business jets

- None operate in scheduled service
- The costs of demonstrating compliance with the ageing aircraft rule are not justified given these points raised

response | Partially accepted

comment | *338* comment by: *Lockheed Martin Aeronautics*

Attachments #8 #9 #10 #11 #12

Attached are the exclusion requests to RMT.0225: Part 26 for the Lockheed Martin L-188 Electra (CAP13-051), 382 Series Hercules (CAP13-053), 1329 JetStar (CAP13-052), and L-1011 TriStar (CAP13-054). Please contact Lockheed Martin if any further information is needed at:
Telephone: (770) 494-5444
Fax: (770) 494-5445
E-Mail: L1011.support@lmco.com
Mail: Lockheed Martin Aeronautics Company
Technical Support Center
86 South Cobb Drive
Department 6A4M, Zone 0579
Marietta, GA 30063-0579, USA
Sincerely,
James V. Orlando
FAA Coordinator,
Continuing Airworthiness Project (CAP)
Lockheed Martin Aeronautics

response | Partially accepted.
The exclusion requests and the various proposed criteria have been considered. In addition, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

comment | *438* comment by: *Transavia*

EASA is requested to include the following airplanes in Appendix II (excluded aeroplanes). These airplanes used to be previously operated by Transavia.com, but are now no longer operating under EASA operating requirements and are unlikely to do so in the future.
Boeing Model 737-200, serial no.
20836, 20943, 20944
Boeing Model 737-300, serial no.
23738, 23786, 24326, 24327, 24328, 24329
Boeing Model 737-800 serial no.
28373, 28374
Boeing Model 757-200 serial no.
26633, 26634

response

Partially accepted.
It is believed this comment is linked with the application of 26.330. the text has been revised to relieve the STCH from the burden to develop DTI for aircraft not operated under Part-M. In addition, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

comment

474 comment by: *Jet Aviation Basel*

There are a limited number of large aeroplanes controlled by individual serial number that operate within the private category with EASA STC, where the operator is subject to foreign NAA regulations and not obliged to comply with the ruling. The utilisation is only a fraction of that of a commercial airliner and the original fatigue inspection thresholds will never be reached. It is requested that the regulation be considered for change to provide flexibilty for the authority to excuse the obligation of DAH's from conducting the evaluation in limited circumstances on a case by case basis for aircraft in the private category.

response

Noted.
It is believed this comment is linked with the application of 26.330. The text has been revised to relieve the STCH from the burden to develop DTI for aircraft not operated under Part-M. Furthermore, 26.370 (a)(2) has been made applicable to PART-CAT only.

comment

545 comment by: *Boeing*

Page: 87
Paragraph: Appendix II – Excluded Airplanes

The proposed text states:
"Proposals from the stakeholders will be considered by EASA within the NPA public consultation period. The list of excluded aircraft will be included in Appendix I to the implementing rule containing Part-26."
REQUESTED CHANGE:
Boeing requests an exclusion from paragraphs 26.300 through 26.370 of the proposed Ageing Aircraft Structures rule for the following Boeing-manufactured airplanes: Models 707, 720, DC-8, DC-9, DC-10, MD-10, and MD-90.
In addition to the listed models, Boeing requests exclusion from paragraphs 26.300 through 26.370 of the proposed Aging Aircraft Structures rule for Boeing-manufactured airplanes that have been or will be modified for non-commercial air transport use.

JUSTIFICATION:
Except for airplanes for which the exclusion of Article 1.2 of EC 216/2008 (EASA Basic Regulation) is applicable, none of these airplanes are currently operated under EASA operating requirements, and it is unlikely any will be under EASA operating requirements in the future. Due to utilization, certification basis, and environmental considerations such as noise requirements, it may not be economically feasible to transfer the above listed

airplanes into EASA jurisdiction.
In addition to the listed models, Boeing requests exclusion from paragraphs 26.300 through 26.370 of the proposed Aging Aircraft Structures rule for Boeing-manufactured airplanes that have been or will be modified for non-commercial air transport use. This includes Boeing Business Jets, Very Important Person (VIP), research, and miscellaneous government use airplanes. These airplanes typically operate with a small number of passengers and accumulate relatively few flight cycles compared to the airplanes providing commercial air transport services. Boeing's intent is to harmonise with FAA's Title 14 Code of Federal Regulations (14 CFR) Parts 121 and 129, which provide exemption from Widespread Fatigue Damage and Aging Aircraft Safety Rule requirements. To appropriately identify and address airplanes in non-commercial use, additional discussions with EASA will be necessary.
[NOTE: Boeing has submitted a separate request for exclusion to EASA (ref. Boeing Letter B-H020-REG-13-TLM-49, dated 30 September 2013, to Mr. Jules Kneepkens).]

response

Partially accepted.
The exclusion requests and the various proposed criteria have been considered. In addition, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.
Furthermore, 26.370(a)(2) has been made applicable to PART-CAT only.

comment

710 comment by: *Bombardier Aerospace*

Bombardier requests excluding the CL-215/CL-415 Amphibious aircraft. This aircraft was certified prior to the DTA requirements of FAA Amendment 25-45. As a result, the DTA requirements proposed in the NPA would be prohibitive to implement and would yield minimal safety benefits.
This is a special-mission, unpressurized aircraft, typically accumulating a low number of flight hours per year (200-300). Because of the amphibious operation of the aircraft and severe operating environment, there are already thorough annual structural inspections to control corrosion, supplemented by even more extensive inspections during the C-check, performed every 6-7 years on average. By their nature, these inspections allow for crack detection as well.
The service experience of this aircraft has shown these inspections to be adequate for detecting fatigue damage and allowing corrective action to be taken before the structural integrity of the aircraft can be compromised.

response

Partially accepted.
The exclusion requests and the various proposed criteria have been considered. In addition, the Agency has proposed an additional rule 26.380 which sets the criteria for exclusions and which allows the Agency (or NAA for operators) to agree on those aircraft, changes and repairs that can be excluded from Part 26.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' p. 88

comment	*30* comment by: *CAA-NL* · Some additional changes have to be made in AMC 20-20 when our proposals relocating from Part/CS 26 to Part M are accepted (specifically references to Part 26.370 and CS 26.370)
response	Not acccepted. Previous related comment has not been accepted. Part-26 is envisioned to contain both DAH/Operators requirements.

comment	*61* comment by: *AIRBUS* **PROPOSED TEXT / COMMENT:** This AMC does not make easy the review for a given domain by each aviation stakeholder specialised in such a domain. The large number of pages to review is also a contributor. It would be advisable to rework the configuration of the AMC 20-20 contents to organise them to mirror the existing European Rulemaking Regulations structure: – a set of information for design activities (maybe to be kept in the AMC 20-20), and – another set for the management of aircraft continuing airworthiness. Besides, this set could be relocated to a more convenient location, i.e. in the Part-M. This would help for example in detecting the misleading contents that were inappropriately transcribed from the FAA material. **RATIONALE / REASON / JUSTIFICATION:** For example, the explanations on the activities under the responsibility of organisations approved under Part-21 are mixed with those for activities carried out by organisations approved under Part-M. It is to be noted that AMC-20 are located on the Certification Specifications page of the EASA website. This has led to the perception that the AMC-20 are related solely to design activities. Therefore, a lot of persons or organisations responsible for the management of aircraft continuing airworthiness may think the AMC-20 do not apply to their activities. A lot of contents of this AMC originate from materials published by the FAA. The approach followed in the FAA system diverges from the approach in the Regulation (EC) 2042/2003 (Part-M and Part-145). In the FAA system an operator may carry out some activities that would fall under Part-21 in the EASA system. For example, the paragraph 3. of the Appendix 1 to AMC 20-20 (guidelines for the development of a SSIP/SSID) is based directly on Appendix 1 to FAA AC 91-56B: – The Appendix 1 to FAA AC 91-56B states “[...] it will be necessary to consider the effect of all major repairs and operator-approved alterations and modifications on individual airplanes.” – The Appendix 1 to AMC 20-20 states “[...] it may be necessary to consider the effect of repairs and operator-approved or other DAH modifications on individual aircraft.” The wording “operator-approved modifications” can give the impression that operators are allowed to approve design changes (beyond the provision of the Article 4 of Regulation (EU) No 748/2012 or the consideration of used aeroplane imports from a non-Member State). It can be particularly misleading for the persons who would need now to go through this AMC, while they thought the AMC-20 do not apply to their activities.

response

Partially accepted.
First part of the comment: Noted.
Second part of the comment: Accepted. The text has been changed .

comment

243 comment by: *AIRBUS*

Comment related to page 88/203, paragraph,
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:

Appendix 2	Guidelines for development of a programme to preclude the occurrence of Widespread Fatigue Damage	115
Annex 1	Full-scale fatigue test evidence	141
Annex 2	Example on how to establish an LoV	148

RATIONALE / REASON / JUSTIFICATION:
New annexes not highlighted

response

Accepted.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 1. PURPOSE p. 89

comment

252 comment by: *Beechcraft Corporation*

The Beechcraft Corporation, formerly Hawker Beechcraft Corporation, a manufacturer of CS-25 turbine powered aircraft, holds type certificates dating back to 1964 for multiple business jet aircraft with a maximum take-off weight (MTOW) of less than 40,000 lbs (18,144 kg). Beechcraft has not experienced major incidents, hull losses or loss of life for any CS-25 turbine powered aircraft due to structural issues. Hence, with this proven field history, supported by test and analysis appropriate to the certification basis of each model, Beechcraft opposes any extension of Part-26 below the current MTOW limit of 75,000 lbs (34,019 kg).
Beechcraft has examined the proposed sections (26.300 and 26.350) and the supporting Appendix I, including Appendices 1, 2, 3 and 4, applicable to Beechcraft Corporations proposed responsibilities as a type certificate holder (TCH). This examination included comparison to current maintenance planning data for Beechcraft operators and reveals that sufficient operator guidance is available without implementation of the NPA. This guidance is continuously monitored by Beechcraft Corporation to ensure it is appropriate to ensure continued operational safety for the fleet.
Beechcraft notes, however, that 26.300(f) requires fleet monitoring. Fleet monitoring for business jet fleets is problematic at best as mandatory reporting is not required by the regulatory authorities. Hence, consistent reporting typically ends at the end of the warranty period. However, it should be noted that subsequent interaction between aircraft owners and Beechcraft Corporation Customer Service and Repair Design Office

	does provide a voluntary means of randomly obtaining information concerning the health of the various models. In conclusion, Beechcraft Corporation thanks EASA for the opportunity to comment on NPA 2013-07 and firmly believes, based on field history, guidance currently in place and voluntary monitoring conducted; the proposed change it not applicable to the Beechcraft Corporation CS-25 turbine powered aircraft models.
response	Partially accepted. 26.300(f), CS and associated guidance material has been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 2. RELATED REGULATIONS AND DOCUMENTS p. 89-90

comment	*244* comment by: *AIRBUS* Comment related to page 89-90/203, paragraph, 2 (b) EASA AMC and FAA Advisory Circulars PROPOSED TEXT / COMMENT: It is proposed to add: 25.571-1D Damage Tolerance and Fatigue Evaluation of Structure
response	Accepted.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 4. DEFINITIONS AND ACRONYMS p. 92-94

comment	*245* comment by: *AIRBUS* Comment related to page 92/203, paragraph 4. DEFINITIONS AND ACRONYMS PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph for clarification **Existing design changes or repairs** are changes and repairs which are to be approved before the entry into force of this rule. **Future design changes and repairs** are changes and repairs which are to be approved on or after the entry into force of this rule. RATIONALE / REASON / JUSTIFICATION: The 2 definitions are, for example, redundant with definitions page 28. Definition should be unique. See comment 38.
response	Not accepted. Definitions will be provided on each document for ease of use and to allow as much as possible for it to be assessed as a stand-alone document.

comment	*246* comment by: *AIRBUS* Comment related to page 92/203, paragraph 4. DEFINITIONS AND ACRONYMS PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph for clarification **Fatigue-Critical Structure (FCS)** is structure that is susceptible to fatigue cracking that could lead to a catastrophic failure of an aircraft. For the purposes of this AMC, FCS belongs to the overall class of structure that would need to be assessed for compliance with § 25.571(a) at Amendment 25-45, or later. The term FCS may refer to fatigue-critical baseline structure, fatigue-critical modified structure, or both. RATIONALE / REASON / JUSTIFICATION: it was clarified by FAA/AAWG that the composite are excluded from the FCS list. This should be clarified by the text of AMC as 571(a) applies to composite when FCS should not.
response	Not accepted. The FCS definition is harmonised with the FAA. However, for the purposes of Part-26 it is not expected the DAH to review composite repairs.

comment	*248* comment by: *AIRBUS* Comment related to page 93/203, paragraph 4. DEFINITIONS AND ACRONYMS PROPOSED TEXT / COMMENT: It is proposed to modidy this paragraph to read: **Multiple Site Damage (MSD)** is a source of widespread fatigue damage characterised 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).~~ RATIONALE / REASON / JUSTIFICATION: For harmonisation with FAA definition
response	Accepted. The text has been changed.

comment	*250* comment by: *AIRBUS* Comment related to page 93/203, paragraph 4. DEFINITIONS AND ACRONYMS PROPOSED TEXT / COMMENT: It is proposed to modidy this paragraph to read: **Primary Structure** is structure that significantly contributes to the carrying carries flight, ground, crash or pressurisation loads. RATIONALE / REASON / JUSTIFICATION: For harmonisation with FAA definition (FAA AC 25-1529/AC 120-CPCP (draft)) Crash is not part of the definition. Definition of secondary structure is not given, it is assumed that this is the complement to

	primay. It may be better to say it.
response	Not accepted. See the response to comment 322.(Dassault). Primary structure is linked to CPCP. Items sustaining crash loads should be considered as part of primary structure.

comment	*251* comment by: *AIRBUS* Comment related to page 94/203, paragraph 4. DEFINITIONS AND ACRONYMS (b) acronyms PROPOSED TEXT / COMMENT: It is proposed to modidy this paragraph to read: DTI Damage Tolerance Inspections ~~and other procedures~~ RATIONALE / REASON / JUSTIFICATION: For clarification, "other procedure" is not defined.
response	Accepted.

comment	328 comment by: Dassault Aviation 4. DEFINITIONS AND ACRONYMS · The definitions and acronyms are the ones given previously in AMC 25.571 C. It seems to DASSAULT-AVIATION the duplication has to be avoided. · Same comments as made above on Damage Tolerance / Limit of Validity and Primary Structure apply here.
response	Noted. For ease of use the Agency prefers to have a separate definition/acronym list for each applicable document.

comment	546 comment by: Boeing Page: 93 Paragraph: AMC 20-20 - Amdt. 1: 1st bullet on page The proposed text states: "- Limit of Validity (LoV) is not more than the period of time, expressed in appropriate units (e.g. flight cycles) stated as a number of total accumulated flight cycles or flight hours or both, 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 demonstrated that widespread fatigue damage is unlikely to occur in the aeroplane structure; and that the inspections and other maintenance actions and procedures resulting from this demonstration and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aeroplane structure." REQUESTED CHANGE: "- Limit of Validity (LoV) is not more than the period of time, expressed in appropriate

units (e.g. flight cycles) stated as a number of total accumulated flight cycles or flight hours or both, 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 demonstrated that widespread fatigue damage is unlikely to occur in the aeroplane structure; and that the inspections and other maintenance actions and procedures resulting from this demonstration and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aeroplane structure."

JUSTIFICATION:
The selected text is not definitive as to what constitutes other elements of fatigue and damage tolerance, and does not harmonise with the FAA's parallel definition. The proposed definition establishes a redundant requirement; DT of non-WFD structure is already required, or will be required by SSIDs; 26.300(a); 14 CFR §25.571 at Amendment 25-45, or CS 25.571 at Change 7; and to repairs via 14 CFR §26.43 or CS 26.320.

response | Accepted.
The LOV definition has been harmonised with the FAA.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 5. CONTINUING STRUCTURAL INTEGRITY PROGRAMME AND WAY OF WORKING p. 94-96

comment | *70* comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 96/203, section B., AMC 20-20, paragraph 5.(e)(2)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
"(2) The operator is responsible for incorporating ~~approved DAH~~mandatory maintenance actions and for evaluating recommended maintenance actions for incorporation ~~necessary to maintain airworthiness~~ into its aircraft-specific maintenance programmes, in accordance with Part-M (Ref. M.A.302)."
RATIONALE / REASON / JUSTIFICATION:
For clarification.

response | Not accepted.
The need to review all ICA and maintenance instructions promulgated by the DAH and considered them for inclusion in the maintenance programme, is addressed elsewhere in Part–M and, therefore, there is no need to the additional change.

comment | *71* comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 96/203, section B., AMC 20-20, paragraph 5.(e)(3)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:

"(3) The competent authority of the State of registry, or the Continuing Airworthiness Management Organisation when it holds the approval privilege, is responsible for the approval of the aircraft maintenance programme."

RATIONALE / REASON / JUSTIFICATION:

The current wording gives the impression that the competent authority of the State of registry is the only organisation that can approve aircraft maintenance programmes and their amendments. This is more restrictive than point M.A.302.

response

Accepted.

comment

127 comment by: *KLM Engineering & Maintenance*

The operator is responsible for incorporating approved DAH actions necessary to maintain airworthiness into its aircraft-specific maintenance programmes, in accordance with Part-M (Ref. M.A.302).

The differences between EASA and FAA requirements may limit an operator's ability to conduct Widespread Fatigue damage evaluations as part of the Damage Tolerance staged approval process.

This would limit the operator's ability to allow airplanes to be repaired and returned to service in a safe condition while the WFD evaluation is being conducted.

Harmonise with the FAA.

response

Not accepted.

Part-21, Subpart-M allows temporary approvals subject to limitations (such as pending WFD evaluations). Therefore, no virtual differences with the FAA requirements exist. Please note that an operator is not responsible for conducting a WFD evaluation, this should be done by an appropriately approved design organisation under Part-21.

comment

329 comment by: *Dassault Aviation*

5. CONTINUING STRUCTURAL INTEGRITY PROGRAMME AND WAY OF WORKING

· §§(a) and (b):

_ *"These new or validated procedures and processes must include periodic monitoring of operational usage with comparison to design assumptions." "The monitoring of operational usage is best achieved in cooperation with the operators, including implementation of fleet leader programmes to ensure that flight lengths, fuel weights, payloads, altitudes, etc. …"* This monitoring of operational usage is quite not possible for Business Jets due to the multiple customers. See also comment already made in §26.300 (f)(1) and AMC 25.571 9.3.2. So DASSAULT-AVIATION ask for mitigating those sentences adding, "if possible". So the proposed sentences become: *"(a)… These new or validated procedures and processes must include,* if possible*, periodic monitoring of operational usage with comparison to design assumptions." "The monitoring of operational usage,* if possible*, is best achieved in cooperation with the operators, including implementation of fleet leader programmes to ensure that flight lengths, fuel weights, payloads, altitudes, etc. …"*

_ "*It is recognised that it might not always be possible to form or to maintain an STG, due to a potential lack of resources with the operators or TCH.*" So who take the responsibility

of the STG in case of TCH deficiency.

response

Noted.
Regarding the monitoring issue (26.300(f)) the rule, CS and associated guidance material have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.
AMC 20-20 Chapter 5(a) already covers the case of a TCH not being able to organise the STG.

comment

423 comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.*

AMC 20.20:

5.(a) - General:

Paragraph: "Part 26.300(f) 'Continued Airworthiness Procedures' requires that TCHs for large aeroplanes establish a new process or validate an existing process which ensures that unsafe levels of fatigue cracking will be precluded in service. ...."

Comment: Eliminate periodic monitoring from the rule and retain it in the guidelines (i.e. part of AMC 20-20). Periodic monitoring of operational usage and assessing of the need for mandatory modifications 26.300(f) is problematic for manufacturers to comply due to current reporting requirements and lack of access to operators' proprietary data. TCH access to operational data is limited and there is no enforcement vehicle to require compliance from operators. Please note the FAA considered and then removed a similar requirement from their final rule concluding existing regulations \36\ that require both DAHs and operators to report structural defects should be adequate to enable us to determine whether the objectives of this final rule are being met.

In order to allow TCH to perform with such EASA requirement, EASA must oblige Operators and Repair Shop to inform TCH about any relevant finding as it is already proposed by ICAO regulations. EASA then would revise the Operational and Part-M requirements.

response

Noted.
Regarding the monitoring issue (26.300(f)) the rule, CS and associated guidance material have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment

547 comment by: *Boeing*

Page: 95
Paragraph: AMC 20-20 - Amdt 1 (3rd paragraph)

The proposed text states:
"... In particular, aircraft use for conducting surveys, commercial or non-commercial operations should be considered on a case-by-case basis."

REQUESTED CHANGE:
Remove this sentence or clarify that this is not a TCH requirement.

JUSTIFICATION:
This is a commercial issue between the TCH and the operator. The operator may develop their own maintenance program for unique usage of the airplane or may contract with third parties (including the TCH) for assistance in developing such a program. The operator is ultimately responsible for how they use the airplane and having a maintenance program that supports that usage. This AMC makes the TCH responsible for maintenance programs for custom uses of the airplane by third tier operators that the TCH may have no control of or involvement with. Note that this comment is not required if 26.300(f) is deleted as requested earlier in these comments.

response

Not accepted.
It is expected that the TCH cooperates with the operator in case the aircraft operates beyond its intended operational use,upon which the maintenance programme is based. If a TCH has concerns furing certification that they will not be able to anticipate the typical operation and usage of the product, the ICA should indicate to operators what the assumptions would be for establishing the maintenance programme together with any appropriate limitations on its use.

comment

548 comment by: *Boeing*

Page: 96
Paragraph: AMC 20-20 - Amdt 1 – para (e)(1)

The proposed text states:
"(1) The TCH is responsible for developing the ageing aircraft structures programme for each aircraft type, detailing the actions necessary to maintain airworthiness. Other DAH should develop programmes or actions appropriate to the modification/repair for which they hold approval, unless addressed by the TCH. All DAHs will be responsible for monitoring the effectiveness of their specific programme, and to amend the programme as necessary."
REQUESTED CHANGE:
"(1) **If not already addressed as part of certification to CS 25.1529, t**he TCH is responsible for developing the ageing aircraft structures programme for each aircraft type, detailing the actions necessary to maintain airworthiness. Other DAH should develop programmes or actions appropriate to the modification/repair for which they hold approval, unless addressed by the TCH. All DAHs will be responsible for monitoring the effectiveness of their specific programme, and to amend the programme as necessary."

JUSTIFICATION:
Airplanes certified to the latest standards are required to have maintenance programs that included the appropriate maintenance throughout the operational life.

response

Not accepted.
The Agency prefers to keep the text generic (not making a specific split-up based on

CS 25.1529).

comment

633 comment by: *S.A. Morshed, Emirates*

AMC 20-20 Para 5 (a) General
Delete wordings: ", fuel weights, payloads, altitudes, etc…."
Reason:
Past experience has shown that this data is particularly impractical to obtain. Usually, it would require a dedicated operator special effort to collect and provide such data and a regulation compelling the operators to track and report such data. Note that this comment is not required if 26.300(f) is deleted as requested earlier in these comments.

response

Not accepted.
26.300(f), CS and associated guidance material have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment

634 comment by: *S.A. Morshed, Emirates*

AMC 20-20 Para 5 (a) General
Change from: "5 year(s)" to "6 year(s) or equivalent heavy check intervals"
Reason:
To align the evaluation to be in-synchronization with operator maintenance intervals. Note that this comment is not required if 26.300(f) is deleted as requested earlier in these comments.

response

Partially accepted.
The text has been changed to be more generic.
26.300(f) the rule, CS and associated guidance material have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment

665 comment by: *AIRBUS*

Comment related to page 95/203, paragraph 5 (a) "**CONTINUING STRUCTURAL INTEGRITY PROGRAMME AND WAY OF WORKING"**
PROPOSED TEXT / COMMENT:
It is proposed to modidy this paragraph to read:
A review is to be done on a regular basis, not exceeding 5 years, and then it is decided if a detailed fleet survey is needed as describded hereafter.
The monitoring of operational usage is best achieved in cooperation with the operators, including implementation of fleet leader programmes to ensure that flight lengths, fuel weights, payloads, altitudes, etc., correspond with the assumptions made when the aircraft was certified or that were used in the development of the ageing aircraft programmes.
RATIONALE / REASON / JUSTIFICATION:

A regular review is certainly needed, but mainly to decide if a detailed fleet survey is to be performed or not.

response

Partially accepted.
The text has been changed to be more generic.
26.300(f) the rule, CS and associated guidance material have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment

701 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
"The monitoring of operational usage is best achieved in cooperation with the operators, including implementation of fleet leader programmes to ensure that flight lengths, fuel weights, payloads, altitudes, etc., correspond with the assumptions made when the aircraft was certified or that were used in the development of the ageing aircraft programmes."
Monitoring of fuel weights, payloads, and similar parameters is virtually impossible for TCHs and DAHs to accomplish. It would place an unnecessary burden on the operator to establish dedicated reporting of these details.
SUGGESTED RESOLUTION:
EATL proposes to delete the specific reference to these parameters

response

Not accepted.
However, the text has been amended to allow for more flexibility.
26.300(f) the rule, CS and associated guidance material have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 6. FATIGUE AND DAMAGE TOLERANCE EVALUATION AND SUPPLEMENTAL STRUCTURAL INSPECTION PROGRAMME (SSIP) p. 96-98

comment

64 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 97/203, section B., AMC 20-20, paragraph 6.
page 110/203, section B., AMC 20-20, Appendix 1, paragraph 2.1.
PROPOSED TEXT / COMMENT:
It is proposed to modify the AMC 20-20 paragraph 6 to read:
“The SSID or ALS, along with the criteria used and the basis for the criteria should be submitted to the Agency for review and approval. The SSIP should be adequately defined in the SSID. The SSID or ALS should include the areas to be inspected, the inspection method and the reference to the corresponding applicable inspection procedures (including the sequential inspection steps), the inspection threshold~~,~~ and repeat interval ~~and inspection methods~~, and the list of aeroplanes to be inspected. In addition, the inspection access, the type of damage being considered, likely damage sites and details of the resulting fatigue cracking scenario should be included as necessary to support the prescribed inspections. The applicable modification status~~, associated~~ and/or life

limitation, and the types of operations for which the SSID is valid should also be identified and stated. [...]. For an SSIP newly developed to meet Part 26.300 the guidance of this AMC applies. ~~In addition, the inspection access, the type of damage being considered, likely damage sites and details of the resulting fatigue cracking scenario should be included as necessary to support the prescribed inspections~~."

It is proposed to modify the paragraph 2.1. of the AMC 20-20 Appendix 1 to read:

"[...]. The recommended SSIP, along with the criteria used and the basis for the criteria, should be submitted by the TCH to the Agency for approval. The SSIP should be adequately defined in the SSID and presented in a manner that is effective. The SSID should include the areas to be inspected, the inspection method (including the sequential inspection steps), the inspection threshold and repeat interval, and the list of aeroplanes to be inspected. In addition, the inspection access, the type of damage being considered, ~~and~~ likely damage sites and details of the resulting fatigue cracking scenario should be included as necessary to support the prescribed inspections.~~; inspection access, threshold, interval method and procedures;~~ The applicable modification status and/or life limitation,~~;~~ and the types of operation for which the SSID is valid should also be identified and stated."

RATIONALE / REASON / JUSTIFICATION:

For sake of consolidation and consistency with Comment No. 6. This will ensure the persons or organisations responsible for the management of the aircraft continuing airworthiness are provided with the necessary details to implement the SSIP.

response

Not accepted.

The Agency prefers to keep the text unchanged as the necessary information is already suficcient.

comment

253 comment by: *AIRBUS*

Comment related to page 97/203

PROPOSED TEXT / COMMENT:

It is proposed to modify this paragraph to read:

For an aircraft maintenance programme subject to an LoV under Part 26.300(c) the evaluation need only provide the inspections ~~and other procedures~~ necessary up to the LoV.

RATIONALE / REASON / JUSTIFICATION:

See the response to comment 251

response

Not accepted. Altough comment 251 is accepted because it refers to an acronym, it is believed the 'other procedures' should be kept here as it refers to element such as inspection method but also to replacements/modification actions necessary to support the LOV.

comment

330 comment by: *Dassault Aviation*

6. FATIGUE AND DAMAGE TOLERANCE EVALUATION AND SUPPLEMENTAL STRUCTURAL INSPECTION PROGRAMME (SSIP)

· *"An SSID should be developed, as outlined in Appendix 1 to of this AMC, from this body of*

	data." Add ALS to be in line with previous and subsequent text: *"An SSID* or ALS *should be developed, as outlined in Appendix 1 to of this AMC, from this body of data."*
response	Not accepted. Appendix 1 is specific to the SSID.

comment	*549* comment by: *Boeing* Page: 97 Paragraph: AMC 20-20 - Amdt 1 - 2nd paragraph on page The proposed text states: "Part 26.300(a) requires that TCHs for certain large transport aeroplanes create an ALS and include in it inspections and other procedures derived from a fatigue and damage tolerance evaluation. An SSID or ALS developed according to the guidance of this AMC or an SSID mandated under a current EASA Airworthiness Directive will satisfy the requirements of Part 26.300(b)." **REQUESTED CHANGE:** "Part 26.300(a) requires that TCHs for certain large transport aeroplanes create an ALS and include in it inspections and other procedures derived from a fatigue and damage tolerance evaluation. An SSID or ALS developed according to the guidance of this AMC or an SSID mandated under a current EASA **or FAA** Airworthiness Directive will satisfy the requirements of Part 26.300(b)." **JUSTIFICATION:** Our suggested change allows for current FAA-approved SSIDs to satisfy the requirement. Alternatively, broaden the statement to extend to other approved national authorities.
response	Not accepted. The process of acceptance or adoption by the Agency of foreign Authorithies ADs is not affected by this regulation

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 7. CONTINUED AIRWORTHINESS PROCEDURES, SERVICE BULLETIN REVIEW AND MANDATORY MODIFICATION PROGRAMME p. 98-99

comment	*66* comment by: *AIRBUS* **COMMENT IS RELATED TO:** page 98/203, section B., AMC 20-20, paragraph 7. **PROPOSED TEXT / COMMENT:** It is stated in this paragraph that: "Any aircraft primary structural components that would require frequent repeat inspection, or where the inspection is difficult to perform, taking into account the potential airworthiness concern, should be reviewed to preclude the human factors issues associated with repetitive inspections."

	Can the meaning of “frequent repeat inspection” and “the inspection is difficult to perform” be a clarified by adding specific, measurable and attainable criteria? Can the reference of the relevant regulation points (Part-21, Part-26 and/or CS-25) that impose the consideration of human factors and performance limitations issues during the evaluation of aircraft structure be added? **RATIONALE / REASON / JUSTIFICATION:** For sake of clarity.
response	Noted. Frequent repeat inspection could mean repetitive inspections with a short interval. Inspection difficult to perform could refer to special NDT.

comment	*68* comment by: *AIRBUS* **COMMENT IS RELATED TO:** page 99/203, section B., AMC 20-20, paragraph 7.(a)(iii) **PROPOSED TEXT / COMMENT:** Can the meaning of “routine maintenance” be a clarified (taking into account the definition of “maintenance” given in the Article 2 of Regulation (EC) 2042/2003)? **RATIONALE / REASON / JUSTIFICATION:** For sake of clarity (Refer also to Comment No.61).
response	Partially accepted. The text has been adjusted.

comment	*254* comment by: *AIRBUS* Comment related to page 98203, paragraph è(a) and (b) PROPOSED TEXT / COMMENT: It is proposed to revisit this paragraph: Part 26.300(f) requires that Continued Airworthiness Procedures are established or validated to ensure that unsafe levels of fatigue cracking will be precluded in service. These new or validated procedures and processes must include: (a) periodic monitoring of operational usage with comparison to design assumptions; (b) a periodic Service Bulletin review process or equivalent that includes an assessment of the need for mandatory changes in cases where inspection alone is not reliable enough to ensure that unsafe levels of cracking are precluded. RATIONALE / REASON / JUSTIFICATION: The way to comply has not been discussed, and the criteria for compliance are not defined.
response	Noted. 26.300(f), the corresponding CS and associated guidance material have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment	*331* comment by: *Dassault Aviation*

7. CONTINUED AIRWORTHINESS PROCEDURES, SERVICE BULLETIN REVIEW AND MANDATORY MODIFICATION PROGRAMME

· §§(a) and (b):

_ "*periodic monitoring of operational usage with comparison to design assumptions*" Refer to previous comment on the subject §5. (a) and (b).

response

Noted. Part 26.300(f), the corresponding CS and associated guidance material have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment

404 comment by: *AIRBUS*

Comment related to page 98/203, paragraph (a)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
This may be done by the TCH alone or in conjunction with the operators at a preliminary STG meeting.
~~Each of the criteria should be addressed on a routine basis, also considering new information about operational usage when it becomes available from the monitoring programme.~~
RATIONALE / REASON / JUSTIFICATION:
This parargraph does not bring additional value to the above sentence.

response

Partially accepted.
The order of the paragraphs has been changed and the reference to 'monitoring programme' deleted.

comment

424 comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.*

AMC 20.20:

7.(a)

Paragraph: "...Part 26.300(f) requires that Continued Airworthiness Procedures are established or validated to ensure that unsafe levels of fatigue cracking will be precluded in service. These new or validated procedures and processes must include:

(a) periodic monitoring of operational usage with comparison to design assumptions;..."

Comment: Eliminate periodic monitoring from the rule and retain it in the guidelines (i.e. part of AMC 20-20). Periodic monitoring of operational usage and assessing of the need for mandatory modifications 26.300(f) is problematic for manufacturers to comply due to current reporting requirements and lack of access to operators' proprietary data. TCH access to operational data is limited and there is no enforcement vehicle to require compliance from operators. Please note the FAA considered and then removed a similar requirement from their final rule concluding existing regulations \36\ that require both DAHs and operators to report structural defects should be adequate to enable us to

	determine whether the objectives of this final rule are being met. In order to allow TCH to perform with such EASA requirement, EASA must oblige Operators and Repair Shop to inform TCH about any relevant finding as it is already proposed by ICAO regulations. EASA then would revise the Operational and Part-M requirements.
response	Partially accepted. 26.300(f) the rule, CS and associated guidance material have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment	*550* comment by: *Boeing* Page: 98 Paragraph: AMC 20-20 - Amdt 1 – para 7 <u>The proposed text states</u>: "Service Bulletins issued early in the life of an aircraft fleet may utilise inspections (in some cases non-mandatory inspections) alone to maintain structural integrity. Inspections may be adequate in this early stage, when cracking is possible, but not highly likely. However, as aircraft age the probability of fatigue cracking becomes more likely. In this later stage it is not prudent to rely only on inspections alone because there are more opportunities for cracks to be missed and cracks may no longer occur in isolation. In this later stage in the life of a fleet it is prudent to reduce the reliance strictly on inspections, with its inherent human factors limitations, and incorporate modifications to the structure to eliminate the source of the cracking. In some cases reliance on an inspection programme, in lieu of modification, may be acceptable through the increased use of mandatory versus non-mandatory inspections." **<u>REQUESTED CHANGE</u>:** Delete this text or place it in the Explanatory Notes. **<u>JUSTIFICATION</u>:** The text is not needed; it does not provide additional clarity or guidance.
response	Not accepted. The Agency does not agree to delete the text as it is believed it adds clarity and guidance.

comment	*551* comment by: *Boeing* Page: 98 Paragraph: AMC 20-20 - Amdt 1 – para 7 <u>The proposed text states</u>: "Any aircraft primary structural components that would require frequent repeat inspection, or where the inspection is difficult to perform, taking into account the potential airworthiness concern, should be reviewed to preclude the human factors issues associated with repetitive inspections."

REQUESTED CHANGE:
Delete this text.

JUSTIFICATION:
The placement of this statement is inconsistent with the focus on structural integrity.

response

Not accepted.
Human factors can be associated with cracks not being found, therefore, compromising the structural integrity.

comment

552 comment by: *Boeing*

Page: 98
Paragraph: AMC 20-20 - Amdt 1 – para 7

The proposed text states:
"Part 26.300(f) requires that Continued Airworthiness Procedures are established or validated to ensure that unsafe levels of fatigue cracking will be precluded in service. These new or validated procedures and processes must include:

(a) periodic monitoring of operational usage with comparison to design assumptions;

(b) a periodic Service Bulletin review process or equivalent that includes an assessment of the need for mandatory changes in cases where inspection alone is not reliable enough to ensure that unsafe levels of cracking are precluded.

Compliance may take into account compliance with this subpart and compliance with previous programmes of SB review, etc. Significant environmental and accidental damage findings should also be taken into account. Damage scenarios assumed for certification should be compared to those being reported (leading to SB action) and where there are differences, the potential airworthiness impact should be evaluated. Differences may include the pattern and extent of cracking, corrosion or accidental damage, the time at which it was discovered and the rate of growth."
REQUESTED CHANGE:
This paragraph in the AMC does not agree with 26.300(f) as it should. AMC 20-20 (a) corresponds to 26.300 (f)(1), but AMC 20-20 (b) differs from 26.300 (f)(2):
"26.300 (f) Establish a process that ensures that unsafe levels of fatigue cracking will be precluded in service. This process must include:
(1) periodic monitoring of operational usage with comparison to design assumptions; and
(2) a periodic assessment of the need for mandatory changes in cases where inspection alone is not reliable enough to ensure that unsafe levels of cracking are precluded."

JUSTIFICATION:
Change is needed for clarity and congruity.
[This requested change is not necessary if our request to delete 26.300(f) is accepted.]

response

Noted.

26.300(f), corresponding CS and associated guidance material (e.g. AMC 20-20 paragraph 7) have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment

553 comment by: *Boeing*

Page: 99
Paragraph: AMC 20-20 - Amdt 1 – para 7.(a)

The proposed text states:
“Each of the criteria should be addressed on a routine basis, also considering new information about operational usage when it becomes available from the monitoring programme.”
REQUESTED CHANGE:
Delete this text.

JUSTIFICATION:
Any change to the AAWG criteria should be reviewed by and agreed to by the AAWG.

response

Partially accepted.
The text has been amended.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 8. CORROSION PREVENTION AND CONTROL PROGRAMME p. 99-100

comment

10 comment by: *DDUMORTIER*

Page 100 : When making reference to reporting/notification of corrosion level 1 exceedance along the different proposed updated document, the reporting to "competent authority" is systematicaly mentioned while the reporting to TCH is not.
May we recommend to harmonise the different reference docuements for identifying the required double reporting to both parties : **competent authority** and **TCH**.

response

Noted.
However on page 100 of the NPA it is stated that corrosion Level 1 exceedance needs to be reported to the TCH as well.

comment

69 comment by: *AIRBUS*

COMMENT IS RELATED TO
page 100/203, section B., AMC 20-20, paragraph 8.
PROPOSED TEXT / COMMENT:
This paragraph (and others, e.g. in the Appendix 4) states:
“[...]. The TCH should include all of these corrosion-related activities in a manual referred to as the Baseline Programme. [...]”
Can the references of the relevant regulation points (Part-21, Part-26 and/or CS-25) that

specify “a manual referred to as the Baseline Programme” be reminded?
RATIONALE / REASON / JUSTIFICATION:
The term “Baseline maintenance programme” [and “generic maintenance programme”] is used in the Part-M for aircraft not involved in commercial air transport.
A term having different meanings may create confusion (Refer also to Comment No. 61).

response

Noted. Paragraph 8 does not use the wording “Baseline maintenance programme” but baseline programme, which in this case means the baseline CPCP to be developed by the TCH.

comment

72 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 100/203, section B., AMC 20-20, paragraph 8.
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
“[...]. In line with Part-M requirements, when the TCH publishes revisions to ~~their Baseline Programme~~its Instructions for Continued Airworthiness addressing corrosion issues, the~~se~~ revised or new mandatory maintenance actions should be incorporated and the new or revised recommended maintenance actions should be evaluated for incorporation in~~reviewed and~~ the operator’s aircraft maintenance programme ~~adjusted as necessary~~ in order to maintain corrosion to Level 1 or better. [...]”
RATIONALE / REASON / JUSTIFICATION:
For clarification.

response

Not accepted.
However, the Agency proposed in Chapter 8 of AMC 20-20 text to consider the corrosion issues to be dissipated troughout the ICA rather then being part of a stand-alone CPCP document.

comment

73 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 100/203, section B., AMC 20-20, paragraph 8.
PROPOSED TEXT / COMMENT:
The following sentences introduce an ambiguity:
“An operator may [...] choose to develop its own CPCP [...]. In developing its own CPCP an operator may join with other operators and develop a Baseline Programme similar to a TCH-developed Baseline Programme for use by all operators in the group.”
Does an operator need to demonstrate its capability in accordance with the Annex (Part-21) to the Regulation (EU) No 748/2012 to develop its own CPCP? Once demonstrated, is a Design Organisation Approval issued to recognise this design capability?
RATIONALE / REASON / JUSTIFICATION:
The preparation (and the amendment) of Instructions for Continued Airworthiness, including those for a CPCP, is an activity ruled by design-related Regulation (refer for example to Part-26 point 26.300(e) or, to CS-25 points CS 25.1529 and CS 25.1729 and the related Appendix H, point H25.3 paragraph (b)(1) and point H25.4). The paragraph (e) of

the Article 5 in the Regulation (EC) 216/2008 states that “organisations responsible for the design [...] of products, parts and appliances shall demonstrate their capability [...]. Unless otherwise accepted these capabilities [...] shall be recognised through the issuance of an organisation approval”.
The persons and organisations responsible for managing the continuing airworthiness of aircraft are governed by the Regulation (EC) 2042/2003. No provision has been found in this Regulation and its Annex (Part-M) to allow these persons or organisations to carry out design activities.
A lot of contents of this AMC originate from materials published by the FAA. The approach followed in the FAA system diverges from the approach in the Regulation (EC) 2042/2003 (Part-M and Part-145). In the FAA system the operator may carry out activities that would require a Design Organisation Approval in the EASA system. (Refer also to Comment No. 61).

response

Noted.
However, it is expected that the operator creates its CPCP based on the baseline CPCP from the TCH. In addition, the approval needs to be given by the competent authority so that sufficient control is ensured.

comment

74 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 100/203, section B., AMC 20-20, paragraph 8.
page 185/203, section B., AMC 20-20, Appendix 4, paragraph 1.
PROPOSED TEXT / COMMENT:
The following sentences introduce an ambiguity:
“[...]. Before an operator may include a CPCP in its maintenance or inspection programme, the competent authority should review and approve that CPCP. [...]” (AMC 20-20, paragraph 8.)
“Before an operator may include a new Corrosion Prevention and Control Programme (CPCP) in their maintenance or inspection programme, the Agency should review and approve that CPCP.” (AMC 20-20, Appendix 4, paragraph 1.)
Is the term “maintenance or inspection programme” appropriate? (found several times in this NPA)
The preparation (and the amendment) of Instructions for Continued Airworthiness is a design activity controlled under (Part-21 or) Part-26. Is the competent authority referred to into this sentence the authority delivering design approvals or the authority responsible for the approval of aircraft maintenance programmes under Part-M?
RATIONALE / REASON / JUSTIFICATION:
The US regulation system refers to “maintenance programme” or to “inspection programme” depending on the applicable regulation. In the EU regulation system, Part-M refers only to “Aircraft Maintenance Programme” (AMP).
Refer also to Comment No. 61: A lot of contents of this AMC originate from materials published by the FAA. The approach followed in the FAA system diverges from the approach in the Regulation (EC) 2042/2003 (Part-M and Part-145). In the FAA system the operator may carry out activities that would require a Design Organisation Approval in the

EASA system.
Concerning the approval of the CPCP before introduction in the AMP, no provision has been found in the Regulation (EC) 2042/2003 and its Annex (Part-M) to allow the persons or organisations responsible for managing the continuing airworthiness of aircraft to carry out design activities.
If the term "competent authority" refers to the authority responsible for the approval of AMP under Part-M, this sentence introduces a new requirement more restrictive than the existing point M.A.302. The approval is at the level of the AMP (and not at the level of its elements), and so covering all instructions included.
Of course, the competent authority of the State of registry is one organisation that can approve AMP and their amendments. But the Continuing Airworthiness Management Organisation, when it holds the approval privilege, can also approve its AMP and their amendments. The subject sentence does not take into account this latter case.
Duplication (of texts) should be avoided to prevent possible confusion, errors, or extensive judgment.

response

Not accepted.
The compentent authority for the operator's CPCP approval is generally the NAA and not the Agency. The CAMO privileges are limited and would not allow approval of the operators CPCP withouth involvement of the competent authority.

comment

75 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 100/203, section B., AMC 20-20, paragraph 8.
page 185/203, section B., AMC 20-20, Appendix 4, paragraph 1.
PROPOSED TEXT / COMMENT:
The following paragraphs introduce an ambiguity:
"The operator should show that the CPCP is comprehensive in that it addresses all corrosion likely to affect primary structure, and is systematic in that it provides:
(a) step-by-step procedures that are applied on a regular basis to each identified task area or zone, and
(b) these procedures are adjusted when they result in evidence that corrosion is not being controlled to an established acceptable level (Level 1 or better)." (AMC 20-20, paragraph 8.)
"The Agency review is intended to ensure that the CPCP is comprehensive and systematic. The operator should show that the CPCP is comprehensive in that it addresses all corrosion likely to affect primary structure, and systematic in that whether it provides:
(a) step-by-step procedures that are applied on a regular basis to each identified task area or zone; and
(b) these procedures are adjusted when they result in evidence that corrosion is not being controlled to an established acceptable level (Level 1 or better)." (AMC 20-20, Appendix 4, paragraph 1.)
How does the term "primary structure" fit the other terms FCS, PSE, DDP? Is it necessary to have this term? Where is published the list of primary structure items so that groups of operators that intend to develop their own CPCP can do so?

Is the demonstration that the CPCP is comprehensive a design activity?
RATIONALE / REASON / JUSTIFICATION:
The AMC 20-20 indicates that an operator (or a group thereof) may want to develop a CPCP without TCH involvement. They need to access the list of structural items to evaluate, and should be directed to the correct source.
The comprehensiveness of a CPCP is rather dependent on the end results of design activities: design approval holders usually specify in their instructions for continued airworthiness the necessary step-by-step procedures (e.g. in the AMM), their schedule and the identified task area or zone to maintain (e.g. in the MRBR).
The continuing airworthiness management activities address the development and revision of the aircraft maintenance programme (point M.A.302) mainly on the basis of source documents collecting the end results of the design activities. The comprehensiveness of the aircraft maintenance programme is the responsibility of the person or organisation responsible for the management of the aircraft continuing airworthiness, but this is not limited to the corrosion-related maintenance. The continuing airworthiness management activities also include the analysis of the aircraft maintenance programme effectiveness, with regard to established defects, malfunctions and damage, in order to amend the aircraft maintenance programme accordingly.
The explanations on the development and adjustment of the aircraft maintenance programme are already provided in the AMC M.A.302. Therefore, is it necessary to duplicate this information in the AMC 20-20 Appendix 4? Could a reference to Part-M be a better solution?
Duplication should be avoided to prevent possible confusion, errors, or extensive judgment.

response

Noted.
Primary structure is defined in AMC 20-20. The Agency prefers to keep all the relevant information regarding the CPCP within AMC 20-20. The comprehensive CPCP development should be based on the TCH baseline CPCP. The operator CPCP would be accepted by the NAA.

comment

105 comment by: *KLM Engineering & Maintenance*

The proposed rule requires that the Repair Evaluation Guidelines (REG) and Repair Assessment Guidelines (RAG) must be approved by EASA.
The requirement is contrary to the harmonization agreements contained in EU-US and other bilateral agreements and associated technical implementation procedures concerning mutual acceptance of design data and approval of repairs.
To distinguish between FAA and EASA requirements it is suggested that it is made clear that the requirement is for EASA approved documents only (where EASA acts as the certifying authority), not for documents that are already approved by the FAA or other regulatory authorities that have a bilateral agreement with the EU (where EASA acts as the validating authority).

response

Not accepted.
See the response to comment 102.

comment	*256* comment by: *AIRBUS* Comment related to page 98-99 /203, paragraph 8 PROPOSED TEXT / COMMENT: It is proposed to revise this paragraph to harmonise with current way of working A corrosion prevention and control programme (CPCP) is a systematic approach to prevent and to control corrosion in the aircraft's primary structure RATIONALE / REASON / JUSTIFICATION: Even though Airbus would agree with the wording "primary" there is an harmonization issue as the FAA seems to limit the CPCP programme to PSE.
response	Not accepted. FAA does not seem to limit the CPCP to PSE. AC 91-56B refers to the use of MSG-3 and MSG-3 does not limit the CPCP to PSEs.

comment	*554* comment by: *Boeing* Page: 100 Paragraph: AMC 20-20 - Amdt 1 – para 8. The proposed text states: "As part of the ICA, the TCH should provide an inspection programme that includes the frequency and extent of inspections necessary to provide the continued airworthiness of the aircraft. Furthermore, the ICA should include the information needed to apply protective treatments to the structure after inspection. In order for the inspections to be effectively accomplished, the TCH should provide corrosion removal and cleaning procedures and reference allowable limits (e.g. SRM). The TCH should include all of these corrosion-related activities in a manual referred to as the Baseline Programme. This Baseline Programme manual is intended to form a basis for operators to derive a systematic and comprehensive CPCP for inclusion in the operator's maintenance programme. The TCH is responsible for monitoring the effectiveness of the Baseline Programme and, if necessary, to recommend changes based on operators reports of findings. In line with Part-M requirements, when the TCH publishes revisions to their Baseline Programme, these should be reviewed and the operator's programme adjusted as necessary in order to maintain corrosion to Level 1 or better." **REQUESTED CHANGE:** Add a sentence to end of the paragraph to state: **"As an alternative to establishing a stand-alone Baseline CPCP program, the TCH may integrate the CPCP tasks into the baseline maintenance program (e.g., Zonal and Structural maintenance programs)."** **JUSTIFICATION:** Airplanes that were certified with CPCP integrated into the baseline maintenance program should not require a redundant document. A redundant requirement is not necessary and creates additional burden without added safety benefit.
response	Partially accepted. AMC 20-20 text has been changed.

comment	*622* comment by: *S.A. Morshed, Emirates* **AMC 20-20 Para 8 (Page 100)** Add a sentence to end of the paragraph: "As an alternative to establishing a stand-alone Baseline CPCP program, the TCH may integrate the CPCP tasks into the baseline maintenance program (e.g. Zonal and Structural maintenance programs)." **Proposed Text:** As part of the ICA, the TCH should provide an inspection programme that includes the frequency and extent of inspections necessary to provide the continued airworthiness of the aircraft. ... Please refer to NPA for entire text... The TCH is responsible for monitoring the effectiveness of the Baseline Programme and, if necessary, to recommend changes based on operators reports of findings. In line with Part-M requirements, when the TCH publishes revisions to their Baseline Programme, these should be reviewed and the operator's programme adjusted as necessary in order to maintain corrosion to Level 1 or better. **Justification:** Aircraft that were certified with CPCP integrated into the baseline maintenance program should not require a redundant document. It would not improve safety and would potentially confuse operators.
response	Partially accepted. See the response to comment 554.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 9. DAMAGE TOLERANCE EVALUATION OF REPAIRS AND MODIFICATIONS, REPAIR EVALUATION GUIDELINES AND REPAIR ASSESSMENT PROGRAMMES p. 100-102

comment	*259* comment by: *AIRBUS* Comment related to page 101/203, paragraph 9 (end of page) PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read: The ~~primary vehicle~~ guideline for achieving this for repairs will be the REG supplied by the TCH and for modifications the data supplied by the DAH RATIONALE / REASON / JUSTIFICATION: For clarification
response	Partially accepted. Text changed to 'primary means'.

comment	*555* comment by: *Boeing* Page: 100 Paragraph: AMC 20-20 - Amdt 1 – para 9. <u>The proposed text states</u>:

"9. DAMAGE TOLERANCE EVALUATION OF REPAIRS AND MODIFICATIONS, REPAIR EVALUATION GUIDELINES AND REPAIR ASSESSMENT PROGRAMMES"

REQUESTED CHANGE:

It is unclear to whom the contents of Paragraph 9 are addressed --Operators or TCHs? Further, there appears to be no distinction between repairs and modifications.

Consider a rewrite of this material to direct the contents of the material to the correct addressees and to correctly differentiate between repairs and modifications. If this material is directed towards the DAH, then this entire paragraph might be better positioned in Appendix 3, Para 6., of this AMC.

JUSTIFICATION:

Changes are needed for clarity of intent.

response

Accepted.

Additional text is added to specify that paragraph 9 is addressing both DAH and operators.

comment *556* comment by: *Boeing*

Page: 101

Paragraph: AMC 20-20 - Amdt 1 – para 9. [1st paragraph on page]

The proposed text states:

"Repair Evaluation Guidelines (REG) are intended to assure the continued structural integrity of all relevant repaired and adjacent structure."

REQUESTED CHANGE:

Delete the phrase, *"and adjacent structure",* from this paragraph and form the 29 other places it appears in the NPA.

JUSTIFICATION:

The meaning of *"… and adjacent structure"* is unclear and sets the expectation for arbitrary requirements being imposed.

response

Not accepted.

Relevant adjacent structure is structure whose fatigue and damage tolerance behaviour and justification is altered by the repair. See responses to comments 293, 617, 623.

comment *557* comment by: *Boeing*

Page: 101

Paragraph: AMC 20-20 - Amdt 1 – para 9. [2nd paragraph on page]

The proposed text states:

"… Nonetheless, following further studies by the AAWG working groups it has been agreed that repairs to all structure susceptible to fatigue and whose failure could contribute to catastrophic failure will be considered. (Ref. AAWG Report: Recommendations concerning ARAC taskings FR Doc. 04-10816 Ref.: Aging Airplane safety final rule. 14 CFR 121.370a and 129.16.) "

REQUESTED CHANGE:
Delete this text.

JUSTIFICATION:
The report quoted was written under an FAA tasking to provide a means of compliance with a rule that the AAWG agreed was a means to establish DTI for all repairs.

response: Not accepted.

comment 623 — comment by: *S.A. Morshed, Emirates*

AMC 20-20 Para 9 (Page 101)
Delete "and adjacent structure" from here and the 29 other places it appears in the NPA
Proposed Text:
Repair Evaluation Guidelines (REG) are intended to assure the continued structural integrity of all relevant repaired and adjacent structure
Reason:
The meaning of this is unclear and sets the expectation for arbitrary requirements being imposed.

response: Partially accepted.
The term 'adjacent structure' has been clarified.
See the response to comment 617 and revised AMC 20-20 Chapter 9.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 10. LIMIT OF VALIDITY OF THE MAINTENANCE PROGRAMME AND EVALUATION FOR WIDESPREAD FATIGUE DAMAGE — (a) Initial WFD evaluation and LoV p. 103-105

comment 260 — comment by: *AIRBUS*

Comment related to page 103/203
PROPOSED TEXT / COMMENT:
It is proposed to modify the LOV definition in consistency with the FAA definition
RATIONALE / REASON / JUSTIFICATION:
For harmonisation and unique definition. See also comment 86

response: Accepted.
The LOV definition has been changed.

comment 332 — comment by: *Dassault Aviation*

10. LIMIT OF VALIDITY OF THE MAINTENANCE PROGRAMME AND EVALUATION FOR WIDESPREAD FATIGUE DAMAGE
· (a) Initial WFD evaluation and LoV
_ *"…of the engineering data that supports the structural maintenance programme is defined as being not more than the period of time, stated as a number of total*

accumulated flight cycles or flight hours or both,…" Same comment as above, the age of the A/C is also an important parameter. So DASSAULT-AVIATION proposal is: " *…of the engineering data that supports the structural maintenance programme is defined as being not more than the period of time, stated as a number of total accumulated flight cycles* ~~*or*~~ and *flight hours* ~~*or*~~ and ~~both~~ aeroplane maximal age,…"

_ *"To support establishment of the LoV, the design approval holder will demonstrate by test evidence, analysis and, if available, service experience and teardown inspection results of high-time aeroplanes,…".* Same comment as above, teardown can be replaced by the successful application of residual strength loads (cf. V.29, CS 26.300 (c) and AMC 25.571 Appendix 2 comments).

_ **"***The design process generally establishes a design service goal (DSG) in terms of flight cycles/hours for the airframe. It was generally expected … that occurs on an aircraft operated up to the DSG will occur in isolation… exceeded their DSG only some SSIPs have correctly addressed…*". DASSAULT-AVIATION suggest to replace DSG by LoV as it is the true limit of the A/C life.

_ **"***Part 26.300(d) requires TCHs of large transport aeroplanes of MTOM greater…*" MTOM is not defined but there is no doubt that it corresponds to MTOW. So why not use MTOW. MTOM is used also further in § (b).

_ **"***However, the principles described here are applicable to any aircraft that has structural features susceptible to WFD and/or for which the engineering data that supports the maintenance programme is limited."* This sentence seems to extend the applicability of the new rule and LoV determination to all A/C as susceptibility to WFD will have to be determined to judge if it may happen or not. This statement is not listed elsewhere. DASSAULT-AVIATION ask this sentence to be suppressed and to limit clearly the today application of new rule to A/C of MTOW greater than 75 000 lbs as stated before.

response

10. LIMIT OF VALIDITY OF THE MAINTENANCE PROGRAMME AND EVALUATION FOR WIDESPREAD FATIGUE DAMAGE

Not accepted. The LOV definition is now harmonised with the FAA.

_ *"To support establishment of the LoV, the design approval holder will demonstrate by test evidence, analysis and, if available, service experience and teardown inspection results of high-time aeroplanes,…".* Same comment as above, teardown can be replaced by the successful application of residual strength loads (cf. V.29, CS 26.300 (c) and AMC 25.571 Appendix 2 comments).

Not accepted. The residual load strength approach is by definition covered under test evidence.

_ **"***The design process generally establishes a design service goal (DSG) in terms of flight cycles/hours for the airframe. It was generally expected … that occurs on an aircraft operated up to the DSG will occur in isolation… exceeded their DSG only some SSIPs have correctly addressed…*". DASSAULT-AVIATION suggest to replace DSG by LoV as it is the true limit of the A/C life.

Not accepted. This reflects what was historically done.

_ *"Part 26.300(d) requires TCHs of large transport aeroplanes of MTOM greater…"* MTOM is not defined but there is no doubt that it corresponds to MTOW. So why not use MTOW. MTOM is used also further in § (b).
Not accepted. The mass is stated in lbs/kg, not the weight.

_ *"However, the principles described here are applicable to any aircraft that has structural features susceptible to WFD and/or for which the engineering data that supports the maintenance programme is limited."* This sentence seems to extend the applicability of the new rule and LoV determination to all A/C as susceptibility to WFD will have to be determined to judge if it may happen or not. This statement is not listed elsewhere. DASSAULT-AVIATION ask this sentence to be suppressed and to limit clearly the today application of new rule to A/C of MTOW greater than 75 000 lbs as stated before.
Not accepted. The guidelines of AMC 20-20 regarding the LOV could also refer to the future 25.571 amendment which will introduce the LOV concept for all CS-25 aircraft.

comment *558* comment by: *Boeing*

Page: 103
Paragraph: AMC 20-20 - Amdt 1 – para 10.(a)

The proposed text states:
"The Limit of Validity (LoV) is ... demonstrated that widespread fatigue damage is unlikely to occur in the aeroplane structure; and that the inspections and other maintenance actions and procedures resulting from this demonstration and the other elements of the fatigue and damage tolerance evaluation, are sufficient to prevent catastrophic failure of the aeroplane structure."
REQUESTED CHANGE:
"The Limit of Validity (LoV) is ... demonstrated that widespread fatigue damage is unlikely to occur in the aeroplane structure; and that the inspections and other maintenance actions and procedures resulting from this demonstration ~~**and other elements of the fatigue and damage tolerance evaluation are sufficient to prevent catastrophic failure of the aeroplane structure**~~. "

JUSTIFICATION:
The suggested deleted text is not definitive as to what constitutes other elements of fatigue and damage tolerance and does not harmonise with the FAA definition. The proposed definition establishes a redundant requirement; DT of non-WFD structure is already required, or will be required by SSIDs; 26.300(a); 14 CFR §25.571 at Amendment 25-45, or CS 25.571 at Change 7; and to repairs via 14 CFR §26.43 or CS 26.320.

response Accepted.
The LOV definition is harmonised with the FAA's definition.

comment *559* comment by: *Boeing*

Page: 104
Paragraph: AMC 20-20 - Amdt 1 – para 10.(a) [last paragraph on page]

The proposed text states:
"The proposed LoV and results of the WFD ... . It is expected that the TCH will work closely with operators in the development of these programmes to assure that the expertise and resources are available when implemented."
REQUESTED CHANGE:
"The proposed LoV and results of the WFD ... . It is expected that the TCH will work closely with operators in the development of these programmes ~~**to assure that the expertise and resources are available when implemented**~~."

JUSTIFICATION:
The TCHs can work with operators to assist them in implementing the operational aspect of the service actions necessary to preclude WFD. The TCHs are unable to assure that appropriate expertise and resources exist at the operator; this would be solely the responsibility of the operators.

response

Accepted.
The text has been changed.

comment

560 comment by: *Boeing*

Page: 105
Paragraph: AMC 20-20 - Amdt 1 – para 10.(a) [1st paragraph on page]

The proposed text states:
"Note: The LoV applies to aeroplanes, not to individual parts. Should there be any concerns about the service life of a removable component containing FCS or PSEs, an ALS limitation or SMP can be mandated on that specific component, which would then need to be tracked."
REQUESTED CHANGE:
"Note: The LoV applies to aeroplanes, not to individual parts. ~~Should there be any concerns about the service life of a removable component containing FCS or PSEs, an ALS limitation or SMP can be mandated on that specific component, which would then need to be tracked.~~ **Removable components that contained FCS will have a damage tolerance evaluation with any supplemental inspection requirements established in a SSID or ALS. All inspection requirements, both baseline and supplemental must be performed based on the age and utilization of the removable component which may be different than the airframe on which it is installed."**

JUSTIFICATION:
Removable components can be salvaged from aeroplanes that have reached the LOV. These removable components can continue in service, provided that there are damage tolerance-based inspections established that will be performed based on the age and utilization of the removed component. The baseline maintenance, combined with a

supplemental program, provides capability to detect cracking in these components, provided that the program contains instructions to account for the age and inspection history of the component.

response

Partially accepted.
The text proposed by the commentator is not addressing the potential issue of WFD of a removable component.
The AMC text is amended (an ALS limitationSMP or life limitation arising from the WFD evaluation).

comment

624 comment by: *S.A. Morshed, Emirates*

AMC 20-20 Amdt 1 Para 10 (Page 104)
Delete words "to assure that the expertise and resources are available"
Proposed Text:
The proposed LoV and results of the WFD ... . It is expected that the TCH will work closely with operators in the development of these programmes to assure that the expertise and resources are available when implemented.
Justification:
TCH can work with operators to assist them in implementing the operational aspect of the service actions necessary to preclude WFD. The TCH are unable to assure that appropriate expertise and resources exist at the operator. This would solely be the responsibility of the operators.

response

Accepted.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 10. LIMIT OF VALIDITY OF THE MAINTENANCE PROGRAMME AND EVALUATION FOR WIDESPREAD FATIGUE DAMAGE — (b) Revision of WFD evaluation and LoV p. 105

comment

263 comment by: *AIRBUS*

Comment related to page 105/203, paragraph (b)
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
In order to operate an individual aircraft up to an extended LoV, a WFD evaluation should also be performed for all applicable modified or repaired structure to determine if any new structure or any structure affected by the change is susceptible to WFD. This evaluation should be conducted by the DAH for the changed structure in conjunction with the operator prior to the aircraft reaching its existing LoV. ~~For practical purposes it is suggested that the SRM is also reviewed and updated to facilitate its continued applicability up to the extended LoV. If this is not done all SRM-based repairs will require individual approval.~~
RATIONALE / REASON / JUSTIFICATION:
For harmonisation with FAA proposal and single process

response | Partially accepted.
The text has been clarified to align it with the intent of 26.350.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — 12. IMPLEMENTATION p. 106-107

comment | *11* comment by: *DDUMORTIER*

Page 107 : CPCP in the table
The structure affected by CPCP is "All primary structure": could this be clarified as well in CS25 ? This is often questioned in certification activities.

response | Not accepted. The CPCP is not directly linked to CS-25 as a requirement, therefore no need to make a statement regarding 'all primary structure'.

comment | *76* comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 106/203, section B., AMC 20-20, paragraph 12.
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
"[...]. In compliance with Part-M, operators ~~must~~assess new and/or modified applicable maintenance data published by the DAH to amend their current ~~structural~~aircraft maintenance programmes~~ to comply with and to account for new and/or modified applicable maintenance data promulgated by the DAH~~. New and/or revised maintenance data related to the type~~promulgated~~that are published by the DAH become~~s~~ effective~~applicable when promulgated~~at the time of release to subscribers~~and when related to the type~~ if they are not ~~specifically~~ intended to be approved by the Agency~~ in the ageing aircraft rules~~. In cases where the DAH documentation is required to be approved by the Agency (ALS or some parts of the documentation required by Part 26), the maintenance data only become~~s~~ formally effective~~applicable~~ when the Agency has approved it. (Note: there are also ADs ~~applicable~~ to make mandatory the compliance with certain SSIDs, CPCPs, mod programmes and RAGs)
Appropriate implementation times for operators should be included in the ~~TCH~~DAH documentation and should be considered or applied~~followed~~ by the operator when the compliance is recommended or mandatory, respectively."
It is proposed to clarify concurrently the point M.A.302 to read:
"(d) The aircraft maintenance programme must establish for the aircraft, the engine(s), the propeller(s), and their components, as appropriate, compliance with:
(i) The instructions issued by the competent authority;
(ii) The instructions ~~for continuing airworthiness~~ and airworthiness limitations that have been specified as mandatory in compliance with Regulation (EU) No 748/2012 and its Annex (Part-21) or the Regulation (EU) No …/… and its Annex (Part-26) in:
~~– issued by the holders of the type certificate, restricted type certificate, supplemental type certificate, major repair design approval, ETSO authorisation or any other relevant approval issued under Regulation (EC) No 1702/2003 and its Annex (Part-21), and~~

~~– included in the certification specifications referred to in point 21A.90B or 21A.431B of the Annex (Part-21) to Regulation (EC) No 1702/2003, if applicable;~~
– the approval of the type design or restricted type design,
– the approval of a change to type design or supplemental type design that has been embodied,
– the approval of a major repair design that has been embodied, or
– an airworthiness directive applicable to the type design or restricted type design.
They must be identified as mandatory;
(iii) recommended instructions for continued airworthiness developed and published in compliance with Regulation (EU) No 748/2012 and its Annex (Part-21) or the Regulation (EU) No …/… and its Annex (Part-26), that are selected in accordance with criteria:
– proposed by the owner or the continuing airworthiness management organisation, and
– approved in accordance point M.A.302(b);
(~~ii~~iv) additional or alternative instructions proposed by the owner or the continuing airworthiness management organisation once approved in accordance with point M.A.302(b) or (c) as appropriate, except for the instructions and/or accomplishment plan~~intervals~~ of critical maintenance ~~safety related~~ tasks and procedures~~referred in paragraph (e)~~, which may be changed ~~escalated~~, subject to sufficient reviews carried out in accordance with paragraph (g) and only ~~when subject~~after direct approval in accordance with point M.A.302(b)."

RATIONALE / REASON / JUSTIFICATION:

For clarification.

Further, a possible ambiguity needs to be eliminated. The note at the end of the paragraph 12 of the AMC 20-20 addresses the existence of some AD related to the matter. This note is placed just after the discussion on the DAH documentation requiring an approval from the Agency. "Approved by the Agency" does not mean "mandatory" (and vice versa). It is reminded that ADs make the compliance mandatory whatever the approval needs for the referenced documentation.

The same ambiguity exists in the current version of the point M.A.302: there is no explicit description of the different approaches for the management of mandatory and recommended instructions for continued airworthiness. The reader has to remember the provision of the point M.A.301-7, which indicates that the aircraft continuing airworthiness and the serviceability of both operational and emergency equipment shall be ensured by the establishment of an embodiment policy for non-mandatory modifications and/or inspections.

Therefore, some amendments are proposed to explicitly state how a person or organisation responsible for the management of the aircraft continuing airworthiness manages the mandatory and recommended instructions for continued airworthiness developed and published in compliance with the Part-21 or the Part-26.

response

Noted.

It is not envisioned to make changes to M.A.302 within the current rulemaking task related to the ageing aircraft rules and, therefore, the Agency prefers to keep the AMC 20-20 text in paragraph 12 also as is.

Note that the Agency changed paragraph 12 to replace TCH by DAH as suggested by the

commentator.

comment

268 comment by: *AIRBUS*

Comment related to page 107/203, table
PROPOSED TEXT / COMMENT:
It is proposed to revise the table for consistency with part 26.
RATIONALE / REASON / JUSTIFICATION:
Some examples of non consistency:

WFD is due at 1 DSG in table of page 107.
Part 26-300 gives 3 different limits (i), (ii) and (iii).

The targets of part 26.370 also are not consistent with the table of page 107.

response

Not accepted.
Please note that the table on page 107 adresses guidelines for those aircraft types which are not affected by specific paragraphs within Part-26.

comment

333 comment by: *Dassault Aviation*

12. IMPLEMENTATION
· RAG is to be defined. It seems to be Repair Assessment Guidelines as the title of Appendix 3 Annex 2 §4.1 title.

response

Noted.
The definition has been provided. Repair assessment guidelines (RAG) provides a process to establish DT inspections for repairs on the fuselage boundary structure.

comment

358 comment by: *CAA-NL*

Paragraph 12 – Page 106 of 203: Implementation.
Commen:
“RAGs” is an undefined acronym. (2x)
Proposal:
Change “RAGs” into “RAPs”.
Explanation:
Incorrect acronym used.

response

Noted.
RAG has been defined. Since RAG is defined, there is no need to change RAP into RAG.

comment

693 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
AMC 20-20 states that an assessment of repairs to fatigue-critical structure (FCS) in

	accordance with the REGs and RAPs published by the TCHs is to be performed no later than at 3/4 of the DSG. For Boeing models B757-236SF and B757-23APF, the models operated by EATL, this would be the equivalent of 37500 total flight cycles. The REG as published by The Boeing Company states that the assessment of repairs is to be performed before reaching a threshold of 50000 total flight cycles or a proportionally lower threshold if 60000 total flight hours have been exceeded. A grace period of one year after publishing is mentioned for implementation in the operator maintenance programme, and a threshold of 4 years after approval of that maintenance programme for complaince on aircraft which have exceeded the threshold of 3/4 DSG. SUGGESTED RESOLUTION: EATL propose that EASA provides clearification on how REGs and RAPs are handled if previously approved by the FAA. Considering the late publishing of the NPA and the economic and organisational impact on the industry and specifically on European operators, we strongly recommend that EASA makes the maximum efforts to harmonise the DT and WFD rules with the existing FAA rules in all relevant aspects.
response	Noted. However AMC 20-20 provides general guidelines. The final implementation timing is to be agreed by EASA approval of the REG under 26.320. In addition, The Agency recognises that certain aircraft are close to the threshold of ¾ DSG (see Appendix 3, paragraph 3.13.1). Please note also that 26.370 has been harmonised further with the FAA by not referring explicitly to the REG. the Agency may also produce a certification memorandum to clarify the acceptability of the FAA data.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — APPENDIX 1: GUIDELINES FOR THE DEVELOPMENT OF A SUPPLEMENTARY STRUCTURAL INSPECTION PROGRAMME	p. 108-114

comment	*65* comment by: *AIRBUS* page 110/203, section B., AMC 20-20, Appendix 1, paragraph 2.1. see comment 64
Response	Not accepted. See the response to comment 64.

Comment	*77* comment by: *AIRBUS* **COMMENT IS RELATED TO:** page 108/203, section B., AMC 20-20, Appendix 1, paragraph 1.2. **PROPOSED TEXT / COMMENT:** This paragraph states: “Early fatigue requirements, such as ‘fail safe’ regulations, did not provide for timely inspection of an aircraft’s critical structure to ensure that damaged or failed components

could be dependably identified and then repaired or replaced before hazardous conditions developed."
Should reference to "dangerous" conditions be more appropriate? Same comment applies to the paragraph 5.1.3. of the explanatory note (page 19/203) and the paragraph 9. of the AMC 20-20 (page 100/203).
RATIONALE / REASON / JUSTIFICATION:
The terms 'minor', 'major', 'hazardous' and 'catastrophic' have a meaning in the CS-25 framework. Consistency should be maintained.
Requirements (e.g. CS 25.571 or Part-26 point 26.300) refer to the term 'catastrophic'.

Response

Noted.
The commenter proposal of 'dangereous' could also be somewhat vague. Therefore, the term harzardous is considered sufficient in this context which is mainly to explain the background.

Comment

78 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 109/203, section B., AMC 20-20, Appendix 1, paragraph 2.
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
"[...] Large transport aeroplanes that were certified according to FAR 25.571 Amendment 25-45/54 or JAR 25 Change 7 or later are damage-tolerant. The maintenance instructions and airworthiness limitations arising from the fatigue and damage tolerance evaluations that have been specified as mandatory are included in the ALS (and/or ADs). Other maintenance instructions~~fatigue requirements~~ are usually part of the MRB Report, as required by ATA MSG-3. However, for pre-ATA MSG-3 Rev 2 aeroplanes there are no requirements for regular MRB Report review and for post-ATA MSG-3 Rev 2 aeroplanes there is only a requirement for regular MRB Report review in order to assess if the CPCP is effective. Concerning ageing aircraft activities, it is important to regularly review for effectiveness all instructions resulting from the fatigue and damage tolerance analysis~~the part of the MRB Report containing the structural inspections resulting from the fatigue and damage tolerance analysis for effectiveness~~."
RATIONALE / REASON / JUSTIFICATION:
The proposed modifications are for clarification and ensure consistency with the Comment No.76.
A nuance has been made for the location of other maintenance instructions: they may also be given in service bulletins, for example.

Response

Partially accepted.
The text has been revised.

Comment

79 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 110/203, section B., AMC 20-20, Appendix 1, paragraph 2.2.
PROPOSED TEXT / COMMENT:

It is proposed to modify this paragraph to read:
“Aeroplanes certified to FAR 25.571 Amendment 25-45, JAR 25.571 Change 7 and CS-25 or later amendments are damage-tolerant. The maintenance instructions (inspections, modifications, replacements, etc) ~~airworthiness limitations~~ including the ~~inspections and~~ associated procedures established in accordance with FAR/JAR/CS 25.571 shall be included in the ICA, whether they are mandatory (i.e. included in the ALS of ICA) or recommended, ref. FAR/JAR/CS 25.1529. Further guidance for the actual contents is incorporated in FAR/JAR/CS-25 Appendix H. [...]”
RATIONALE / REASON / JUSTIFICATION:
The proposed modifications clarify the existence of both mandatory and recommended instructions and ensure consistency with the Comment No.76.

Response

Noted.
The Agency agrees with the commentator but prefers to leave the text as it is since it refers to an appendix in FAR/JAR/CS-25 for further guidance for the actual contents.

Comment

80 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 114/203, section B., AMC 20-20, Appendix 1, paragraph 3.5.
PROPOSED TEXT / COMMENT:
The AMC 20-20, Appendix 1, paragraph 3.5. indicates that PSE and FCS are critical parts/components.
RATIONALE / REASON / JUSTIFICATION:
In accordance with this AMC, PSE and FCS are explicitly categorised as critical parts/components.
The only indication on this matter is "buried" here in this AMC.

Response

Noted.

Comment

202 comment by: *British Airways*

Reference:
AMC 20-20 Appendix 1, 3.2, Para 3 Page 112
Comment summary:
The text differs from that provided in FAA AC91-56B and introduces additional issues such as scribe marks. This guidance should be harmonised with the FAA AC to ensure TCH’s present a consistent approach and that there is no ambiguity as to whether they have to reassess existing documents.
Regarding scribe marks, the original airworthiness concern related to the fuselage skin. The statement provided in AMC 20-20 is not explicit or defined and could be read to apply to any structure not just the fuselage skin.
It is widely acknowledged that scribe marks came about due to maintenance errors and is not inherent in the aircraft design. As a result of the investigation into why the scribe marks occurred, Airworthiness Directives addressed affected models and maintenance practices were revised.
Inspections were one-time only inspections to determine if scribe marks were present. All

affected models have been addressed by mandatory inspections and industry maintenance practices and procedures have been revised.
There is no need to consider scribe marks going forward. If EASA has a concern about maintenance practices it should not be addressed in this NPA.
EASA stated at the workshop (Cologne April 2013) that revisions to existing SSID/P would need to comply. This would introduce further inspections on models that have had the mandated SB inspections accomplished and already comply.
Suggested resolution:
Harmonise with guidance material provided in FAA AC91-56B.

Response

Not accepted.
The guidelines to develop the SSID is not only addressing damage that is inherent to the design (such as fatigue damage directly related to the material properties and the size/geometry of the structure) but also other types of damage such as accidental damage. In addition the example of scribe marks was already in the existing AMC 20-20. Means of compliance for exsting programmes are specified in CS 26.300.

Comment

267 comment by: *LHT DO*

Inconsistency on ref pages. FAR 25.571 Amdmt. 45 introduced damage tolerance. The CS is not mentioned .
Please amend page 109, 110 with: " ….certified to FAR 25.571 Amndt. 25-45, JAR 25 ch.7 or CS 25.571 Amdmt. 00 …".

Response

Not accepted.
The reason is to indicate at which point in time aircraft had damage tolerance in their certification basis (which was before the Agency was established).

Comment

334 comment by: *Dassault Aviation*

Appendix 1
· §§2 and 2.2:
_ CAW not defined in the acronym list of AMC 20-20 but in the one of AMC 25.571.
_ "*Whether the aircraft was originally certified to be damage-tolerant or not, the TCH should review operational usage on a regular basis, say every five years, and ensure that it remains in accordance with the assumptions made at certification or when the SSIP was first developed.*" Same remark as previously concerning the fact it is not possible do to so for Business Jets: cf. §§26.300 (f)(1), AMC 25.571 9.3.2. and AMC 20-20 5. (a).
_ "*The DAH should therefore check this information periodically against current service experience. Any unexpected defect occurring should be assessed as part of the continuing assessment of structural integrity to determine a need for revision to this information.*" Idem as previous remark.
· §3.1:
_ AC 25.571-1C to be replaced by 1D.
· §3.4 (b):
_ The number of flight demonstrated by the fleet is a factored number. Taking usual scatter factor it demonstrates at a best half the reached life. So service experience returns

	lessons only if damages have appeared. Furthermore no evidence of residual strength is given by a flying A/C.
Response	Partially accepted. CAW has been defined. 26.300(f) and and associated guidance material have been updated to focus on the process, thus allowing for more flexibility in compliance demonstration. Text amended to refer to AC 25.571-1C or a later revision. The intent of the AMC is to use the probabilistic approach to define the threshold inspection interval. The commentator refers to elements used under the deterministic approach.

Comment	*394* comment by: *FAA* NPA proposes to insert “where an LOV is not provided as a result of needing to meet a specific requirement for an LOV, the applicant must consider all likely fatigue scenarios up to an operational life that is either conservatively set based on experience or rational assumptions of usage or otherwise limited in the ALS.” This appears to be more of a requirement than guidance, and the “operational life” as described appears to have the same effect as an LOV. Also, the statement that operational life is required to be either “conservatively set… or otherwise limited…” is unclear. Is “otherwise limited” intended to be other than conservative? Suggested Resolution: Clarify the functional difference between “LOV” and this “operational life.” Revise the text to state that the applicant should set an operational life of the SSID based on fleet experience or test data. Define/specify what is meant by “rational assumptions.”
Response	Partially accepted. The text has been revised to improve clarity. It is a requirement to address the operational life as this is the terminology used in CS 25.571. The Agency sees the LOV as an acceptable means for establishing the operational life to be evaluated when the SSID is developed as operation is not possible beyond the LOV.

Comment	*435* comment by: *Thomson Airways* In production, the OEM’s provide operators with repairs accomplished prior to delivery. As the OEM’s own the engineering the approval documentation provided for these repairs does not usually quote the EASA or FAR regulations. Will this NPA provide any guidance for operators to get the DTA and WFD analysis for each production repair within a specific time or could repairs accomplished by the OEM during production be excluded from this rule?

response	Noted. In production repairs are not considered as repairs under Subpart M of Part-21 but rather as production concessions approved prior to issuing the CoA. Therefore, the TCH has the obligation to provide related ICA, based on the certification basis, to the operator at time of delivery. If this did not include a DT evaluation the REG could also be used to pick up any reinforcing repairs for which no DTI was provided.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — APPENDIX 2: GUIDELINES FOR THE DEVELOPMENT OF A PROGRAMME TO PRECLUDE THE OCCURRENCE OF WFD p. 115-140

Comment	*81* comment by: *AIRBUS* **COMMENT IS RELATED TO:** page 137/203, section B., AMC 20-20, Appendix 2, paragraph 6. **PROPOSED TEXT / COMMENT:** This paragraph states that "Documentation will be provided by the TCH and STC holder as appropriate to specify the required reporting format and time frame". This statement seems to be in contradiction with the provisions of the point M.A.202 of Part-M. **RATIONALE / REASON / JUSTIFICATION:** The point M.A.202 requires that reports be made as soon as practicable, but in any case within 72 hours of the person or organisation identifying the condition to which the report relates (the NPA 2013-01(B) adds to this point "unless exceptional circumstances prevent this"). So, how do the reporting time frames specified by TCH/STC holders, if different, fit this provision? Harmonisation of reporting forms should be contemplated to prevent an additional burden on organisations. Sometimes an occurrence may need to be reported to the relevant design organisation and different competent authorities: e.g. to the authority for the oversight of the continuing airworthiness of individual aircraft and the issue of airworthiness review certificates, to the authority for the oversight of a maintenance organisation, and/or to the authority for the approval of maintenance programmes. Harmonisation would reduce the duplication of efforts to report the same occurrence on different forms. Only the distribution list would need to be adjusted to the case. Could the Technical Occurrence Report form ref. FO.IORS.00044-004 (after adaptation, if necessary), on the EASA website http://www.easa.europa.eu/iors/, be the acceptable template to report occurrence whatever the Member State authority or design organisation?
Response	Partially accepted. The text has been added for clarification. However, the 'time frame' refers to subsequent actions which could be needed to collect more detailed information to support the developing of the corrective actions.

Comment	*128* comment by: *KLM Engineering & Maintenance* The text states operators are responsible for WFD evaluations of existing modifications

	where an extension of an LOV is required. The LOV or extended LOV is established following a WFD evaluation. The section provides examples of modifications that require WFD evaluation. Example (i) requires multiple adjacent modifications to be evaluated. It is a Part M requirement for operators to control the modification status of the aeroplane. Adjacency is not qualified/defined and could be interpreted to include almost any modification. These could also include TCH SB's. This is not consistent with CS25, AMC25.571, and Appendix 4 that provides examples for new design. The lists are different. For new design (i) is not included yet for existing design (i) is included? FAA AC25.571-1D Appendix 4 does not include (i). The un-harmonised situation will cause further problems when transferring aeroplanes. General comment: There is lack of clarity in the NPA concerning the definition of the term adjacent structure, which is not included in either FAA requirements or guidance. The term is not clearly defined, but is used 30 times throughout the document. Suggest to delete (i) "multiple adjacent modifications". If deletion of (i) is not acceptable to EASA, then please provide a clarification of the term "multiple adjacent" (for example the minimum distance between modifications or the number of adjacent modifications). Harmonise with the FAA.
Response	Partially accepted. Adjacent modification has been explained. See the responses to comments 293, 556, 459, 617, 623.

Comment	*129* comment by: *KLM Engineering & Maintenance* The text states operators are responsible for WFD evaluations of existing modifications where an extension of an LOV is required. At the bottom of the examples, EASA has provided 3 further potential areas that operators must consider. (a) and (c) are not covered by Appendix 2 section 4.3. If included, (a) and (c) would significantly increase the number of modifications an operator would need reviewed. The WFD concern is addressed by Appendix 2, paragraph (h), any modification that affects several frame bays, addresses the concern and is consistent with the guidance provided in Appendix 2, section 4.3. Designs requiring Full Scale Fatigue Testing for WFD should be a subset of the designs having a WFD risk. FAA AC25.571.1D Appendix 4 does not contain (a) or (c) in their guidance of areas that must be considered. Harmonise with the examples in AMC 25.571, Appendix 4 and FAA AC25.571.1D Appendix 4.
Response	Partially accepted. See the response to comment 207.

Comment	*203* comment by: *British Airways* **References:** AMC 20-20 Appendix 2, paragraph 7.1, (c) Page 139 **Comment summary:** Sixth paragraph down starts 'For existing isolated fuselage skin repairs…' yet the section title is multiple adjacent repairs. Suggest the commentary on the isolated skin repair has it's own section as it is unlikely a reader will be able to find this guidance information. **Suggested resolution:** Create new sub-section containing the guidance information related to isolated repairs detailed in paragraph 6.
Response	Partialy accepted. The text has been amended to remove the potential confusion regarding the title of the paragraph.

Comment	*204* comment by: *British Airways* **References:** AMC 20-20 Amdt 1, Appendix 2, Paragraph 7, Examples (i), Page 140 **Comment summary:** The text states operators are responsible for WFD evaluations of existing modifications where an extension of an LOV is required. The LOV or extended LOV is established following a WFD evaluation. The section provides examples of modifications that require WFD evaluation. Example (i) requires multiple adjacent modifications to be evaluated. It is a Part M requirement for operators to control the modification status of the aeroplane. Adjacency is not qualified/defined and could be interpreted to include almost any modification. These could also include TCH SB's. This is not consistent with CS25, AMC25.571, and Appendix 4 that provides examples for new design. The lists are different. For new design (i) is not included yet for existing design (i) is included? FAA AC25.571-1D Appendix 4 does not include (i). The un-harmonised situation will cause further problems when transferring aeroplanes. Example (i) should be deleted. **Suggested resolution:** Harmonise with FAA guidance provided in AC25.571-1D Appendix 4. Delete, '(i) multiple adjacent modifications.'
Response	Not accepted. The text was, however, modified to explain adjacent modifications. Additionally 26.350 has been harmonised with the FAA. See the response to comment 128.

Comment	*206* comment by: *British Airways* **References:**

AMC-20 20 Appendix 2, paragraph 7 example (h). Page 140

Comment summary:

The examples of types of modifications and repairs that present concerns (h) are not consistent with the previous text (see page 49, paragraph 4, first sentence). It is also not consistent with the guidance figure A2-13 or FAA AC25.571-1D Appendix 4.

FAA AC25.571.1D Appendix 4 does not contain (a) of other potential areas that must be considered. Also (a) requirements appear to be covered by (c).

For consistency of approach used by both FAA & EASA STCH's in line with EU-US bilateral agreements. The text should be the same as FAA AC25.571.1D

Whilst it is appreciated that the FAA has no requirement for WFD evaluation of existing modifications/changes, the FAA does provide guidance for future changes. It is unclear why the examples would be different between future changes and existing changes.

Suggested resolution:

Replace wording with that contained in FAA AC25.571.1D.

response

Partially accepted:

First part of the comment is not accepted. The wording '2 or more frame bays' (meaning it covers at least 3 frames) is consistent with the drawing in A2-13. Therefore, there is no need to change it.

Second part of the comment is accepted.

comment

207 comment by: *British Airways*

References:

AMC 20-20 Amdt 1, Appendix 2, Paragraph 7 Page 140

Comment summary:

The text states operators are responsible for WFD evaluations <u>of existing modifications</u> where an extension of an LOV is required.

At the bottom of the examples, AMC20-20 proposes 3 further potential areas that operators <u>must</u> consider.

(a) and (c) are not covered by Appendix 2 section 4.3. If included, (a) and (c) would significantly increase the number of modifications an operator would need reviewed. The WFD concern is addressed by Appendix 2, paragraph (h), any modification that affects several frame bays, addresses the concern and is consistent with the guidance provided in Appendix 2, section 4.3.

Those designs requiring Full Scale Fatigue Testing for WFD should represent a subset of the designs having a WFD risk.

FAA AC25.571.1D Appendix 4 does not contain (a) or (c) in their guidance of areas that must be considered.

For consistency of approach used by STCH's on both sides of the Atlantic (and in-line with EU-US bilateral agreements), the examples should consistent in AMC 25.571, Appendix 4 and FAA AC25.571.1D Appendix 4.

In a previous comment to the EASA draft rule (submission 26) recommendations were made to more accurately align with Figure A2-13 eg Replace existing text with the following: (a) long lengths of repaired or replaces skin splice;

(c) Any repair that affects more than two frame bays…
EASA stated they would change the text but it this does not appear to have occurred.
Further consideration of this and review of the FAA guidance now supports deleting 'other potential areas' paragraphs (a) & (c).

Suggested resolution:

Harmonise with FAA guidance provided in AC25.571-1D Appendix 4.
Delete, other potential areas paragraphs (a) & (c).

response

Partially accepted.
The text (a) has been deleted.
The text (b) and (c) have been re-numbered. The list is now aligned with the FAA material (AC 25.571 -1D Appendix 4).

comment

271 comment by: *AIRBUS*

Comment related to page 127/203, paragraph 4.3.6. Potential for Discrete Source Damage (DSD
PROPOSED TEXT / COMMENT:
It is proposed to delete this paragraph
RATIONALE / REASON / JUSTIFICATION:
The SMP is the adequate mean to cope with this issue.
This paragraph has also been removed by the FAA

response

Partially accepted.
See the response to comments 335, 561.

comment

272 comment by: *AIRBUS*

Comment related to page 130/203, paragraph (d) Establishing maintenance actions
PROPOSED TEXT / COMMENT:
It is proposed to revise this paragraph for clarification, especially:
In order to implement a viable inspection programme for MED, static stability must be maintained at all times and there should be no concurrent MED with MSD in a given structural area
RATIONALE / REASON / JUSTIFICATION:

Static stability is anyway a generic requirement, what is the purpose of the underlined sentence?

Rational, objective not understood

response

Not accepted.
The text highlights the scenario where the MED and MSD happen concurrently. The defined inspection should cover this scenario.

comment	*273* comment by: *AIRBUS* Comment related to page 130/203, paragraph 4.3.8. Inspection Start Point (ISP) PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read: Alternatively, an inspection start point may be established by applying appropriate factors (e.g. conservatively dividing the full-scale test result by a factor of 3) to the number representing WFD (average behaviour). RATIONALE / REASON / JUSTIFICATION: For clarification
response	Accepted.

comment	*274* comment by: *AIRBUS* Comment related to page 133/203, paragraph 4.4.1. Period of WFD evaluation validity PROPOSED TEXT / COMMENT: It is proposed to revise this value of 25% in An evaluation through at least an additional 25 % of the DSG would provide a realistic forecast, with reasonable planning time for necessary maintenance action. RATIONALE / REASON / JUSTIFICATION: This value should be dependant upon each programme
response	Partially accepted.

comment	*277* comment by: *AIRBUS* Comment related to page 132/203, paragraph **4.3.910. Structural Modification Point (SMP) (a)** PROPOSED TEXT / COMMENT: It is proposed to modify this paragraph to read: (a) Extension of SMP. In some cases, the SMP may be extended without changing the required reliability of the structure, i.e. projection to that of a two life time full-scale fatigue test. These cases may generally be described under the umbrella of additional fatigue test evidence and include either or a combination of any or all of the following: The tasks required to extend an SMP include the following: RATIONALE / REASON / JUSTIFICATION: This sentence has bo be reinserted in order allow SMP extension with different use of the A/C.
response	Partially accepted. The text has been changed.

comment	*293* comment by: *AIR FRANCE* AMC 20-20 Amdt 1 Appendix 2 Paragraph 7 : Define the term adjacent structure.
response	Partially accepted.

	The term ‘adjacent modifications’ has been clarified. See the responses to comments 128, 293, 556, 459, 617, 623.

comment	*295* comment by: *AIR FRANCE* AMC 20-20 Amdt 1 Appendix 2 paragraph 7 page 140 : The text states taht operators are responsible for WFD evaluations of existing modifications where an extension of an LOV is required. At the bottom of the examples, EASA has provided 3 further potential areas that operators must consider. (a) and (c) are not covered by Appendix 2 section 4.3. If included, (a) and (c) would significantly increase the number of modifications an operator would need reviewed. The WFD concern is addressed by Appendix 2, paragraph (h), any modification that affects several frame bays, addresses the concern and is consistent with the guidance provided in Appendix 2, section 4.3. Designs requiring Full Scale Fatigue Testing for WFD should be a subset of the designs having a WFD risk. FAA AC25.571.1D Appendix 4 does not contain (a) or (c) in their guidance of areas that must be considered. Harmonise this paragaph with the examples in AMC 25.571, Appendix 4 and FAA AC25.571.1D Appendix 4.
response	Partially accepted. See the response to comment 207.

comment	*324* comment by: *Gulfstream Aerospace Corporation* **Paragraph 4.3.8 Inspection Start Point** The added (highlighted) discussion appears to repeat the same points as the original version. The discussion of ‘Inspection Interval’ appears to be redundant with paragraph 4.3.10. • Gulfstream recommends EASA remove the superseded portion of the original document and delete the discussion of inspection intervals.
response	Accepted. See revised text.

comment	*325* comment by: *Gulfstream Aerospace Corporation* **Paragraph 4.3.9 Structural Modification Point (SMP)** The added (highlighted) discussion appears to repeat the same points as the original version. Gulfstream recommends EASA remove the superseded portions of the original document.
response	Partially accepted.

comment	*335* comment by: *Dassault Aviation*

Appendix 2

· §2:

_ This gives a third definition list. Can all definitions (and acronyms) be gathered in one place only?

_ "***Structural Modification Point (SMP)*** *is a point reduced from the WFD average behaviour (i.e. lower bound), so that operation up to that point provides equivalent protection to that of a two-lifetime fatigue test.*" Isn't it "deduced" instead of "reduced"? The in-bracket text "(i.e. lower bound)" seems in contradiction with the definition of WFD $_{(average\ behavior)}$ as it is not clear if it applies to SMP or not. Furthermore the factor two taken here should be replaced by three if the inspection of the zone susceptible to WFD is not reliable. So DASSAULT-AVIATION propose the following modified sentence":

"***Structural Modification Point (SMP)*** *is a point* ~~reduced~~deduced *from the WFD average behaviour* ~~(i.e. lower bound)~~*, so that operation up to that point provides equivalent protection to that of a two-lifetime fatigue test* or three if the inspection of the zone is not reliable*.*"

_ *"**WFD (average behaviour)** is the point in time when 50 % of the fleet is expected to reach WFD for a particular detail.*" Using the term WFD could be confusing as it designates also the phenomenon itself and not the phenomenon appearance instant of time. DASSAULT-AVIATION suggest to replace it by : *"***WFDT (average behaviour)** *is the point in time when 50 % of the fleet is expected to reach WFD for a particular detail.*"

· §3:

_ "*The design process generally establishes a design service goal (DSG) in terms of flight cycles/hours for the airframe. It is expected that any cracking that occurs on an aircraft operated up to the DSG will occur in isolation…*" As already underlined, DSG should be replaced by LoV and aeroplane age is also an important parameter. DASSAULT-AVIATION propose to change the sentence as: "*The design process generally establishes a* ~~*design service goal (DSG)*~~ limit of validity (LoV) *in terms of flight cycles/hours*/ aeroplane maximal age *for the airframe. It is expected that any cracking that occurs on an aircraft operated up to the* ~~*(DSG)*~~ LoV *will occur in isolation*…"

· §4.3.2 :

_ (a): " *'WFD (average behaviour),' which is the point when 50 per cent of the aeroplanes in a fleet would have experienced WFD*" As the definition 'WFD $_{(average\ behavior)}$' has already been given, it is redundant to add "which is…experienced WFD".

_ (b): "*a complete review of the service history of the susceptible areas, to identify any occurrences of fatigue cracking and the continuing validity of loads and mission profiles…*" As already indicated above, this approach is not practically feasible for Business Jets: cf. §§26.300 (f)(1), AMC 25.571 9.3.2., AMC 20-20 5. (a). and 10. Appendix 1.

· §4.3.6 :

_ "*A structure susceptible to MSD/MED may also be affected by DSD due to an*

uncontained failure of high-energy rotating machinery (i.e. turbine engines)." DSD is a Ultimate condition. It is currently admitted to not combine it to fatigue damage or other damage or environmental effect (as moisture for composite). Moreover Ultimate loads have not to be applied at the end of the LoV. DASSAULT-AVIATION ask firmly to suppress this paragraph. See also previous comment of AMC 25.571 C. Appendix I concerning crash loads.

· §4.3.7:
_ (d):"… analytically-derived time stated in flight cycles or flight hours …" and "…should result in the same reliability as a successful two-lifetime fatigue test." Same comments as previously: Aeroplane maximal age to be added in complement of flight cycles and flight hours as well as three-life time in case of unreliable inspection.

· §4.3.8:
_ Fig. 6-1 inexistent. It should the Fig. A2-19.

· §4.3.9:
_ Repetitions to be eliminated: "*TCH/DAH finds that the flight cycles and/or flight hours SMP for a particular structural detail have been exceeded by one or more aircraft in the fleet, the TCH/DAH should expeditiously evaluate selected high-time aircraft in the fleet to determine their structural condition. From this evaluation, the TCH/DAH should notify the competent authorities and propose appropriate service actions.*" "*A DAH may find that the SMP for a particular structural area has been exceeded by one or more aeroplanes in the fleet. In that case, the DAH should expedite the evaluation of those high-time aeroplanes to determine their structural condition and notify the airworthiness authorities and propose appropriate maintenance actions specific to those aeroplanes."*
_ Flight hours / Flight cycles to be completed with aeroplane maximal age as already mentioned.

· Fig. A2-20:
_ DASSAULT-AVIATION ask for successful Residual Strength Test to be added as an alternative to Teardown as already evoked before.

_ *"(f) the LoV of the maintenance programme in terms of flight cycles or flight hours or both as appropriate to accommodate variations in usage.*" As already stated aeroplane maximal age to be added. So DASSAULT-AVIATION propose the following modification: *"(f) the LoV of the maintenance programme in terms of flight cycles* ~~or~~ and *flight hours* ~~or both~~ and aeroplane maximal age *as appropriate to accommodate variations in usage.*"

· §7.:
_ The examples (a) to (i) have already been given in AMC 25.571 Appendix 4. Is it necessary to repeat them? Why not refer to AMC 25.571 to avoid the repetition and any differences?

· Annex 1:
_ The text is quite identical than the one of AMC 25.571 Appendix 2. Is-it necessary to

double it? Why not refer to AMC 25.571?

_ (b) Factor 3: As already stated previously the level of loads applied at the end of fatigue test or Residual Strength Test has to be listed as an alternative to teardown.

· Annex 2:
_ Fig 7-2 to be replaced by Fig. 2-2.

response

Partially accepted.

Appendix 2

· §2:
_ This gives a third definition list. Can all definitions (and acronyms) be gathered in one place only?
Not accepted.
The Agency prefers for each part of the NPA (Part-26,AMC 25.571, AMC 20-20) to have a separate definition list as these documents, when published, could be used in isolation.

… "***Structural Modification Point (SMP)*** *is a point* ~~reduced~~deduced *from the WFD average behaviour* ~~(i.e. lower bound)~~*, so that operation up to that point provides equivalent protection to that of a two-lifetime fatigue test* or three if the inspection of the zone is not reliable*.*"
Partially accepted. The definition has been harmonised with the FAA.

_ *"**WFD (average behaviour)** is the point in time when 50 % of the fleet is expected to reach WFD for a particular detail."* Using the term WFD could be confusing as it designates also the phenomenon itself and not the phenomenon appearance instant of time. DASSAULT-AVIATION suggest to replace it by : *"***WFDT (average behaviour)** *is the point in time when 50 % of the fleet is expected to reach WFD for a particular detail.*"
Not accepted. The fact that 'average behaviour' is added makes already a clear distinction with the term WFD.

· §3:
… DASSAULT-AVIATION propose to change the sentence as: "*The design process generally establishes a* ~~*design service goal (DSG)*~~ limit of validity (LoV) *in terms of flight cycles/hours/* aeroplane maximal age *for the airframe. It is expected that any cracking that occurs on an aircraft operated up to the* ~~*(DSG)*~~ LoV *will occur in isolation*…"
See the response to comment 332.

· §4.3.2 :
… As the definition 'WFD $_{(average\ behavior)}$' has already been given, it is redundant to add "which is…experienced WFD".
Noted. It is redundant. However it is easier for the reader to have the definition included here in the context.

_ (b): "*a complete review of the service history of the susceptible areas, to identify any occurrences of fatigue cracking and the continuing validity of loads and mission profiles…*"

As already indicated above, this approach is not practically feasible for Business Jets: cf. §§26.300 (f)(1), AMC 25.571 9.3.2., AMC 20-20 5. (a). and 10. Appendix 1.
Not accepted. In this context, even a business jets TCH should be able to asses to some extent whether the mission profiles and loads have been changed based on the feedback (e.g feedback from occurrences reported). In addition the text is harmonised with FAA AC 120-104.

· §4.3.6 :
_ "*A structure susceptible to MSD/MED may also be affected by DSD due to an uncontained failure of high-energy rotating machinery (i.e. turbine engines).*" DSD is a Ultimate condition. It is currently admitted to not combine it to fatigue damage or other damage or environmental effect (as moisture for composite). Moreover Ultimate loads have not to be applied at the end of the LoV. DASSAULT-AVIATION ask firmly to suppress this paragraph. See also previous comment of AMC 25.571 C. Appendix I concerning crash loads.
Partially accepted. The text has been revised. While the paragraph was intended to be informative it is agreed that it may lead to confusion regarding expectations for compliance with CS 25.903(d) which currently does not demand that pre-existing fatigue damage is considered.

· §4.3.7:
_ (d):"… analytically-derived time stated in flight cycles or flight hours …" and "…should result in the same reliability as a successful two-lifetime fatigue test." Same comments as previously: Aeroplane maximal age to be added in complement of flight cycles and flight hours as well as three-life time in case of unreliable inspection.
Not accepted. Regarding age: WFD is typically linked to fatigue cracking which is expressed in cycles and hours. No need for 3 life time testing, as in case of unreliable inspection the SMP should be set at the same as the ISP (which is the WFD average behaviour divided by 3)

· §4.3.8:
_ Fig. 6-1 inexistent. It should the Fig. A2-19.
Partially accepted. It should have been Figure 2.1. The ttext has been changed.

· §4.3.9:
_ Repetitions to be eliminated: "*TCH/DAH finds that the flight cycles and/or flight hours SMP for a particular structural detail have been exceeded by one or more aircraft in the fleet, the TCH/DAH should expeditiously evaluate selected high-time aircraft in the fleet to determine their structural condition. From this evaluation, the TCH/DAH should notify the competent authorities and propose appropriate service actions.*" "*A DAH may find that the SMP for a particular structural area has been exceeded by one or more aeroplanes in the fleet. In that case, the DAH should expedite the evaluation of those high-time aeroplanes*

to determine their structural condition and notify the airworthiness authorities and propose appropriate maintenance actions specific to those aeroplanes."
_ Flight hours / Flight cycles to be completed with aeroplane maximal age as already mentioned.
Not accepted. See responses to previous comments

· Fig. A2-20:
_ DASSAULT-AVIATION ask for successful Residual Strength Test to be added as an alternative to Teardown as already evoked before.
Noted . The graph is not new to AMC 20-20. However, under Appendix 2 of AMC 25.571 of the NPA under paragraph (b)(4))(i) it is explained that residual strength load test is also a way to demonstrate freedom of WFD.

_ *"(f) the LoV of the maintenance programme in terms of flight cycles or flight hours or both as appropriate to accommodate variations in usage."* As already stated aeroplane maximal age to be added. So DASSAULT-AVIATION propose the following modification: *"(f) the LoV of the maintenance programme in terms of flight cycles* ~~*or*~~ and *flight hours* ~~*or both*~~ and aeroplane maximal age *as appropriate to accommodate variations in usage."*
Not accepted. See responses to previous comments.

· §7.:
_ The examples (a) to (i) have already been given in AMC 25.571 Appendix 4. Is it necessary to repeat them? Why not refer to AMC 25.571 to avoid the repetition and any differences?
Noted. For ease of use and it is proposed to keep it in both places.

Annex 1:
_ The text is quite identical than the one of AMC 25.571 Appendix 2. Is-it necessary to double it? Why not refer to AMC 25.571?
Noted. For ease of use it is proposed to keep it in both places.

_ (b) Factor 3: As already stated previously the level of loads applied at the end of fatigue test or Residual Strength Test has to be listed as an alternative to teardown.
Accepted.

· Annex 2:
_ Fig 7-2 to be replaced by Fig. 2-2.
Accepted.

comment *396* comment by: *FAA*

The definition of structural modification point is different from the definitions given in the NPA.
Suggested Resolution:
Change the definition of structural modification point to be consistent within the document.

response	Accepted.

comment	*397* comment by: *FAA* The definition of teardown inspections is different from the definitions given in the NPA. Suggested Resolution: Change the definition to be consistent within the document (change this definition to reflect an earlier definition).
response	Accepted.

comment	*561* comment by: *Boeing* Page: 127 Paragraph: AMC 20-20 - Amdt 1 – para 4.3.6. <u>The proposed text states</u>: **"4.3.6. Potential for Discrete Source Damage (DSD)** - A structure susceptible to MSD/MED may also be affected by DSD due to an uncontained failure of high-energy rotating machinery (i.e. turbine engines). The approach described in this guidance material should ensure the MSD sizes and densities, that normally would be expected to exist at the structural modification point, would not significantly change the risk of catastrophic failure due to DSD." **<u>REQUESTED CHANGE</u>:** Delete this paragraph. **<u>JUSTIFICATION</u>:** Combining MSD/MED cracking at the modification point with a discreet source damage is unnecessary. It is highly unlikely that inspection programs established at ISP will not detect cracking such that damage would reach the density expected at SMP. The methodology assures that, without an inspection program, the probability of cracking reducing the structure to residual strength is remote. It is therefore extremely remote that at this point in time that a crack missed by the inspections has reached critical crack length and the airplane suffers an uncontained failure of high energy rotating machinery.
response	Partially accepted. The text has been changed. See also the response to comment 335.

comment	*562* comment by: *Boeing* Page: 136 Paragraph: AMC 20-20 - Amdt 1 – para 5.(b) <u>The proposed text states</u>: "(b) summary of the operational statistics of the fleet in terms of hours and flights;" **<u>REQUESTED CHANGE</u>:**

Delete this paragraph.

JUSTIFICATION:
TCHs cannot divulge operators' proprietary data to a third party.

response

Noted.
However, the intent is not to disclose any proprietory information, rather to provide an overall fleet summary.

comment

563 comment by: *Boeing*

Page: 138
Paragraph: AMC 20-20 - Amdt 1 – para 7.1.

The proposed text states:
“The risk of WFD in existing repairs and modifications (changes) with DTI implemented following a DTE according to their certification basis, or Part 26.320, or Part 26.330, or FAA Part 26 requirements, is considered remote. Nonetheless, if the LoV is subsequently extended, assumptions made by the TCH supporting this extension may be invalidated by existing and new repairs.”
REQUESTED CHANGE:
“The risk of WFD in existing repairs and modifications changes) with DTI implemented following a DTE according to their certification basis, or Part 26.320, or Part 26.330, or FAA Part 26 requirements, is considered remote. ~~Nonetheless, if the LoV is subsequently extended, assumptions made by the TCH supporting this extension may be invalidated by existing and new repairs."~~

JUSTIFICATION:
The proposed rule will require a more stringent evaluation to raise the LOV than to establish the LOV initially. The different level of scrutiny is not justified based on whether it is an initial determination or a later extension. This approach will have significant financial impact by restricting the ability to raise the LOV of a fleet of airplanes. This creates additional burden without added safety benefit.
-- Extended LOV will require all changes (repairs, alterations and modification) assessment for extension.
-- Extended LOV will be an airplane-unique number and not feasible to provide as a fleet value.

response

Partially accepted. See the response to comment 460.

comment

660 comment by: *AEA*

The text states operators are responsible for WFD evaluations of existing modifications where an extension of an LOV is required.
The LOV or extended LOV is established following a WFD evaluation. The section provides examples of modifications that require WFD evaluation.
Example (i) requires multiple adjacent modifications to be evaluated.
It is a Part M requirement for operators to control the modification status of the aeroplane.
Adjacency is not qualified/defined and could be interpreted to include almost any modification. These could also include TCH SB's.
This is not consistent with CS25, AMC25.571, and Appendix 4 that provides examples for new design. The lists are different.
For new design (i) is not included yet for existing design (i) is included?
FAA AC25.571-1D Appendix 4 does not include (i).
The un-harmonised situation will cause further problems when transferring aeroplanes.
Suggest (i) is deleted.

The text states operators are responsible for WFD evaluations of existing modifications where an extension of an LOV is required.
At the bottom of the examples, EASA has provided 3 further potential areas that operators must consider.
(a) and (c) are not covered by Appendix 2 section 4.3. If included, (a) and (c) would significantly increase the number of modifications an operator would need reviewed. The WFD concern is addressed by Appendix 2, paragraph (h), any modification that affects several frame bays, addresses the concern and is consistent with the guidance provided in Appendix 2, section 4.3.
Surely those designs requiring Full Scale Fatigue Testing for WFD are a subset of the designs having a WFD risk?
FAA AC25.571.1D Appendix 4 does not contain (a) or (c) in their guidance of areas that must be considered.
For consistency of approach used by STCH's on both sides of the Atlantic (and in-line with EU-US bilateral agreements), the examples should consistent in AMC 25.571, Appendix 4 and FAA AC25.571.1D Appendix 4.

response

Noted.
For first part see the response to comment 128.
For the second part see the response to comment 207.

comment *671* comment by: *AIRBUS*

Comment related to page 125/203, paragraph 4.3.1. Identification of structure potentially susceptible to WFD
PROPOSED TEXT / COMMENT:
It is proposed to modify this paragraph to read:
Unless already fully addressed in the existing fatigue and damage tolerance evaluation the

TCH should identify each part of the aircraft's structure that is potentially susceptible to WFD for further evaluation. A justification should be given that supports selection ~~or rejection~~ of each area of the aircraft structure.
RATIONALE / REASON / JUSTIFICATION:
It is proposed to remove wording "or rejection" as this may drive the need to justify rejection of any single part of the airframe.

response

Partially accepted.
It is not intended to justify the rejections for any part of the airframe. The text has been amended.

comment

673 comment by: *AIRBUS*

Comment related to page 127/203, paragraph 4.3.4. **Final cracking scenario**
PROPOSED TEXT / COMMENT:
It is proposed to delete the following text.
One such approach is to define the final cracking scenario as a subcritical condition (e.g. first crack at link-up ~~at limit load~~).
RATIONALE / REASON / JUSTIFICATION:
Proposal to remove underlined text. If residual strength assessment at limit load is performed, there is no interest in defining such a subcritical scenario.

response

Accepted.

comment

674 comment by: *AIRBUS*

Comment related to page 130/203, paragraph 4.3.8. Inspection Start Point (ISP)
PROPOSED TEXT / COMMENT:
It is proposed to delete the following text.
Inspection start point. If an inspection is determined to be effective, you will need to establish when those inspections should start. This point is illustrated in Figure ~~6-1~~ A2-17..
RATIONALE / REASON / JUSTIFICATION:
"Figure 6-1" should be replaced by "Figure A2-17"

response

Partially accepted.
Figure 2-1 of Annex 2 of this Appendix has replaced Figure 6-1.

comment

676 comment by: *AIRBUS*

Comment related to page 135/203, Figure A2- 20: Use of fatigue test and teardown information to determine WFD average
PROPOSED TEXT / COMMENT:
It is proposed to delete the following text.
2 CRITICAL CRACK LENGTH:
First link-up of adjacent cracks ~~at limit load (locally)~~ or an adequate level of large damage capability.
RATIONALE / REASON / JUSTIFICATION:

If residual strength assessment at limit load is performed, there is no interest in defining such a subcritical scenario.

response

Not accepted.
The methodology selected must take into account the initial cracking scenario. Simetrical and equal crack lengths in a MSD scenario subject to a uniform stress field would result in first link-up occurring at every hole, so should be limited to limit load.

comment

694 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
The text states operators are responsible for WFD evaluations of existing modifications where an extension of an LOV is required.
The LOV or extended LOV is established following a WFD evaluation. The section provides examples of modifications that require WFD evaluation.
Example (i) requires multiple adjacent modifications to be evaluated.
It is a Part M requirement for operators to control the modification status of the aeroplane. Adjacency is not qualified/defined and could be interpreted to include almost any modification. These could also include TCH SB's. This is not consistent with CS25, AMC25.571, and Appendix 4 that provides examples for new design. The lists are different.
For new design (i) is not included yet for existing design (i) is included?
FAA AC25.571-1D Appendix 4 does not include (i).
The un-harmonised situation will cause further problems when transferring aeroplanes. It can be assumed that a cost vs. benefit analysis (if performed) would show that the increase of level of safety would be negligible.
SUGGESTED RESOLUTION:
EATL would suggest that the subject paragraph (i) is deleted, alternatively the term "adjacent" must be clearly defined and quantified to allow compliance.

response

Partially accepted.
See the response to comment 128.

comment

695 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
The text states operators are responsible for WFD evaluations of existing modifications where an extension of an LOV is required.
At the bottom of the examples, EASA has provided 3 further potential areas that operators must consider.
(a) and (c) are not covered by Appendix 2 section 4.3. If included, (a) and (c) would significantly increase the number of modifications an operator would need reviewed. The WFD concern is addressed by Appendix 2, paragraph (h), any modification that affects several frame bays, addresses the concern and is consistent with the guidance provided in Appendix 2, section 4.3.
Surely those designs requiring Full Scale Fatigue Testing for WFD are a subset of the designs having a WFD risk?

FAA AC25.571.1D Appendix 4 does not contain (a) or (c) in their guidance of areas that must be considered.
SUGGESTED RESOLUTION:
For consistency of approach used by STCH's on both sides of the Atlantic (and in-line with EU-US bilateral agreements), the examples should consistent in AMC 25.571, Appendix 4 and FAA AC25.571.1D Appendix 4.

response | Partially accepted. See the response to comment 207.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — ANNEX 1: FULL-SCALE FATIGUE TEST EVIDENCE p. 141-147

comment *208* comment by: *British Airways*

References:
AMC-20 20 Appendix 2, Annex 1, (d), (5) Page 146
Comment summary:
Make it clear that AMC 20-20 Appendix 2, Annex 1 (d) (5) is only applicable to aeroplanes certified post CS25.571 change X.
Suggested resolution:
Enhance text to state that aeroplane certified pre CS25.571 change X are not required to comply with Annex 1.

response | Partially accepted.
See amended text.

comment *280* comment by: *AIRBUS*

Comment related to page 141/203, annex 1
PROPOSED TEXT / COMMENT:
This annex is a copy/paste of Appendix 2 to AMC 25.571 will slight differences in wording.
RATIONALE / REASON / JUSTIFICATION:
For harmonisation It is proposed to remove this Annex and keep Appendix 2 to AMC 25.571 as the single repository for this guidance.

response | Not accepted.
For the ease of use and for the fact that the guidance applies also retroactively. The Agency prefers to keep the Annex within AMC 20-20.

comment *326* comment by: *Gulfstream Aerospace Corporation*

AMC 20-20 Amdt 1- Continuing Structural Integrity Programme – Appendix 2, Annex 1
It is not clear why this data is in both AMC 25.571 and AMC 20-20. As written, the overview would apply to new aircraft designs as it references CS 25.571. Guidance provided in AMC 20-20 should cover the use of previous test data to support evaluations of existing designs.

- Gulfstream recommends EASA remove Annex 1 and reference AMC 25.571 for details on full-scale fatigue testing.

response

Not accepted.
Full-scale fatigue testing guidance (as mentioned in AMC 20-20) may also be useful to help DAHs to comply with 26.300.

comment

398 comment by: *FAA*

The addition of Annex 1 and Annex 2 makes the AMC difficult to follow and the information is repetitive to that found in AMC 25.571.
Also, there is another Annex 1 and Annex 2, but to different appendices. This adds to the confusion in determining what an acceptable method of compliance is.
Suggested Resolution:
Revise the document to clarify how information from AMC 25.571 or other parts of AMC 20-20 may be used for developing full-scale fatigue test evidence or addressing repairs and alterations.

response

Partially accepted.
The Agency has made some improvements to AMC 20-20. However, the document organisation in terms of using Annexes linked with the Appendices has not been changed.
Annex 1 on 'Full-scale fatigue testing guidance' (as placed in AMC 20-20) may also be useful to help DAHs to comply with 26.300, therefore, the text, similar to AMC 25.571, will be kept.

comment

564 comment by: *Boeing*

Page: 145
Paragraph: AMC 20-20 - Amdt 1 – para (d)(1)

The proposed text states:
"...Ultimately, the evidence needs to be sufficient to conclude with confidence that, within the design service goal of the airframe, WFD will not occur. Factors 1 through 4 should be considered in determining the sufficiency of the evidence."

and

"A test duration of a minimum of twice the design service goal for the aeroplane model would normally be necessary if the loading spectrum is realistic, the design and construction for the test article principal structure is the same as for the certified aeroplane, and post-test teardown is exhaustive...."
REQUESTED CHANGE:
Change the term *"design service goal"* to **"proposed LOV"** in the two places highlighted.

JUSTIFICATION:
Change is needed to be consistent with the proposed regulation.

response	Partially accepted. The term LOV has been used.

comment	*565* comment by: *Boeing* Page: 146 Paragraph: AMC 20-20 - Amdt 1 – para (d)(4)(ii) The proposed text states: "... A short design service goal for the modification could simplify the demonstration of freedom from WFD for the STC applicant ..." **REQUESTED CHANGE:** Change the term "*design service goal*" to "**Limit of Validity**." **JUSTIFICATION:** Change is needed to be consistent with the proposed regulation.
response	Not accepted. The DSG refers to the expected life of the modification and not to the aircraft LOV.

comment	*566* comment by: *Boeing* Page: 147 Paragraph: AMC 20-20 - Amdt 1 – para (e) The proposed text states: "--..gross weight (e.g. increases)..." **REQUESTED CHANGE:** "-- **significant** gross weight ..." **JUSTIFICATION:** Many gross weight changes are fairly small in magnitude (e.g., <2%) and result in insignificant change in fatigue loading when compared to the scatter in fatigue performance.
response	Not accepted. Regardless of the magnitude of the weight it is expected that the TCH considers the impact on the LOV.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — ANNEX 2: EXAMPLE OF HOW TO ESTABLISH AN LOV	p. 148-150

comment	*687* comment by: *AIRBUS* Comment related to page 150/203, annex 2 PROPOSED TEXT / COMMENT: On top of page 150 (Step 4, bullet LOV 3), there is a mistake: "Operators would be

	required to perform maintenance actions in ~~five~~ four out of the six WFD-susceptible areas.” RATIONALE / REASON / JUSTIFICATION: Replace five by four as in AC 120-104.
response	Accepted.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — APPENDIX 3: GUIDELINES FOR ESTABLISHING INSTRUCTIONS FOR CONTINUED AIRWORTHINESS OF STRUCTURAL REPAIRS AND MODIFICATIONS p. 151-168

comment	*21* comment by: *NEOS* Para 3.12 includes blend-outs in the list. FAA AASR is applicable to reinforceing repairs only, this will requires additional efforts and complication in getting the approval from eurpoan operators operating non-EU TCHs a/c.
response	Partially accepted. See the response to comment 617. The EASA text simply provides a case of an a-typical situation and does not require additional activity for compliance compared to FAA.

comment	*23* comment by: *NEOS* Comments to para (e) and (f): In the FAA system is the authority requiring the STC holder to provide compliance with AASR and not the operator and on the FAA site is available the list of STC holder compliant with AASR, this is providing more power in the request of compliance and a single source point for evidence of compliance helping operator in getting compliance with rule. The operator is rerquested to act in liue of STC holder only when it no more exists. http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgSTC.nsf/MainFrame?OpenFrameSet It is also not clear for non - EU *STC Holder product approved before 28 September 2003 and therefore not having EASA approval which rules apply in case of these product are approved by an authority where* a bilateral agreement exist having already in place an AASR (e.g FAA).
response	Noted. As per 26.330 the STCH has the obligation to provide DTI to the operator. Major changes approved prior to the Agency are also subject to Part 26.

comment	*82* comment by: *AIRBUS* **COMMENT IS RELATED TO:** page 164/203, section B., AMC 20-20, Appendix 3, paragraph 6.1. **PROPOSED TEXT / COMMENT:**

It is proposed to modify the paragraph 6.1. to read:

"**6.1. Contents of the CAME and of the aircraft maintenance programme**

(a) The ~~operator~~Continuing Airworthiness Management Organisation (CAMO) should include the following in ~~their maintenance programme~~its Continuing Airworthiness Management Exposition (CAME):

(1) A process to ensure that all new repairs and modifications to be embodied that affect FCBS will have:

(i) DT data ~~and~~;

(ii) DTI or other procedures implemented, for those that have been specified as mandatory in the approval of a repair design/change to type design/supplemental type design;

(iii) DTI or other procedures evaluated for incorporation, for those that have been specified as recommended in the approval of a repair design/change to type design/supplemental type design.

(2) A process to ensure that all existing repairs and modifications to FCBS that have been embodied:

(i) are evaluated for damage tolerance ~~and~~;

(ii) have DTI or other procedures implemented, for those that have been specified as mandatory in the approval of a repair design/change to type design/supplemental type design;

(iii) DTI or other procedures evaluated for incorporation, for those that have been specified as recommended in the approval of a repair design/change to type design/supplemental type design.

This process includes:

(i) a review of the ~~operator~~CAMO processes to determine if DT data for repairs and modifications affecting FCBS have been developed and incorporated/evaluated for incorporation into the operator's aircraft maintenance programme for the operational life of the aircraft. If an operator is able to demonstrate that these processes ensure that DT data are developed for all repairs and modifications affecting FCBS, then no further action is required for existing repairs and modifications;

(ii) a process to identify or survey existing repairs (using the survey parameters from Annex 3 to this Appendix) and modifications that affect FCBS and determine DTI for those repairs and modifications. This should include an implementation schedule that provides timing for incorporation/evaluation for incorporation of DT data into the operator's aircraft maintenance programme, within the time frame given in the applicable TCH or STC holder's approved documentation.

(b) Figure A3-2 below outlines one possible means an operator can use to develop an implementation plan for aircraft in their fleet."

RATIONALE / REASON / JUSTIFICATION:

The purpose of the CAME is to set forth the procedures, means and methods of the organisation (i.e. the CAMO). Compliance with its contents will assure compliance with Part-M requirements. The point M.A.301 indicates the aircraft continuing airworthiness and the serviceability of both operational and emergency equipment are ensured, amongst other, by the accomplishment of **all** maintenance (both scheduled and unscheduled), in accordance with the point M.A.302 approved Aircraft Maintenance Programme (AMP).

	Processes are included in the CAME, while the maintenance to perform is described in the AMP.
response	Noted. The main purpose of Chapter 6, Appendix 3 is to provide guidance on how to comply with 26.370, therefore, the proposed changes (related primary with Part-M) are not necessary to support the intent of this Chapter.

comment	*83* comment by: *AIRBUS* **COMMENT IS RELATED TO:** page 168/203, section B., AMC 20-20, Appendix 3, paragraph 7. **PROPOSED TEXT / COMMENT:** It is proposed to delete this paragraph and to revise point M.B.301 of Part-M (and related AMC), if necessary. **RATIONALE / REASON / JUSTIFICATION:** Duplication of these requirements is unnecessary and contributes to make regulations confusing or more complex than necessary. Example of confusion created: does this paragraph 7. imply that the indirect approval procedure cannot be applied to approve the amendments to the aircraft maintenance programme in accordance with point M.A.302(c)? What would justify this restriction?
response	Not accepted. However, a reference to M.B.301 has been added.

comment	*106* comment by: *KLM Engineering & Maintenance* The proposed rule requires that the Repair Evaluation Guidelines (REG) and Repair Assessment Guidelines (RAG) must be approved by EASA. The requirement is contrary to the harmonization agreements contained in EU-US and other bilateral agreements and associated technical implementation procedures concerning mutual acceptance of design data and approval of repairs. To distinguish between FAA and EASA requirements it is suggested that it is made clear that the requirement is for EASA approved documents only (where EASA acts as the certifying authority), not for documents that are already approved by the FAA or other regulatory authorities that have a bilateral agreement with the EU (where EASA acts as the validating authority).
response	Not accepted. See the response to comment 102.

comment	*130* comment by: *KLM Engineering & Maintenance* There are differences in airplane survey requirements in that they do not specifically exclude non-reinforcing repairs from consideration as the FAA AC does. AMC 20-20, 3.13.2 pg. 158:

This typically excludes maintenance actions such as blend-outs, plug rivets, trim-outs, etc., unless there are known specific risks associated with these actions in specific locations.
FAA AC 120-93 Section 218:

This typically excludes maintenance actions such as blend-outs, plug rivets, trim-outs, etc.
Harmonise the EASA Repair Evaluation Guidelines (REG) definition with the FAA AASR requirement, or explain the benefits and impact of the deviation.

response

Noted.
Non-reinforcing repairs are not specifically excluded by either FAA requirement or by EASA proposal. Conversely the Agency is not requiring non-reinforcing repairs to be systematically considered.

comment

211 comment by: *British Airways*

References:
AMC-20 20 Appendix 3, paragraph 2 – 'Definitions' Page 151
Comment summary:
The definition of Fatigue Critical Baseline Structure (FCBS) is not consistent with the FAA definition provided in FAA title 14 CFR 26.41 & the stated purpose of AC120-93.
The EASA definition does not contain the qualification statement regarding if repaired or altered (modified).
The EASA definition is:
Fatigue-Critical Baseline Structure (FCBS) is the baseline structure of the aircraft that is classified as fatigue-critical structure.
Title 14 CFR 26.41 definitions are:
Baseline structure means structure that is designed under the original type certificate or amended type certificate for that airplane model.
Fatigue critical structure means airplane structure that is susceptible to fatigue cracking that could contribute to a catastrophic failure, as determined in accordance with § 25.571 of this chapter. Fatigue critical structure includes structure, which, if repaired or altered, could be susceptible to fatigue cracking and contribute to a catastrophic failure. Such structure may be part of the baseline structure or part of an alteration.
FAA AC120-93 paragraph 100 states:
This AC provides guidance for TC and STC Holders to address new and existing repairs and alterations that affect fatigue critical structure (FCS) of the original, as delivered, baseline airplane structural configuration, that is, fatigue critical baseline structure (FCBS). It also provides guidance for repairs that affect FCS of an alteration, referred to in this AC as fatigue critical alteration structure (FCAS).
Suggested resolution:
Enhance the definition to align with the FAA. Add a qualification statement regarding repairs and alterations such as, 'which, if repaired or altered, could be susceptible to fatigue cracking and contribute to a catastrophic failure.'

response

Accepted.
FCBS definition is the same as the FAA's definition. FCS definition has been added as

requested.

comment *213* comment by: *British Airways*

References:
AMC20-20 Appendix 3, Paragraph 3.13.1 (c) Implementation schedule Page 157
Comment summary:
As stated in comment to 26.360 (b)(3), this allows return to service for 12 months after initial repair approval (stage 1). Damage tolerance based thresholds and maintenance actions are required at this point (stage 2).
Certain, FAA TCH's are not required to provide the DT (stage 2) until 18 months.
Whilst it is appreciated this is a DAH requirement, it will have a significant impact on operators.
Currently operators work to a TCH Service Letter that states that EASA accept the FAA process and timescales. If the proposed rule is adopted, EU-operators of certain US certified aeroplanes will be out of compliance with the 26.370 (b) (1) and AMC 20-20 Appendix 3, paragraph 3.13.1 (c) [existing repairs] and AMC 20-20-Appendix 3 Annex 1 (b) [future repairs] which requires 12 months.
As 26.370 (b) (1) is a rule, it will be hard to vary in the future unless this issue is addressed.
If EASA accept the FAA accepted process, it should be addressed in the AMC material.
If EASA do not accept the FAA process, grace periods should be established for those repairs already in the existing process.
Currently, there is no guidance available to operators in the situation where the FAA TCH does not alter the existing process. It is unclear how operators would cope with this on future repairs.
Suggested resolution:
If EASA accept the FAA process and timescales adopted by some US TCH's, it should be addressed in the AMC material.
If EASA do not accept the FAA process, grace periods should be established for those repairs already in the existing process.
Also, EASA should provide guidance to operators on acceptable means of compliance in the event of the FAA accepted process not changing to accommodate the proposed EASA rule.
EASA has previously indicated the 12 months can be varied with Agency approval. It remains unclear to EU operators whether the 18 month stage 2 process does have Agency approval or not.
EASA previously agreed to change the text of this (comment 30 in previous draft rule submission) but the change is not evident.

response Noted.
However, 26.370(b)(1) has been removed, the LOV extension requirement is harmonised with the FAA.
See the response to comment 436.

comment *219* comment by: *British Airways*

References:

AMC 20-20 Amdt 1, Appendix 3, Paragraph 3.7.4 and 3.12 Page 156

Comment summary:

3.7.4 requires approved repair data.

3.12 requires a Damage Tolerance Evaluation (DTE) to be performed on future repairs including blend-outs, trim-outs etc {non-reinforcing repairs}.

Certain TCH's provide a Repair Design Record (RDR) for these conditions. The RDR is not approved – it is accepted data. The FAA sanctions the process.

Unless the wording is changed to recognise this process, the RDR may not be acceptable for EU operators for both future and existing repairs.

Suggested resolution:

AMC 20-20 should provide guidance as to whether a repair covered by a RDR is constitutes approved data or not - this could be done by referring to the EU-US bilateral.

response

Noted.

See the response to comments 696, 661.

comment

278 comment by: *FedEx Aging Aircraft Structures*

Airbus currently uses a 6 month limit which too frequently has FedEx rerouting aircraft because the deadline is rapidly approaching without receiving an answer. FedEx would like a limit for the TCH and an allowance after the TCH has provided the data to allow the operator to incorporate into our maintenance program. The 24 month program that FAA has afforded Boeing with 18 month response and 6 month for the operator to respond has worked better than the 12 month for independent DER's.

response

Noted.

However, the 6-month limit is set by the TCH for a temporary repair and not directly by the regulation.

comment

294 comment by: *AIR FRANCE*

3.13.2 : There are differences in airplane survey requirements in that they do not specifically exclude non-reinforcing repairs from consideration as the FAA AC does. AMC 20-20, 3.13.2 pg. 158:

This typically excludes maintenance actions such as blend-outs, plug rivets, trim-outs, etc., unless there are known specific risks associated with these actions in specific locations. FAA AC 120-93 Section 218:

This typically excludes maintenance actions such as blend-outs, plug rivets, trim-outs, etc. Harmonise the EASA Repair Evaluation Guidelines (REG) definition with the FAA AASR requirement, or explain the benefits and impact of the deviation.

response

Noted.

See the response to comments 130, 672. Non-reinforcing repairs are not specifically excluded by either FAA requirement or by EASA proposal. Conversely the Agency is not

requiring non-reinforcing repairs to be systematically considered.

comment

336 comment by: *Dassault Aviation*

Appendix 3

· §2.:

_ Definitions are redundant. Can't they be gathered in one place only?

· §3.13.1 (a) and (b):

_ DSG to be replaced by LoV.

_ What is the validation of the delay of seven years? Why not less or more?

· §4.6:

_ DSG to be replaced by LoV.

· §6.3:

_ "*Operators should accomplish the first inspection of an change according to the DTI schedule. If the age of the modification is unknown, use the aircraft age in total flight cycles or total flight hours, as applicable.*" Aeroplane maximal age to be added as already stated.

_ "*In any case the inspection should be accomplished no later than the time limit equivalent to a C-check interval, from incorporation of the DTI into the operator's approved maintenance programme.*" From where comes this request? It should depend upon the DDP.

response

Noted.

Appendix 3

· §2.:

_ Definitions are redundant. Can't they be gathered in one place only?

Noted. See the response to comment 328.

· §3.13.1 (a) and (b):

_ DSG to be replaced by LoV.

_ What is the validation of the delay of seven years? Why not less or more?

Noted. DSG should remain in the text since the LOV is not applicable to all CS-25 aircraft. 7-year value is the value developed during the FAA rule and guidance development in conjunction with the AAWG.

· §4.6:

_ DSG to be replaced by LoV.

Noted. DSG should remain in the text since the LOV is not applicable to all CS-25 aircraft.

· §6.3:

_ "*Operators should accomplish the first inspection of an change according to the DTI schedule. If the age of the modification is unknown, use the aircraft age in total flight*

cycles or total flight hours, as applicable." Aeroplane maximal age to be added as already stated.
Not Accepted. Calendar years cannot be inserted here since the text refers to a DTI schedule which, according to the definition of DTI/DTE, refers only to cracking.

_ "*In any case the inspection should be accomplished no later than the time limit equivalent to a C-check interval, from incorporation of the DTI into the operator's approved maintenance programme.*" From where comes this request? It should depend upon the DDP.
Noted. This provides guidance for the maximum allowed grace period to be considered.

comment

343 comment by: *All Nippon Airways*

ANA comments to NPA 2013-07

AMC 20-20 Amdt 1 3.13.2 – Page 158/203
A DTI is required that reinforce the FCBS and non-reinforced repair (blend-outs, trim-outs, etc) are excluded. However, there is a sentence "unless there are known specific risks associated with these actions in specific locations". This sentence requires operators to pick up all non-reinforced repair for evaluation and this is not harmonised with the FAA rule. To harmonise the requirements, this sentence to be deleted.

response

Noted.
See the response to comment 130.

comment

399 comment by: *FAA*

4.5. Developing additional DT data for modifications that affect FCBS
Paragraph (a) requires new or additional DT data for an existing STC modification to be published as a supplement to the ALS, and paragraph (c) requires approval of DT data for modifications not developed by a TCH or STCH to be approved under a new STC.
These requirements are not harmonised with the FAA requirements and will result in additional unnecessary work required to process these approvals. Airworthiness directives will be necessary to enforce revisions to the ALS, and several new STC approvals may need to be processed and issued.
In this AMC 20-20, the term "compliance document" has been used (similar to FAA AC 120—93), and in section 6.3 of AMC 20-20, it states "The maintenance programme should reflect the requirements of Part 26.320 and 26.330 for DTI for design changes and modifications, allowing a maximum of 12 months for incorporation of the DTI provided directly by the DAH into the maintenance programme.". This process is similar to the FAA process specified in FAA AC 120-93.
Suggested Resolution:
Remove the requirement for new or additional DT data for an existing STC modification to be published as a supplement to the ALS, and the requirement for DT data for modifications not developed by a TCH or STCH to be approved under a new STC.
The FAA process has been to allow the DT data be submitted and FAA approved as an

independent document (compliance document), and be made available to operators for incorporation into their maintenance program. The Operators FAA approved Implementation Plan (OIP) specifies the process the operator will use to obtain and include the necessary DT data into their maintenance program. Operators are required to follow their FAA approved OIP.

response

Accepted.
The rule text has been revised.

comment

401 comment by: *FAA*

This section on future repairs states:
Repairs to FCS conducted after the operator has incorporated the REGs into their maintenance programme must have a DTE performed. This includes blend-outs, trim-outs, etc., that are beyond published limits.
While the text is the same as AC 120-93, FAA implementation of rule has permitted Repair Evaluation Guideline documents to include a process an ~~deviate by stating that the~~ operator can use that will reduce the unnecessary burden of performing a damage tolerance evaluation (DTE) on every non-reinforcing repair that affects fatigue critical structure (FCS). This process permits the operator to request the TCH to determine if the subject non-reinforcing repair (that exceeds published allowable limits, such as blend-outs or trim-outs) may have an adverse effect on the FCS. If the type certificate holder (TCH) determines that the published allowable limit is conservative and there is ample margin that supports the subject exceedance, then the TCH will inform the operator that the exceedance is acceptable. U.S. operators would then classify this repair as minor with no further showing (the repair is accepted, not approved). If, however, the TCH determines that the exceedance is marginal, and that a DTE will be required, the TCH will perform the DTE, and this repair will be classified as a major repair, and the operator will need to incorporate any required damage tolerance inspection into their maintenance program.
Suggested Resolution:
Revise the guidance to allow flexibility of the type certificate holder in determining whether a damage tolerance evaluation is needed for certain non-reinforcing repairs, such as a blend-out or trim-out. The determination would need to be based on the design approval holder's assessment and the allowance for this deviation could be identified in the design approval holder's repair evaluation guidelines.

response

Noted.
Under the EASA-system, the operators do not have the privilaege to classify repairs as it is a DOA responsibility. Therefore, TCH guidance on new repairs (including non-reinforcing repairs) would be best placed in the SRM. All repairs under Part-M must be to approved data.

comment

442 comment by: *Thomson Airways*

To accomplish a repair survey for all repairs could be very restrictive to operators maintaining operation and maintenance schedule plans with the requirement to accomplish a complete survey of the aircraft.

	Suggest that the repair survey can also be accomplished over a few heavy maintenance checks within a specific compliance time allowing operators to break up the full survey into specific areas over more than one heavy maintenance check. The term 'heavy' check should be clarified.
response	Noted. There is not strict requirement in Part-26 or AMC 20-20 which requires to do the survey in one single heavy maintenance check. The operator should follow the quidelines in the REG. Within the REG the TCH should indentify what heavy maintenance means, but could typically mean a timelimit equivalent to a D-check.

comment	*445* comment by: *Thomson Airways* Suggest that blend out, trim-outs, etc are removed from the list of repairs that require DTE. This differs greatly from the FAA ageing aircraft rule where only reinforcing repairs need to be considered. Suggest As much as possible harmonization of the EASA rule and of the FAA rules.
response	Noted. Non-reinforcing repairs are not specifically excluded by either FAA requirement or by EASA proposal. Conversely the Agency is not requiring non-reinforcing repairs to be systematically considered.

comment	*483* comment by: *Jet Aviation Basel* Section 4.5 (a) advises that "Additional DT data for existing modification may be approved as a change to the existing STC by the STCH and published for example as a supplement to the ALS" This would be classed as a major change and therefore chargeable by the Agency, adding further cost to the DAH or operators to maintain compliance. Is there consideration that any changes mandated as a response to the compliance to this ruling will not incur agency charges?
response	Noted. The concern is understood. Further guidance is expected to be communicated within the implementation phase.

comment	*567* comment by: *Boeing* Page: 151 Paragraph: AMC 20-20 - Amdt 1 – Appendix 3 - para 1. The proposed text states: “Part 26.320 through 26.370 define which repairs and modifications must be addressed using damage tolerance.” **REQUESTED CHANGE:** Correct the referenced Part from *“26.370”* to **26.360**.

JUSTIFICATION:
Part 26.370 does not define repairs or modifications that require DTA. The correct reference is Part 26.360.

response: Accepted.

comment *568* comment by: *Boeing*

Page: 152
Paragraph: AMC 20-20 - Amdt 1 – Appendix 3 - para 3 (2nd and 3rd paragraphs on page)

The proposed text states:
"Repairs may be of concern as time in service increases for the following reasons:
As aircraft age, both the number and age of existing repairs increase. Along with this increase is the possibility of unforeseen repair interaction, failure, or other damage occurring in the repaired area. The continued operational safety of these aircraft depends primarily on a satisfactory maintenance programme (inspections conducted at the right time, in the right place, using the most appropriate technique, or in some cases replacement of the repair). To develop this programme, a damage tolerance evaluation of repairs to aircraft structure is essential. The longer an aircraft is in service, the more important this evaluation and a subsequent inspection programme become."
REQUESTED CHANGE:
Delete this entire text.

JUSTIFICATION:
The narrative in paragraphs 2-8 do not provide guidance to TCHs, DAHs, or operators, and is not required. If EASA deems this information necessary, then it may be better placed in the explanatory notes.

response: Not accepted.
The Agency believes it is supporting the background information to complement the guidance directly within the paragraph.

comment *569* comment by: *Boeing*

Page: 152
Paragraph: AMC 20-20 - Amdt 1 – para 3. (5th paragraph on page)

The proposed text states:
"… This information is used to establish an inspection programme for the structure that will be able to detect cracking that may develop before it precipitates a major structural failure."
REQUESTED CHANGE:
"… This information is used to establish an inspection programme for the structure that will be able to detect cracking that may develop before it precipitates a ~~major structural~~ **catastrophic** failure."

JUSTIFICATION:
Our suggested change supports the proposed rule requirements.

response

Partially accepted.
The text has been changed.

comment

570 comment by: *Boeing*

Page: 153
Paragraph: AMC 20-20 - Amdt 1 – para 3.3

The proposed text states:
"**3.3. Identifying Fatigue-Critical Baseline Structure (FCBS).**
TC holders should develop the list of FCBS and include the locations of FCS and a diagram showing the extent of FCS. TC holders should make the list available to STC holders and to operators."
REQUESTED CHANGE:
"**3.3. Identifying Fatigue-Critical Baseline Structure (FCBS).**
TC holders should develop the list of FCBS ~~and include the locations of FCS and a diagram showing the extent of FCS~~. TC holders should make the list available to STC holders and to operators."

JUSTIFICATION:
This is not a rule requirement.

response

Partially accepted.
AMC 20-20 is not meant as a rule and only provides guidance . The word 'should' has been added to the paragraph.

comment

571 comment by: *Boeing*

Page: 153
Paragraph: AMC 20-20 - Amdt 1 – para. 3.3

The proposed text states:
The title of paragraph 3.3. is ***"Identifying Fatigue-Critical Baseline Structure (FCBS)."***
REQUESTED CHANGE:
Guidance on identification of FCBS does not exist in this NPA. We suggest deleting everything except the first three sentences of para. 3.3. Note the information in this section does not provide any guidance to defining FCBS, but it should.

JUSTIFICATION:
The only portion of this section that addresses FCBS is the first three sentences, which comprise only a restatement of the definition. This is the only relevant text. AMC 20-20 then refers to CS 25.571 and AMC 25.571 for the necessary guidance, and we note that FCBS guidance is not contained there either.

response

Not accepted.
Guidance is provided in the NPA per AMC 25.571. The Agency prefers to keep the additional background information supporting the FCBS identification.

comment

572 comment by: *Boeing*

Page: 155
Paragraph: AMC 20-20 - Amdt 1 – para 3.7.

The proposed text states:
The title of paragraph 3.7. is: ***"Developing DT data for existing published repair data"***
REQUESTED CHANGE:
We suggest referencing ANNEX 4 (Service Bulletin Review Process) in this paragraph (specifically at para. 3.7.2. – SBs).

JUSTIFICATION:
Missing reference.

response

Accepted.

comment

573 comment by: *Boeing*

Page: 156
Paragraph: AMC 20-20 - Amdt 1 – para. 3.11.

The proposed text states:
"**3.11. Existing repairs**
TCHs should develop processes that will enable operators to identify and obtain DTI for existing repairs on their aircraft that affect FCBS. Collectively, these processes are referred to as REGs and are addressed below."
REQUESTED CHANGE:
Either delete this paragraph or include it in paragraph 3.13 - *Repair evaluation guidelines*.

JUSTIFICATION:
This is adequately addressed in other places in this Appendix; placement in this section is unnecessary.

response

Partially accepted.
Chapter 3.11 is better linked to Chapter 3.13.

comment

574 comment by: *Boeing*

Page: 157
Paragraph: AMC 20-20 - Amdt 1 – para 3.13.1.

The proposed text states:

"(c) Obtaining DTI and incorporation of the Damage Tolerance Inspection (DTI) into the maintenance program must be completed as follows: For existing, non-published repairs and deviations to published repairs identified in the survey, if REGs direct operators to contact the TC holder to obtain DTIs, the TC holder should approve the DTI within 12 months after identification, unless the TCH uses another process agreed by EASA."

REQUESTED CHANGE:
Revise the text in (c) to state:
"(c) Obtaining DTI and incorporation of the Damage Tolerance Inspection (DTI) into the maintenance program must be completed as follows: For existing, non-published repairs and deviations to published repairs identified in the survey, if REGs direct operators to contact the TC holder to obtain DTIs, the TC holder should ~~approve the DTI within 12 months after identification, unless the TCH uses another process agreed by EASA~~ **provide the DTI within 18 months after the operator requests the DTI from the TCH**."

JUSTIFICATION:
Under the 3-stage approval process, the TC holder is allowed to provide DTI within 18 months. We request that this harmonise with the parallel FAA guidance.

response

Not accepted.
AC 120-93. Appendix 5 which is linked to Appendix 6 also specifies a 12-month period, unless otherwise agreed.

comment

575 comment by: *Boeing*

Page: 158
Paragraph: AMC 20-20 - Amdt 1 – para 3.13.2.

The proposed text states:
"**3.13.2. Developing a process for conducting surveys on affected aircraft.**
The TCH should develop a process to be used by operators to conduct aircraft surveys. ...
... The process the TCH develops to conduct surveys should include:
(a) a survey schedule;
(b) areas and access provisions for the survey;
(c) a procedure for repair data collection that includes:
(1) repair dimensions,
(2) repair material,
(3) repair fastener type,
(4) repair location,
(5) repair proximity to other repairs,
(6) repairs covered by published repair data, and
(7) repairs requiring DTI;
(d) a means to determine whether a repair affects FCBS or not."
REQUESTED CHANGE:
Replace with the information in BCA REGsTable 5.3.5-1:
"Elements of Repair Examination:

Location
-- Sketch, or drawing (optional)
-- Geometric location (e.g. B STA, BBL, WL, WBL, etc)
-- Structural Element being repaired
-- Surface(s) on which the repair is installed
-- Dimensions and shape of damage (note trim-out radii).
Design
-- Length and width, or diameter, and orientation of repair on original structure
-- Fastener type (solid or blind) including material (magnetic or non-magnetic) and number of fastener rows
-- Fastener size and spacing (approximate)
-- Type and thickness of repair material (if the material is tapered note taper ratio)
Condition
-- Visual evidence of deterioration (e.g., corrosion, cracking, loose or missing fasteners, or other damage). Any repair with visual evidence of deterioration may not be structurally satisfactory and further investigation by the operator is necessary.
Adjacent repairs and STC modifications
-- Repairs located on the same or adjacent component (e.g., within one stringer, rib, or frame bay of the primary repair)
-- Distance, edge(s), from adjacent repair(s) or STC modification(s)
Existing record of repair (optional)
-- Number of flight cycles and flight hours of the repaired structure at installation (if available). If RSC, then flight cycles and flight hours of the component is requested, if known.
-- Data from existing records (optional); size and type of damage, base structure thickness."

JUSTIFICATION:
The proposed list in the NPA is incomplete.

response

Partially accepted.
The text has not been changed.

comment

576 comment by: *Boeing*

Page: 158
Paragraph: AMC 20-20 - Amdt 1 – para 3.13.2.

The proposed text states:
The title of paragraph 3.13.2. is: "Developing a process for collecting surveys on affected aircraft"
REQUESTED CHANGE:
Revise the title to state: "Developing a process for collecting ~~surveys~~ **survey data** on affected aircraft"

JUSTIFICATION:

	Change is needed to align the title with the paragraph guidance material.
response	Not accepted. The title of Paragraph 3.13.2 does not include the word 'collecting'.

comment	*577* comment by: *Boeing* Page: 159 Paragraph: AMC 20-20 - Appendix 3, para 3.14 The proposed text states: **"3.14. Repairs to removable structural components** Fatigue-critical structure may include structure on removable structural parts or assemblies that can be exchanged from one aircraft to another, such as door assemblies and flight control surfaces. In principle, the DT data development and implementation process also applies to repairs to FCS on removable components. During their life history, however, these parts may not have had their flight times recorded on an individual component level because they have been removed and reinstalled on different aircraft multiple times. These actions may make it impossible to determine the component's age or total flight hours or total flight cycles. In these situations, guidance for developing and implementing DT data for existing and new repairs is provided in Annex 3 to this Appendix." **REQUESTED CHANGE:** Delete the last sentence of this paragraph (highlighted) and add the following in its place: "**One acceptable means of showing compliance is provided in Annex 3."** **JUSTIFICATION:** Regulatory authorities have accepted multiple ways of determining utilization for RSCs. A change to this text, as we have suggested, would allow operators flexibility to show compliance.
response	Not accepted. AMC 20-20 only provides guidance which means that other acceptable means would be accepted too. Please note that 26.370 has been revised to allow some flexibility to obtain DTI for existing repairs.

comment	*578* comment by: *Boeing* Page: 160 Paragraph: AMC 20-20 - Amdt 1 – para 4.3. The proposed text states: **"4.3. Modifications that need DT data**. Using the guidance provided in AMC 25.571 and the detailed knowledge of the modification and its effect on the FCBS, the TCH **and** STC holder, **and** in certain cases the operator, should consider the following situations in determining what DT data need to be developed." **REQUESTED CHANGE:** Revise the text to state:

	"4.3. Modifications that need DT data. Using the guidance provided in AMC 25.571 and the detailed knowledge of the modification and its effect on the FCBS, the TCH ~~**and**~~ **or** STC holder, ~~**and**~~ **or** in certain cases the operator, should consider the following situations in determining what DT data need to be developed." **JUSTIFICATION:** Change is needed to clarify that it is one or the other, not both or all three.
response	Accepted.

comment	*579* comment by: *Boeing* Page: 161 Paragraph: AMC 20-20 - Amdt 1 – para 4.5.(c) The proposed text states: "*Note*: The TCH and STC holder should submit data that describes and supports the means used to determine if a modification affects FCBS, and the means used for establishing FCS of a modification." **REQUESTED CHANGE:** The Note should be placed at the end of para. 4.3 - Modifications that contain new FCS. **JUSTIFICATION:** General Comment: EASA does not require a compliance plan. For regulations requiring approval or submission of data, please specify how the data will be submitted and to whom it should be submitted.
response	Noted. However, the Agency has introduced a compliance plan.

comment	*580* comment by: *Boeing* Page: 164 Paragraph: AMC 20-20 - Amdt 1 – para 6.1.(a)(2)(ii) The proposed text states: (ii) a process to identify or survey existing repairs (using the survey parameters from Annex 3 to this Appendix) and modifications that affect FCBS and determine DTI for those repairs and modifications. **REQUESTED CHANGE:** The reference should be to **Annex 2,** not Annex 3. **JUSTIFICATION:** Editorial-only comment.
response	Accepted.

comment	*581* comment by: *Boeing* Page: 166 Paragraph: AMC 20-20 - Amdt 1 – para 6.1.2.(a) The proposed text states: "(a) The plan should include a process for producing a list of modifications that affect FCBS on an operator's aircraft. The list may should first be developed by obtaining data through a review of the aircraft records. The operator will need to show to their competent authority that the aircraft records are a reliable means for identifying modifications that affect FCBS. As per guidance in paragraph (3)(c) below, the operator may identify modifications developed by TCH and STC holders by performing a records review. Under Part-M requirements the aircraft records should be sufficient to help identify whether DTI exists for all modifications (Ref. M.A.305(d) and AMC M.A.305(d)). However, for some older aircraft a records review may not always be adequate to identify all modifications that have an adverse effect on FCBS. An aircraft survey may need to be conducted to identify such modifications, which could be done at the time of the repair survey. For each modification that affects FCBS, the process should document the means of compliance for incorporating DT data associated with that modification, whether through a TCH or STC holder compliance document, an operator's DT data implementation schedule, or existing DT-based ICA." **REQUESTED CHANGE:** "(a) The plan should include a process for producing a list of modifications that affect FCBS on an operator's aircraft. The list may ~~should~~ first be developed by obtaining data through a review of the aircraft records. The operator will need to show to their competent authority that the aircraft records are a reliable means for identifying modifications that affect FCBS. ~~As per guidance in paragraph (3)(c) below, the operator may identify modifications developed by TCH and STC holders by performing a records review.~~ Under Part-M requirements the aircraft records should be sufficient to help identify whether DTI exists for all modifications (Ref. M.A.305(d) and AMC M.A.305(d)). However, ~~for some older aircraft~~ a records review may not always be adequate to identify all modifications that have an adverse effect on FCBS. An aircraft survey may need to be conducted to identify such additional modifications, ~~which could be done at the time of the repair survey~~ not contained in the aircraft records.. For each modification that affects FCBS, the process should document the means of compliance for incorporating DT data associated with that modification, whether through a TCH or STC holder compliance document, an operator's DT data implementation schedule, or existing DT-based ICA." **JUSTIFICATION:** Change is needed to harmonise with FAA's AC 120-93, "Damage Tolerance Inspections for Repairs and Alterations," paragraphs 406-408.
response	Not accepted. For those modification which are deemed approved with Article 4 of Regulation (EU) No 748/2012 the records may, in some cases, not be complete. Therefore, the Agency

	whishes to retain the possibility to provide guidance in AMC 20-20 regarding the survey of modifications even if the records (partially) exist.

comment	*582* comment by: *Boeing* Page: 166 Paragraph: AMC 20-20 - Amdt 1 – para 6.1.2.(b)(3) The proposed text states: "(3) include DT data associated with a modification that is provided in a compliance document;" **REQUESTED CHANGE:** Delete this subparagraph. **JUSTIFICATION:** In the context of this paragraph, this is a duplicate of the material in paragraph 6.1.2.(b)(1).
response	Noted. The paragraph has been amended, to address also this issue.

comment	*626* comment by: *S.A. Morshed, Emirates* **AMC 20-20 Appendix 3 (Page 160)** **4.3 Modification that need DT data** Delete the word and and replace with "or" in two places Change to: Using the guidance provided in AMC 25.571 and the detailed knowledge of the modification and its effect on the FCBS, the TCH or STC holder, or in certain cases the operator , should consider the following situations in determining what DT data need to be developed. **Proposed Text:** Using the guidance provided in AMC 25.571 and the detailed knowledge of the modification and its effect on the FCBS, the TCH and STC holder, and in certain cases the operator, should consider the following situations in determining what DT data need to be developed. **Justification:** Clarify that it is one or the other, not both or all three.
response	Accepted. See the response to comment 578.

comment	*646* comment by: *Thomson Airways* Suggest EASA add an estimated cost for operators to implement this rule for a typical airplane (without an LOV extension).
response	Noted.

comment	*661* comment by: *AEA* 3.7.4 requires approved repair data. 3.12 requires a Damage Tolerance Evaluation (DTE) to be performed on future repairs including blend-outs, trim-outs etc {non-reinforcing repairs}. Certain TCH's provide a Repair Design Record (RDR) for these conditions. The RDR is not approved – it is accepted data. The FAA sanctions the process. Unless the wording is changed to recognise this process, the RDR may not be acceptable for EU operators for both future and existing repairs.
response	Noted. See the response to comment 696. The Agency may produce a certification memorandum to clarify the acceptability of the FAA data.

comment	*696* comment by: *European Air Transport Leipzig GmbH / DHL* SUMMARY: 3.7.4 requires approved repair data. 3.12 requires a Damage Tolerance Evaluation (DTE) to be performed on future repairs including blend-outs, trim-outs etc {non-reinforcing repairs}, as well as any other minor deviations from approved data. Certain TCH's provide a Repair Design Record (RDR) for these conditions. The RDR is not approved – it is accepted data and considered to be a "minor" deviation by the DAH. The FAA sanctions the process. Unless the wording is changed to recognise this process, the RDR may not be acceptable for EU operators for both future and existing repairs. RDRs are key element to cost effective and continuous operation for airlines without EASA Part 21 approval. They constitue a negligible risk with respect to DT and/or WFD. SUGGESTED RESOLUTION: EATL propose that EASA accept the FAA process and change the wording accordingly. EATL furthermore demand that EASA perform a detailed cost vs benefit analysis to assess the increase in level of safety gained by the inclusion of blend-outs and other minor repairs within the DT and WFD requirement. It must be considered that practically blend-outs and other minor repairs are unlikely to be detected during detailed visual inspections with a sufficiently high probability of detction. The effort required to detect these repairs including full paint stripping of the fuselage and most likely large sections of the interior structure stands in no comparison to the increase in level of safety.
response	Noted. 3.7.4 requires the TCH to evaluate their published repair data and does not discuss the approval process. The proposed requirement for evaluation of existing repairs by the operator includes reinforcing repairs only, unless otherwise specified by the TCH. Therefore, there is no need for a cost benefit analysis with respect to blendouts and other non-reinforcing repairs.

3.12 reflects the need to evaluate all new repairs for DT and does not restrict the approval process further than currently defined by Part-21 applicable bilaterals and associated TIP. The Agency may produce a certification memorandum to clarify the acceptability of the FAA data.

comment *697* comment by: *AIRBUS*

Comment related to page 155/203, Appendix 3, paragraph 3.6. Review of published repair data
PROPOSED TEXT / COMMENT:
(d) other documents available to operators (~~e.g. some sections of aircraft maintenance manuals and component maintenance manuals~~) that may contain approved repair data.
RATIONALE / REASON / JUSTIFICATION:
AMM & CMM are not approved manuals, hence do not contain approved data.

response Not accepted.
AMM/CMM are considered to be approved instructions under Part-21 (e.g via 21.A.263 privilege). It could be possible that those manuals may contain repair instructions from repairs approved in accordance with Subpart-M of Part-21.

comment *702* comment by: *AIRBUS*

Comment related to page 156/203, Appendix 3, paragraph 3.7.4 Other forms of data transmission
PROPOSED TEXT / COMMENT:
In addition to SRMs, SBs, and documentation for ADs, the TCH should review any other documents (~~e.g. aircraft maintenance manuals and component maintenance manuals~~) that contain approved repair data
RATIONALE / REASON / JUSTIFICATION:
AMM & CMM are not approved manuals, hence do not contain approved data.

response Not accepted.
See the response to comment 697.

comment *703* comment by: *AIRBUS*

Comment related to page 156/203, Appendix 3, paragraph 3.13. Repair evaluation guidelines
PROPOSED TEXT / COMMENT:
(a) a process for conducting surveys of affected aircraft that will enable identification and documentation of all existing repairs that affect fatigue-critical baseline structure and identification of repairs requiring immediate actions.
RATIONALE / REASON / JUSTIFICATION:
For clarification, based on current process.

response

Noted.
The commentators proposal could indeed be considered under the general survey guidelines established in the REG but the Agency prefers not to change the text.

comment

705 comment by: *AIRBUS*

Comment related to page 156/203, Appendix 3, paragraph 3.13.2. Developing a process for conducting surveys on affected aircraft
PROPOSED TEXT / COMMENT:

Update the text of §3.13.2 to allow such a review as an acceptable means for conducting the survey, e.g. by adding a note as follows:
As an option to a physical syrvey, a records review may be used if the operator can demonstrate that its record keeping system retains documentation of all repairs made to the airplane over the in-service life of the airplane. This means:
1. all repairs affecting FCS are documented and recorded regardless of the classification of the repair;
2. all repairs affecting FCS are contained in the operator's permanent record keeping system and clearly defines the repair (location, configuration...) and proximity to other repairs; 3. the documentation states whether or not a DTE was performed, and if any DTI were developed as a result of the DTE, and;
4. the operator has incorporated any DTI into its maintenance program.

Validation of the records system by its regulatory authority that assures that all repairs to FCS are documented, regardless of classification, is necessary. This validation includes a physical survey of a percentage of the (specific make and model airplane) fleet for comparison to the aircraft record. Without such a record keeping system and validation, a physical survey of all aircraft of that specific make and model will be required.

RATIONALE / REASON / JUSTIFICATION:

It is understood that the definition of a survey is a close look at or examination of the FCS with the aim of identifying existing repairs.
This implies the survey is a physical inspection of the airplane structure.

However, for recent airplanes , the number of existing repairs may be limited and well documented. Therefore, under the condition that it can be proven that the repair records are accurate, the survey could be based on the records review only.

response

Not accepted.
However, please note that for more recent aeroplanes (CS-25 Amdt 1) development/ implementation of a REG would not be needed (see 26.320(c)).

comment

707 comment by: *AIRBUS*

Comment related to page 163/203, Appendix 3, Figure A3-1: Developing a means of compliance for modifications
PROPOSED TEXT / COMMENT:

The top left box “TCH tasks – Repairs” should read “TCH task”.

RATIONALE / REASON / JUSTIFICATION:
The box is valid for both Repairs and modification.

response: Accepted.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — ANNEX 1: APPROVAL PROCESS FOR NEW REPAIRS p. 169

comment *22* comment by: *NEOS*

Concerning non-published data, FAA time frame to provide a STAGE 2 approval for repair is 12 months but a different timeframe can be also concordated.

An FAA MFG with ODA delagation is providing second stage approval forms within 18 months from STAGE 1 release.This will make complication for European operators operating non - EU TCHs A/C to get the approval within the time frame.

We would like to ask a statement that issue of a STAGE 2 approval within 18 months is acceptable provided than operator will include all the necessary action into maintenance program within 6 months.
This will maintain all the process within 24 months allowing operator to get the approval in the 18 months if necessary.

response: Noted.
See the response to comment 436.

comment *114* comment by: *KLM Engineering & Maintenance*

Three stage repair approvals for Damage Tolerant Inspections:
EASA allows Damage Tolerant deferral greater than 12 months provided that a temporary limitation was substantiated by sufficient fatigue and damage tolerance data and approved at the first stage of approval. Some Non-EU Type Certificate Holders hold FAA approval to approve repair designs for static strength for a period on 24 months, without the FAA requirement to perform a Damage Tolerant evaluation at the first stage of approval.
The EASA proposal results in an additional burden to both the TCH and the operator, and could result in additional ground time of an airplane waiting for stage 1 approval with Damage Tolerant evaluation.
If a Non-EU TCH provides a stage 1 approval with a threshold of 24 months that is only

evaluated for static strength, then the EASA proposal makes the operator responsible to obtain a Damage Tolerant evaluation. There is limited Damage Tolerant evaluation capability outside the Type Certificate Holders.
The FAA equivalent text contained in FAA AC120-93 Appendix 5 contains a sentence 'Unless the FAA agrees a longer period the DT data should be submitted no later than 12 months…'
The underlined text is omitted from the EASA Annex.
Harmonise with FAA requirements and clarify in AMC 20-20, Annex 1.

response

Noted.
See the response to comment 436.

comment

216 comment by: *British Airways*

References:

AMC 20-20 Amdt 1, Appendix 3, Annex 1, (b) Page 169

Comment summary:

(b) requires DT data not later than 12 months.
One FAA regulated TCH provides the stage 2 approval in 18 months. This process is now widely accepted by industry.
Reference should be made to this process if accepted by EASA. If accepted by EASA under the bilateral arrangements this should be stated. If not accepted, this should also be made clear.
If EASA believes that the EU-US bilateral is provides the EASA acceptance of the FAA agreed process, this should be stated in the appendix.
The FAA equivalent text contained in FAA AC120-93 Appendix 5 contains a sentence 'Unless the FAA agrees a longer period the DT data should be submitted no later than 12 months…'
The underlined text is omitted from the EASA Annex.
Operators trying to follow the requirements will need to contact EASA for clarification on this issue unless addressed here. If EASA does accept the process it makes sense to recognise it here or provide a reference to an EASA letter or decision. Currently, there is no EASA guidance on this.

Suggested resolution:

Use text provided in FAA AC120-93 Appendix 5, b. second sentence changing the reference to the FAA to 'EASA' or 'The Agency'.
'Unless the [~~FAA~~] Agency agrees a longer period the DT data should be submitted no later than 12 months…'
Add a note at the end of paragraph b. stating that at least one TCH has an alternative accepted arrangement that allows for the DT data to be submitted no later than 18 months after the aircraft was returned to service.
Similar comments were made to EASA when responding to the draft rule (Previous EASA submission 33).
EASA stated 'Text amended to show alternative agreement as Part 21 refers to 'limited time period' only. 12 months will remain the norm for EASA repair approval.
We cannot refer to specific agreement to Techs in the AMC. In the case of TCH controlled

by FAA, EASA accepts their repair approval under the bilateral. No further statement is required.'

As the AMC is guidance material, it is the best place to clarify what operators should do with respect to the 18 months timescale. The EASA response states the repair approval is accepted under the bilateral, what remains unclear is whether the timescales (eg 18 months) will be acceptable to EASA or not. Also, as the 18 months process is 'accepted' by the FAA does this mean it is 'approved' via the bilateral. This is very unclear and the AMC is the best place to clarify the EASA position and prevent operators from being out of compliance.

response

Noted.
See the response to comment 436. Whatever the approved data is, the operator needs to comply with it.
The Agency cannot provide specific approvals of individual TCH agerements within the AMC.

comment

583 comment by: *Boeing*

Page: 169
Paragraph: AMC 20-20 - Amdt 1 – Annex 1

The proposed text states:
"(b) The second stage is approval of DT data. Sufficient data to substantiate continued safe operation. This should be submitted not later than 12 months after the aircraft was returned to service, unless a temporary limitation was substantiated by sufficient fatigue and damage tolerance evaluation data and approved at the first stage of approval, in which case the second stage DT data should be approved before the temporary limit is reached."

REQUESTED CHANGE:
"(b) The second stage is approval of DT data. Sufficient data to substantiate continued safe operation. This should be submitted not later than 12 months after the aircraft was returned to service, unless ~~**a temporary limitation was substantiated by sufficient fatigue and damage tolerance evaluation data and approved at the first stage of approval, in which case the second stage DT data should be approved before the temporary limit is reached**~~ **EASA agrees to a longer period of time.**

JUSTIFICATION:
This is a new un-harmonised requirement in the AMC. The statement says that an applicant may have an extension only after he does all of the work required to show that an extension is appropriate, negating the need for an extension. Other regulatory authorities have approved longer Stage 1 approval times based on processes developed within the approved REG documents. These processes contain safeguards to ensure proper and timely handling of substandard repairs, and EASA should consider these. Not allowing the extended Stage 1 approval time would be a significant burden to manufactures with no increase in safety. Revising the text, as we have suggested, will harmonise it with FAA AC 120-93, Appendix 5.

response

Noted.
See the response to comment 436.

comment

627 comment by: *S.A. Morshed, Emirates*

AMC 20-20 Appendix 3 Annex 1 Para (b) (Page 169)
Delete "unless a temporary limitation was substantiated by sufficient fatigue and damage tolerance evaluation data and approved at the first stage of approval, in which case the second stage DT data should be approved before the temporary limit is reached."
Change to:
The second stage is approval of DT data. Sufficient data to substantiate continued safe operation This should be submitted not later than 12 months after the aircraft was returned to service, unless EASA agrees to a longer period of time.
Proposed Text:
The second stage is approval of DT data. Sufficient data to substantiate continued safe operation This should be submitted not later than 12 months after the aircraft was returned to service, unless a temporary limitation was substantiated by sufficient fatigue and damage tolerance evaluation data and approved at the first stage of approval, in which case the second stage DT data should be approved before the temporary limit is reached.
Justification:
This is a new un-harmonised requirement by AMC. Essentially the statement says that an applicant can have an extension only after he does all of the work required to show that an extension is appropriate, negating the need for an extension. Other regulatory authorities have approved longer stage one approval times based on processes developed within the Approved REG documents. These processes contain safe guards to insure proper and timely handling of substandard repairs and EASA should consider these. Not allowing the extend Stage 1 approval time would be a significant burden to manufactures with no increase in safety. Revising the text will harmonise it with AC 120-93 Appendix 5.

response

Noted.
See the response to comment 436.

comment

662 comment by: *AEA*

(b) requires DT data not later than 12 months.
One FAA regulated TCH provides the stage 2 approval in 18 months. This process is now widely accepted by industry.
Reference should be made to this process if accepted by EASA. If accepted by EASA under the bilateral arrangements this should be stated. If not accepted, this should also be made clear.
The FAA equivalent text contained in FAA AC120-93 Appendix 5 contains a sentence 'Unless the FAA agrees a longer period the DT data should be submitted no later than 12 months…'
The underlined text is omitted from the EASA Annex.
Operators trying to follow the requirements will need to contact EASA for clarification on

this issue unless addressed here. If EASA does accept the process it makes sense to recognise it here or provide a reference to an EASA letter or decision. Currently, there is no EASA guidance on this.

response

Noted.
See the response to comment 436.

comment

698 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
(b) requires DT data not later than 12 months.
One FAA regulated TCH provides the stage 2 approval in 18 months. This process is now widely accepted by industry.
The FAA equivalent text contained in FAA AC120-93 Appendix 5 contains a sentence 'Unless the FAA agrees a longer period the DT data should be submitted no later than 12 months…'
The underlined text is omitted from the EASA Annex.
Operators trying to follow the requirements will need to contact EASA for clarification on this issue unless addressed here. If EASA does accept the process it makes sense to recognise it here or provide a reference to an EASA letter or decision. Currently, there is no EASA guidance on this.
If, under any circumstances, EASA would not agree to an 18 month stage 2 approval, it can be estimated that other TCH would pass on costs for the required process streamlining directly to the operators. Considering the fact, that there exist no registered cases of repairs approved for static strength failing in the first to years after embodiment, the increase of safety is negligible.
SUGGESTED RESOLUTION:
EATL propose that EASA accept the FAA approved procedure. Reference should be made to this process in AMC 20-20. If accepted by EASA under the bilateral arrangements this should be stated. If not accepted, this should also be made clear and considered in a revised RIA.

response

Noted.
See the response to comment 436.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — ANNEX 2: ASSESSMENT OF EXISTING REPAIRS p. 170-176

comment

584 comment by: *Boeing*

Page: 170
Paragraph: AMC 20-20 - Amdt 1 – Annex 2

The proposed text states:
Annex 2 addresses ASSESSMENT OF EXISTING REPAIRS.
REQUESTED CHANGE:

Revise the entire Annex, considering the material currently in FAA's AC 120-93, Chapters 2-4. This proposed Annex 2 appears to intermix procedures developed covering the fuselage pressure boundary with other components (wing, empennage, etc.) and are not compatible.

JUSTIFICATION:
Revision is necessary for clarity and intent.

response

Not accepted.
The guidance allows the TCH to develop a REG in a manner appropriate to their needs.

comment

585 comment by: *Boeing*

Page: 170
Paragraph: AMC 20-20 - Appendix 3 - Annex 2 – para.3

The current text states:
"**3. DAMAGE TOLERANCE INSPECTION DEVELOPMENT**
This includes the development of the appropriate maintenance plan for the repair under consideration. During this step determine the inspection method, threshold, and repeat interval. Determine this information from existing guidance information as documented in the RAG (see Paragraph 4), or from the results of an individual damage tolerance evaluation performed using the guidance in AMC 25.571."
REQUESTED CHANGE:
Change to state:
"3. DAMAGE TOLERANCE INSPECTION DEVELOPMENT
This includes the development of the appropriate maintenance plan for the repair under consideration. During this step determine the inspection method, threshold, and repeat interval. Determine this information from existing guidance information as documented in the RAG (see Paragraph 4)**, the REG,** or from the results of an individual damage tolerance evaluation performed using the guidance in AMC 25.571."

JUSTIFICATION:
Revise the entire Annex 2 to differentiate between operator and TCH responsibilities. The NPA addresses both the TCH and operators, and there is ambiguity as to which party is being addressed. Annex 2 must be revised to clearly indicate the party that is affected. The FAA's AC 120-93 delineates responsibility between the operator and TCH.

response

Accepted. (With respect to addition of 'REG').

comment

586 comment by: *Boeing*

Page: 171
Paragraph: AMC 20-20 - Amdt 1 – Annex 2 - para 4.

The proposed text states:
Paragraph 4 addresses "REPAIR ASSESSMENT GUIDELINES."

REQUESTED CHANGE:
Delete this paragraph as it is not applicable.

JUSTIFICATION:
Paragraph 4 of this Annex was adopted almost in its entirety from FAA AC 120-73, which was written for specific airplanes certified prior to Amendment 25-45 and is not applicable to models certified to later amendments.

response

Not accepted.
Deletion of the Appendix is not accepted. The AMC will continue to retain as guidance related to earlier ageing aircraft programs where it is considered to still be relevant in some cases to compliance with the Part-26 requirement.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — ANNEX 3: REPAIRS AND MODIFICATIONS TO REMOVABLE STRUCTURAL COMPONENTS p. 177-179

comment

84 comment by: *AIRBUS*

COMMENT IS RELATED TO:
page 177/203, section B., AMC 20-20, Appendix 3, Annex 3, paragraph 1.
PROPOSED TEXT / COMMENT:
Some options proposed by this paragraph can be misinterpreted.
In addition, it is proposed to assign some responsibility to TC holders to determine the suitable methods to assign conservative life figures to parts in case of unknown history.
RATIONALE / REASON / JUSTIFICATION:
The following questions have been raised for:
– The option (a): what does "no part changes have occurred" mean? Does it mean no change at aeroplane level (no change of any aeroplane part) or no change at part level (no change for a given part, e.g. cargo door)? In any case, it seems that this option is valid only for aeroplanes/parts recently delivered.
– The option (b): How does this option work with component pools?
It is therefore found reasonable to allocate some responsibilities to TC holders to determine the suitable calculation methods.
It should be emphasised that these methods define back-up solutions to the normal tracking of parts history required by Part-M.

response

Noted. The text has not been changed by this NPA.
(a) 'no' part change means both a modification or a replacement.
(b) for component pools the conservative approach would be to take into account the oldest aircraft in the world fleet.
Regarding the comment on calculation method, AMC 20-20 provides one possible way but not the only way. Current text is considered suficcient.
Please note that tracking requirements on Part-M may not be applicable to all structural components.

comment	*85* comment by: *AIRBUS* **COMMENT IS RELATED TO:** page 178/203, section B., AMC 20-20, Appendix 3, Annex 3, paragraph 5.(a) **PROPOSED TEXT / COMMENT:** Should the tracking burden reduction proposed by this option be balanced with the possible aggravation of the potential for human errors generated by over-maintenance? It is proposed to put more emphasis on such aspects in this paragraph: "5. IMPLEMENTATION OPTIONS TO HELP REDUCE TRACKING BURDEN The following implementation techniques could be used to alleviate some of the burden associated with tracking repairs to affected removable structural components. These techniques, if used, would need to be included in the maintenance programme and may require additional EASA approval and TCH or STC holder input for DTI. They should not be a substitute to good continuing airworthiness management practices, including safety management, as defined in Part-M. (a) Upgrading existing repairs As an option, existing repairs may be removed and replaced to zero time the DTI requirements of the repair and establish an initial tracking point for the repair. […]" **RATIONALE / REASON / JUSTIFICATION:** These options should not be a substitute to good continuing airworthiness management practices.
response	Not accepted. Options are not intended to substitute the good continuing airworthiness management practices as defined in Part-M.

comment	*217* comment by: *British Airways* **References:** AMC 20-20 Amdt 1, Appendix 3, Annex 3, paragraph 1 (c) Page 177 **Comment summary:** The methods of conservatively establishing the age of a Removable Structural Component are similar to the guidance provided to US operators in FAA AC120-93. In trying to comply with AC120-93 industry has recognised that additional methods can be adopted. An industry led initiative is currently providing recommendations for enhancing the guidance. These proposals were discussed at the last Airworthiness Assurance Working group (AAWG) meeting held at the EASA head office in Cologne April 2013. Methods that have been locally FAA approved include using the dash number of the component to conservatively assign utilisation from the dash number creation. Further recommendations are for industry to adopt a recommended practice of detailing in box 12 of the EASA Form 1 or FAA 8130-3 the hour/cycle time for when a DT repair is embodied. (This is a similar approach as that employed for other safe life structure such as Landing Gear). Enhanced release paperwork would help drive a common and improved industry standard that would benefit all parties (including the regulatory agencies). **Suggested resolution:** EASA should consider taking the opportunity to include additional industry guidance and recommended the approach in the AMC. These would include the use of dash numbers

(as applicable) and recommending (add to AMC 20-20 Amdt 1 Appendix 3 Annex 3 paragraph 1 (c)) and the recording on the EASA Form 1/FAA 8130-3 of DT lives at repair embodiment in box 12 (add to AMC 20-20 Amdt 1 Appendix 3 Annex 3 at the end of paragraph 1).
This would be an improvement on the current situation, drive up current practices and would address current thinking without making it a requirement.
It is recognised that to change the EASA Form 1 and co-ordinate the change with the FAA is a significant undertaking and the proposals would be easier to address.

response

Partially accepted.
Some changes to the text have been incorporated, along the lines proposed by the commenter. The Agency will continue to work with the Industry to further improve the guidance.

comment

587 comment by: *Boeing*

Page: 177
Paragraph: AMC 20-20 - Appendix 3 - Annex 3 – para. 2.

The proposed text states:
"2. TRACKING. An effective, formal control or tracking system should be established for removable structural components that are identified as FCBS or that contain FCS. …"
REQUESTED CHANGE:
"**2. TRACKING.** An effective ~~formal control or tracking~~ system should be established for removable structural components that are identified as FCBS or that contain FCS. …"

JUSTIFICATION:
Regulatory authorities have accepted multiple ways of determining compliance, other than implementation of a formal tracking system. This should be accounted for in this paragraph.

response

Partially accepted.

comment

588 comment by: *Boeing*

Page: 179
Paragraph: AMC 20-20 - Amdt 1 – Annex 3 - para 5.(b)

The proposed text states:
"… The development of inspection processes, methods, applicability and intervals will probably require the assistance of the TCH or STC holder for the FCS in question."
REQUESTED CHANGE:
This paragraph should specify how the authority would approve or acknowledge such processes.

JUSTIFICATION:
General Comment: EASA does not require a compliance plan. For regulations requiring

approval or submission of data, please specify how the data will be submitted and to whom it should be submitted.

response

Not accepted.
The text is deleted since the need for approval of repair data under the applicable Part-26 or Part-21 Subparts and their implementation under Part-M and Part-26 is unaltered by these approaches. The need for approval is mentioned in the introduction paragraph of Annex 3.

comment

708 comment by: *AIRBUS*

Comment related to page 177/203, Annex 3,
3. DEVELOPING AND IMPLEMENTING DT DATA (a) Repairs
PROPOSED TEXT / COMMENT:
It is proposed to read :
Accomplish the initial repair assessment of the affected structural component at the same time as the aircraft level repair survey for the aircraft on which the component is installed. Develop DT data according to the process given in Step 3 of ~~Appendix 6~~ Annex 2 and incorporate DTI into the maintenance programme.
RATIONALE / REASON / JUSTIFICATION:
There is no Appendix 6, should read Annex 2.
Accomplish the initial repair assessment of the affected structural component at the same time as the aircraft level repair survey for the aircraft on which the component is installed. Develop DT data according to the process given in Step 3 of Appendix 6 and incorporate DTI into the maintenance programme.

response

Accepted.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — ANNEX 4: SERVICE BULLETIN REVIEW PROCESS p. 180-183

comment

589 comment by: *Boeing*

Page: 180
Paragraph: AMC 20-20 - Amdt 1 – Annex 4 - Guidelines for following the Service Bulletin (SB) flow chart

The proposed text states:
"… Specifically, the list will not include those SBs where a BZI programme developed for the repair assessment programme has been determined to be sufficient to meet the damage tolerance requirements for the FCBS that is affected by the SB. A note should be prominently placed somewhere in the compliance document stating that SBs not included in the list satisfy the DT data requirement. …"(*to end*)
REQUESTED CHANGE:
Delete everything in this text from the word "Specifically" in the third paragraph to the end of the entire section.

JUSTIFICATION:
The material in this section was developed by the AAWG and proposed for inclusion in FAA's AC 120-93. The text was not adopted into FAA rules or guidance for various reasons. The AAWG-drafted text uses the concept of BZI, which is not applicable to many airplanes in the fleet today, and the procedure defined here in does not consider other aspects of Service Bulletin selection (other than those that might be included in ATA Chapters 51-57) and so may mislead the applicant.

response: Not accepted.
Annex 4 is only a means to comply.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — APPENDIX 4: GUIDELINES FOR THE DEVELOPMENT OF A CORROSION PREVENTION AND CONTROL PROGRAMME p. 185-196

comment *12* comment by: *DDUMORTIER*

Page 186 : corrosion level 1 definition
This level 1 definition is still not appropriate for corroded structure elements that can not be reworked due to functional or practical/economical aspects whatever the structure integrity and transfer of load is still not affected by the corrosion damage.
With the existing definition, any part which is to be replaced as long as no rework/blend out is feasable has to be considered as a non control to level 1 which is not in line with the global philosophy when the structure integrity is not affected.
Could we envisage a revision of the level 1 definition in order to address this very reccurent isue ?

response: Accepted. The Level 1 corrosion definition has been revised.

comment *13* comment by: *DDUMORTIER*

page 187 : TCH-developed Baseline Program
The baseline program shall also include reporting rules.

response: Partially accepted.
To avoid confusion on the content, the final sentence of the definition is deleted.

comment *14* comment by: *DDUMORTIER*

Page 203 : § 3.1.1 (a)(b)(c)(d)(e) :
A sixth item could be added for consideration of available margin on each individual structure element for potential blend out/rework.
Two structure elements having similar a, b, c, d and e condition should not be considered in the same manner when setting CPCP instruction when the first is having very limited capability for rework versus the other. Such criteria should trim both the level of inspection and the periodicity for the CPCP task.

response	Noted. The limited rework capability could be considered as part of the airworthiness assessment as proposed under (d) on the same page.

comment	*15* comment by: *DDUMORTIER* Page 192 : §3.1.4.: This paragraph dealing with "continuous analysis and surveillance" is only making reference to such duty at operator level while equivalent responsibility (at another level for sure) to proceed for continous analysis and surveillance of the CPCP baseline effectivity is also assigned to the TCH. May we recommend to update it accordingly.
response	Noted. The guidelines on the programme review by the TCH are provided in paragraph 3.2.6.

comment	*16* comment by: *DDUMORTIER* Page 193 : § 3.2.9. In reference to comment on previous page, this paragraph shall not be only dedicated to operators but also to TCH. As mentionned before, this could also trigger a update in Part 21.
response	Noted. See paragraph 3.2.5.

comment	*121* comment by: *KLM Engineering & Maintenance* Definition of Level 1 corrosion: The definition of Level 1 corrosion is given in both AMC 25.571 and AMC 20-20. Using more than one location for definitions may cause discrepancies after future changes to definitions. Create one location for definitions such as Level 1 corrosion. In other documents refer to that location for the definition. Note: This comment is applicable to all definitions that are used in the proposed rule.
response	Not accepted. Generally, the Agency prefers to have the definitions in the applicable document for ease of use. Note that the Level 1 definition has been changed.

comment	*275* comment by: *FedEx Aging Aircraft Structures* As stated above, as a purchaser and operator of used aircraft, frequently we are finding level 2 corrosion that obviously resulted in this condition after 20+ years of operation and with no evidence of prior treatment. The CPCP program should require adjustment of the maintenance program after multiple aircraft are identified with level 2 corrosion in the same location; and the program should require the application of CIC's.

response

Noted.
See the response to comment 281.

comment

276 comment by: *FedEx Aging Aircraft Structures*

The FAA appears to have lost interest in Level 2 findings and in most cases has allowed us to capture the data and be able to produce it upon request. Only Level 3 should be required to be submitted to regulatory authority.

response

Noted.
See the response to comment 629.

comment

285 comment by: *AIRBUS*

Comment related to page 186-187 /203, Corrosion level definition
PROPOSED TEXT / COMMENT:
It is proposed to harmonise the corrosion levels definitions
RATIONALE / REASON / JUSTIFICATION:
Harmonisation of the corrosion levels definitions
THere is a need to agree corrosion level definitions, especially level 1, to be aligned across the industry and between TC (EASA/FAA) authorities and MRB authorities (ATA MSG3).

response

Noted.
Level 1 corossion definition is harmonised with the MSG-3 Level 1 corossion definition.

comment

590 comment by: *Boeing*

Page: 185
Paragraph: AMC 20-20 - Amdt 1 – Appendix 4 – para 1.1.

The proposed text states:
"**1.1. Purpose**: This Appendix gives guidance to operators and DAHs who are developing and implementing a CPCP for aeroplanes maintained in accordance with a maintenance programme developed in compliance with Part-M M.A.302."
REQUESTED CHANGE:
"**1.1. Purpose**: This Appendix gives guidance to operators and DAHs who are developing and implementing a CPCP for aeroplanes maintained in accordance with a maintenance programme developed in compliance with Part-M M.A.302 **where the CPCP has not already been integrated into the baseline maintenance program**."

JUSTIFICATION:
There is no additional document required by the ATA/A4A MSG-3 guidelines. CPCP is integrated into the structures MSG-3 logic. Any additional task(s)m, if necessary to address corrosion as a result of the MSG-3 analysis, will be included in the structures section of the MPD/MRBR or the zonal section of the MPD/MRBR.

response

Not accepted.

There is no specific need for an additional CPCP document if the corrosion prevention specific tasks are incorporated in the baseline maintenance programme.

comment *591* comment by: *Boeing*

Page: 187
Paragraph: AMC 20-20 - Amdt 1 – para 2. (*Definitions*)

The proposed text states:
"-- **Level 3 corrosion** is that corrosion occurring during the first or subsequent accomplishments of a corrosion inspection task that the operator determines to be an urgent airworthiness concern."

"-- TCH-developed Baseline Programme. As part of the ICA, the TCH should provide an inspection programme that includes the frequency and extent of inspections necessary to provide the continued airworthiness of the aircraft. Furthermore, the ICA should include the information needed to apply protective treatments to the structure after inspection. In order for the inspections to be effectively accomplished, the TCH should include, in the ICA, corrosion removal and cleaning procedures and reference allowable limits. The TCH should include all of these corrosion-related activities in a manual, referred to as the Baseline Programme. The Baseline Programme manual is intended to facilitate operator development of a CPCP for their maintenance programme."

REQUESTED CHANGE:
Change to read as follows:
-- **Level 3 corrosion** is that corrosion occurring during the first or subsequent accomplishments of a corrosion inspection task that the operator**, TCH, or regulatory agency** determines to be an urgent airworthiness concern.

-- TCH-developed Baseline Programme. As part of the ICA, the TCH should provide an inspection programme that includes the frequency and extent of inspections necessary to provide the continued airworthiness of the aircraft. Furthermore, the ICA should include the information needed to apply protective treatments to the structure after inspection. In order for the inspections to be effectively accomplished, the TCH should include, in the ICA, corrosion removal and cleaning procedures and reference allowable limits. ~~**The TCH should include all of these corrosion-related activities in a manual, referred to as the Baseline Programme.**~~ The Baseline Programme manual is intended to facilitate operator development of a CPCP for their maintenance programme.

JUSTIFICATION:
There have been instances where operators have not recognized the significance of corrosion found during inspections. Information like the cleaning procedures have been historically provided within the task cards and information on allowable limits have historically been provided within the SRM or AMM. Providing these all in a single manual, in addition to maintaining the information up to date in all locations, would create a significant burden to the industry with no added safety benefit. The NPA is not in sync with the ATA/A4A MSG-3 process.

response

Accepted.
The text has been changed.

comment

592 comment by: *Boeing*

Page: 193
Paragraph: AMC 20-20 - Amdt 1 – para 3.2.5.

The proposed text states:
"3.2.5. Reporting system: Procedures to report findings of Level 2 and Level 3 corrosion to the competent authority should be clearly established in this section. All Level 2 and Level 3 findings should be reported in accordance with the applicable AD, operator's service difficulty reporting procedures or reporting required by other competent authorities. Additional procedures for alerting the competent authority of Level 3 findings should be established that expedite such reporting. This report to the competent authority shall be made after the determination of the corrosion level."
REQUESTED CHANGE:
"3.2.5. Reporting system: Procedures to report findings of ~~**Level 2 and**~~ Level 3 corrosion to the competent authority should be clearly established in this section. All ~~**Level 2 and**~~ Level 3 findings should be reported in accordance with the applicable AD, operator's service difficulty reporting procedures or reporting required by other competent authorities. ~~**Additional**~~ Procedures for alerting the competent authority of Level 3 findings should be established that expedite such reporting. This report to the competent authority shall be made after the determination of the corrosion level."

JUSTIFICATION:
The CPCP provides sufficient direction on corrective action for Level 2 corrosion. There is no need for every Level 2 corrosion instance (e.g., any corrosion event that required a reinforcing repair) to be reported to the regulatory agency. If such a reporting requirement were established, it is unclear how the regulatory agency could process that data, given the large number of airplanes in the fleet and the large number of reinforcing repairs that occur.

response

Partially accepted.
(Agree to delete 'Additional'). See also the response to comment 629.

comment

593 comment by: *Boeing*

Page: 193
Paragraph: AMC 20-20 - Amdt 1 – para 3.2.6.

The proposed text states:
"3.2.6. Periodic review: This section should establish a period for the TCH (or lead operator) and participating operators to meet with the competent authority and review the reported Level 2 and Level 3 findings. The purpose of this review is to assess the Baseline Programme and make adjustments if necessary."

REQUESTED CHANGE:
Add to the end of the paragraph: **"This may be accomplished through normal maintenance program reviews conducted via the Maintenance Program Industry Steering Committees (or equivalent meetings) for the model."**

JUSTIFICATION:
Change is needed to avoid duplicate assignments.

response

Accepted.

comment

594 comment by: *Boeing*

Page: 194
Paragraph: AMC 20-20 - Amdt 1 – para 3.2.13.(b)

The proposed text states:
"(b) A single isolated occurrence of corrosion between successive inspections that exceeds Level 1 does not necessarily warrant a change in the operators CPCP. If the operator experiences multiple occurrences of Level 2 or Level 3 corrosion for a specific task area, then the operator should implement a change to the CPCP."
REQUESTED CHANGE:
Change to text as follows:

"(b) A single isolated occurrence of corrosion between successive inspections that exceeds Level 1 does not necessarily warrant a change in the operators CPCP **if it can be attributed to a unique event that is unlikely to occur on another airplane.** If the operator experiences multiple occurrences of Level 2 or Level 3 corrosion for a specific task area, then the operator should implement a change to the CPCP."

JUSTIFICATION:
Clarification of the intent is needed.

response

Not accepted.
The intent of the current text is sufficient. There is no need to specify further restriction as it will be decided by the operator and their Authority as to whether a change is required based on a singe finding. The proposed text is actually defining Level 1 corrosion rather than the process for revision of the CPCP.

comment

595 comment by: *Boeing*

Page: 195
Paragraph: AMC 20-20 - Amdt 1 – para 4.1.1.

The proposed text states:
"4.1.1. Provisions for aircraft that have exceeded the implementation threshold: The operator's CPCP must establish a schedule for accomplishing all corrosion inspection tasks in task areas where the aircraft age has exceeded the implementation threshold (see main

text of AMC paragraph 12). Repeat paragraph 12 text on implementation."

REQUESTED CHANGE:

Change to:

4.1.1. Provisions for aircraft that have exceeded the implementation threshold: If there are aircraft that do not have a CPCP and they have exceeded the implementation threshold, the operator's CPCP must establish a schedule for accomplishing all corrosion inspection tasks in task areas where the aircraft age has exceeded the implementation threshold (see main text of AMC paragraph 12). Repeat paragraph 12 text on implementation.

JUSTIFICATION:

This statement is no longer needed for most models, as they already have a CPCP. This was a requirement when the CPCP ADs were originally released because there were airplanes that were older than the initial implementation threshold of the CPCP task. This is no longer the case.

response

Not accepted.

There is no need to elaborate as to why the threshold has been exceeded. Some aircraft do not yet have a CPCP (some business aircraft and some types where maintenance programmes were developed prior to MSG-3 Rev 2).

comment

628 comment by: *S.A. Morshed, Emirates*

AMC 20-20 Appendix 4 Par 1.1 (Page 185)

Change to: This Appendix gives guidance to operators and DAHs who are developing and implementing a CPCP for aeroplanes maintained in accordance with a maintenance programme developed in compliance with Part - M M.A.302 where the CPCP has not already been integrated into the baseline maintenance program.

Proposed Text:

"This Appendix gives guidance to operators and DAHs who are developing and implementing a CPCP for aeroplanes maintained in accordance with a maintenance programme developed in compliance with Part-M M.A.302."

Justification:

There is no additional Document required by the ATA/A4A MSG-3 guidelines. CPCP is integrated into the structures MSG-3 logic. Any additional task(s) if necessary to address corrosion as a result of the MSG-3 analysis will be included in the structures section of the MPD/MRBR or the zonal section of the MPD/MRBR.

response

Not accepted.

See the response to comment 590.

comment

629 comment by: *S.A. Morshed, Emirates*

AMC 20-20 Appendix 4 Section 3.2.5 Reporting system (Page 193)

Delete reference to Level 2:

Procedures to report findings of Level 3 corrosion to the competent authority should be clearly established in this section. All Level 3 findings should be reported in accordance

with the applicable AD, operator's service difficulty reporting procedures or reporting required by other competent authorities. Procedures for alerting the competent authority of Level 3 findings should be established that expedite such reporting. This report to the competent authority shall be made after the determination of the corrosion level.

Proposed Text:

Procedures to report findings of Level 3 corrosion to the competent authority should be clearly established in this section. All Level 3 findings should be reported in accordance with the applicable AD, operator's service difficulty reporting procedures or reporting required by other competent authorities. Additional procedures for alerting the competent authority of Level 3 findings should be established that expedite such reporting. This report to the competent authority shall be made after the determination of the corrosion level.

Justification:

The CPCP provides sufficient direction on corrective action for Level 2 corrosion. There is no need for every level 2 corrosion instance (e.g. any corrosion event that required a reinforcing repair) to be reported to the regulatory agency. If such a reporting requirement were established, it is unclear how the regulatory agency could process that data given the large number of airplanes in the fleet and the large number of reinforcing repairs that occur.

response

Noted.

The focus of the paragraph is on the TCH establishing guidance in the baseline programme and the timescale of reporting is not specified in the AMC. The information on Level 2 corrosion may be needed in a form acceptable to the competent authority responsible for approval of any revision to the maintenance programme resulting from a Level 2 finding. The AMC text is intended to allow flexibility. Minor amendments have been made to help clarification.

For a very mature baseline CPCP and a fleet in its sunset years it is understood that an NAA may find it acceptable to relax the reporting requirements.

comment

630 comment by: *S.A. Morshed, Emirates*

AMC 20-20 Appendix 4 Section 3.2.13(b) (Page 194)

"...A single isolated occurrence of corrosion between successive inspections that exceeds Level 1 does not necessarily warrant a change in the operators CPCP if it can be attributed to a unique event that is unlikely to occur on another airplane. If the operator experiences multiple occurrences of Level 2 or Level 3 corrosion for a specific task area, then the operator should implement a change to the CPCP. ..."

Proposed Text:

"...A single isolated occurrence of corrosion between successive inspections that exceeds Level 1 does not necessarily warrant a change in the operators CPCP. If the operator experiences multiple occurrences of Level 2 or Level 3 corrosion for a specific task area, then the operator should implement a change to the CPCP. ... "

Reason:

Clarification.

response

Not accepted.

	See the response to comment 594.

comment	*631* comment by: *S.A. Morshed, Emirates* **AMC 20-20 Appendix 4 Section 4.1.1. (Page 195)** Change To: If there are aircraft that do not have a CPCP and they have exceeded the implementation threshold, the operator's CPCP must establish a schedule for accomplishing all corrosion inspection tasks in task areas where the aircraft age has exceeded the implementation threshold (see main text of AMC paragraph 12). Repeat paragraph 12 text on implementation. **Proposed Text:** (4.1.1. Provisions for aircraft that have exceeded the implementation threshold) The operator's CPCP must establish a schedule for accomplishing all corrosion inspection tasks in task areas where the aircraft age has exceeded the implementation threshold (see main text of AMC paragraph 12). Repeat paragraph 12 text on implementation. **Reason:** This statement is no longer needed for most models as they already have a CPCP. This was a requirement when the CPCP ADs were originally released because there were airplanes that were older than the initial implementation Threshold of the CPCP task. This is no longer the case.
response	Not accepted. See the response to comment 595.

comment	*699* comment by: *European Air Transport Leipzig GmbH / DHL* SUMMARY: "The CPCP also includes procedures to notify the competent authority of the findings and data associated with Level 2 and Level 3 corrosion and the actions taken to reduce future findings to Level 1" With an implemented CPCP approved by the governing authority clear procedures are in place to address Level 2 corrosion with the aim to improve corrosion level to Level 1 or better. Possible adjustment options to existing CPCP such as reduction of intervals, change of inspection method, modification action, introduction of additional specific inspection tasks as well as oversight by national authorities by approving these measures provide sufficient safety. Reporting of all Level 2 findings to the authority would create an unnecessary burden both for authorities and operatrs and would require dedicated reporting systems as well as implementation of databases for data handling. The time consumed for data handling on both sides results in unnecessary costs to the industry while achieving a negligible increase of safety. SUGGESTED RESOLUTION: EATL proposes to remove the explicit demand for reporting of all Level 2 corrosion findings. Existing processes are in place and assure a comparable level of safety.
response	Noted. See the response to comment 629.

comment	*709* comment by: *AIRBUS* Comment related to page 185/203, Appendix 4 Guideline for CPCP PROPOSED TEXT / COMMENT: This process is identified in the ATA MSG-3 Scheduled maintenance development document, which introduced the CPCP concept in revision 2, circa 1993. The Agency will accept a CPCP based on this document and the information in this advisory circular AMC RATIONALE / REASON / JUSTIFICATION: It is not fully correct to say MSG3 address the CPCP. It only address part of it. MSG3 does not consider level 2 or 3 corrosion, nor finding reporting rules.
response	Noted. The text is deleted since the paragraph on approval addresses it.

AMC 20-20 Amdt 1 'Continuing Structural Integrity Programme' — APPENDIX 5: GUIDELINES FOR THE FOR CONTINUED AIRWORTHINESS PROCESSES FOR CONTINUING STRUCTURAL INTEGRITY, INCLUDING DEVELOPMENT OF AN SB REVIEW AND MANDATORY MODIFICATION PROGRAMME (REF.: PART 26.300) p. 197-203

comment	*327* comment by: *Gulfstream Aerospace Corporation* **AMC 20-20 Amdt 1- Continuing Structural Integrity Programme – Appendix 5** Some details are provided to guide the evaluation process, but there are none that address what is to be done with the results. The aging aircraft rule requires an ALS. Changes to the ALS that are more restrictive generally require an AD to enforce. Therefore, the ALS should be changed as a result of this process only in cases where an unsafe condition is identified. It is difficult to see how an unsafe condition could be indicated solely by a review of 'key operating variable parameters such as weight, fuel, payload, mission length, etc.' The standard set for changing the ALS should match that reserved for a demonstrated unsafe condition. • Gulfstream recommends EASA provide guidance that addresses disposition of results of the periodic review. **Paragraph 1. General** Within this paragraph, EASA includes the following redundant statement: *" In order to show compliance with Part 26.300(f) 'Continued Airworthiness Procedures', a summary of the TCH's procedures that address Part 26.300(f) and take into account the guidance of this AMC should be provided to the Agency (see Appendix 5 for further details)."* • Gulfstream recommends removal of the "(see Appendix 5 for further details)" statement as the text is already within Appendix 5.
response	Partially accepted. 26.300(f) has been updated to focus on the process, thus allowing for more flexibility in compliance demonstration. Second comment is accepted.

comment | *337* | comment by: *Dassault Aviation*

Appendix 5

· §1.:

_ (a): Same comment as previously on the fact that periodic monitoring of operational usage for Business Jets is not practically feasible (cf. §26.300 (f)(1) and AMC 25.571 9.3.2. for example).

_ (c): "*Modifying structure so that a reasonably high probability exists that ultimate load capability will typically be retained over long periods of the aircraft's life …*" It is not possible to demonstrate by analysis that the structure will be able to sustain them after even one A/C life. There is no request in the rule that oblige to apply Ultimate Loads after having performed the fatigue test. It is only requested to withstand the Residual Strength Loads. So DASSAULT-AVIATION propose to modify the sentence as: "*Modifying structure so that* ~~a reasonably high probability exists that ultimate~~ residual strength *load capability will* ~~typically~~ *be retained over* ~~long periods of~~ *the aircraft's life …*".

response | Noted.
26.300(f) has been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.
Second comment: Not accepted. Damage tolerance requirements are supplemental to the basic strength requirements for ultimate load capability and designed to allow essential inspections and other procedures to be established . These inspections are intended to find damaged structure well before it becomes critical and to repair or replace it to restore ultimate load capability. It is never been acceptable practice to allow long term operation with structure substantially below the required ultimate load capability.

comment | *425* | comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.*

AMC 20.20:

Appendix 5.(1):

Paragraph: "Part 26.300(f) 'Continued Airworthiness Procedures' requires that TCHs for large transport aeroplanes establish a new process or validate an existing process which ensures that unsafe levels of fatigue cracking will be precluded in service. These new or validated procedures and processes must include:

(a) periodic monitoring of operational usage with comparison to design assumptions; ..."

Comment: Eliminate periodic monitoring from the rule and retain it in the guidelines (i.e. part of AMC 20-20). Periodic monitoring of operational usage and assessing of the need for mandatory modifications 26.300(f) is problematic for manufacturers to comply due to current reporting requirements and lack of access to operators' proprietary data. TCH access to operational data is limited and there is no enforcement vehicle to require compliance from operators. Please note the FAA considered and then removed a similar requirement from their final rule concluding existing regulations \36\ that require both DAHs and operators to report structural defects should be adequate to enable us to

	determine whether the objectives of this final rule are being met. In order to allow TCH to perform with such EASA requirement, EASA must oblige Operators and Repair Shop to inform TCH about any relevant finding as it is already proposed by ICAO regulations. EASA then would revise the Operational and Part-M requirements.
response	Noted. The 26.300(f) has been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment	*426* comment by: *Embraer - Indústria Brasileira de Aeronáutica - S.A.* **AMC 20.20:** **Appendix 5.(1):** **Paragraph:** "... (a) Ensuring the CAW process and its implementation provide adequate monitoring of the relevant service data and trends within it and compare these to the existing substantiation." **Comment:** In order to allow TCH to perform with such EASA requirement, EASA must oblige Operators and Repair Shop to inform TCH about any relevant finding as it is already proposed by ICAO regulations. EASA then would revise the Operational and Part-M requirements.
response	Noted. The CAW process should take into account all available service experience whether provided on the basis of a requirement or not. The Agency currently considers that Part-M reporting requirements are sufficient to ensure a minimum acceptable level of information. This will be monitored pending the development of EU Regulations and implementation of Part-26.

comment	*596* comment by: *Boeing* Page: 197 Paragraph: AMC 20-20 - Amdt 1 – Appendix 5 - para 1. The proposed text states: "**1. GENERAL:** Part 26.300(f) 'Continued Airworthiness Procedures' requires…" **REQUESTED CHANGE:** Delete this appendix [see our comment on 26.300(f)] or change the text to state: "**1. GENERAL: It is recommended that …"** **JUSTIFICATION:** The proposed 26.300(f) should be withdrawn, since there is no regulation that requires the operators to report all this data to the TCH and, therefore, the TCH is being compelled

	to comply with something that they may be unable to comply with due to circumstances beyond their control. This becomes especially challenging when the fleet ages and airplanes are being operated by third tier operators who have no direct business relationship with the TCH. [Note that this comment may be ignored if 26.300(f) is deleted as requested and the Appendix 5 is deleted accordingly.]
response	Noted. Part 26.300(f) has been updated to focus on the process, thus allowing more flexibility in compliance demonstration.

comment	*597* comment by: *Boeing* Page: 197 Paragraph: AMC 20-20 - Amdt 1 – Appendix 5 – para 1. The proposed text states: "… In order to show compliance with Part 26.300(f) 'Continued Airworthiness Procedures', a summary of the TCH's procedures that address Part 26.300(f) and take into account the guidance of this AMC should be provided to the Agency (see Appendix 5 for further details). …" **REQUESTED CHANGE:** Revise the reference to Appendix 5 in this paragraph. **JUSTIFICATION:** While the text makes a reference to Appendix 5, it does not point the reader to the appropriate place within the document or section.
response	Accepted. See the response to comment 327.

comment	*598* comment by: *Boeing* Page: 198 Paragraph: AMC 20-20 - Amdt 1 – Appendix 5 – paras 2.2 and 2.3 The proposed text states: Paragraph 2.2 addresses: **Potential or increasing structural airworthiness concern.** Paragraph 2.3 addresses: **Damage is difficult to detect during regular maintenance** **REQUESTED CHANGE:** While these paragraphs roughly follow the STG Guidelines report, they are not in the same order or worded the same. We suggest revising them to harmonise with the AAWG-approved STG Guidelines standards. **JUSTIFICATION:** Change is needed for clarity and for understanding the expectation.
response	Partially accepted.

	The STG guidelines are relatively old. The text will be revised to try to utilise consistently the most relevant elements to today's expected practices.

comment	*599* comment by: *Boeing* Page: 198 Paragraph: AMC 20-20 - Amdt 1 – Appendix 5 General Comment: We note the lack of an STG "sunset" clause. **REQUESTED CHANGE:** EASA should stipulate when an STG is no longer necessary. **JUSTIFICATION:** This suggested change would establish expectations and better understanding of the requirements.
response	Accepted. The Agency understands that the value of maintaining the STG will eventually diminish to a point where it is no longer needed.

comment	*600* comment by: *Boeing* Page: 199 Paragraph: AMC 20-20 - Amdt 1 – Appendix 5 – para 3. The proposed text states: **"3. STG MEETING, SB REVIEW AND RECOMMENDATIONS** It is recommended to review at the same time all SBs that can interact, the so-called SB package, in the selection process. The meeting should start with an STG agreement on the selected SB list and on those deferred. At the meeting the TCH should present their analysis of each SB utilising the collection of operator input data. ... *(to end of entire paragraph)"* **REQUESTED CHANGE:** Revise or delete this material. This is new information that does not conform to the current process in the AAWG Approved STG guidelines. **JUSTIFICATION:** Document the current AAWG Approved STG guidelines or delete this material.
response	Noted. This material exists in the AMC and is believed to reflect the intent of the Appendix F guidelines example of SB selection process.

comment	*635* comment by: *S.A. Morshed, Emirates*

AMC 20-20 Appendix 5 Para 1 General
Delete wordings: “weight, fuel, payload,”
Reason:
Past experience has shown that this data is particularly impractical to obtain. Usually, it would require a dedicated operator special effort to collect and provide such data and a regulation compelling the operators to track and report such data. Note that this comment is not required if 26.300(f) is deleted as requested earlier in these comments.

response

Not accepted.
26.300(f) has been updated to focus on the process, thus allowing for more flexibility in compliance demonstration. Nonetheless, this type of data may be essential to a continued airworthiness investigation.

comment

636 comment by: *S.A. Morshed, Emirates*

AMC 20-20 Appendix 5 Para 1 general
Change from: ”five years” to “6 year(s) or equivalent heavy check intervals”
Reason:
To align the evaluation to be in-synchronization with operator maintenance intervals. Note that this comment is not required if 26.300(f) is deleted as requested earlier in these comments.

response

Noted.
26.300(f) and the associated guidance has been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

comment

700 comment by: *European Air Transport Leipzig GmbH / DHL*

SUMMARY:
"The monitoring of operational usage is best achieved in cooperation with the operators, including implementation of fleet leader programmes to ensure that flight lengths, fuel weights, payloads, altitudes, etc., correspond with the assumptions made when the aircraft was certified or that were used in the development of the ageing aircraft programmes."
Monitoring of fuel weights, payloads, and similar parameters is virtually impossible for TCHs and DAHs to accomplish. It would place an unnecessary burden on the operator to establish dedicated reporting of these details.
SUGGESTED RESOLUTION:
EATL proposes to delete the specific reference to these parameters.

response

Noted.
26.300(f) and associated guidance has been updated to focus on the process, thus allowing for more flexibility in compliance demonstration.

Appendix A - Attachments

EASA aging aircraft rule comments - Legacy Learjet Aircraft.pdf
Attachment #1 to comment #25

A&C-13-248_GAC_Comments_to_NPA2013-07.pdf
Attachment #2 to comment #310

AIA Comments on NPA 2013-07 Ltr.pdf
Attachment #3 to comment #447

Ageing Aircraft Structures_Cessna Aircraft Company Response.pdf
Attachment #4 to comment #619

EASA Exclusion Application draft - Legacy Learjet Aircraft (3).pdf
Attachment #5 to comment #26

mm1809.pdf
Attachment #6 to comment #37

TS13.51725Letter to European Aviation Safety Agency.pdf
Attachment #7 to comment #2

EASA Exclusion Letters Approval0001.pdf
Attachment #8 to comment #338

CAP13-051 Lockheed Martin Electra EASA Exclusion Letter.pdf
Attachment #9 to comment #338

CAP13-054 Lockheed Martin TriStar EASA Exclusion Letter.pdf
Attachment #10 to comment #338

CAP13-052 Lockheed Martin JetStar EASA Exclusion Letter.pdf
Attachment #11 to comment #338

CAP13-053 Lockheed Martin Hercules EASA Exclusion Letter.pdf
Attachment #12 to comment #338