European Aviation Safety Agency

Comment-Response Document 2016-15

Appendix
to ED Decision 2017/018/R

RELATED NPA 2016-15 — RMT.0252 (MDM.056) — 24.8.2017

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1. Summary of the outcome of the consultation

159 comments were submitted by 19 stakeholders during the NPA 2016-15 consultation.

The stakeholders commenting on this NPA included European national aviation authorities, the FAA, TCCA, type certificate holders (EU and non-EU), and others.

The nature of the comments received ranges from specific technical aspects, to comments aiming to improve the wording of the proposed amendments.

Several comments were accepted or partially accepted, thus leading to substantial amendments of the proposed text which, in certain elements, has been significantly improved.

2. Individual comments and responses

In responding to comments, a standard terminology has been applied to attest EASA's position. This terminology is as follows:

(a) **Accepted** — EASA agrees with the comment and any proposed amendment is wholly transferred to the revised text.

(b) **Partially accepted** — EASA either agrees partially with the comment, or agrees with it but the proposed amendment is only partially transferred to the revised text.

(c) **Noted** — EASA acknowledges the comment but no change to the existing text is considered necessary.

(d) **Not accepted** — The comment or proposed amendment is not shared by EASA.

(General Comments)	-

comment	*3* comment by: *Rolls-Royce Deutschland / Airworthiness Office - D. Stege* Please avoid for European Regulations or AMC/GM the term 'manufacturer'. Wherever possible and correctly applied, the terms 'TC/STC Holder' or 'POA Holder' should be used to minimise uncertainties.
response	Partially accepted Manufacturer is replaced by TC/STC holder, except for MSG 3 document names which include manufacturer.

comment	*19* comment by: *UK CAA* Thank you for the opportunity to comment on NPA 2016-15, Instructions for continued airworthiness - certification maintenance requirements. Please be advised there are no comments from the UK Civil Aviation Authority.
response	Noted

comment	*47* comment by: *CAA-NL* The NPA describes in section 2 (in particular section 2.2) that its specific objective is the harmonisation of the EASA AMC 25-19 with FAA AC 25-1 9A, and the improvement of instructions and guidance in the AMC, thus ensuring a better harmonisation of the CMR

	development process among applicants, and the reduction of the risk of inadequate task identification and follow-up. We agree that the proposals in the NPA provide improved guidance and instructions and reduce the risk of inadequate task identification and reduce the risk of inappropriate task escalations which would reduce safety. However, while the existing (original) version of AMC 25-19 is nearly completely harmonised with the original FAA AC 25-19, the proposals in this NPA deviate to quite a large degree from AC 25-19A. Although we agree the text proposed in the NPA is generally preferable over what is written in AC 25-19A, the objective of harmonisation is not achieved. It is proposed that EASA takes the initiative to work with the FAA in a new task to obtain better harmonisation between the AMC and AC.
response	Noted Other authorities, including the FAA, were involved in the working group. The goal was to amend CS 25/AMC/GM starting from AC 25-19A: the result is an improvement of the EASA guidance material, which was agreed by the FAA, to be used to revise AC 25-19 accordingly. The harmonisation will be achieved with FAA AC 25-19B

comment	*50* comment by: *DGAC France* Please note that DGAC has no specific comments on this NPA.
response	Noted

comment	*52* comment by: *AIRBUS* **GENERAL COMMENT** As a general comment, Airbus believes that it would be beneficial if the EASA can liaise with the FAA Rulemaking to harmonise FAA AC 25-19A with revised EASA AMC 25-19, in order to avoid the risk that two standards of 25-19 guidelines become applicable to Applicants for new aircraft requiring both EASA and FAA TC. In addition, it would be advisable that the EASA issue the NPA as AMC 25-19B in order to be in line with the harmonised FAA AC 25-19B. However it would be useful that the EASA retains AMC 25-19 in its documentation database so it can be accessed by operators and NAA's for use on aircraft types certificated according to the earlier CMR selection methodology. **RATIONALE** For a TC Applicant, it is highly desirable to minimise the differences and thus avoid two separate certification exercises. Non harmonisation of EASA and FAA 25-19 guidelines will lead to two sets of dossiers and two CMR documents for the same aircraft type. Such a situation would lead carriers to question the justification for differences that could impact their operation and cause difficulties when transferring aircraft from one register to another.

	GENERAL COMMENT As it was already highlighted in previous meetings on this subject, Airbus is of the opinion that the cancellation of the Two Star CMR categorisation may lead to some potential adverse effects. **RATIONALE** The cancellation of the Two Star CMR categorisation will remove a powerful tool that permits a task to be mandated while allowing some controlled flexibility on the interval. Identifying all CMRs as equal will now lead to hard limits which, in many cases, are not justified due to the difficulty in identifying the maximum acceptable interval with a high degree of accuracy. This is particularly the case where the determination includes the probability of an event (fire, cabin depressurisation, evacuation etc…). Hard limits may be justified in specific situations but in the majority of cases the flexibility to permit the task to be performed under optimum conditions (during a recognised check package) outweighs any benefit of enforcing the task at a hard interval a few hundred hours earlier. Even if the NAAs will usually not accept escalation of the OMP task related to MRBR without reliability and in service data and by just relying on a calculated figure coming from a different process; by publishing the SSA limits through CMR in regard with lower MRBR intervals could encourage operators to ask for excessive MRBR task escalation. Even if the safety should be not impacted (no unsafe condition justified up to the SSA limits), potential impacts on operability and/or economics are not excluded.
response	Noted 1st comment: Other authorities, including the FAA, were involved in the working group. The goal was to revise CS 25/AMC/GM starting from AC 25-19A: the result is an improvement of EASA Guidance Material which was agreed by the FAA to be used to revise the AC 25-19 accordingly. The harmonization will be achieved with FAA AC 25-19B. In the EASA system, there is no revision letter for the AMC name related to an amendment History of amendment is available on EASA website. 2nd comment: AC 25-19A already abandoned the two star categorisation and the working group supported this position.

comment	*97* comment by: *ECOGAS* **ECOGAS represents mainly but is not limited to SME's active in maintenance.** We appreciate the effort in the large aeroplane sector to promote regulatory coordination related to the harmonisation of the current EASA AMC 25-19 with FAA AC 25-19A in relation to CMRs, and proposes an amendment to CS-25 (which includes a revision of AMC 25-19). We appreciate that the work is supporting the route of reliabiltity centered maintenance culminating in the prpoven MSG-3 routine and see this is the correct way forward.

	We trust that manufacturers association, like GAMA as far as it concerns their segment of large aeroplanes will provide the necessary detail feedbck together with high manhour MRO's and in the field of airline maintenace that the result, as indicated troughout this NPA, will result in a very usefull final regulation. We trust also, that the full integration of the competent manufaturer will lead to a usefull regulation.
response	Noted

comment	*100* comment by: *Luftfahrt-Bundesamt* • The LBA has no comments on NPA 2016-15.
response	Noted

comment	*101* comment by: *Dassault-Aviation* Dassault-Aviation comment: Whole document mainly refers to MRB and MSG-3 methods, while other methods may be applied
response	Noted The AMC does not prevent the use of other methods. However, MRB and MSG3 are the most frequently used for CS-25 products.

comment	*143* comment by: *EUROCONTROL* The EUROCONTROL Agency has no comment to make on EASA NPA 2016-15.
response	Noted

comment	*144* comment by: *Jeff Conner* As stated in CS 25.1309, the requirements for CMRs apply to “any equipment or system as installed in the aeroplane.” While we recognize the need to consider the potential effects of latent failures that could lead to hazardous or catastrophic failures, the expansion of the use of CMRs to detect latent failures that could result in a major failure condition represents a unique challenge for turbine engines given the aviation industry’s significant reliance on twin engine applications. This extension could result in the introduction of multiple new CMRs on

	systems with traditional architectures, traditional well-understood technologies and excellent field history without a commensurate safety benefit.
response	Noted It is not intended to deal with all latent failures contributing to major failure conditions but only with those not addressed by any other maintenance task and in combination with only one specified failure event (see paragraph 11 (f)).

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comment	*126* comment by: *FAA* We thank EASA for this NPA which proposes close harmonization with AC 25-19A. We also thank EASA for involving us in the initial development of this NPA through RMT.0252 (MDM.056) Subtask 5 activity.
response	Noted

comment	*142* comment by: *IACA International Air Carrier Association* IACA supports the envisaged harminisation with the FAA and has no further comments to NPA 2016-15. Erik Moyson SSCC member
response	Noted

3. Proposed amendments — 3.1. Draft certification specifications (CSs) — CS 25.1309 'Equipment, systems and installations' p. 6-7

comment	*1* comment by: *Francis Fagegaltier Services* The aim of harmonising with FAA texts related to FAR 25 is understood. However, was harmonisation with other EASA certification specifications also considered ? The newly proposed 25.1309 (e) is moving towards the current CS-E 510 (e)(1) which states in particular "(e) If the acceptability of the safety analysis is dependent on one or more of the following items, they must be identified in the analysis and appropriately substantiated: (1)

	Maintenance actions being carried out at stated intervals" ..... "the maintenance intervals must be published in the airworthiness limitations section of the instructions for continued airworthiness required under CS-E 25". However, the wording "certification maintenance requirements" does not appear in CS-E. Would these mandatory maintenance actions for engine certification be considered as being CMR ?
response	Noted This NPA aims at harmonisation of AMC 25-19 with the FAA AC: harmonisation of CS-E with CS-25 was out of the scope of this NPA. It may be included in a future RMP.

comment	*4* comment by: *Bombardier* Text of CS25.1309 (e) The CMR definition should be aligned with the definition in AC 25.19A. A requirement to assess systems to define CMRs should be added. Suggested revised text: (e) A Certification Maintenance Requirement is a **scheduled maintenance task** which is necessary for achieving the safety objectives of CS 2501309(b). **The aeroplane equipment and systems must be assessed to define the applicable Certification Maintenance Requirements.** Certification Maintenance Requirements must be published in the Airworthiness limitations Section of the Instructions for Continued Airworthiness required by CS 25.1529.'
response	Partially accepted: The main purpose of this paragraph is to ensure that CMRs are established as necessary, to prevent development of the failure conditions described in CS 25.1309(b) and published in the ALS, and not to give a definition of CMR Modified wording: (e) Certification Maintenance Requirements must be established, as necessary, to prevent development of the failure conditions described in CS 25.1309(b), and must be included in the Airworthiness Limitations Section of the Instructions for Continued Airworthiness required by CS 25.1529.

comment	*5* comment by: *Bombardier* References in CS 25.1309(e) The NPA refers to CS 25.1309(e) while the AMC to CS 25.1309 refers to various regulations such as CS 25.671, CS 25.783, CS 25.901, CS 25.933. For consistency, it is recommended to align the wording of CS 25.1309(e) with the AMC.

	Suggested change: "A Certification Maintenance Requirement is a maintenance action which is necessary for achieving the safety objectives of CS 25.1309(b) CS 25.1309 and other system safety requirements (such as CS 25.671, 25.783, 25.901, and 25.933)"
response	Not accepted: The link with the various regulations is ensured through AMC 25.1309 and AMC 25-19.

comment	*48* comment by: *CAA-NL* The proposal in the NPA includes a change to 25.1309 (adding bullet (e)) which requires CMRs to be included in the Airworthiness Limitation Section (ALS) of the Instructions for Continued Airworthiness required by CS 25.1529. We support this proposal but have to point out that there is no equivalent requirement in the US FAR (14 CFR 25.1309) and that FAA AC 25-1 9A goes no further than stating in section 13 that “An acceptable means is to include CMRs in the Airworthiness Limitations section of the airplane maintenance manual.” Until the better harmonisation task proposed above has been completed, this difference potentially leads to the kind differences in CMR documents that it is the objective of the NPA to avoid.
response	Noted The FAA in the working group agreed with this requirement, which will be harmonised with the next revision of the FAA AC.

comment	*102* comment by: *Dassault-Aviation* Dassault-Aviation: Comment: Page 6 § 3.1 (e). The definition of CMR is not consistent with other definition in appendix H, other paragraphs than 1309(b) may require CMR's New proposed wording: "Certification Maintenance Requirement is a maintenance action which is necessary for achieving the safety objectives of CS 25.1309(b). It is to be adressed per Appendix H Instructions for Continued Airworthiness. Certification maintenance..."
response	Not accepted: Reference to appendix H is covered by reference to CS 25.1529.

comment	*116* comment by: *FAA* Comment: The proposed addition to CS 25.1309(e) states that a CMR "is a maintenance action which is necessary for achieving the safety objectives of CS 25.1309(b)." 1) This definition limits CMR only to 1309(b), potentially excluding other rules (such as 671, 933, etc.) that may also generate CMRs (as discussed in the proposed AMC). This definition also implies maintenance actions can attend to the full set of safety objectives in CS 25.1309(b). It also implies CMRs are always necessary because without them the safety objectives would not be achieved. We believe CMRs, if necessary, can limit exposure (or probability) to the undesired failure conditions. Proposed Resolution: 1) We suggest define CMR more generally as a required scheduled maintenance task established during the design certification of the airplane systems as an airworthiness limitation of the type certificate or supplemental type certificate. (These are the words used in the 1st paragraph of section 5 of the proposed AMC.) We reason that maintenance tasks can prevent the failure condition covered by CS 25.1309(b) from materializing because the underlying premise is failures, if found, will eventually be fixed. Thus we suggest "The applicant must establish CMRs, as necessary, to prevent development of the failure conditions described in CS 25.1309(b)."
response	Accepted: Modified wording: (e) Certification Maintenance Requirements must be established, as necessary, to prevent the development of the failure conditions described in CS 25.1309(b), and must be included in the Airworthiness Limitations Section of the Instructions for Continued Airworthiness required by CS 25.1529.

comment	*117* comment by: *FAA* Comment: We recommend EASA take the opportunity of harmonizing ICA requirements with the FAA to harmonize section CS H25.4(a)(2) with FAA corresponding requirement of 14 CFR section H25.4(a)(2) in appendix H of part 25. EASA did not harmonize with the FAA on 14 CFR 25.981(b) at Amdt. 25-102 for critical design configuration control limitations (CDCCLs) when CS 25.981 was revised at Amendment 1 for

reasons stated in NPA 10-2004. Therefore CS H25.4(a)(2) was not included at the time.

The FAA later moved the requirements from 14 CFR 25.981(b) to 14 CFR 25.981(d) at Amdt. 25-125. EASA harmonized and adopted CS 25.981(d) at Amendment 9 but did not revise CS H25.4(a)(2) to contain similar requirements as the FAA.

Proposed Resolution:

Replace “Reserved” in CS H25.4(a)(2) with:

Each mandatory replacement time, inspection interval, related inspection procedure, and all critical design configuration control limitations approved under CS 25.981 for the fuel tank system, and

response

Not accepted

This modification is outside the scope of this NPA.

comment

118 comment by: *FAA*

Comment:

Harmonize with 14 CFR appendix H section H25.4 paragraphs by skipping CS H25.4(a)(4) and using CS H25.4(a)(5).

This may reduce confusion for applicants when referring to specific requirements in appendix H since the FAA already has different requirements in 14 CFR H25.4(a)(4) than what EASA is proposing.

Proposed Resolution:

Add new CS H25.4(a)(4) Reserved.

Renumber proposed CS H25.4(a)(4) to H25.4(a)(5).

response

Accepted

Text is modified accordingly.

comment

131 comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page	Consistency	3.1	CS25.1309	A maintenance action can	FROM: "A Certification

6	within the document and the regulation		(e)	be anything including non-schedule maintenance actions, CCMRs are only schedule maintenance tasks. Also, to harmonize the reference to CS25 requirements of AMC 25-19 and CS25.1309.	Maintenance Requirement is a maintenance action which is necessary for achieving the safety objectives of CS 25.1309(b)" TO: "A Certification Maintenance Requirement is **a scheduled maintenance task** which is necessary for achieving the safety objectives of CS 25.1309(b) **and other system safety requirements (such as CS 25.671, 25.783, 25.901, and 25.933)**"

response

Accepted:

Modified wording:

(e) Certification Maintenance Requirements must be established, as necessary, to prevent the development of the failure conditions described in CS 25.1309(b), and must be included in the Airworthiness Limitations Section of the Instructions for Continued Airworthiness required by CS 25.1529.

comment

145 comment by: *Jeff Conner*

CS 25.1309

3.1(e)

This section states that “Certification Maintenance Requirements must be published in the Airworthiness Limitations Section of the Instructions for Continued Airworthiness”.

EASA and FAA regulations on CMRs are not harmonized in this respect. The FAA’s Appendix H to 14 CFR 25 (see H25.4 Airworthiness Limitation Section) addresses only structural inspections and fuel tank inspections. Certification Maintenance Requirements for components other that structural inspections and fuel tank inspections are not required to be in the ALS under FAA regulations.

	Additionally, Section 13.a. of FAA Advisory Circular 25.19A reads as follows: "As stated in FAA Order 8110.54A, Instructions for Continued Airworthiness Responsibilities, Requirements, and Contents, dated 10/23/2010, CMRs are functionally equal to airworthiness limitations. An acceptable means is to include CMRs in the Airworthiness Limitations section of the airplane maintenance manual." The stated purpose of this NPA is to "address a regulatory coordination issue related to harmonisation of the current EASA CS-25 and AMC 25-19 with the FAA AC 25-19A". The requirement to list CMRs in the ALS needs to be modified to be consistent with FAA guidance.
response	Not accepted: The FAA in the working group agreed with this requirement, which will be harmonised with the next revision of the FAA AC.

comment	*146* comment by: *Jeff Conner* **Appendix H** **H25.4(a)(4)** This section lists the information that must be contained in the Airworthiness Limitations Section and states that "Each Certification Maintenance Requirement established to comply with any of the applicable requirements of CS-25 (see AMC 25-19)." EASA and FAA regulations on CMRs are not harmonized in this respect. The FAA's Appendix H to 14 CFR 25 (see H25.4 Airworthiness Limitation Section) addresses only structural inspections and fuel tank inspections. Certification Maintenance Requirements for components other that structural inspections and fuel tank inspections are not required to be in the ALS under FAA regulations. Additionally, Section 13.a. of FAA Advisory Circular 25.19A reads as follows: "As stated in FAA Order 8110.54A, Instructions for Continued Airworthiness Responsibilities, Requirements, and Contents, dated 10/23/2010, CMRs are functionally equal to airworthiness limitations. An acceptable means is to include CMRs in the Airworthiness Limitations section of the airplane maintenance manual." The stated purpose of this NPA is to "address a regulatory coordination issue related to harmonisation of the current EASA CS-25 and AMC 25-19 with the FAA AC 25-19A". The requirement to list CMRs in the ALS needs to be modified to be consistent with FAA guidance.

response

Not accepted:

The FAA in the working group agreed with this requirement, which will be harmonised with the next revision of the FAA AC.

comment

151 comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

'CS 25.1309 Equipment, systems and installations

…

(e) A Certification Maintenance Requirement is a maintenance action which is necessary for achieving the safety objectives of CS 25.1309(b). Certification Maintenance Requirements must be published in the Airworthiness Limitations Section of the Instructions for Continued Airworthiness required by CS 25.1529.

REQUESTED CHANGE: We request to delete this text.

'CS 25.1309 Equipment, systems and installations

…

(e) A Certification Maintenance Requirement is a maintenance action which is necessary for achieving the safety objectives of CS 25.1309(b). Certification Maintenance Requirements must be published in the Airworthiness Limitations Section of the Instructions for Continued Airworthiness required by CS 25.1529.

JUSTIFICATION:

The application of CMRs is adequately captured in Appendix H and the AMC, this is a level of detail inappropriate for CS 25.1309.

response

Not accepted:

Publication in the ALS was agreed by the working group.

3. Proposed amendments — 3.2. Draft acceptable means of compliance (AMC) and guidance material (GM) — AMC 25-19 'Certification Maintenance Requirements' p. 7-23

comment

2 comment by: *Francis Fagegaltier Services*

in paragraph 6 of the proposed AMC 25-19, there is a "definition" of failure ("c. Failure. Refer

	to AMC 25.1309.") which is only a cross-reference to another AMC. It is noted that the word "failure" is defined in CS-definitions. We must expect that the definition in AMC 25.1309 is consistent with the definition in CS-definitions ! It would be better to refer to only one source of definitions, which, of course, should be CS-definitions.
response	Noted The two definitions are consistent.

comment	*6* comment by: *Bombardier* 3.2 Draft AMC and GM Text of Paragraph 1: Purpose For consistency with AC 25.19A, replace "are protected against unintentional changes during service" with "are protected in service".
response	Accepted in service is enough at this stage: details of protection are developed in paragraph 11(c).
comment	*7* comment by: *Bombardier* 5. CMR Definition The statement "Compliance may also result from a qualitative, engineering judgment-based analysis" by itself leaves too much room for interpretation. We consider quantitative analysis to be the prime mean to determine CCMRs. We ask EASA to provide additional guidance or criteria to define the scope of this statement. BA suggests the following criteria: 1) Specific Preventative Maintenance Tasks mandated by Issue Papers or CRIs to be addressed as CMRs 2) CMRs instituted as a result of safety significant items not yet qualified for life at time of Type Certification.
response	Not accepted Guidance is provided in paragraph 10(e).

comment	*8* comment by: *Bombardier* 5. CMR Definition

	Clarification of first paragraph Replace "Compliance" with "CCMR": **CCMR** may also result from a qualitative, engineering judgment-based analysis.
response	Partially Accepted: wording revised A CMR may also result from a qualitative, engineering judgment-based analysis.

comment	*9* comment by: *Bombardier* 5. CMR Definition - Clarification to paragraph "a" on CMR intent 1. Aim of this comment is to clarify that quantitative evaluation is used to determine is a latent failure should be checked or not. 2. It is proposed not to delete the "significant" part from the previously used "significant latent failures" since it is aligned with this sentence saying "A CMR is usually intended to detect the significant latent failures" and with the definitions of AC 1309. Replace text with: A CMR is usually intended to detect significant latent failures that would, in combination with one or more other specific failures or events, result in a hazardous or catastrophic failure condition where the quantitative evaluation from system safety analysis (SSA) identifies the need for a scheduled maintenance task.
response	Not accepted 1. As written in the AMC, a CMR may also result from a qualitative analysis. 2. Significant was deleted because the sentence by itself already explains what is a significant latent failure. Thus it was considered redundant.

comment	*10* comment by: *Bombardier* 5. CMR Definition - clarification to paragraph "a" Comment 1: BA considers that the MSG-3 process is intended to address preventative maintenance tasks associated with safety related item via MSG-3 process logic path (Route) 5 or 8. CMRs are intended to cover failure finding tasks. BA thus recommends deleting the following sentence:

	"A CMR can also be used to establish a required task to detect an impending wear-out of an item whose failure is associated with a hazardous or catastrophic failure condition." Comment 2: If EASA keeps the reference to wear-out, BA still finds the sentence vague, leaving much room for interpretation and thus increasing the likelihood of needless maintenance work. The extent of impending wear-out evaluation must be clarified to ensure various OEMs would be on the same playing field. e.g. 1: Does wear-out consideration include any item that is not qualified for life of the aircraft or does it also assume that part qualified for life per qual test may also be assumed to wear out as part of the CMR evaluation? e.g. 2: Is wear-out consideration associated with any moving part in a CAT HAZ Fault Tree Analysis or is it limited to specific items defined under specific criteria?
response	Not accepted As explained in paragraph 5 b., the MSG3 process doesn't supersede the CMR process.

comment	*11* comment by: *Bombardier* 5. CMR Definition - alignment with paragraph 10(c) of AC 25.19A To align the text with AC 25.19A, change "A CMR may also be used to detect a latent failure that would, in combination with one specific failure or event, result in a major failure condition, where the system safety analysis (SSA) identifies the need for a scheduled maintenance task." to the following: "CMRs may also be identified for latent failures that would, in combination with one or more specified failures or events , lead to a major failure condition where the system safety analysis (SSA) identifies the need for a scheduled maintenance tasks and the maintenance tasks is not identified and assigned a task via the MSG-3 process (however experience has shown these cases are rare)."
response	Not accepted Paragraph 5 is a definition only: paragraph 11(f) explains the selection process.

comment	*12* comment by: *Bombardier* 5. CMR Definition: Paragraph (c)

	We recommend deleting the following sentence: "indicate that corrective maintenance or repair is necessary if the item has failed, or identify the need to inspect for impending failures (e.g. heavy wear or leakage)." Justification: 1. BA considers that the MSG-3 process is intended to address preventative maintenance tasks associated with safety related items via the MSG-3 process logic path (Route) 5 or 8. CMRs are intended to cover failure finding tasks. 2. Significant Leakage (oxygen, hydraulics, fuel, bleed) below the acceptable threshold is detectable either through Crew Alerting System (via monitoring) or may in some cases be obvious during pre-flight checks. Checking for small leaks below the monitoring threshold would create a significant maintenance burder without a significant benefit to safety. 3. Safety significant systems and parts are qualified against wear as part of the Type Certification process. It is unnecessary to require CMR tasks to be defined to address this as well.
response	Not accepted: 1. as explained in paragraph 5 b., the MSG3 process doesn't supersede the CMR process. 2. during the SSA, credit can be taken for correct flight crew performance of the preflight check or crew alerting system (see paragraph 10 (b) of this AMC). There is no intention to introduce tasks in addition to monitoring already in place. 3. It is not intended to address items with a life limit qualified for the aircraft life or beyond.
comment	*13* comment by: *Bombardier* 5. CMR Definition: paragraph "d" We recommend replacing "to establish routine maintenance" with "to establish preventative maintenance tasks". The word "routine" is too vague and has been the subject of endless discussions between BA and regulatory authorities on previous BA certification programs. If "routine" is used, it should be clearly defined in the "Other Definitions" section of the AMC.
response	Not accepted Examples provided give the scope of a routine task.
comment	*14* comment by: *Bombardier*

	Section 3.2 Paragraph 6 "Other Definitions" Add a definition of "Equivalent MRBR task" and a definition of "Compatible MRBR task". The proposed definition of "Equivalent task" would be as follows: "A MRBR or other source derived schedule maintenance task that fulfills the intent of the SSA derived CCMR task". The proposed definition of "Compatible MRBR task" would be as follows: "A MRBR or other source derived schedule maintenance task that has an equal or lower check interval than the SSA derived CCMR task". Note: Alternatively, the wording above ("Compatible and/or Equvalent") can be used in the text of NPA wherever the "Compatible MRBR task" term or "adequate ... task" is currently used.
response	Partially accepted Add definition of Compatible MRBR task: "An MRBR task whose intent addresses the CCMR task intent and whose interval is equal to or lower than the interval that would otherwise be required by a CMR".

comment	*15* comment by: *Bombardier* 8. Design Considerations Related to Significant Latent Failures - paragraph "a" Clarification is requested to avoid confustion between: 1. Indication to Maintenance Crew via Maintenance Computer or Maintenance Page, and 2. Flight Crew Indication given on EICAS or being self evident to Flight Crew during normal operation. Where the word warning is replaced by indication system, the expression "indication system" should be replaced by "flight crew indication system".
response	Accepted replace indication system by flight crew indication system.

comment	*16* comment by: *Bombardier* 8. Design Considerations Related to Significant Latent Failures - paragraph "b" It is worthwhile to use the term "Candidate CMR" instead of "CCMR" here, for clarity.

response	Accepted "Candidate CMR" instead of 'CCMR'.

comment	*17* comment by: *Bombardier* Figure 1. To align with AC 25-19A, and to provide more clarity: Replace text of Note 4 with: "This CMR designation may be necessary if an **equivalent** scheduled maintenance task has not been identified in other Instructions for Continued Airworthiness, nor has an **equivalent** MRBR task been identified and assigned via the MSG-3 process."
response	Not accepted Adequate is more appropriate than equivalent in this context

comment	*18* comment by: *Bombardier* Figure 1 - alignment with Note 2 A "CMCC" block should be added to the diagram, with a dotted line indicating it is optional.
response	Not accepted This figure describes the what but not the who. Adding a block 'CMCC' would make the diagram more complex whereas a CMCC is only optional.

comment	*20* comment by: *Bombardier* Figure 1 - Note 4 and Step 4 It is appropriate to disposition maintenance task driven by Major failure conditions the same way CCMRs are dispositioned. Step 4 should point to compatible MRBR task as the prime route with exceptional dotted line to CMR block if no MRBR task covers the intent fo the Major task. Also, block line should have arrows pointing to block 3 (ISC/MRB) similarly to block 2.
response	Partially accepted

	As these tasks are not CCMRs, they cannot be linked with the existing box: however a new box is added to reflect that an adequate task can be identified.
comment	*21* comment by: *Bombardier* Paragraph 10(a) BA agrees that all significant latent failures (found principally through the Fault Tree Analysis) must be identified in the safety analysis but not necessarily "addressed". That is to say, the term "addressed" could be interpreted as a requirement to list every single dormancy (even if the associated probabalistic reqts are met with this latency as dormant for aircraft life and it is involved in, for example, a triple or quadraple "AND-ed" combination leading to HAZ event) and to provide in the analysis a written justification on why no CCMR has been assigned for such latency. BA believes that this is unnecessary; considering such latency in the numerical analysis is sufficient (i.e. considering such latency in the Fault Tree Analysis is sufficient). Suggested Change: replace "The SSA should address all significant latent failures" with "The SSA should identify all significant latent failures and using a guidance of this document define the significant latent failures that require maintenance (CCMR) and the corresponding tasks and task intervals. Other means such as a Technical/Design Compliance Report could be an acceptable means to determine the need of a CCMR when associated with qualitative determination assessment."
response	Not accepted Using a guidance could be a means to cover this requirement
comment	*25* comment by: *Bombardier* Paragraph 10(d) This paragraph as written leaves too much room for engineering judgment. BA would rather recommend wording that refers to the commonly accepted SSA practices such as the Fault Tree Analyis method (or equivalent) which is a structured approach to evaluation failure scenarios from System Functional Hazard Assessment. The Fault Tree Analysis part of the System Safety Assessement, coupled with sound failure rates, helps determine required scheduled maintenance task and inspection intervals. In our experience at Bombardier, the concept of "engineering judgment" is too vague and has caused much confusion on previous certification programs. Structured methods per ARP4761 such as FTAs coupled with an explanatory narrative to the FTA should be the prime means of determining CCMRs.

	As an alternative proposal, BA can suggest the following criteria: Specific Preventative Maintenance Tasks mandated by Issue Papers or CRIs to be addressed as CMRs.
response	Not accepted Engineering judgement should be a manufacturer's initiative: a CRI should not be the only driver for it.

comment	*27* comment by: *Bombardier* Paragraph 10(c) The term "other requirements" could be interpreted to mean either: 1. Those containing probabilistic requirements for which CCMR may be required OR 2. Requirements such as CS 25.671 & CS 25.933 that impose additional specific contraints to the CCMR determination such as (1/1000= CS 25.671) or triple path with max dormancy of (1/1000 = CS 25.933). Bombardier favours the latter interpretation. To make this clear, we suggest replacing "other requirements (such as CS 25.671, 25.783, 25.901, and 25.933)" with "other requirements (such as CS 25.671, 25.783, 25.901, and 25.933 **that impose specific probabilitic contraints limiting the CCMR interval over and above the quantitative assessment required by CS 25.1309**)."
response	Not accepted The Bombardier interpretation is correct and is covered by the current wording.

comment	*28* comment by: *Bombardier* Paragraph 10(e) The proposed text requires justification on top of justification which is not value added. Section (e) should be restructured using the philosphy that in cases where a FTA (properly structured and using acceptable failure rates) demonstrates that there is no need to impose a check, that FTA analysis (in the SSA) constitutes the justification as to why no check is required.There is no need for an additional qualitative assessment in such cases. BA also strongly disagrees with the additional criteria identified in the 3 sub-bullets to decide if a CCMR should be imposed. The FTA process accompanied with a plain english technical narrative in the SSA, where required, already provides sufficient substatantiation

	of the need/or not for a CCMR. Any requirements to ensure the availability of back-up systems, emergency systems, or equipment/systems required to be installed as per CS 25 must be provided in the associated regulatory material / guidance. Also, the term "reduce exposure to a single failure or event that would cause a failure condition" is open to interpretation. For BA, it is not clear why the currently used process defining CCMRs in the safety analysis are not sufficient and the NPA proposes to add additional justification for all latent failures including latent failures related to back-up, emergency systems, etc. Suggested Text Changes: Replace NPA text in para 10(e) with: "In some situations, a failure condition might meet the quantitative probability objective, yet contain a component that, per the analysis, does not required inspections to meet that objective (i.e., could be left latently failed for the life of the aircraft). In that situation, it is believed that some inspections in the life of the airplane are necessary to avoid undue exposure to catastrophic “single failure” situations, therefore a qualitative assessment to determine the required maintenance before end of airplane life is still necessary (i.e. one latent for life combined with a single failure or event leading to CAT, even if the quantitative probability objective is met with aircraft life latency, the CCMR in the life of the airplane is recommended). Similar situations may exist (i.e. one latent for aircraft life combined with a single failure or event) relative to hazardous failure conditions, these should be evaluated on a case by case before accepting the existence of a life dormancy. Where the probability of active failure of a dual failure scenario leading to hazardous failure condition exceeds 1E-5 per flight hour, it is recommended to institute a CCMR for the single latent failure condition."
response	Not accepted The Bombardier proposal would probably be acceptable within the frame of a project. However, it is too specific for the purpose of this AMC.
comment	*29* comment by: *Bombardier* Paragraph 10(f) The SSA FTA process is the justification. No additional justification is needed on top of the FTA/plain english narrative. The rationale similar to the one provided above, it is not clear to BA on why additional justification is now required for each significant latent failure and the current processes are not sufficient. Suggest replacing existing text with "For failure conditions involving multiple significant latent failures, the SSA should identify a

	CCMR for each significant latent failure unless otherwise justified as not required (because not credit required) or justified as being able to remain latent for life of the aircraft without compromising compliance to the probabilistic requirement. Also, one CCMR may cover multiple significant latent failures." OR with this ALTERNATE: "Each significant latent failure, which is determined by a safety analysis as requiring a maintenance task to determine whether a failure has occured or not, reqiures a dedicated CCMR, or alternatively, a single CCMR may cover multiple significant latent failures."
response	Partially accepted Text modified as follows: For failure conditions involving multiple significant latent failures, the SSA should identify a CCMR for each significant latent failure unless otherwise justified (e.g. one CCMR may cover multiple significant latent failures, or the significant latent failure could exist for the life of the aircraft without compromising compliance with the safety objectives and paragraph 10.e considerations).

comment	*30* comment by: *Bombardier* Paragraph 11(b) - "The CMR designation should be applied in the case of catastrophic dual failures where one failure is latent." Based on a newly developed BA approach for dispositioning of CCMRs on two recent new product certification programs, it may not be necessary to use CMR designations in events where: an applicable MSG-3 task is in place to cover the CCMR, and an Interval CAP is included in the TCDS (Type Certification Data Sheet), indicating that the CCMR in question is dispositioned as an MRB, with the condition that: the MRB specific task reference can not be deleted from the MRBR, and the MRB specific task is capped at the interval required by the system safety analysis. BA believes that the processes described in Appendix 3 of this NPA provide processes that are equivalent to CMR processes (the MRBR tasks' content can not be changed, nor the tasks' intervals modified before consulting the CCMR). Note: This BA proposal is valid provided EASA considers BA proposed changes to Appendix 3. BA suggests replacing the NPA text in paragraph 11(b) with the following: "The CMR designation should be applied in the case of catastrophic dual failures where one failure is latent unless the applicant has the means in place to ensure that the SSA assumptions on MRBR tasks' intent and intervals, which are used to disposition CCMRs, are

	protected in service. Appendix 3 provides examples of acceptable means of protection. Any such means should be presented to the Agency for acceptance."
response	Not accepted The intention of this paragraph was to avoid the trade-off with MRBR tasks in cases of catastrophic dual failures.

comment	*31* comment by: *Bombardier* Paragraph 11(b) - Wearout "The CMR designation should also be applied to tasks that address wearout of a component involved in a catastrophic failure condition that results from two failures." Wearout modes to be considered should be limited to those parts in landing gear and flight control hydromechanical system that have not shown compliance to agreed qualification spectrum for Type Cert and that have no imposed Life Limits documented in the TCDS. We recommend rewording paragraph 11 (b) to reflect this.
response	Not accepted Proposed rewording is too specific The intention of this paragraph was to avoid the trade-off with the MRBR task in a case of catastrophic dual failures.

comment	*32* comment by: *Bombardier* Paragraph 11(c) Comment 1: Should "compatible" be changed to "equivalent and compatible" (and then further in the first sub-paragraph below to change "compatible" to "equivalent"? See previous BA comment given to sub-para 6 (Definitions). Comment 2: "SSA assumptions" is a vague term and should be clarified. We suggest replacing "SSA assumptions are protected in service" with "SSA assumptions on MRBR tasks' intent and intervals, which are used to disposition CCMRs, are protected in service." Comment 3: "Associated technical publications" is a vague term. See also BA comments on Appendix 3 explaining why BA believes that both, the ICA and MRBR needs to be mentioned.

	We suggest replacing the last sentence with "The TC applicant should adequately describe the selected means of protection in the Airworthiness Limitation section of ICA and in MRBR (see Appendix 3 for an example) in order for the operator to be aware of the process to be followed in case of evolution of compatible MRBR tasks that are included in the operator's aircraft maintenance program (AMP)."
response	Comment 1 partially accepted: compatible definition added to paragraph 6 Comment 2 partially accepted: replace SSA assumptions by CCMRs (see also appendix 3 paragraph1) Comment 3 not accepted: The Bombardier proposal is too specific. Other means of protection could be acceptable in addition to those used in appendix 3.

comment	*33* comment by: *Bombardier* Paragraph 11(d) We recommend deleting this paragraph. The CCMR dispositioning process is established in the AMC 25-19. Provided the OEM follows the disposition process defined in paragraphs 10 and 11 there should be no need for an additional rationale. Example 1: If the SSA shows that a CCMR could remain latent for life based on FTA, there should be no need to further justify. FTA with an FTA narrative providing a plain english explanation of the failure scenario under review is the justification. Example 2: If the SSA determines the need to check a latent failure and it is subsquently proposed to transfer this CCMR to MRB based on conditions mentioned in 11c then there should be no need for additional rationale.
response	Not accepted This sentence doesn't require additional work but only that the CCMR disposition is presented to EASA.

comment	*34* comment by: *Bombardier* Paragraph 11(e) Should this not pertain to the MSG-3 process vs this AMC? Recommend to delete this paragraph or to make it a Note (just a clarification rather than a

	step of a procedure).
response	Not accepted Paragraphs 11.a through g provide the criteria and guidance for CMR selection or non-selection.

comment	*35* comment by: *Bombardier* Paragraph 11(f) See earlier BA explanations given for Figure 1 (where a similar change is proposed), on changing "adequate" to "equivalent". Also: NPA should imbed text to consider normal maintenance activities, such as brake changes or other types of unscheduled maintenance, as a means to uncover latent faults. We recommend changing the proposed sentence to: "This CMR designation may be necessary if an **equivalent** scheduled maintenance task has not been identified in other Instructions for Continued Airworthiness, **nor an equivalent MRBR task identified and assigned via the MSG-3 process**."
response	Not accepted An MRBR is an ICA and doesn't justify this addition Adequate has been considered as more appropriate than equivalent.

comment	*36* comment by: *Bombardier* Paragraph 11(g) This paragraph is too vague and could result in additional mandatory maintenance tasks based on subjective and inconsistent engineering judgment calls. We recommend deleting this section since its intent is already covered by BA recommended change proposed against para 10(e).
response	Not accepted Once a CCMR has been identified by paragraph 10 (e), a maintenance task is needed and 11(g) notes some parameters for interval selection Hence, paragraph 11(g) will not create additional maintenance tasks.

comment	*37* comment by: *Bombardier* Appendix 1, paragraph 2 Based on our experience, it should be made clear that the "mechanism or device" should signal a failure to the flight crew, and not (only) the maintenance crew.
response	Not accepted The reversion to ‘expose’ clarifies that the failure will be known to the crew (flight and/or maintenance).

comment	*38* comment by: *Bombardier* Appendix 1, Paragraph 3: Reference to an indication system should be clarified to "flight crew indication system". In our experience, some have interpreted similar requirements as being satisified by an indication to the maintenance crew.
response	Not accepted This is a general guideline for creating a CMR: in some cases, an indication to the maintenance crew could be acceptable.

comment	*39* comment by: *Bombardier* Appendix 2, Paragraph 3: CMRR Interval determination The purpose of sentence "However, once a decision is made to create a CMR, then the CMR interval should be based solely on the results of the SSA" is not clear. It may imply that for example, that the CMCC may not propose a more conservative interval than the one determined in the SSA if deemed necessary. Additionally, in Bombardier experience some CCMRs have been derived from sources other than the SSAs. As an example - General Visual Inspection (GVI) of Cargo Compartment sealing tape to ensure adequate Halon concentration (there is no failure mode associated with sealing tape). The proposed sentence would not allow processes to raise CCMRs from other sources other than SSA, contrary to accepted practice. As a result, BA recommends deleting this sentence.
response	Not accepted Once a decision is made to create a CMR, the interval should be driven by the SSA or other relevant analysis and not by other considerations. If the CMCC proposes a more conservative

	interval for a practical reason (task packaging), we confirm that it will not be the driver for the CMR interval.
comment	*41* comment by: *Bombardier* Appendix 2, Paragraph 3 - Vagueness: The last sentence of the proposed text is vague and subject to interpretation. The methodology to determine dormant for life should be unambiguous. The proposed BA paragraph 10(e), which is inspired by AC25.19A paragraph 10(e), provides clear guidance as to which elements should not be left dormant for life. BA recommends that the following text proposed in Apdx 2 item 3 should be deleted: "In the case where the SSA does not specify an interval shorter than the life of the aeroplane, then the CMR interval may be proposed by CMCC considering factors that influence the outcome of the failure condition, such as the nature of the fault, the system(s) affected, field experience, or task characteristics."
response	Not accepted paragraph 10 (e) is dedicated to CCMR identification, which is before the CMCC. Once the need for the CCMR has been identified through paragraph 10 (e), the CMCC is involved in the determination of the interval considering the listed factors.
comment	*42* comment by: *Bombardier* Appendix 2, Paragraph (4): In BA experience, there is little benefit to discussing Latent for Life classification during the CMCC. Clarification should be added to emphasize the fact that Latent For Life Items should not be presented at CMCC, but discussed between the manufacturer and the regulator ahead of the CMCC.
response	Not accepted The discussion in the CMCC is limited to the interval. The identification of the need for a CCMR is discussed between the applicant and EASA prior to the CMCC.
comment	*43* comment by: *Bombardier* "compatible" vs "compatible and equivalent"

	Appendix 2, Paragraph 5 Appendix 3, example 1a Appendix 3, example 1b Similar to the BA comment on Paragraph 6 of Section 3.2, "compatible" should be changed to "compatible and equivalent" in the listed references.
response	Not accepted Equivalent is going too far. Compatible reflects the expected intent.

comment	*44* comment by: *Bombardier* Appendix 3, point 1: Bombardier recommends changing "SSA assumptions" to "SSA assumptions on MRBR tasks' intents and intervals, which are used to disposition CCMRs" for clarity.
response	Not accepted The intent of these examples is to show how to protect the SSA assumptions. Selection of the compatible MRB task (intent and interval) should cover the scope of the CCMR.

comment	*45* comment by: *Bombardier* Appendix 3, example 1c and example 2: BA believes that neither example 1 nor example 2 as given will ensure that the CCMR is respected during in-service operation. A hybrid of both examples would be preferable. With the current processes, if the MRBR does not have provisions referring to the Airworthiness Limitations Section (ALS), an operator can change maintenance tasks without consulting the OEM. We recommend deleting example 2 and replacing the text in 1(c)with: "Traceability between the CCMR and the compatible MRBR task should be provided in the Airworthiness Limitations Section (ALS) of the Instructions for Continued Airworthiness. Table 1 illustrates one possible means for traceability. Also, MRBR shall contain a requirement to consult ALS before any changes (or deletion) are made to the content and/or interval of any MRBR task, and only allow such a change provided: a) an MRBR task has no an associated CCMR task in ALS, or b) where an MRBR task has an associated CCMR task, an intent of CCMR task is preserved

	and the CCMR task interval stated in ALS is not exceeded. This is needed to ensure that the CCMR is respected during in-service operation of the aircraft and future evolution of the maintenance program."
response	Not accepted Appendix 3 provides examples that describe the means (but not the only means) to protect SSA assumptions/CCMRs during in-service operation During the certification process, a DAH may propose any other means of protection acceptable to the Certifying Authority Operators can change their AMP, but any change must be approved by the competent authority. Deletion of Example 2 is not accepted as it does provide protection. The operator and the competent authority will know through the marking that compatible maintenance tasks are identified in the table as being linked to a CCMR. Proposed text for 1 (c) is already covered by 1 (d) and 1 (e).

comment	*46* comment by: *Bombardier* Appendix 3, Example 1, Paragraph (f)(1): In line with our comments on paragraph (c), we recommend changing "in the ALS" to "in the ALS and MRBR".
response	Not accepted See the response to comment 45.

comment	*49* comment by: *CAA-NL* In the proposed new text for paragraph 7.b. of AMC 25-19, the words “or contribute to” are proposed to be deleted in the sentence “These difficulties led to the selective use of rational analyses to estimate quantitative probabilities, and the development of related criteria based on historical data of accidents and hazardous incidents caused or contributed to by failures.’. Leaving out these words is incorrect and will lead to confusion and further dis-harmonisation with the FAA AC. The essence of a CMR is that it (generally) tries to detect a latent failure before this can, in combination with another failure, an error or an operational or environmental event, lead to a failure condition. Failures occur at component or subsystem level, where latent failures have no initial effect at aeroplane level. It is an essential concept that latent failures do not directly cause a failure effect at aeroplane level but can only contribute to such a failure effect when an additional failure, an error or an operational or environmental event occurs. Leaving out the words “or contribute to” in this sentence confuses this fundamental concept. We propose to leave the words in.

response	Accepted 'or contributed to' to be reinserted.

comment	*53* comment by: *Gulfstream Aerospace Corporation* The applicant can inform the operator but cannot protect against changes by the operator. It is not clear if the intent is to inhibit the operator to unintentionally change the task (scope, interval), the OEM or both. The OEM can provide the necessary information and ensure it will not be unintentionally changed during the MRB and CMCC processes, but the OEM cannot ensure the operator will not change it. This content seems to be related to the following para from FAA 25.19A: "The applicant has procedures in place (e.g. tagging of MSG-3 tasks to identify those derived from the safety analysis) so that the FEC8 or FEC5 task would not be susceptible to escalation beyond the interval that would otherwise be required by a CMR. For example, due to difficulty in accessing the item, a task may not be conducted at the required interval. Engineering judgment indicates a CMR is appropriate for compliance rather than a MSG-3 task." Recommend clarifying the sentence to ensure proper understanding from the readers.
response	Not accepted Protection means are further explained in paragraph 11 (c) and Appendix 3

comment	*54* comment by: *Gulfstream Aerospace Corporation* Recommend that the version level be specified here. Also recommend adding AC 25.19A.
response	Not accepted Version levels are avoided to prevent outdated references FAA ACs are not referenced in EASA AMC/GM, unless directly used/endorsed by EASA.

comment	*55* comment by: *Gulfstream Aerospace Corporation* This language differs from FAA AC 25.19A. 10. (c) which says that CMR would be selected IF there is no MSG-3 task for that failure condition. Recommend adding additional clarification: "... and no MSG-3 task exist to detect the latent failure."
response	Not accepted Harmonisation with the FAA AC should be achieved with AC 25-19B In any case, all the CCMRs must be identified and addressed by selection as CMRs or mitigated by appropriate MSG 3 tasks.

comment	*56* comment by: *Gulfstream Aerospace Corporation* Recommend using the term wearout instead of heavy wear for consistency.
response	Accepted

comment	*57* comment by: *Gulfstream Aerospace Corporation* As worded, one may interpret that the SSA "value" is the FTA exposure time that meets the 25.1509 requirement. The Task Interval could also take into account qualitative assessment, which if agreed by the CMCC could be different from the exposure time stated in the FTA. Recommend explaining this difference to allow proper usage of engineering judgment and qualitative assessment.
response	Not accepted It is the value coming from the SSA and will be the basis for interval discussions with the CMCC.

comment	*58* comment by: *Gulfstream Aerospace Corporation* This language appears contrary to Appx 2, Para (3), which states that once the decision to create a CMR is achieved, the interval has to come from the SSA. Hence, if other relevant analysis is used to substantiate the interval, that analysis has to be referenced in the SSA. Recommend deleting this wording.
response	Not accepted Other analysis such as design assessment (e.g. CS-29) may identify the need for a CCMR and particularly for impending wearout.

comment	*59* comment by: *Gulfstream Aerospace Corporation* Recommend defining this term "compatible MRBR task", for example: -Detect the CCMR failure mode(s); -Has an equal or shorter interval if compared to the CCMR interval; - is a Systems Task, FED 5 or 8
response	Partially accepted New definition added for compatible MRBR task.

comment	*60* comment by: *Gulfstream Aerospace Corporation* Recommend using the term latent for consistency.
response	Accepted Hidden replaced by latent.

comment	*61* comment by: *Gulfstream Aerospace Corporation* Recommend additional words "the failure mode(s) to be detected, the..." to be comprehensive.
response	Partially Accepted Replace “the nature of the fault” by "the failure mode(s) to be detected”

comment	*63* comment by: *Gulfstream Aerospace Corporation* Recommend adding in the additional CMCC task of reviewing the failure mode(s) to be detected
response	Partially accepted Replace ‘the nature of the fault’ by ‘the failure mode(s) to be detected’.

comment	*64* comment by: *Gulfstream Aerospace Corporation* 10 (g) states "the task interval (the allowable value coming from the SSA or other relevant analysis).". This paragraph states that the interval must come from the SSA. Hence, 10 (g) is incorrect. If another relevant analysis is done, that analysis has to be mentioned in the SSA as the means to substantiate the interval.
response	Accepted paragraph 3 will be completed with “or other relevant analysis” after “solely on the results of the SSA”

comment	*66* comment by: *Gulfstream Aerospace Corporation* Consider creating a Note as follows: "Note: It is not intended to bypass the MSG-3 methodology due to the CMCC request to review the MSG-3 analysis. The intent is to ensure that the MSG-3 analysis is accurate

	based on the CMCC findings and discussions."
response	Not accepted The two processes are independent and there is no need to add this note.

comment	*67* comment by: *Gulfstream Aerospace Corporation* Recommend adding clarifying language: "...in accordance with the process described in paragraph 11."
response	Not accepted Introduction of Appendix 3 already provides reference to paragraph 11(c).

comment	*68* comment by: *Gulfstream Aerospace Corporation* Assessment of a task intent is not always clear to the operator. The information of all failure modes intended to be detected during the accomplishment of the task may not be available to the operator (SSAs, MSG-3 anlayzes). It is recommended that the MRB Chairperson is contacted by the competent authority in order to provide such information, assess the changes or forward the request to the OEM, hence ensuring proper assessment of the change effects. See Example 2 g.1., as it seems to be more comprehensive and addresses the issue.
response	Accepted Using the following wording for 1.f.1 Should the operator propose to change the intent of a task, the operator should ask for the DAH's confirmation that this change does not adversely affect the intent of the corresponding CCMR task. If the corresponding CCMR task is no longer accommodated, the operator needs to propose to include a mandatory task in the AMP in order to satisfy the intent of the referenced CCMR limitation. These changes to the AMP require the approval of the competent authority responsible for the oversight of the operator.

comment	*69* comment by: *AIRBUS* **COMMENT** Page 7, section 3.2, paragraph 1 (Purpose). In the second sentence, Airbus proposes to re-order the wording so that it reads: 'This AMC also provides a rational basis for coordinating the CMR selection and Maintenance Review Board (MRB) processes'. **RATIONALE**

	As written it may be understood as 'MRB selection process' which is incorrect. If this change is not acceptable then Airbus proposes to write 'CMR-selection processes' so that it is clear that the word 'selection' only relates to CMR.
response	Accepted This AMC also provides a rational basis for coordinating the CMR selection process and the Maintenance Review Board (MRB) process, if the latter is used.

comment	*70* comment by: *AIRBUS* **COMMENT** Page 7, section 3.2, paragraph 1 (Purpose). In the third sentence, Airbus proposes to replace the word 'unintentional'. One of the following would better meet the intent: 'unjustified' or 'unapproved' or 'unwarranted'. **RATIONALE** Changes in service will be intentional. The point is that these changes may be made without recognition of the link with certification documentation.
response	Partially accepted: in service is enough at this stage: details of protection are developed in paragraph 11(c).

comment	*72* comment by: *AIRBUS* **COMMENT** Page 8, section 3.2, paragraph 5. First line. The word 'periodic' has been struck from the first line. It is suggested that the word 'repetitive' is introduced if 'periodic' is not considered appropriate. **RATIONALE** The one time discard of a component would meet the CMR definition as it is proposed. It is understood that Life Limited Parts do not also need to be identified as CMRs and thus the concept of a CMR being an aircraft level task having a repeat (periodic) interval should be introduced to avoid confusion.
response	Not accepted: scheduled covers the purpose of periodic.

comment	*73* comment by: *AIRBUS*

COMMENT

Page 9, section 3.2, paragraph 5-b.

Airbus proposes to modify the sentence as follows :

'Both types of analysis may produce equivalent maintenance tasks with or without similar intervals'

RATIONALE

It is unlikely that the MSG-3 logic will define an 'equivalent' interval to that from 25.1309 but this does not prejudice the subsequent CMR selection process. Even if it is not 'equivalent' there may be an opportunity to allow credit to be taken for the MRBR task.

response

Accepted:

Modified text according to comment 154 will answer the comment.

comment

74 comment by: *AIRBUS*

COMMENT

Page 8, section 3.2, paragraph 3 (Related Documents).Airbus suggests to update the ATA address as follows :

1275 Pennsylvania Ave., NW, Suite 1300 | Washington, DC 20004.

RATIONALE

ATA moved recently from 1301 to 1275.

response

Noted:

available from … will be removed to avoid outdated reference.

comment

76 comment by: *AIRBUS*

COMMENT

Page 11, paragraph 6 (Other definitions). l (Significant Latent Failure)

Airbus would like to remark that the word 'more' in the definition of Significant Latent Failure may lead to confusion since it is always possible to combine a latent failure with multiple other failures or events to produce a Haz or Cat FC. A review of fault tree or dependence diagram will identify all latent failures and their contribution to the top event. Even those considered as having only a small influence will become 'significant latent failures' with this definition since, combined with an unlimited number of other failures / events a Haz / Cat FC will occur.

response	Noted

comment	*77* comment by: *AIRBUS* **COMMENT** Page 11, paragraph 7-a. Airbus suggests a slight change in the first sentence as follows : 'CS 25.1309(b) specifies required safety levels in qualitative terms, and requires that a safety assessment must be conducted to show compliance.' **RATIONALE** Wording improvement .
response	Not accepted: CS 25.1309 (b) doesn not require per se a safety assessment but a safety assessment as described in AMC 25-1309 is necessary to show compliance.

comment	*78* comment by: *AIRBUS* **COMMENT** Page 12, paragraph 8-a. In the first sentence, Airbus proposes to reword 'to detect significant latent failures' to '…to detect significant failures that would otherwise be latent.'. **RATIONALE** A failure is only latent if there is no monitoring and indication to bring it to the attention of the crew. Where this capability exists then the failure highlighted cannot be described as latent.
response	Partially accepted The applicant should implement practical and reliable failure monitoring and indication systems to detect failures that would otherwise be significant and latent.

comment	*79* comment by: *AIRBUS* **COMMENT** Page 15, paragraph 10-e. Airbus would like to indicate a general remark about the decision to add a qualitative assessment to determine whether a periodic maintenance task is needed even if

	demonstrated as non-necessary by quantitative one. Airbus would like to express some concern about the extension of this new rule to hazardous failure conditions. **RATIONALE**This new rule that applies to catastrophic and hazardous failure conditions would lead to significant additional workload for the industry. Qualitative demonstrations (e.g. Common Mode Analysis (CMA), Particular Risks Analysis (PRA),…) are performed to demonstrate the compliance with the Fail Safe criteria that are required for catastrophic failure condition only (as per CS 25 and associated AMC).
response	Not accepted We recognise that the two last bullets might be more applicable to catastrophic failure conditions. However, for the first bullet, we consider that it could be applicable to hazardous failure conditions, depending on the occurrence rate of the evident failure (single evident + one latent during the aircraft life).

comment	*80* comment by: *AIRBUS* **COMMENT** Page 15, paragraph 10-e. In the first bullet 'reduce exposure to a single failure or event that would cause a failure condition', Airbus suggests that 'failure condition' is too broad a term. Airbus proposes to reword to read '…that would cause a Hazardous or Catastrophic failure condition'. **RATIONALE** It is understood that it is not intended that a CCMR is created to reduce exposure to a single failure or event that would cause a Minor or Major failure condition.
response	Accepted Wording modified accordingly.

comment	*81* comment by: *AIRBUS* **COMMENT** Page 16, paragraph 11-b. Airbus proposes to change the first sentence to read: 'The CMR designation should be applied in the case of catastrophic dual failures (excluding events) where one failure could not be failed latent for the life of the aeroplane.' **RATIONALE**If the event has to be considered (e.g. engine fire, cabin depressurization, need for evacuation etc...) like failure that could be failed latent for the life of the aeroplane;

	then many tasks will need to be identified as CMRs. In this situation, credit should be allowed for compatible MRBR task.
response	Not accepted This rationale is covered by paragraph 10(e).

comment	*82* comment by: *AIRBUS* **COMMENT** Page 16, paragraph 11-e. *'Since the MSG-3 logic may not consider a failure condition containing three or more failures, it is possible that there is no MRBR task identified for a CCMR.'* Airbus proposes to delete this Paragraph 11-e. **RATIONALE** It was beneficial to clearly discern the difference between the MSG-3 process and the CMR process to avoid misunderstanding when Failure Effect Category 8 task (FEC8) was proposed to accommodate CCMR.
response	Not accepted This paragraph only states that, in some cases, a CCMR may not be mitigated by an MRBR task and must be covered by a CMR.

comment	*83* comment by: *AIRBUS* **COMMENT** Page 16, paragraph 11-g. Airbus proposes to change the wording to read '…an interval shorter than the life of the aeroplane, the applicant may determine that it would be appropriate to justify a task considering factors…. **RATIONALE** The word 'may' allows for a task to be generated and dispositioned according to the NPA guidelines. If not reworded, this paragraph has the potential to drive large differences between DAH's SSA content. It is not clear how EASA will use this paragraph. There is a risk that they will expect all latent faults with interval greater than aircraft life to be discussed in the SSA. Rewording the text implies this to be an applicant decision rather than one to be encouraged by EASA.

response	Not accepted Once a CCMR has been identified by paragraph 10 (e), a maintenance task is needed and paragraph 11(g) notes some parameters for interval selection There will be no task justification as per 11(g) but as per 10(e).

comment	*84* comment by: *AIRBUS* **COMMENT** Page 17, paragraph 12-c. Airbus suggests that the change from 'local authority' to 'competent authority' may lead to some confusion. **RATIONALE** The change from 'local' (i.e. NAA) to 'competent' authority may introduce confusion. The operator is expected to include the policy for exceptional short term extension in his maintenance disposition prior to its use. Is it clear that 'competent' refers to NAA in this case (since it pertains to operator use of statement within CMR document) and not 'EASA' as the competent authority for approval of the CMR document?
response	Not accepted Competent Authority is the generic name to be used in the revised AMC/GM for the local authority.

comment	*85* comment by: *AIRBUS* **COMMENT** Page 17, paragraph 12-c (3). Airbus suggests that the terms 'competent authority' may lead to some confusion. **RATIONALE** Does the applicant have to use the term 'competent authority' in its CMR documentation or can he use the term 'operator's local Authority' ? There is a risk that EASA would be requested to approve such an extension.
response	Not accepted Competent Authority is the generic name to be used in the revised AMC/GM for the local authority. Furthermore, we refer to EASA when EASA must be involved.

comment	*86* comment by: *AIRBUS* **COMMENT** Page 18, paragraph 13-a. Airbus proposes to change the sentence to read: *'Any post-certification changes to CMRs should be reviewed by the same entities that were involved in the process of CCMR/CMR determination (ref. paragraphs 10 and 11) at the time of initial certification.'* **RATIONALE** Any post-certification changes to CMRs is understood by Airbus as: New, revised or deleted CMRs. AND CCMRs accommodated by a compatible MRBR task. It is supported by para13b. 'Any post-certification changes to CMRs must be approved by the Agency,…'. Indeed, it is Airbus understanding that CCMRs proposed to be accommodated by a compatible MRBR task (no CMR selected) must be also approved by the EASA.
response	Partially accepted Title of paragraph completed (Post –Certification changes to CMRs (New, revised or deleted) Any change to CCMRs accommodated by a compatible MRBR task are covered by the protection means per 11(c).
comment	*87* comment by: *AIRBUS* **COMMENT** Page 18, paragraph 13-f. Airbus proposes to change the first sentence to read: *'New CMRs that are unrelated to in-service events (unless otherwise justified and agreed by the Agency) may be created and they should be documented and approved by the Agency.'* **RATIONALE** The use of CMRs as mandatory corrective action to address unsafe condition seen in service on the aircraft type can be in some particular cases an acceptable and appropriate mean. e.g.: Inspection proposed as mandatory corrective action with an acceptable compliance time and

	without a mandatory fix design solution (Modification). The unsafe condition for the PRE-MOD is addressed by the CMR and the POST-MOD is safe. Transfer of maintenance requirement from an individual AD to the CMR documentation at the end of the AD compliance time. A generic AD will be issued on the CMR documentation that will introduce these new CMRs (restrictions to the existing CMR documentation).
response	Partially accepted To address the comment, it is proposed to revise paragraph 13 e) as follows: 'To address an unsafe condition, EASA may determine that the requirements of an existing CMR must be modified (more restrictive actions to be required) or a new CMR must be created. These new requirements will be mandated by an Airworthiness Directive (AD) and the applicant's CMR documentation will be revised to include the change.'

comment	*88* comment by: *AIRBUS* **COMMENT** Page 20, Appendix 1, paragraph 1. Airbus proposes to delete the sentence 'Substituting a CMR with an MRBR task does not necessarily reduce maintenance costs'. **RATIONALE** If the MRBR task already exists then there will be no extra cost. If the MRBR task does not exist then it would only be created if it is considered appropriate by the operator – otherwise he would retain the CMR. Thus the sentence does not appear to be correct.
response	Not accepted The intent is to disconnect the number of CMRs from the cost of maintenance. An effective reduction of the maintenance cost is achieved by reducing the number of CCMRs.

comment	*89* comment by: *AIRBUS* **COMMENT** Page 20, Appendix 1, paragraph 2. Airbus proposes to revert to 'expose' rather than 'detect'. **RATIONALE** Faults can be detected and remain hidden until interrogated via maintenance systems. The intent here is not only that the fault is detected but that it is made evident without the need for specific action by maintenance.

response	Accepted Rationale justifies the reversion to 'expose'.

comment	*90* comment by: *AIRBUS* **COMMENT** Page 22, Appendix 3, Example 1. Airbus proposes to change the title of Example 1 from 'Publishing the CCMRs as airworthiness limitations' to 'Publishing the CCMRs in the same location as airworthiness limitations'. **RATIONALE** CCMRs are not Airworthiness Limitations unless they are categorised as CMRs. If they are published as airworthiness limitations then they will be understood to be CMRs.
response	Partially accepted : see comment 124 'Traceability of CCMRs and MRBR tasks in the Airworthiness Limitations Section'.

comment	*91* comment by: *AIRBUS* **COMMENT** Page 22, Appendix 3, Example 1. Airbus would like to highlight a general comment: While this is proposed as an example it is difficult to understand how a set of tasks included in the ALS will not be considered by an operator's authority as airworthiness limitations. Example 2 is the only reasonable solution and ATA's MPIG community is proposing to modify MSG-3 to drive that as the harmonised Industry method.
response	Noted

comment	*92* comment by: *AIRBUS* **COMMENT** Page 22, Appendix 3, Example 1, paragraph f. Airbus suggests to reword the second sentence as follows : 'For CCMR tasks included in AMP that are based on compatible MRBR task, the following

	applies.' **RATIONALE** This change is proposed for clarification.
response	Not accepted The concept of a compatible MRBR task accommodates CCMRs.

comment	*93* comment by: *IATA* · Section 3.2 of the document (page 7 of 25) IATA Comment: regarding "AMC 25-19 / Certification Maintenance Requirements / 1 PURPOSE" – since reference is made to the MRB process, the reference should be inclusive of the International MRB/MTB Process Standard (IMPS) document which EASA approved (as IMPS Issue 00 – April 29,2016). We consider that such a reference would support recognition of harmonization with FAA and would avoid subsequent amendment of this AMC to document the harmonized position on the MRB Process Standard. IATA Proposal: Change the text stating "…This AMC also provides a rational basis for coordinating the Maintenance Review Board (MRB) and CMR selection processes, if the MRB process is used…" to state "…This AMC also provides a rational basis for coordinating the Maintenance Review Board (MRB) and CMR selection processes, if the MRB process (as defined by the International MRB/MTB Process Standard (IMPS) document) is used…"
response	Not accepted however the reference to the International MRB/MTB Process Standard (IMPS) document will be added to paragraph 3 as a related document.

comment	*94* comment by: *IATA* Section 3.2 of the document (page 8 of 25) IATA comment: regarding "AMC 25-19 / Certification Maintenance Requirements / 3 RELATED DOCUMENTS" – we consider that the above referenced IMPS document originating from the IMRBPB is important to mention in relationship with CMR. IATA Proposal: Add to the text stating "ATA (MSG-3), Operator/Manufacturer Scheduled Maintenance Development, Available from Airlines for America, 1301 Pennsylvania Avenue – Suite 1100, Washington, DC 20004–1707" the paragraph to state "International MRB/MTB Process Standard (IMPS) document available from the International Maintenance Review Policy Board"

response	Not accepted However the reference to the International MRB/MTB Process Standard (IMPS) document) will be added to paragraph 3 as a related document.

comment	*95* comment by: *IATA* Throughout the document, in 6(six) instances corresponding respectively to section 5 (page 8 of 25), section 6 (page 11 of 25), section 10 (page 14 of 25), section 11 (page 16 of 25) and section 13 (page 18 of 25) IATA comment: the use of “wearout” is usually associated with a mechanical feature of a component and, although we assume this was the context in which the Agency used the word in all six instances flagged above, it is not always interpreted as possibly addressing a “degradation” of a feature of the component. IATA proposal: replace in all six cases the word “wearaout” with the text “wearout/degradation”. Moreover, for consistency, in definition “n” (see page 11 of 25) instead of the text stating “Wearout. A condition where a component is worn beyond a predetermined limit” use the text stating “Wearout/Degradation. A condition where a component is worn/degraded beyond a predetermined limit.”
response	Not accepted This wording is harmonised with FAA AC 25-19A.

comment	*96* comment by: *IATA* See comment 95 Throughout the document, in 6(six) instances corresponding respectively to section 5 (page 8 of 25), section 6 (page 11 of 25), section 10 (page 14 of 25), section 11 (page 16 of 25) and section 13 (page 18 of 25) IATA comment: the use of “wearout” is usually associated with a mechanical feature of a component and, although we assume this was the context in which the Agency used the word in all six instances flagged above, it is not always interpreted as possibly addressing a “degradation” of a feature of the component. IATA proposal: replace in all six cases the word “wearaout” with the text “wearout/degradation”. Moreover, for consistency, in definition “n” (see page 11 of 25) instead of the text stating “Wearout. A condition where a component is worn beyond a predetermined limit” use the text stating “Wearout/Degradation. A condition where a component is worn/degraded beyond a predetermined limit.”

response	Not accepted This wording is harmonised with FAA AC 25-19A.

comment	*103* comment by: *Dassault-Aviation* Dassault-Aviation: Comment: Page 8 § 5.a: The wording "A CMR can also be used to establish a task..." is too prescriptive New proposed wording: "A CMR may also be used to establish a task..."
response	Not accepted: Can or may offer the same level of flexibility.

comment	*104* comment by: *Dassault-Aviation* Dassault-Aviation: Comment: Page 8 §5.a: Ageing is also a cause for increase of an item failure rate. New proposed wording: Replace "wearout..." by "wearout/ageing..."
response	Not accepted: Ageing is only one of the possible reason for wearout.

comment	*105* comment by: *Dassault-Aviation* Dassault-Aviation Comment: Pages 8 and 9 §5.A: "A CMR may also be used to detect a latent failure...need for a scheduled maintenance". CMR for major only failure condition is not per the current practices and would add undue

	burden to operators. The case of a major dual cutset "latent plus one" can be adressed by an MRBR task or a MPD task. New proposed wording: Delete the sentence.
response	Not accepted: The concept of a major failure in combination with another specific failure or event was supported by the drafting working group and is part of FAA AC 25-19A. It is detailed in paragraph 11(f).

comment	*106* comment by: *Dassault-Aviation* Dassault-Aviation Comment: Page 12 § 8.a: the design considerations are out of the scope of the AMC. New proposed ording: Remove the sentences relative to the design considerations
response	Not accepted The purpose of section 8 is to minimise the number of significant latent failures thanks to design considerations.

comment	*107* comment by: *Dassault-Aviation* Dassault-Aviation: Comment: Figure 1 page 13 upper left box. Note 4 should be deleted (consistency with comment on the paragraph 5.a) New proposed wording: delete note 4
response	Not accepted: The concept of a major failure in combination with another specific failure or event was supported by the drafting working group and is part of FAA AC 25-19A. It is detailed in paragraph 11(f).

comment	*108* comment by: *Dassault-Aviation* Dassault-Aviation Comment: Figure 1 page 13 flow chart. Right branch (case of major FC) should be removed (consistency with comment on paragraph 5.a). New proposed wording: Delete right branch
response	Not accepted: The concept of a major failure in combination with another specific failure or event was supported by the drafting working group and is part of FAA AC 25-19A. It is detailed in paragraph 11(f).

comment	*109* comment by: *Dassault-Aviation* Dassault-Aviation Comment: Page 14 §10a: prescriptive form is irrelevant. New proposed wording: "Select significant latent failures from the SSA results"
response	Not accepted There is no selection to be performed: the SSA process needs to address all significant latent failures

comment	*110* comment by: *Dassault-Aviation* Dassault-Aviation Comment: Page 14 §10.c: ageing is also a cause for increase of an item failure rate. New proposed wording:

	In the last sentence of 10.C, replace "wearout" by "wearout/ageing"
response	Not accepted Ageing is only one of the possible reasons for wearout.

comment	*111* comment by: *Dassault-Aviation* Dassault-Aviation Comment: Page 15 §10.g third bullet: the wording "intended maintenance task" is inaccurate. New proposed wording: "intended maintenance task objectives,.."
response	Not accepted Task should be read in accordance with paragraph 6 and the task objectives are covered by the intended maintenance task, together with the failure mode to be detected and the failure condition of concern.

comment	*112* comment by: *Dassault-Aviation* Dassault-Aviation Comment: page 16 §11.b: common mode should be taken into account when evaluating the order of the failure combinations. New proposed wording: Add the sentence "Common mode failures should be taken into account when evaluating the order of the failure combination".
response	Not accepted Any combination of failures which are not demonstrated to be independent are considered single failures from the 25.1309 perspective: as such, the concern raised here is addressed in paragraph 10(e).

comment	*113* comment by: *Dassault-Aviation*

	Dassault-Aviation Comment: Page 16 §11.C first sentence: no alternative is proposed to "MRBR task". Other processes may exist. New proposed wording: " In all other cases,...a compatible MRBR task (or other means acceptable to comply with CS 25.1529) to accommodate..."
response	Not accepted Other means addressed in paragraph 1 Purpose.

comment	*114* comment by: *Dassault-Aviation* Dassault-Aviation Comment: Page 16 §11.f: to be removed (see comment on §5.a for Major failure condition. New proposed wording: remove paragraph 11.f
response	Not accepted the concept of a major failure in combination with another specific failure or event was supported by the drafting working group and is part of FAA AC 25-19A.

comment	*115* comment by: *Dassault-Aviation* Dassault-Aviation Comment: Page 18 §13.e: systematic issuance of an AD seems too drastic. Actual need for an AD should be evaluated considering the fleet data. New proposed wording: revise wording to make issuance od an AD conditional to fleet data analysis.
response	Not accepted

	This is the current practice for such situations.
comment	*119* comment by: *FAA* Section 5 first paragraph comment: The last sentence of the paragraph “Compliance may also result from qualitative …” Proposed Resolution: We suggest revise “Compliance” to “CMRs”. Section 5a comment: First sentence “The CMRs are required tasks, and associated intervals, developed to achieve compliance with CS 25.1309 and other requirements …” Proposed Resolution: We suggest revise to “The CMRs are required tasks, and associated intervals, developed to support compliance with CS 25.1309 and other requirements …”
response	Accepted: Wording revised: ‘A CMR may also result from a qualitative, engineering judgment-based analysis’.
comment	*120* comment by: *FAA* Para 11c, bottom sentantce comment: “The TC applicant should adequately describe the selected means of protection in the associated technical publication …” It is not obvious for readers to know what is meant by “the associated technical publication” Proposed Resolution: State intended documents, or provide examples. An alternative may be to refer readers to the examples in Appendix 3.

response	Not accepted The purpose is to be generic enough to address all applicants.

comment	*121* comment by: *FAA* Section 12a comments: The sentence " … therefore they should be included in the Airworthiness Limitations Section …" Proposed Resolution: With the proposed rule 25.1309(e) which would require CMRs be published in the ALS, revise the word "should" in the sentence to "must".
response	Not accepted Must cannot be used in AMC material: however the revised CS 25.1309 is written with must.

comment	*122* comment by: *FAA* Paragraph 4 comment: Not all CCMRs have to go through the CMCC, only the presented ones (as discussed in para #1). Proposed Resolution: Revise paragraph to "The CMCC may address some or all CCMRs. The applicant coordinates with the Agency to define those CCMRs that will be presented to the CMCC."
response	Not accepted The intent is covered by the second sentence where the applicant may select the CCMRs to be presented to the CMCC. As an example, when EASA has already required a CMR, it may not bring any added value to present the related CCMR to the CMCC.

comment	*123* comment by: *FAA* Para 1 comment:

	" …to ensure that the SSA assumptions are protected against unintentional changes during service." The words "unintentional changes" are not necessary and may create confusion as to the meaning of the sentence. Proposed Resolution: Revise to " … to ensure that the SSA assumptions are protected against unintentional changes during service if CCMRs were accommodated by MRBR tasks."
response	Partially Accepted Text modified to emphasise the protection in service of CCMRs: 'With reference to paragraph 11.c of this AMC, this Appendix provides examples to facilitate the implementation of the means to ensure that the CCMRs are protected in service.'

comment	*124* comment by: *FAA* Example 1 Title comment: "Publishing the CCMRs as airworthiness limitations" The proposed rule would require CMRs be published in the ALS, not CCMRs as stated in the Example's title. Proposed Resolution: Suggested modification: "Traceability of CCMRs and MRBR tasks in the Airworthiness Limitations Section"
response	Accepted

comment	*125* comment by: *FAA* Example 1 para a comment: "The CMR designation may not be necessary if there is a compatible MRBR task to accommodate the CCMR, provided that the DAH publishes the CCMR as an airworthiness limitation." Modify the sentence so that it is consistent with the proposed rule language (i.e. CMRs are limitations, not CCMRs) Proposed Resolution A

We suggest revise sentence to “The CMR designation may not be necessary if there is a compatible MRBR task to accommodate the CCMR, provided that the DAH shows direct traceability between the MRBR task and the accommodated CCMR in the ALS.”

Table 1 comment:

This method to cross reference CCMR and compatible MRBR task also requires some identification of the task within the MRBR to link it with the table.

Proposed Resolution B

For example, a note by the accommodating MRBR task referring to the ALS table.

Example 1 para d and e comment:

We understand the sentences at the end of these 2 paragraphs which say “These changes to the ALS require Agency approval” are associated with the new CMRs being added to the ALS, not the changes to the MRBR tasks/intervals.

Proposed Resolution C

Clarify what the Agency would be approving in the ALS. We note that the arrangement of the sentences in paragraph f of Example 2 makes it clear that the Agency would approve the newly added CMRs.

Example 1 para e comment:

The alternative provided in the paragraph “Alternatively, the DAH could assess the feasibility of escalation of the interval of the corresponding CCMR by re-evaluating the system safety assumptions that lead to the CCMR at the time of initial certification” would allow the CCMR to ‘reverse-accommodate’ the MRBR task interval escalation. However, because CCMRs themselves are not required to be in the ALS, conceivably there would be no changes to the ALS that would require Agency approval.

Proposed Resolution D

Clarify what the Agency would be approving in the ALS. We note that the arrangement of the sentences in paragraph f of Example 2 makes it clearer.

Example 1 para f comment:

The paragraph refers to the operator's Aircraft Maintenance Program (AMP). In the U.S., this would be the operators Continuous Airworthiness Maintenance Program (CAMP). We understand at least one of European aircraft companies uses the acronym AMP for aircraft maintenance procedures. We believe this could be confusing.

Proposed Resolution E

Clarify or explain the AMP acronym. For example, refer to a regulatory definition.

Example 1 para f.1 comment:

This paragraph discusses when an operator changes a compatible MRBR task they will also "need" to include a "mandatory" task in their maintenance program. The only "mandatory" task for an operator is in the ALS or AD. In either case, it would be beyond the authority of the local PMI.

Proposed Resolution F

Please clarify the intent of paragraph.

response

Partially accepted

A Sentence modification accepted.

B Not accepted. Appendix 3 provides examples that describe the means (but not the only means) to protect SSA assumptions/CCMRs during in-service operation. During the certification process, the DAH may propose any other means of protection acceptable to the Certifying Authority. Furthermore, the intention was to avoid modifying the MRBR.

C Not accepted: in paragraph e, several scenarios for changes of the ALS are described. In all these cases, these changes need EASA Approval.

D Not accepted: the acronym is explained in the text.

E Not accepted: the acronym is explained in the text.

F Not accepted: the 'mandatory' task is as indicated to satisfy the intent of the referenced CCMR limitation which is already in the ALS.

comment

132 comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page 8	Major	3.2	AMC 25-19 - item 5	CMRs should not be required for Majors in	FROM: "A CMR may also be used to detect a latent

			(a)	cases of dual failure. CMR designation for Majors should be used, only if no MSG-3 task is available. (as per AC 25-19A, item 10 c)	failure that would, in combination with one specific failure or event, result in a major failure condition, where the system safety analysis (SSA) identifies the need for a scheduled maintenance task." TO: “CMRs may also be identified for latent failures that would, in combination with one or more specified failures or events, lead to a major failure condition that is not identified and assigned a task via the MSG-3 process.”

response

Not accepted:

the concept of a major failure in combination with another specific failure or event was supported by the drafting working group and is part of FAA AC 25-19A. It is detailed in paragraph 11(f).

comment

133 comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page 9	Wear Out	3.2	AMC 25-19 - item 5 (c)	It is necessary to clarify that CCMRs might be defined to detect of only latent failure modes due to wear-out.	FROM: "... or identify the need to inspect for impending failures (e.g. heavy wear or leakage)." TO: "…or identify the need to inspect for impending failures (e.g. heavy wear or leakage) **that are latent.**"

response

Not accepted:
The word ‘impending’ implied latency.

comment

134 comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page 11	Wear Out	3.2	AMC 25-19 - item 6 (n)	The definition of wear-out talks about a component being worn, and this requires wear to be defined. Suggest to add the definition included in the MSG-3 document referred in the AMC.	ADD: "Wear: Physical deterioration of the surface of an item due to relative motion between two parts in contact."

response

Not accepted
This definition is common with FAA AC 25-19A and was not subject to change by the working group.

comment

135 comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page 13	Major	3.2	AMC 25-19 - item 9 - Figure 1	a) Schedule Maintenance for Majors would become CMRs only if no MSG-3 equivalent tasks is associated. The Major related tasks should be discussed in the CMCC similarly to the CCMRs. b) To align with item 10(b) c) Missing acronyms	a) FLOWCHART: Suggest that box 4 enter box 2, instead of going directly to CMRs. b) FLOWCHART: Change text in box 4 to: "CCMRs accommodated by a compatible MRBR Task or AFM procedure" c) ACRONYMS: Add MRBR - Maintenance Review Board Report and AFM -

					Aeroplane Flight Manual
Page 13	CCMR coverage	3.2	AMC 25-19 - item 9 - Figure 1	Include "MRBR" in NOTE 4, to clarify that the MRBR is the primary source of adequate schedule maintenance tasks to be used to cover CCMRs. Also, modify NOTE 4 as proposed, CMRs should not be defined for Majors, only if no MSG-3 Task is defined. Delete: "the CMR designation may also be used" and "that would, in combination with one specified failure or event"	FROM: "Where the SSA identifies the need for a scheduled maintenance task, the CMR designation may also be used to detect a latent failure that would, in combination with one specified failure or event, lead to a major failure condition. This CMR designation may be necessary if an adequate scheduled maintenance task has not been identified in other Instructions for Continued Airworthiness." TO: "Where the SSA identifies the need for a scheduled maintenance task, to detect a latent failure that can lead to a major failure condition. This CMR designation may be necessary if an adequate scheduled maintenance task has not been identified **in the MRBR (through the MSG-3 process) or** in other Instructions for Continued Airworthiness"

response

Partially accepted

a) a new box will clarify the possibility of an adequate task.

b) Reference to paragraph 10 covers the intent.

c) Add MRBR definition in the definition box.

comment *136* comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page 14	CCMR coverage	3.2	AMC 25-19 - item 10 (b)	Item b, describes that significant latent failures can take credit of AFM checks, this should be captured in the flowchart defined in item 9.	In Flow chart : FROM:"CCMRs accommodated by a compatible MRBR task" TO:"CCMRs accommodated by a compatible MRBR task **or AFM check**"
Page 14	CCMR determination	3.2	AMC 25-19 - item 10 (c)	Suggest removing "usually", since there is no other source for identifying CCMRs other than the Safety Analysis. The Safety Analysis will capture the compliance to 25.1309 an other related requirements.	TO: "a. Tasks that are candidates for selection as CMRs come from safety analyses..."
Page 14	Quantitative and Quantitative assessment	3.2	AMC 25-19 - item 10 (d)	Suggest rephrasing the beginning of sentence to ensure that CCMRs defined in a qualitative manner are always assigned with the objective of detecting latent failures related to CAT or HAZ failure conditions.	FROM: "d. **As the safety analysis may be qualitative or quantitative,** some task intervals may be derived in a qualitative manner (e.g. engineering judgment and service experience)." TO: "**In order to meet the safety requirement for catastrophic and hazardous failure conditions,** some task intervals may be derived in a qualitative manner (e.g. engineering judgment and service experience)"

response

1) Not accepted

An AFM check could be accepted for the non-CCMR decision in the SSA box

2) Accepted

'usually' to be removed.

3) Not accepted

The NPA is clear that CCMRs are related to significant latent failures, i.e. catastrophic and hazardous failures.

comment

137 comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page 15	Latent for Life	3.2	AMC 25-19 - item 10 (e)	Suggest rephrasing this paragraph to harmonize with AC 25-19A - 10(b), that suggests inspection in the life of the aircraft, for cases where the single failure can leave the aircraft one failure away from the CAT or HAZ event. The considerations about availability of equipment are already captured in the FTAs and related failure conditions. Also, differentiating certain equipment might created confusion on which equipment should be considered as back-up/emergency or available per CS 25.	FROM: current paragraph 10 (e) TO: In some situations, a failure condition might meet the quantitative probability objective, yet contain a component that, per the analysis, does not require inspections to meet that objective (i.e., could be left latently failed for the life of the airplane). In that situation, it is believed that some inspections in the life of the airplane are necessary to avoid undue exposure to catastrophic or hazardous "single failure" situations, therefore a qualitative assessment to determine the

					required maintenance before end of airplane life is still necessary.
Page 15	CCMR determination	3.2	AMC 25-19 - item 10 (f)	In most of the cases, CCMRs covers multiple latent failures that can be checked with a single procedure. Suggest to rephrase as proposed.	REPHRASE TO: "f. For failure conditions involving multiple significant latent failures, **the SSA can identify a CCMR to cover multiple significant latent failures related to different failure conditions.**"
Page 15	CCMR determination	3.2	AMC 25-19 - item 10 (g)	Suggest to clarify, CCMRs are defined in the SSA, and not after the SSA is performed. The FTAs or other analysis provide the intervals for the CCMRs defined in the SSA.	FROM: "— the task interval (the allowable value coming from the **SSA** or other relevant analysis)." TO: "— the task interval (the allowable value coming from the **FTA** or other relevant analysis)."

response

1) Not accepted

The NPA wording was considered by the working group as improving FAA AC 25-19A.

2) Not accepted

We would expect a CCMR to be identified for each significant latent failure, unless otherwise justified.

3) Not accepted

FTA is part of SSA.

comment *138* comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page	CCMR	3.2	AMC 25-19 - item	There is no reference to what is a compatible MSG-3	INCLUDE AFTER ITEM b): "c) To be

16	coverage		11 (c)	Tasks. AC 25-19A establishes that it must be FEC 8 or 5 and interval lower (not equal) than the CCMR interval. If the same criteria is not required for the AMC 25-19, it is suggested that the acceptable criteria be included, please consider the proposed criteria.	compatible with a CCMR, the MSG-3 task needs to have the same intent and scope , also, interval must be lower or equal to the CCMR interval." Remaining items letters to be updated.
Page 16	CCMR determination	3.2	AMC 25-19 - item 1	MRJ program has been required to comply with the following: operational or environmental conditions (external events) with probability higher than 1E-7 cannot be accounted as part of cutset. For example, cases of triple failure cutset: Evident External+Latent+Latent. If External Event probability is higher than 1E-7, and both Latent failures could tolerate life latency, they would both require CCMRs for HAZ and would be declared CMRs for CAT, because without the accounting for the Evident External event, this is considered a case of dual failure combination	Add on item 1, page 16: "When significant latent failures or wear-out failures in combination with operational or environmental conditions can lead to catastrophic or hazardous failure conditions that are not shown to be extremely remote (lower than 1E-7), those conditions cannot be accounted as an event part of the failure combination (this will influence the decision to identify a Candidate CMR or select a CMR)."
Page 16	CCMR determination	3.2	AMC 25-19 - item 11 (g)	Same comment as for item 10 (g)	FROM: "g. In the case where the **SSA** does not specify an interval shorter than the life of the aeroplane, an interval may be established ..."

					TO: "g.In case where the **FTA or other analysis** does not specify an interval shorter than the life of the aeroplane, an interval may be established ..."

response

1) Partially accepted

Compatible MRBR task definition added to paragraph 6.

2) Not accepted

This might be a valid point for future improvement of this AMC but this was not discussed by the working group at this stage.

3) Not accepted

An FTA is part of an SSA.

comment

139 comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page 21	CCMR determination	3.2	AMC 25-19 - Appendix 2, item 3	Same comment as for item 10 (g)	FROM: "However, once a decision is made to create a CMR, then the CMR interval should be based solely on the results of the **SSA.** In the case where the **SSA** does not specify an interval shorter than the life of the aeroplane...." TO: "However, once a decision is made to create a CMR, then the CMR interval should be based solely on the results of the **FTA or other analysis**. In the

					case where the **analysis** does not specify an interval shorter than the life of the aeroplane..."
Page 21	CMCC meetings	3.2	AMC 25-19 - Appendix 2, item 4	The statement might bring the question about which criteria to exclude certain CCMRs from the discussion with the CMCC, not involving the operators.	FROM: "4. The CMCC should address all CCMRs. Alternatively, the applicant may coordinate with the Agency to define a subset of CCMRs to be presented to the CMCC. REPLACE BY: "4. The CMCC should address all CCMRs that were agreed with the agency prior to the CMCC meeting."
Page 21	CCMR coverage	3.2	AMC 25-19 - Appendix 2, item 5	To be consistent with item 10(b)	FROM: "5. The CMCC discusses compatible tasks (if any) that the MRB generated" TO "5. The CMCC discusses compatible tasks (if any) that the MRB generated **or AFM procedure**".

response

1) Not accepted

FTA is part of SSA

2) Not accepted

The intent is covered by the second sentence where the applicant may select the CCMRs to be presented to the CMCC. As an example, when EASA has already required a CMR, it may not bring any added value to present the related CCMR to the CMCC.

3) Not accepted

An AFM check could be accepted for the non-CCMR decision in the SSA box, i.e. before CMCC discussions on CCMRs.

comment *140* comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page 22	Publishing of CMRs	3.2	AMC 25-19 - Appendix 3 - Example 1	The Candidate CMR that are covered by MRB tasks should not be considered airworthiness limitations, since they are not stand-alone requirements like MRB tasks or CMRs. Also, the publishing of CCMR intervals should be excluded from the example as this is considered proprietary information by some OEMs. Also, the publishing of CCMRs as airworthiness limitation may be interpreted that CCMRs are additional requirements to the CMRs.	FROM: "EXAMPLE 1 —Publishing of CCMRs as airworthiness limitations" TO "EXAMPLE 1 — Publishing of **CMRs** as airworthiness limitations"". TO: "for Continued Airworthiness to ensure that the CCMR is respected during in-service operation of the aircraft and future evolution of the maintenance program.

response

Partially accepted see comment 124

“Traceability of CCMRs and MRBR tasks in the Airworthiness Limitations Section”

comment

141 comment by: *Mitsubishi Aircraft Corporation*

NPA Page	Category	NPA Section	NPA Reference	Comment/Reason for Change	Change Proposal
Page 23	Publishing of CMRs	3.2	AMC 25-19 - Appendix 3 - Example 2	The MRBR is an independent document from the CCMR process, therefore information about the CCMRs should remain only in the CMR documentation. The reference to the MRB tasks should only be included in the Limitation Section along with the CMR information. Suggest	TO: "a. The CMR designation may not be necessary if there is a compatible MRBR task to accommodate the CCMR, provided that the DAH uniquely identified each compatible MRBR task in the

				to remove table 2 as some MRB have not accepted to flag the tasks in the MRBR.	existing MRBR task listing.

response

Not accepted

Appendix 3 provides examples that describe the means (but not the only means) to protect SSA assumptions/CCMR during in-service operation

During the certification process, the DAH may propose any other means of protection acceptable to the Certifying Authority.

comment

147 comment by: *Jeff Conner*

AMC25-19

Section 5 Opening Paragraph & 5.a

The opening paragraph in Section 5 states that "A CMR usually results from a formal, numerical analysis conducted to show compliance with the requirements applicable to catastrophic and hazardous failure conditions, as defined in paragraph 6d below." Paragraph 5a states that "A CMR may also be used to detect a latent failure that would, in combination with one specific failure or event, result in a major failure condition, where the system safety analysis (SSA) identifies the need for a schedule maintenance task." These two statements are inconsistent.

Additionally, the extension of the definition of CMRs to include detection of latent failures that could result in a major failure condition could have unintended consequences. This extension could result in the use of excessively conservative latent failure scenarios to require multiple new CMRs on systems with traditional architectures, traditional well-understood technologies and excellent field history. As a result, the number of CMRs associated with a given aeroplane could increase significantly resulting in an unintended reduction in focus on CMRs addressing potential catastrophic and hazardous failure conditions.

We recommend eliminating the reference to "major failure condition" in Paragraph 5.a.

response

Not accepted:

It is not intended to deal with all latent failures contributing to major failure conditions but only with those not addressed by any other maintenance task and in combination with only one specified failure event (see paragraph 11 f)).

comment	*148* comment by: *Jeff Conner* **AMC 25.19** **5.d.** This section states that "The type certification process assumes the aeroplane will be maintained in a condition of airworthiness equal to its certified or properly altered condition". The reference to "properly altered condition" with respect to CMRs is not properly bounded in the context of this NPA. The type certificate holder for an aeroplane develops CMRs based solely on the system safety analysis (SSA) performed by the type certificate holder for the type design and alterations developed by the type certificate holder – not properly altered conditions that may be introduced after certification by other parties. Ensuring that CMRs remain valid for "properly altered" aeroplanes where the alterations are developed by entities other than the TC Holder is not the responsibility of the TC Holder. We recommend addinig wording to make it clear that the TC Holder is only responsible for ensuring that CMRs address the type design and alterations to the type design introduced by the TC Holder – not all properly altered conditions.
response	Accepted 'or properly altered' was removed.

comment	*149* comment by: *Jeff Conner* **AMC 25-19** **12.a.** This section states that "CMRs are considered functionally equivalent to airworthiness limitations, therefore they should be included in the Airworthiness Limitations Section of the Instructions for Continued Airworthiness." EASA and FAA regulations on CMRs are not harmonized in this respect. The FAA's Appendix H to 14 CFR 25 (see H25.4 Airworthiness Limitation Section) addresses only structural inspections and fuel tank inspections. Certification Maintenance Requirements for components other that structural inspections and fuel tank inspections are not required to be in the ALS under FAA regulations. Additionally, Section 13.a. of FAA Advisory Circular 25.19A reads as follows: "As stated in

	FAA Order 8110.54A, Instructions for Continued Airworthiness Responsibilities, Requirements, and Contents, dated 10/23/2010, CMRs are functionally equal to airworthiness limitations. An acceptable means is to include CMRs in the Airworthiness Limitations section of the airplane maintenance manual." The stated purpose of this NPA is to "address a regulatory coordination issue related to harmonisation of the current EASA CS-25 and AMC 25-19 with the FAA AC 25-19A". The requirement to list CMRs in the ALS needs to be modified to be consistent with FAA guidance.
response	Not accepted This harmonisation was agreed with the FAA for a future update of FAA AC 25.19A.

comment	*150* comment by: *Jeff Conner* **Appendix 3** **1.** The title for this appendix is "Means of Protection Against Future Evolutions Proposed by the Design Approval Holder". This section states that "this Appendix provides examples to facilitate the implementation of the means to ensure that the SSA assumptions are protected against unintentional changes during service". Of equal concern to EASA should be a process to "ensure that the SSA assumptions" made by the TC Holder as the DAH are "protected against unintentional changes during service" when the changes are introduced by parties other than the TC Holder (i.e. properly altered configurations developed without the involvement of the TC Holder). This concern is not addressed in this appendix or anywhere else in this NPA. We recommend adding wording to make it clear that the DAH referenced in this appendix is the TC Holder and that the TC Holder is only responsible for ensuring that CMRs address the type design and alterations to the type design introduced by the TC Holder.
response	Not accepted DAH = TC holder. Examples are given to show how changes proposed by operators and the DAH ensure that SSA assumptions are protected .

comment *152* comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

3.2. Draft acceptable means of compliance (AMC) and guidance material (GM)

…

1…

The applicant should ensure that the maintenance tasks and intervals identified in the system safety analyses to support compliance with CS 25.1309 and other system safety requirements (such as CS 25.671, 25.783, 25.901, and 25.933) are protected against unintentional changes during service.

REQUESTED CHANGE: We have a question regarding authority.

JUSTIFICATION:

Does EASA plan to provide the OEMs additional authority to ensure that there are no unintentional changes during service? The current process for escalation only includes the airline and the regulator.

response Noted

No additional authority for OEMs: their duty is to provide the necessary information on CCMRs which have not been selected as CMRs but have been mitigated by a scheduled maintenance task.

It is not foreseen that the OEM interferes in the escalation process between the airline and their regulator.

comment *153* comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

"5 CERTIFICATION MAINTENANCE REQUIREMENTS (CMR) DEFINITION

…

a…

A CMR may also be used to detect a latent failure that would, in combination with one specific failure or event, result in a major failure condition, where the system safety analysis (SSA) identifies the need for a scheduled maintenance task."

REQUESTED CHANGE: We recommend deleting this statement.

Delete text.

"5 CERTIFICATION MAINTENANCE REQUIREMENTS (CMR) DEFINITION

…

a…

A CMR may also be used to detect a latent failure that would, in combination with one specific failure or event, result in a major failure condition, where the system safety analysis (SSA) identifies the need for a scheduled maintenance task."

JUSTIFICATION:

Single failures are allowed for Major failure conditions and it is unlikely that a condition will ever exist that requires a CMR for a major condition. This is inconsistent with CS 25.1309 and unnecessary as such a rare event can still be covered under "engineering judgment".

response

Not accepted:

the concept of a major failure in combination with another specific failure or event was supported by the drafting working group and is part of FAA AC 25-19A. It is detailed in paragraph 11(f).

comment

154 comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

"5 CERTIFICATION MAINTENANCE REQUIREMENTS (CMR) DEFINITION

…

b…

Although Both types of analysis …

REQUESTED CHANGE:

"5 CERTIFICATION MAINTENANCE REQUIREMENTS (CMR) DEFINITION

…

b…

*Although Both **both** types of analysis …*

JUSTIFICATION: Typo

response

Accepted

Text adapted:

'Although both types of analysis may produce equivalent maintenance tasks and intervals, it is not always appropriate to address a Candidate Certification Maintenance Requirement (CCMR) with a Maintenance Review Board Report (MRBR) task.'

comment

155 comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

"6 OTHER DEFINITIONS

…

h. Latent Failure. Refer to AMC 25.1309."

REQUESTED CHANGE: We suggest EASA write a definition that aligns in terms of the context of AC 25-19.

JUSTIFICATION:

25.1309 "defines" latent failure as "*Latent Failure. A failure is latent until it is made known to the flight crew or maintenance personnel."* By this definition, a failure can be latent for less than a flight length (until crew notified). This isn't a useful definition in AC 25-19 context; the context is that a latent failure is one that is not known to flight crew or maintenance personnel for an extended period and will not be known until checked by a CMR or MSG-3 activity. While 25.1309 definition is a correct definition of what "latent" means, it is not a good definition of a latent failure for this use.

response

Not accepted

Paragraph 10 a and b address this comment.

comment

156 comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

"6 SYSTEM SAFETY ASSESSMENTS (SSA)

…

b…

These criteria, expressed as numerical probability ranges associated with the terms used in CS 25.1309(b), became commonly accepted for evaluating the quantitative analyses that are often used in such cases to support experienced engineering and operational judgment and to supplement qualitative analyses and tests."

REQUESTED CHANGE:

"6 SYSTEM SAFETY ASSESSMENTS (SSA)

…

b…

*These criteria, expressed as numerical probability ranges associated with the terms used in CS 25.1309(b), became commonly **are** accepted for evaluating the quantitative analyses that are often used in such cases to support experienced engineering and operational judgment and to supplement qualitative analyses and tests."*

JUSTIFICATION:

The first part of the paragraph says "CS 25.1309(b) specifies required safety levels in qualitative terms." Since they are required, the struck wording is superfluous and implies a level of instability in the Means of Compliance (MoC) that does not exist.

response Accepted

Comment *157* comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

"Note 1: The CCMRs should be accepted by the Agency."

REQUESTED CHANGE: We suggest to delete this note and renumber the other ones accordingly.

"Note 1: The CCMRs should be accepted by the Agency."

JUSTIFICATION:

The necessary role for the regulators is covered by the next step "Disposition of each

	CCMR".
Response	Partially accepted Text is revised: 'Note 1: As part of the SSA acceptance, the CCMRs should be agreed by EASA.'

Comment	*158* comment by: *The Boeing Company*
	THE PROPOSED TEXT STATES: *Note 4: Where the SSA identifies the need for a scheduled maintenance task, the CMR designation may also be used to detect a latent failure that would, in combination with one specified failure or event, lead to a major failure condition. This CMR designation may be necessary if an adequate scheduled maintenance task has not been identified in other Instructions for Continued Airworthiness.* **And path in figure.** **REQUESTED CHANGE:** We suggest deleting reference to CMR from Major failure condition.
	JUSTIFICATION: Single failures are allowed for Major failure conditions and it is unlikely that a condition exists requiring a CMR for a major condition. This is inconsistent with CS 25.1309 and unnecessary as such a rare event can still be covered under "engineering judgment".
response	Not accepted If a scheduled maintenance task is needed to meet the safety objective, CMR designation may be necessary if an adequate scheduled maintenance task has not been identified in other Instructions for Continued Airworthiness.

comment	*159* comment by: *The Boeing Company*
	THE PROPOSED TEXT STATES: *"11 SELECTION OF CMRs*

…
f. Where the SSA identifies the need for a scheduled maintenance task, the CMR designation may also be used to detect a latent failure that would, in combination with one specified failure or event, lead to a major failure condition. This CMR designation may be necessary if an adequate scheduled maintenance task has not been identified in other Instructions for Continued Airworthiness."

REQUESTED CHANGE: We suggest deleting reference to CMR from Major failure condition.

JUSTIFICATION:

Single failures are allowed for Major failure conditions and it is unlikely that a condition exists requiring a CMR for a major condition. This is inconsistent with CS25.1309 and unnecessary as such a rare event can still be covered under "engineering judgment".

response

Not accepted

the concept of a major failure in combination with another specific failure or event was supported by the drafting working group and is part of FAA AC 25-19A.

comment

160 comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

12 DOCUMENTATION AND HANDLING OF CMRs

…

c. Since CMRs are based on statistical averages and reliability rates, an 'exceptional short-term extension' for CMR intervals may be made on one aeroplane for a specific period of time without risking safety. Any exceptional short-term extensions to CMR intervals must be defined and fully explained in the applicant CMR documentation. The competent authority must concur with any exceptional short-term extensions allowed by the applicant CMR documentation before they take place using procedures established with the competent authority in the operators' manuals. The exceptional short-term extension process is applicable to CMR intervals. It should not be confused with the operator's 'short-term escalation' program for normal maintenance tasks described in the operators' manuals.

REQUESTED CHANGE:

12 DOCUMENTATION AND HANDLING OF CMRs

…

c. Since CMRs are based on statistical averages and reliability rates, an 'exceptional short-term extension' for CMR intervals may be made on one aeroplane for a specific period of time without risking safety. Any ***Allowance for*** *exceptional short-term extensions to CMR intervals must be defined and fully explained in the applicant CMR documentation.* ***When the operator applies for an exceptional short-term extension,*** *The* ***the*** *competent authority must concur with any exceptional short-term extensions allowed by the applicant CMR documentation has before they take place using procedures established with the competent authority in the operators' manuals. The exceptional short-term extension process is applicable to CMR intervals. It should not be confused with the operator's 'short-term escalation' program for normal maintenance tasks described in the operators' manuals.*

JUSTIFICATION:

Exceptional short term extension is in the realm of the operator, and is usually only required when an aircraft is in a remote location when the CMR interval is about to be exceeded and requires the short term extension in order to get to a maintenance base where CMR can be performed. This paragraph doesn't seem to understand that, and implies a much greater role by the applicant.

response

Not accepted

It is expected that the DAH should define and explain in which conditions a short term extension can be granted by the competent authority.

comment

161 comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

"EXAMPLE 1 — Publishing the CCMRs as airworthiness limitations

…

c. Traceability between the CCMR and the compatible MRBR task should be provided in the Airworthiness Limitations Section (ALS) of the Instructions for Continued Airworthiness to ensure that the CCMR is respected during in-service operation of the aircraft and future evolution of the maintenance program. Table 1 illustrates one possible means for traceability…"

REQUESTED CHANGE:

"EXAMPLE 1 — Publishing the CCMRs as airworthiness limitations

…

c. Traceability between the CCMR and the compatible MRBR task should be provided in the

*Airworthiness Limitations Section (ALS) of the Instructions for Continued Airworthiness to ensure that the CCMR is respected during in-service operation of the aircraft and future evolution of the maintenance program **as a separate section in the MRBR**. Table 1 illustrates one possible means for traceability…"*

JUSTIFICATION:

CCMR are using the result of MSG-3 Analysis. With coordination with the Design Approval Holder (DAH), the operators can escalate the CCMR task intervals without affecting Type Certification (TC).

CMRs are airworthiness limitation for Type Certification (TC); therefore, the TC is affected if there are any changes to a CMR.

Boeing's process requires a Sensitivity Analysis (SA) on CCMRs. If these CCMRs are insensitive to escalation, then the CCMRs should not be in the ALS. An option is to include confirmed CMRs and unconfirmed sensitive Candidate CMRs.

response

Not accepted

Appendix 3 provides examples that describe the means (but not the only means) to protect SSA assumptions/CCMRs during in-service operation.

During the certification process, the DAH may propose any other means of protection acceptable to the Certifying Authority.

comment

162 comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

Appendix 3 – Table 1 columns title

CCMR task reference	*CCMR interval*	*Compatible MRBR task reference*

REQUESTED CHANGE:

Appendix 3 – Table 1 columns title

*CCMR **MRBR** task reference*	*CCMR interval*	*Compatible MRBR task **description** reference*

JUSTIFICATION:

The CCMR Interval and MRBR Task Interval are one in the same. The CCMRs' identification is in the MRBR document as a separate appendix. Therefore, there is no need to repeat the MRBR Task Interval. The repeat of information in two location increases the likelihood of errors and misunderstanding.

response

Not accepted

Appendix 3 provides examples that describe the means (but not the only means) to protect SSA assumption/CCMR during in-service operation.

During the certification process, the DAH may propose any other means of protection acceptable to the Certifying Authority.

Although the CCMR is mitigated by a compatible MRBR task, the intervals of both could be different (e.g. the CCMR interval could be higher than the MRBR interval).

comment

163 comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

"EXAMPLE 1 — Publishing the CCMRs as airworthiness limitations

…

f. Furthermore, the DAH shall describe in the ALS what the operator needs to observe when changing the operator's aircraft maintenance program (AMP). For tasks included in AMP, which are based on compatible MRBR tasks, the following applies:…"

REQUESTED CHANGE:

"EXAMPLE 1 — Publishing the CCMRs as airworthiness limitations

…

*f. Furthermore, the DAH shall describe in the **MRBR** ALS what the operator needs to observe when changing the operator's aircraft maintenance program (AMP). For tasks included in AMP, which are based on compatible MRBR tasks, the following applies:…"*

JUSTIFICATION:

CCMR are using the result of MSG-3 Analysis. With coordination with the Design Approval Holder (DAH), the operators can escalate the CCMR task intervals without affecting Type Certification (TC).

CMRs are airworthiness limitation for Type Certification (TC); therefore, the TC is affected if

there are any changes to a CMR.

Boeing's process requires a Sensitivity Analysis (SA) on CCMRs. If these CCMRs are insensitive to escalation, then the CCMRs should not be in the ALS. An option is to include confirmed CMRs and unconfirmed sensitive Candidate CMRs.

response

Not accepted

Not compatible with the example.

Appendix 3 provides examples that describe the means (but not the only means) to protect SSA assumptions/CCMRs during in-service operation.

During the certification process, the DAH may propose any other means of protection acceptable to the Certifying Authority.

comment

164 comment by: *The Boeing Company*

THE PROPOSED TEXT STATES:

Appendix 3 – Table columns title

MRBR task reference	*MRBR task description*	*Failure effect category (FEC)*	*Interval*	*Tracking*

REQUESTED CHANGE:

Appendix 3 – Table columns title

MRBR task reference	*MRBR task description*	*Failure effect category (FEC)*	*Interval*	*Tracking*

JUSTIFICATION:

The CCMR Interval and MRBR Interval are one in the same. The CCMRs' identification is in the MRBR document as a separate appendix. Therefore, there is no need to repeat the MRBR Task Interval. The repeat of information in two location increases the likelihood of errors and misunderstanding. This also applies to the MRBR Task Failure Effect Category (FEC).

No tracking to other documents is required because all Airworthiness Limitations

Document (AWD) of the Instructions for Continued Airworthiness remains the same for reference and contents in MRBR Section 9.

response

Not accepted

Appendix 3 provides examples that describe the means (but not the only means) to protect SSA assumption/CCMR during in-service operation.

During the certification process, the DAH may propose any other means of protection acceptable to the Certifying Authority.

Although, the CCMR is mitigated by a compatible MRBR task, the intervals of both could be different (e.g. the CCMR interval could be higher than the MRBR interval).

Table 2 shows an example of task listing within an MRBR, with a column for tracking.

comment

165 comment by: *The Boeing Company*

Page: 22

Paragraph: *AMC 25-19 Appendix 3, Example 1, Section d, and e*

Page: 23

Paragraph: *AMC 25-19 Appendix 3, Example 2, Section d, and f*

THE PROPOSED TEXT STATES:

Throughout the document states …"ALS"…:

REQUESTED CHANGE:

Throughout the document…"CCMR Section"…

JUSTIFICATION:

CCMR are using the result of MSG-3 Analysis. With coordination with the Design Approval Holder (DAH), the operators can escalate the CCMR task intervals without affecting Type Certification (TC).

CMRs are airworthiness limitation for Type Certification (TC); therefore, the TC is affected if there are any changes to a CMR.

Boeing's process requires a Sensitivity Analysis (SA) on CCMRs. If these CCMRs are insensitive to escalation, then the CCMRs should not be in the ALS. An option is to include confirmed CMRs and unconfirmed sensitive Candidate CMRs.

response	Not accepted Appendix 3 provides examples that describe the means (but not the only means) to protect SSA assumptions/CCMRs during in-service operation. During the certification process, the DAH may propose any other means of protection acceptable to the Certifying Authority. An ALS is a defined document for all DAHs, whereas the CCMR section seems to be applicable to individual DAHs only.

comment	*166* comment by: *Transport Canada Civil Aviation Standards Branch* Section 3.2, page 7, Para. 1 Comment: In the highlighted grey text, the phrase "unintentional changes in service" should be clarified. Changes to maintenance task intervals and the tasks themselves will be proposed by operators during the normal course of their maintenance program evolution. Some of these changes will be perfectly acceptable and intentional but others may unknowingly allow interval escalations or task modifications that will exceed the limits or objectives defined by the system safety analysis. Suggested Revision/Change: Suggest revising this wording to "… are protected against changes that exceed the objectives/limits of the system safety analyses ".
response	Partially accepted In service is enough at this stage: details of protection are developed in paragraph 11(c).

comment	*167* comment by: *Transport Canada Civil Aviation Standards Branch* Section 5, page 8, Para. a. Comment: Recommend the term "safety significant " retain the word "significant" in this paragraph so that it reads "significant latent failures" and therefore matches the title in section 8 "Design Considerations Related to Significant Latent Failures". Otherwise, you will need to provide a

	definition of significant latent failures in this document as this paragraph as revised provides a definition for latent failures. Suggested Revision/Change: In the second sentence of Para. a), recommend it read " A CMR is usually intended to detect <u>significant</u> latent failures that would …"
response	Not accepted: Significant is deleted because the sentence explains what is a significant latent failure, the definition being given in paragraph 6 l.

comment	*168* comment by: *Transport Canada Civil Aviation Standards Branch* Section 8, page 12, Para. a. Comment: Recommend this section should be updated/revised to align with the text of Arsenal AC 25.1309 that puts emphasis on implementing failure detection Suggested Revision/Change: Recommend modifying the sentence to read as edited: "A reliable failure monitoring system should utilize current state-of-the-art technology to <u>maximize the probability of detecting and indicating genuine failures</u> while minimizing the probability of falsely detecting and indicating non-existent failures."
response	Not accepted The current paragraph covers the same intent and has been agreed by the working group: this wording is also used in FAA AC 25-19A.

comment	*169* comment by: *Transport Canada Civil Aviation Standards Branch* Figure 1, page 13, Box with Note 4 Comment: For the box associated with Note 4, when a discovery is made that a Major failure condition requiring a maintenance task via the SSA is not currently covered by a compatible MRB

	task, this should be identified as a CCMR (not a CMR). This gives the MRB/ISC (Note 3) the opportunity to review the MSG-3 analyses and determine if this item was missed and if a task can be generated. If no task is generated by the MRB/ISC, then the option still exists to make this task a CMR at the phase "Disposition of each CCMR". Suggested Revision/Change: For this box with Note 4, it is recommended that the arrow leaving instead be linked to the box "CCMRs". This will allow the disposition process to be followed accordingly and consistent with the process identified in Note 3.
response	Not accepted The current paragraph covers the same intent and has been agreed by the working group: this wording is also used in FAA AC 25-19A.

comment	*170* comment by: *Transport Canada Civil Aviation Standards Branch* **Figure 1, page 13, Flow Chart Box** Comment: For the Box " CCMRs accommodated by a compatible MRBR task", Transport Canada has the following comments: In line with paragraph 11.c, a means must be provided to ensure protection of the task and the interval to ensure SSA objectives/limits are not exceeded. The Example 1 shown in Appendix 3 shows that protection of these tasks will require that the CCMRs end up in the ALS. The Example 2 is not clear in this respect as it appears to infer the same protection is required but only provides a tagging in the MRBR which will not ensure s similar protection as CCMRs that end up in the ALS. Transport Canada believes this aspect needs further clarification and comments on this are provided for Example 2 in Appendix 3. Transport Canada believes that a definite link exists between the box "CCMRs accommodated by a compatible MRB task" and the box "Certification Authority Approval" and the "CMR documentation (ALS)". Suggested Revision/Change: Based on this comment and the comments provided in Appendix 3 for Example 2, Transport Canada recommends that an additional box be inserted below the current box "CCMRs accommodated by a compatible MRBR task" that could read " Process to ensure that SSA safety assumptions are protected in service" or similar to be consistent with para. 11.c. This new box should then be linked to the box "Certification Authority approval" to be

consistent with the wording in para. 11c that "Any means should be presented to the Agency for acceptance.F9

Figure 1, page 13, Flow Chart Box

Comment:

Following the box "System Safety Analysis (25.1309,… Paragraph 10", there are only two possible outcomes shown. These outcomes are either a CCMR or Disposition of a Major failure condition. There is also a third important outcome during the SSA reviews which are those significant latent failures that are reviewed by the Authority/applicant where agreement is reached that a CCMR is not required. One example of such a case are latent-for-life items that are considered significant latent failures by definition but do not meet the criteria in paragraph 10c. These latent failures could then be justified as not requiring a CCMR designation. This exercise does take place during the CCMR identification process and Transport Canada believes it is important to recognize it.

Suggested Revision/Change:

Transport Canada recommends adding an additional box immediately following the box "System Safety Analyses (25.1309, …Paragraph 10)" that could be labelled " Significant latent failures not requiring a CCMR" or similar. This additional box would be in parallel with the existing boxes "CCMRs" and "Disposition of Scheduled...Paragraph 11)". A Note could be added as well to further elaborate that Authority/applicant reviews of the SSAs determined that certain significant latent failures did not require a CCMR (this could also include examples where AFM tasks will now be carried out in lieu of past practices where a CCMR would have been raised).

response

Partially accepted:

Note 2 completed to reflect the need for protection.

'The disposition of each CCMR and the means in place to ensure that SSA assumptions are protected in service should be accepted by EASA.'

comment

171 comment by: *Transport Canada Civil Aviation Standards Branch*

Section 10, page 14, Para. b.

Comment:

There may be some instances where these periodic checks intended to be covered by AFM

	procedures are not conducted at the beginning or end of a flight (conditions where flight crew normally perform their assigned duties). Some of these checks will be performed at intervals which are not routine (e.g. 20 hours). It is not clear if this provision will also cover these types of checks even when they are not part of the normally expected flight crew. Suggested Revision/Change: The wording in this section would imply that AFM tasks carried out by the flight crew that are not self-initiated, automatic checks would still be considered as CCMRs. The document is not clear in this respect and should be clarified.
response	Not accepted 'Both cases' in the last sentence of paragraph 10 b addresses periodic checks and self-initiated checks.

comment	*172* comment by: *Transport Canada Civil Aviation Standards Branch* Section 11, page 15, Para. a. Comment: For Para a., the reference in the last sentene to "e.g." should be removed as it can understood that only dual failures need to be considered. Suggested Revision/Comment: The applicant should provide sufficent information to enable an understanding of the failure conditions….. in which they are involved.
response	Partially accepted Triple failure added in para a: '…e.g. whether the significant latent failure is part of a dual failure, a triple failure, or more.'

comment	*173* comment by: *Transport Canada Civil Aviation Standards Branch* Section 11, page 16, Para. e. Comment: This sentence should be elaborated to define the implications although obvious, that in this

	case if no MRB compatible task is identified, a CMR will be required. Suggested Revision/Change: Transport Canada recommends that an additional sentence be included in this paragraph stating " In this case, a CMR will be required." or similar wording.
response	Accepted Sentence 'In this case, a CMR will be required.' is added.

comment	*174* comment by: *Transport Canada Civil Aviation Standards Branch* Section 13, page 18, Para. f. Comment: Should indicate here also that any new CMRs introduced post-Type Certification will be mandated by an Airworthiness Directive (AD). This would be consistent with 13.e above. Suggested Revision/Change: Transport Canada recommends that the sentence "… and they should be documented and approved by the Agency." contain an additional that states "<u>The new CMRs will be mandated by an Airworthiness Directive (AD).</u>"
response	Not accepted As CMR must be reflected in ALS, an AD will not be required except for addressing unsafe conditions. Paragraph 13 e is modified as follows: 'To address an unsafe the condition, EASA may determine that the requirements of an existing CMR must be modified (more restrictive actions to be required) or a new CMR must be created. These new requirements will be mandated by an Airworthiness Directive (AD) and the applicant's CMR documentation will be revised to include the change.'

comment	*175* comment by: *Transport Canada Civil Aviation Standards Branch* Appendix 3, page 23, Example 2 Comment: The context of this example is not clear. Where example 1 states that the CCMRs should be

published as part of the ALS, the title of example 2 infers that this is not necessarily required providing there is a tracking mechanism put in place. Transport Canada has experience with North American operators who develop their own maintenance programs based on OEM MRB reports and will not use the the OEM report after that point. In some of these cases, such operators maintenance planning documents remove all reference to MRB task categories such as FEC 8 which would lead to visibility of a CCMR importance being lost. Additionally, these items could be modified or escalated based on local operator/PMI agreements without any knowledge of the SSA assumptions that may be violated. Unless the tracking table/list in this example is included in the ALS, the risk remains that operators may not respect or understand the SSA limits inferred (i.e. the intervals will not be seen as limitations as well as the task details which could be modified or deleted based on local arrangements). This Example 2 also does not provide any indication of the interval to be monitored for operators to refer to. In this example, the SSA limits and tasks are not visible and would not be considering mandatory in this approach. It is also Transport Canada's understanding that a similar situation would be in existence with European operators.

In addition, Transport Canada references the following extract from the MDM.056 (RMT.0252) Subtask 5 meeting minutes for Dec. 9-12, 2014 related to a directive from the EASA MRB Chair, which stated the following:

"***Conclusion action item 2014/09-008:***
MRB section position is that an MRBR task has per nature no limitation and should not be linked to any. If the goal is to protect the SSA assumption, a CMR should be declared unless sufficient confidence exists that the CCMR interval will not be exceeded through escalations of the MRBR interval by any means. Any mitigating process should be made simple. A tagging, flagging or associated limitation is not acceptable for MRB section and against the original status of MRBR tasks. There should be no special status allocated to any MRBR task with all its inherent flexibility.

European operators (represented by EFL) are satisfied with any document providing requirements for development and packaging of their maintenance programs; MPD is usually used for development of OMP. As a matter of course, any of the applicable documents have to be taken into account for the OMP development and it is easier for the operator to receive the maximum interval for any requirement for further OMP development. The process of mitigating CCMRs with MRBR tasks and then having to take into account specific processes or limitations in order to protect these MRBR tasks seems to be far too complex. Keep it simple. Declare a CMR for CCMR.

Overall it seems clear that if an MRBR task should cover a CCMR the MRBR task should not receive any specific status or limitation or any other "protection means" outside the MRB process, otherwise for the CCMR a CMR should be selected.
The problem for the AMC is then to find the correct criterias for selecting the relevant mitigating means for CCMR."

Based on the TCCA concern and directive isued by the EASA MRB chair and recorded in the

	MDM.056 minutes above, TCCA believes that MRB tagging of CCMR tasks will not be an effective approach to ensure protection of the system safety objectives of 25.1309 Suggested Revision/Change: To ensure that SSA tasks and intervals are protected in service, Transport Canada recommends that it be made clear in this example that the tracking list be part of the ALS similar to example 1 above. Transport Canada believes that inclusion in the ALS is the only means for satisfying the protection stated in paragraph 11c. This would also align with the direction taken by the EASA MRB Chair directive issued to the MDM.056 (RMT.0252) working group and captured in the meeting minutes.
response	Not accepted Appendix 3 provides examples that describe the means (but not the only means) to protect SSA assumptions/CCMRs during in-service operation. During the certification process, the DAH may propose any other means of protection acceptable to the Certifying Authority. In paragraph g of example 2, the DAH is requested to provide guidance in the MRB report so that the visibility of the importance of a CCMR is not lost. Besides, any change to an AMP task needs the DAH's confirmation that this change does not adversely affect the intent or the interval of the corresponding CCMR task