



European Union Aviation Safety Agency
Comment-Response Document (CRD) to CM-S-008 Issue 4

Comment Response Document (CRD) to CM-S-008 Issue 4 on

“Additive Manufacturing”

(dated 03.09.2025)

Note: In response to comments, evolving EASA CM processes since initiation of this revision cycle, and the volume of content within the proposed update to Issue 4 of the CM, the CM has been split into two documents, i.e. the final CM revision and a ‘Supplemental CM’ document, which includes supporting content moved from appendices 2, 4, and 5. For the purposes of this CRD, the comments and EASA responses retain the order referenced to the original single document proposed for comment (April 2024) and may be found in the final CM at Issue 4, or the associated Supplemental document, accordingly.





European Union Aviation Safety Agency

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1. Summary of the outcome of the consultation

During the public consultation of the above referenced proposed updated Certification Memorandum from 6 May 2024 to 14 June 2024, EASA has received:

- 60 comments
- from 13 different commenters.



2. Individual comments (and responses)

In responding to the comments, the following terminology is applied to attest EASA's position:

- (a) **Accepted** — EASA agrees with the comment and any proposed change is incorporated into the text.
- (b) **Partially accepted** — EASA either partially agrees with the comment or agrees with it but the proposed change is partially incorporated into the text.
- (c) **Noted** — EASA acknowledges the comment, but no change to the text is considered necessary.
- (d) **Not accepted** — EASA does not agree with the comment or proposed change.
- (e) **NA** — EASA refers to the responses of another comment.

(General Comments)	-
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comment	2	comment by: <i>Boeing</i>	<p>May 23, 2024 W-ESMC-REG-24-KC-20 Note to file:</p> <p>The attached comprise comments from The Boeing Company submitted to EASA via the Comment Response Tool (CRT) in response to EASA Proposed Update to Issue 4 of Certification Memorandum ref. CM-S-008 on "Additive Manufacturing".</p> <p>In addition to our comments, Boeing recommends EASA harmonize with the FAA on future rulemaking on additive manufacturing to ensure a uniform and consistent approach is used across the passenger cabin.</p>
response	<p>Noted: Considering that some disciplines are moving at a different pace regarding the adoption of AM, and that AM is a rapidly moving subject, it was decided to continue with this CM revision, including the current status regarding cabin safety, in order to document progress relative to other disciplines. A future CM revision is intended to better address harmonisation of the subject.</p>		
comment	45	comment by: <i>Airbus-Regulations-SRg</i>	<p>AIRBUS GENERAL COMMENT:</p> <p>Airbus Commercial Aircraft is pleased to participate in the commenting on proposed CM-S-008 at issue 4. Our experts and matter specialists have carefully reviewed the proposed changes in this new issue. We'd like to provide the EASA with just one comment, allocated to the dedicated CRT section.</p>
response	<p>Noted: See comment 46 (ref. CRD page 18)</p>		
comment	47	comment by: <i>DGAC FR</i>	



	DGAC FR thanks EASA for this consultation. DGAC FR has no specific comment.
response	Noted: Thank you
comment	<p>9 comment by: <i>Federal Aviation Administration</i></p> <p>FAA comment: The FAA recommends removing terminology referencing "no criticality" as it seems to conflict with 21.31 and 21.A.31, which ties the definition of all parts on a certificated product to the airworthiness standards. 21.31 and 21.A.31 tie the necessary type design detail to compliance with airworthiness standards. All parts used on an aircraft should have a type design definition in accordance with the regulations.</p>
response	<p>Noted: EASA agrees with the comment regarding 21.31 relating to more critical applications relative to the Type Design. However, for purposes of practicality and in order to support proportionate management of a range of criticalities, and also readability of the CM, it is considered to be appropriate to use 'no or low criticality' (also aligned with the intent of language in ASTM F3572-22 'Negligible or No Effect').</p> <p>Note/Reminder: The CM coversheet reminds users that CM's are used to 'provide guidance... and complimentary information for compliance demonstration'. Furthermore, a CM is 'not intended to introduce new certification requirements', and, for the purposes of this CM revision, the CM scope is stated as being limited to 'no and low criticality' applications, and should have no (or very limited) impact upon potential aircraft or pax safety (these being the intended purpose of the regulations). This should minimise perceived conflict with 21.31 and 21.A.31 etc.</p>

1.1. Purpose and scope

p. 4

comment	<p>1 comment by: <i>ACG-ARA</i></p> <p>Many products have a cert. basis which is dating back to JAR times. How these will be addressed ?</p>
response	<p>Noted: This CM, and the adoption of AM, does not change established Part 21 certification or change processes, including guidance regarding the definition of an appropriate certification basis for, and changes to, products. This general point is noted in several places, e.g. Appendix 1.</p>
comment	<p>10 comment by: <i>Federal Aviation Administration</i></p> <p>a/ FAA comment: The FAA recommends revising the CM to inform applicants that metallic AM should be treated as new and novel technology, and that design changes that incorporate metallic AM require prior coordination with regulators, and for now, may not be classified as minor.</p> <p>b/ The statement at the end of section 1.1 ("This revision addresses early engagement with EASA regarding AM...") conflicts with a statement made later in the CM, in Appendix 2 ("the intent is for parts manufactured using AM considered to be of no or low criticality (in accordance with the guidance above) to be addressed under a minor change approval").</p>



If these parts, manufactured using AM, are to be certified as minor changes, applicants may pursue the change without engaging regulatory authorities or obtaining agreement that appropriate risk categorization was applied. If applicants are required to engage EASA in their certification activities of no and low criticality AM parts, and there is a possibility that EASA may retain some or all of the certification design items for this activity, the design change could not be considered minor. It is more important for regulators to ensure that applicants understand design change classification standards. Until we gain enough experience and confidence in AM, applicants should be reminded about the need to engage regulators early in their AM certification activities and that projects utilizing metallic AM may not be classified as minor changes without consultation with regulators.

response

In response to Comment 10a: Noted: The CM indicates need to consider novelty, criticality, complexity and to inform EASA accordingly (metallic or not), even for Class D, e.g. Policy Section 3, and ref. to appendix 2. In order to be practical and proportionate, the CM allows proportionate judgement, supported by, at least, a thorough Classification assessment, ref. Appendix 3, and acceptance within the scope of 'minor' (to be agreed with the regulator), avoiding unnecessary burden relating to 'major' classifications, e.g. for a coat hanger. Note that this does not change existing EASA processes and allows further review through established audit procedures. Further to the CRD input, text has been revised to reinforce this message throughout the CM. See also response to comment 9.

Comment 10b: Noted: EASA does not believe there to be a conflict because the CM requests applicants to inform EASA of intent to use AM, even at Class D, and retains existing EASA process regarding a further opportunity to review applicant activities, e.g. during an audit cycle. See response to Comment 9, and 10a above.

Note: This CM revision both indicates information expected to be supplied by the applicant relating to early engagement, regardless of classification, whilst including guidance for only C & D in Appendix 2 etc. As stated in the CM, future revisions will likely address higher classifications.

1.2. References

p. 5

comment

31

comment by: *Lorena GALI SORET*

Attachment #1

The reference link (FAA RAS) included in this revision requires a specific access right.

response

Noted: Following further discussion with the reference provider, the reference has been removed from this revision to the CM.

1.3. Abbreviations and Definitions

p. 6

comment

15

comment by: *Federal Aviation Administration*

	<p>FAA comment: The FAA recommends including definitions for the terms "anomaly," "flaw," and "defects" in this CM. EASA may consider the following definitions per ASTM E1316 – 23a, "Standard Terminology for Nondestructive Examinations."</p> <ul style="list-style-type: none"> • Flaw: an imperfection or discontinuity that may be detectable by nondestructive testing and is not necessarily rejectable. • Defect: one or more flaws whose aggregate size, shape, orientation, location, or properties do not meet specified acceptance criteria and are rejectable. • Flaw characterization: the process of quantifying the size, shape, orientation, location, growth, or other properties, of a flaw based on NDT [non-destructive testing] response. <p>The ASTM E1316 does not provide a definition for "anomaly." While the FAA did not identify an industry-accepted definition for anomaly, the FAA would propose the following definition is suggested for consideration: Anomaly: Flaw or defect that deviates from what is expected or an abnormality that cannot be explained for a specific material type.</p>
response	<p>Accepted: These words have been consistently used inconsistently throughout literature and across the industry. The proposed definitions have been adopted for the purposes of this CM revision. A note has been added to 'definitions' section regarding inconsistent definitions, and need for the user to clarify definitions on a 'case by case' basis.</p>
comment	<p>16 comment by: <i>Federal Aviation Administration</i></p> <p>FAA comment: The definition provided for "criticality" does not align with its usage throughout the CM. The FAA recommends revising the CM to provide the definition of criticality as well as types of criticalities (part criticality, process criticality, criticality considered in determining LoI, etc.) that better match their usage in the CM. The FAA suggests updating the definition for part criticality to reflect that it is a measure of the severity of a part on the overall safety of a product or its occupants, and a characteristic that is not affected by material and fabrication processes. The FAA also suggests updating the definition for process criticality to reflect it as a measure of sensitivity of AM properties to process variations.</p> <p>Part criticality is an indicator of the hazard level associated with the part, and it represents a measure of the level of impact that a failure of a part has on the overall operation of a product, or occupant safety. Material and fabrication processes do not affect part criticality (consistent with ASTM F3572).</p> <p>AM process criticality is among the key factors that necessitates increased regulators' level of involvement in certification projects, and organizational oversight activities.</p>
response	<p>Partially accepted: EASA agrees with the intent of most of these comments, and had already attempted to express them in the existing draft CM revision, e.g. distinguish between the various meanings of 'criticality' used throughout the regulations. However, the wording has been further amended to better distinguish Part, Manufacturing, and Cert Process</p>

criticality (the associated text has been moved from chapter 2 to the Appendix 2 of the final CM at Issue 4.

Note: The potential for non-conformities are recognised within the scope of other EASA regs and guidance, e.g. PART 21.A.307/CM 21.A-K-001 'Parts without Form 1', and have been used in support of a robust Class C and D classification in particular.

comment 19 comment by: *Federal Aviation Administration*

FAA comment: The FAA recommends providing definitions for "full MoC," "simplified MoC," and "no/negligible MoC" to ensure clarity.

response Partially Accepted: Appropriate definitions for "full MoC" and "simplified MoC" added to support the final text in the draft CM.

comment 21 comment by: *Federal Aviation Administration*

FAA comment: The FAA recommends including a definition for "DDP." The FAA also suggests referring, at the first use of the term, to the regulation, guidance, or industry standard where it comes from.

response Accepted: Definition added

2. Background - increasing development of AM use in aviation and the EASA regulations

p. 10

comment 50 comment by: LBA

Page 11: - *'... including robust machine qualification, maintenance, calibration and monitoring processes.'*

Although we are mainly identifying the hardware control, there is no mention about software control. E.g. software & program updates, Access, Cyber security, training of operators, etc.

response Accepted: Reference to software updates etc has been added. The corresponding text has been shifted to Supplemental - Appendix 2.

comment 51 comment by: LBA

Page 11: *'.. Complex parts and processes will likely require, dependent upon criticality, testing higher in the test/analysis pyramid'*

The tests parameters are to be defined in the CS or should the DO define them separately? How does this affect the production organisation afterwards?

response Noted: The DO lead 'end to end' stakeholder considerations all contribute to the test and analysis pyramid definitions and test parameter identifications, as necessary to support MoC for the CSs. These points are indicated throughout the CM.



comment	<p>52 comment by: LBA</p> <p>Page 15: "...number of test specimens and associated statistical analysis must be determined according to recognized standards and/or documented company internal procedures"</p> <p>This may not work without defining who is entitled to acknowledge the internal company procedure to be accepted as a reference.</p>
response	<p>Accepted: Sentence added to ensure adequate data and procedures sharing between stakeholders. The corresponding text has been shifted to Supplemental - Appendix 4.</p>
comment	<p>6 comment by: Federal Aviation Administration</p> <p>FAA comment: Regarding Tables 2a, 2b, and 2c, table values marked with "N" indicate that no method of compliance is necessary for these parts according to the table key, which could be interpreted as misleading the reader to think that EASA accepts anything for these types of parts. Please clarify whether "N" is intended to mean "conventional MOC."</p>
response	<p>Partially Accepted: Note: Section 2 is not Policy, but, as described, documents developing discussion which considers that determining the Criticality Classification governs expectations regarding demonstration of proportionate MoC. However, it is also recognised that much work may be needed to determine the correct Classification and that this will need to be demonstrated (much like MoC). This may be challenging for some requirements, as currently worded, e.g. CS25.571. Therefore, for the purposes of this CM revision, and until better standardised, the need to first demonstrate the correct Classification, including supporting work, is emphasised with the 'N' classification and 'footnotes' supporting the MoC tables.</p> <p>Note: EASA recognises that debate continues regarding the interpretation of, and distinguishing between, actions necessary to support critically classification relative to the actions necessary to demonstrate the showing of the means of compliance being proportionate to criticality, as evidenced in Section 2 (NOT Policy) and supporting tables. The corresponding text has been shifted to Supplemental - Appendix 4.</p>
comment	<p>7 comment by: Federal Aviation Administration</p> <p>FAA comment: Adding criticality for additive manufactured parts adds a level of complexity that is inconsistent with part 21 and the basis for showing compliance to the applicable regulations. The FAA recommends removing references to "no showing" or "simplified showings" since part 21 requires applicants to show compliance to each regulation that is applicable for the design. The means of compliance can vary and are provided within the context of each of our airworthiness regulations.</p>
response	<p>Noted: EASA does not consider that any complexity has been added. This CM simply attempts to better formalise interpretation of existing practices. Note: CMs provide guidance regarding potential standardisation of interpretation of the regulations. See also Comment 6</p>

comment	<p>8 comment by: <i>Federal Aviation Administration</i></p>
	<p>FAA comment: Regarding the note at the top of page 11, please clarify the intended applicability of this document. The scope and title of this document is relative to Additive Manufacturing, yet it appears this statement means the content is intended for all parts regardless of the method(s) used to manufacture the part. The scope and title of this document is specific to Additive Manufacturing, which limits awareness of the broader applicability and visibility of the content for necessary stakeholder review. Consequently, if the part categorization information is intended to be applicable to non-AM materials, processes, and methods as well, the FAA recommends placing that content in a separate, specific document that is not specific to materials/processes/methods to ensure appropriate stakeholder awareness and agreement.</p>
response	<p>Partially accepted: The existing comment regarding the potential for applicability of the CM to extend beyond AM, page 11, has been further amended to emphasise the need for further work to do so.</p>
comment	<p>11 comment by: <i>Federal Aviation Administration</i></p>
	<p>FAA comment: Regarding design certification regulations, this CM seems to confuse the roles and responsibilities when it comes to the stakeholder interests in developing a risk model. For the regulatory authority like the FAA, there should be an understanding that lower risk parts garner proportionate (i.e., less) oversight. However, it is difficult to instill engineering judgement in a form that buckets parts into risk categories so as to avoid both the judgement call and the necessary compliance to regulatory requirements.</p> <p>The determination of part criticality should not offset the need for an applicant to identify and comply with the appropriate airworthiness standards, or the regulatory authority's responsibility to find compliance to these standards.</p> <p>The oversight expectation for the regulatory authority (or the design organization) should not be confused with the expectation that the applicant shows compliance.</p> <p>The rigor used by the applicant in showing compliance (that would be found to be acceptable to the FAA) is currently performed upfront in the certification planning for the FAA. The challenge is that we have to achieve agreement on the risk first. The placement of that consideration and effort inside a CM specific to AM obscures the broader effort trying to be achieved. The failure consequence of a part does not depend on the manufacture of the part.</p> <p>Consequently, the FAA recommends describing the expected outcome for an applicant, a design organization, and the regulatory authority using these approaches.</p>
response	<p>Partially accepted: EASA agrees with the intent of the majority of points in the comment. However, EASA does not believe that the roles and responsibilities have been confused. Indeed, the CM repeatedly makes clear that the regulations and processes have not been changed. The CM simply attempts to provide practical and proportionate guidance for established process relative to the introduction of AM to applications of no</p>

and low criticality, see also comments 6, 9, 10, & 16 etc. Reminder, e.g. the 'criticality' section clearly sets out the recognition that there are many definitions for criticality. It also identifies a recent high level definition, i.e. that associated with LoI, for the purposes of reference in the CM and which is at a high level, also referencing the high level safety outcomes (Cat and Haz), if processes are not followed, e.g. part identification, technical process, certification process etc. EASA considers that this approach works adequately for parts of no and low criticality, if supported by other mitigations, such as the top down/bottom up design safety assessment. This approach is also aligned with Performance Based Regulations (PBR), which is addressing higher level 'performance' outcomes, not the details supporting MoC necessary to achieve these outcomes. As evident in the various sections addressing design, production, and repair concerns in the CM, AM changes nothing regarding the relationship to the regs. In order to help address any apparent confusion, the para has also been revised to explicitly identify part criticality, manufacturing process criticality and cert process criticality.

comment

12

comment by: *Federal Aviation Administration*

FAA comment: Regarding the statement that revisions to the CS25.603, 25.605, 25.613 Acceptable Means of Compliance (AMC) "have been made to better align with the regulatory move towards the use of 'Performance Based Regulation' and also the need for certification effort to be proportionate to 'criticality', in accordance with Level of Involvement (LoI) regulatory guidance, ref. AMC 21.B.100(a)," the FAA recommends removing provisions of the CM that allow the level of rigor in applicants' compliance demonstrations to be proportionate to part criticalities that regulators consider for determining their LoI in certification activities. The FAA also recommends revising the CM to remind applicants that regulators may review any data and information that was not identified for LoI retention, and they expect the rigor in compliance demonstration to be of the same standard as that of the LoI retained data.

The AMC 21.B.100(a) does not authorize compliance demonstrations for applicable regulations to be proportionate to design criticality and risks that regulators consider for determining their LoI. The LoI represents the regulators' level of engagement in certification projects, and not the level of the compliance demonstrations in the applicants' certification efforts.

The AMC 21.B.100(a) only provides information about how applicants may propose EASA's LoI, and how EASA determines its LoI. The AMC describes criticality of the design, technology and the related safety and environmental risks as being among the factors EASA considers for determining its LoI. The AMC does not permit part criticality to be a basis for scaling the level of rigor in compliance demonstrations. The level of rigor in compliance demonstration should not be gauged by any of the criteria used for determining regulators' level of involvement in the certification activity.

response

Partially accepted:

Page 16 already points out that the CM does not reduce the need for the applicant to address all the appropriate requirements (also repeated in Appendix 1). However,

- a 'reminder' has also been added to page 16 to make clear that the tables highlight what the regulator is likely to wish to see (part of



	<p>the certification effort - LoI). Note the existing CM proposed revision already reminds applicants that they may be requested to provide further data, as part of established regulator audit processes. The corresponding text has been shifted to Supplemental - Appendix 4.</p> <ul style="list-style-type: none"> - a note has been added to page 11 to emphasise the point that the regs are moving towards performance outcomes and (PBR) away from prescriptive content - EASA considers that proportionality is a logical consequence of LoI regarding demonstration of MoC, and reflects long established practice (AM, or not). However, chapter 3.1.1 has been amended to remind applicants that they need to satisfy appropriate requirements and that the regulator retains the right to request further justifying evidence. <p>Reminder: A CM (see cover sheet) spells out the 'guidance' intent of such a document. Furthermore, this CM reinforces the message that there are no changes in the regs due to the CM, e.g. regarding design, production, repair. Reminder: This content is in Section 2, so represents background and developing discussion, not Policy. As is clearly stated, this will be developed further. Indeed, Section 2 is included in order to raise such discussions and encourage industry – regulator dialogue.</p>
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comment

13

comment by: *Federal Aviation Administration*

FAA comment: Tables 2a, and 2b, Note 1, states no §§ 2X.603 and 2X.605 "showing for Class D parts (and no showing for some requirements associated with Class C parts) may be accepted because there is no effect on safety including consideration of the material and process selected for construction" (p. 16). This is contradicted by Appendix 3 of the CM which states, "it is important that even applications which have been assessed to be of no criticality (Class D) are adequately controlled, at least, by commercial specifications ..." (p. 28). The CM also emphasizes AM may "generate significant variability if production is not governed by strict process control documentation" (p. 10).

The FAA does not see a scenario where parts with no material process and specifications would be approved for installation on civil aviation products. Part 21 requires sufficient information on materials, and fabrication processes to be included in the design to allow conformity of products. The reasoning is in line with the requirement for "maintaining consistency and quality of a product regardless of safety considerations," expressed in the CM (p. 13). All of the example certified AM parts of no or low criticality in Appendix 4 (pp. 30-48) required material and process specifications. The need for demonstrating capability to produce these parts to specifications is evidenced by the fact that the manufacturing and fabrication processes for most of these parts are qualified and approved for specific AM printer serial numbers.

The FAA recommends revising the CM to emphasize that sufficient information on materials and fabrication processes must be included in the design to ensure compliance with Part 21.

response

Partially accepted: EASA agrees with the intent of some of these thoughts. However, EASA does not accept that a contradiction exists between Section 2 and appendix 3.

Reminder, Section 2 is not Policy, simply documentation of evolving discussion for future development. Section 3 'Policy', only addressing no



and low criticality applications, and Appendices 2 and 3, address the comment points for the limited scope of the existing and proposed CM revisions.

Note: Section 3 Policy, and Appendix 2 and Appendix 3, require some form of spec, even if only commercial for Class D (i.e. the additional work exists within the classification process, not MoC process). Note: these may not require testing, if the argument supporting Class D is adequate.

Note: Furthermore, no contradiction exists between the need for extra work due to novelty of AM and requesting little need for demonstration for certification for parts of no and low criticality applications because these points are addressed in the introduction to Appendix 5.

Note: Explicit need to use appropriate M&P, supported by PCDs has been added to both Section 3 and Appendix 2
See also CM cover page, and responses to comments 6 and 12 above

comment

14

comment by: *Federal Aviation Administration*

FAA comment: Regarding the statement that "EASA recognises that much of the content in this CM, particularly that associated with applications of no or low criticality, is adequately generic to be more broadly applicable to materials, processes, and fabrication methods other than AM. Therefore, the scope of applicability of this CM content could potentially be developed accordingly.": the FAA recommends updating the CM to reflect that the utilization of AM does not exempt applicants from showing compliance to applicable regulations or reduce the rigor required in their compliance demonstrations to these regulations. The FAA also recommends updating the CM to remind applicants that if AM is new to the applicant, or for a particular application or configuration, it would be treated as a new or novel fabrication method, in which case, it must be substantiated by test (reference § 25.605(b)). The requirement for an additional test program for AM means a heightened rigor in compliance demonstration is expected for AM when compared to traditional fabrication methods.

The CM permits certification efforts for projects involving AM to be proportionate to criticality. The reluctance to expand the scope of applicability of the CM and the implied expectation that some parts of the CM may not be applicable to traditionally manufactured parts appears to erroneously signal that regulators are willing to accept a lower degree of rigor in compliance demonstrations for AM than what is required for traditional fabrication methods.

Regulators may consider AM to be a new fabrication method, in which case, it must be substantiated by a test program that is representative of its application (reference § 25.605). Thus, a heightened rigor in compliance demonstrations is to be expected for AM than for traditional fabrication methods.

response

Partially accepted: EASA agrees that CS2x.605 is a key requirement. A note has been added to Section 3 'Policy' of the CM to emphasise the importance of the 'novelty' aspect and of the CS2x.605 to the introduction of AM.



Appendix 1 also includes reference to the important requirement CS2x.605 etc.

Appendix 4 of the proposed update to the CM at Issue 4 also provided reference to the expectations that work, including testing, additional to that typically required for 'conventional' technology will be necessary, as evident in the examples, which have been shifted to Supplemental - Appendix 5.

Furthermore, the reinforced message regarding the need to consider both top down and bottom up design safety assessments, appendix 3, and to consider all possible failure modes and consequences should support a conservative no and low criticality assessment. See also responses to Comments 6, 10, 12, and CM page 11 text amendments.

comment

17

comment by: *Federal Aviation Administration*

FAA comment: The FAA recommends reassessing the overall purpose and approach of this CM in consideration of its conflicting overlap with ASTM standard F3572.

The CM Table 1 attempts to provide a common part classification standard across product types and regulations. The table is identical to Table 1 in the ASTM F3572 standard. The use of this common part classification scheme for identifying the applicable regulations and the corresponding level of rigor in compliance demonstrations (Tables 2a, 2b, 2c) has created a conflict with the requirements specified in the regulations. The CM does not explain or provide justification for its adoption of an AM specific part classification scheme in the ASTM F3572 standard.

The CM does not provide regulatory support for the implementation of an AM specific part classification standard. As reflected in the FAA's Safety Continuum (https://my.faa.gov/content/dam/myfaa/org/linebusiness/avs/offices/air/comm/continuum_doctrine.pdf), airworthiness standards for civil aviation products are tailored to achieve an acceptable level of safety risk for the respective aircraft category (e.g., transport, normal, utility, acrobatic, limited, restricted, and provisional). In addition, regulations define component or system classification standards for assessing critical characteristics for their intended usage on the product (e.g., airframe, mechanical system, electrical system, propulsion, interior, etc.). The safety risk for all product categories, and the criticalities that are evaluated by specialists from different disciplinary areas may not be adequately described by a single classification standard. The FAA has concerns that the approach to place part classification standards in an AM-specific CM eliminates the necessary stakeholder participation. Part classification standards are not structures-specific, nor should they be presented in a process-focused document. This CM allows for a lower demonstration of compliance for AM but does not address the potential for other processes that may also have the same risk of variability in their manufacture.

response

Partially accepted:

EASA agrees with the intent of some of the points in the comment, but believes that all points are adequately addressed within the content of this CM, and the intent of CMs in general (see CM front sheet). The CM clearly states that it does not change existing regulations, but only attempts to provide practical interpretative guidance for no and low criticality



applications. Also see responses to comments 10 & 12. Furthermore, it is not in conflict with F3572 because it uses and builds upon its content. EASA does not accept that the CM 'eliminates the necessary stakeholder participation'. Indeed, it does the opposite by emphasising the importance of the 'end to end' process (ref. to AMC 25.603, 25.605 amendments, test and analysis pyramid definition, training, supply chain management etc) and simply provides guidance regarding practical and proportionate management of the introduction of AM into no and low criticality applications when interacting with EASA. Furthermore, it requires support of development work evidence, ref. Appendix 5 and Supplemental – Appendix 5 in the final version of the CM at Issue 4.

Note: Table 1 is, as stated in the CM, a developed version of the F3572 table (1st, 3 columns common to F3572 table 1, the remaining columns being additional columns addressing simplified and grouped safety related rankings across products).

comment	18 comment by: <i>Federal Aviation Administration</i>
	<p>FAA comment: Regarding Tables 1 and 2a, the FAA recommends removing table line items for catastrophic and hazardous parts category A and B, and removing the column for § 25.571, to align with the intent of this CM being applicable to AM parts of no or low criticality.</p>
response	<p>Not accepted. As indicated at the end of Section 1.1, and at the start of Sections 2 and 3, Section 2 is only documenting 'background' and ongoing 'discussion'. It is not Policy. Sharing evolving discussion was considered to be preferential to not sharing it (Section 2). Consequently, the points made in the comment are likely to form part of expected future discussion, developments, and CM revisions. EASA agrees that such discussion may require clarification regarding interpretation of existing CS MoCs, e.g. CS2x.571 (i.e. above CM level), see also Comment 6 above.</p>
comment	20 comment by: <i>Federal Aviation Administration</i>
	<p>FAA comment: Regarding Note 9 and Table 2b, the FAA recommends appropriately clarifying the need for regulatory assessment, compliance, and effort.</p> <p>Internationally harmonized guidance under § 21.101 requires the identification of affected areas and their associated affected regulations.</p> <p>Parts that are considered affected areas under § 21.101 include affected regulations under § 2x.571/.573. While changes to a fatigue critical part may not adversely affect the part, the part must still be assessed in compliance to the regulatory requirements that are affected.</p> <p>The FAA disagrees that parts subject to fatigue and damage tolerance requirements are "low risk".</p>
response	<p>Partially accepted: Parts need to first be assessed for the need for potential fatigue and DT consideration. However, they may well be established as low risk, but only following appropriate work and justification, e.g. supported by appropriate databases etc. This will form</p>

part of developing discussions. Reminder, this is in Section 2 of the CM, 'background' and 'discussion', not Policy.

Note: Footnote (9) texts amended to better clarify the points above, strengthening the point that this approach may only be relevant to an established TCH etc. The corresponding text has been shifted to Supplemental – Appendix 4 in the final version of the CM at Issue 4.

comment	22	comment by: <i>Federal Aviation Administration</i>
	FAA comment: Please clarify what is meant by "type of part" when it comes to "parameters defining the design value" (p. 15). The limits of the design values - or any design data - should be defined. For example, design values may be limited to a location in the build volume, a build orientation, a wall thickness, surface finish, etc. These limits should be clearly defined.	
response	Accepted. 'Type of part' deleted. Example list of parameters added. The corresponding text has been shifted to Supplemental – Appendix 4 in the final version of the CM at Issue 4.	
comment	23	comment by: <i>Federal Aviation Administration</i>
	FAA comment: Regarding Table 2a, the FAA does not agree that there is no finding of compliance to 25.571 for parts which indirectly affect continued safe flight and landing. The specific example of large aircraft antenna require 25.571 compliance, but the FAA allows simplified MOC.	
response	Partially accepted: EASA agrees that this will form part of future discussion, as indicated in the CM text. The regulation, as written, only applies to more critical parts. However, this needs further discussion because significant work is involved to initially determine applicability of CS2x.571 and relevance to safety. Note that the footnotes indicate this, e.g. Table 2a footnote (9). There is a need to better communicate the work necessary for an applicant to make such a determination of applicability of 2x.571, even if the outcome determines F&DT to be of little consequence to safety. See also response to Comment 12. Reminder, this is in Section 2 of the CM, 'background' and 'discussion', not Policy. The Table 2a and associated text of footnotes have been shifted to Supplemental – Appendix 4 in the final version of the CM at Issue 4.	
comment	24	comment by: <i>Federal Aviation Administration</i>
	FAA comment: Regarding Footnote 1 (p. 18), the FAA suggests the correct citation as "Title 14 of the United States Code of Federal Regulations, (14 CFR) 33.70."	
response	Partially Accepted: Text partially amended to better identify the reference so that it's identity may not be mistaken. The corresponding text has been shifted to Supplemental – Appendix 4 in the final version of the CM at Issue 4.	
comment	33	comment by: <i>Lorena GALI SORET</i>
	Page 11 :	

	<p>Paragraph : "Representative testing : Certification of compliance with CS's is expected to be achieved by 'test' or 'analysis supported by test'. [...]"</p> <p>Excluding first application specificities, from this paragraph it is understood that systematically all CS's substantiations must be based on test or analysis (MoC 4 or MoC 2). In particular, for class D parts and following Table 2.a , for parts which are no subject to loads (e.g. a small decorative interior item), may not require specific testing or analysis to substantiate the CS requirements (e.g. 25.601).</p> <p>I would suggest clarifying this point: Except for some Class D parts, certification of compliance with CS's is expected to be achieved...</p>
response	<p>Noted: EASA agrees that there is often discussion regarding the balance between MoC 2 and 4. However, the need to certify by 'test' or 'analysis supported by test' is a high level specification, e.g. iaw CS25.605, AMC 25.307 etc. The interpretation of the link between analysis and test can be broad, and is a key part of current discussions relating to rapidly developing 'Modelling and Simulation' technologies. Some link between the intended performance of a part and test would be expected, e.g. durability, fire, strength etc, even for applications of no structural criticality, even if only for commercial material selection purposes, ref. the proposed CM at Issue 4 Appendix 2.</p>
comment	<p>34 comment by: Lorena GALI SORET</p> <p>Table 1, Page 14: In class C row general description is written: "Part whose failure has no effect on passengers". Under my understanding, the word "effect" is not directly related to "safety effect". This sentence could be understood as any effect on passengers, including comfort. To avoid misunderstandings, I would suggest specifying "safety effect" instead of "effect"; as the certification is based on "safety consequences".</p>
response	<p>Accepted: Ref to pax safety added. The table 1 and corresponding text has been shifted to Appendix 2 in the final version of the CM at Issue 4.</p>
comment	<p>35 comment by: Lorena GALI SORET</p> <p>Large Aeroplanes- Footnotes, Page 16: " (3) statistically valid material allowables and design values required, e.g. T90 or T99 data (e.g. C or D-Basis for AM data), or equivalent, but unlikely to be S basis data for Class A and B parts) only when showing compliance by analysis."</p> <p>As this footnote is only applicable to Class A and B parts, the sentence "but unlikely to be S basis data for Class A and B parts" is confusing. According to definitions on page 9, for C or D- basis, when these basis values are used to demonstrate compliance with static strength requirements further showing is required. Under my understanding, this sentence is not in line with footnote (3) content which provides C or D basis to show compliance "e.g. C or D- basis for AM data". I would suggest specifying what kind of statistically data is accepted when showing compliance by analysis; or, reformulating the sentence.</p>
response	<p>Partially accepted: CS25.613 (b), (e), and (f) allows the regulators to accept statistical data other than that implied (A and B basis), including</p>

S-basis. This note was added, having been asked about acceptability of S-basis for more critical AM applications (unlikely until AM is more established). The table 2a and associated text of 'Large Aeroplanes – Footnotes' have been shifted to Supplemental - Appendix 4 to the final version of the CM at Issue 4.
EASA agrees that C and D basis may form part of future acceptable data.

comment

40

comment by: *Transport Canada*

on page 16, subparagraph "**(4) proof of structure can be shown by analysis or by element/ part level test (supported by appropriate boundary conditions)**", needs to be corrected to analysis supported by test or by element/part level test.

The rationale is that CS 25.307 requires compliance for each critical loading condition. Compliance can be shown by analysis supported by previous test evidence, analysis supported by new test evidence or by test only.

response

Accepted: 'Supported by test' added. See also the response to Comment 33. The table 2a and associated text of 'Large Aeroplanes – Footnotes' have been shifted to Supplemental - Appendix 4 to the final version of the CM at Issue 4.

comment

44

comment by: *Pilatus Aircraft Ltd*

Table headers are not readable

response

Accepted. Header background changed.

The table 1 has been shifted to Appendix 2 of the final version of the CM at Issue 4.

The tables 2a-c have been shifted to Supplemental - Appendix 4 to the final version of the CM at Issue 4.

comment

46

comment by: *Airbus-Regulations-SRg*

Airbus Comment related to:

PDF page 16, Table 2a CERTIFICATION EFFORT PROPORTIONALITY TO PART CRITICALITY – Large Aeroplanes

AIRBUS COMMENT :

Please split >Table 2a< in two separate tables, one relevant for Structure, with the related columns for 25.603/25.605, 25.613, 25.305/25.307, 25.571 and 25.901/25.903 and a clear separate table for Cabin/ Systems / PowerPlant with columns 25.901/25.903, 25.1309, etc. Furthermore, please delete the notion of CAT/ HAZ/ MAJ/ MIN/ NSE from the new table related to Structure and replace these with High / Medium / Low and Negligible as shown in table 1 on page 14.

RATIONALE:

Although Airbus strongly supports the principle of certification effort proportionate to part criticality and the visualization using the table 2.1, the table as it is gives the impression that a 'systems' component will need to be justified against 'structures' requirements, for instance CS25.571.



response	<p>Furthermore, the concepts of HAZ/ MAJ/ MIN are not recognised in the structure context but are related to a systems approach (through CS25.1309). The notion of catastrophic is recognised in the structure context (e.g. CS25.571) but using the term 'high' will maintain a better link to table 1.</p> <p>Noted: The need to consider how to define and split the tables has formed part of ongoing discussions within various WGs, e.g. EAAMIRG, WG1 etc. The tables, as presented, represent the current documented status at the time of this CM revision and have been included for visibility purposes. Being in Section 2 (background/context), they do not represent a final policy position, this point being emphasised in the CM text at various points. Furthermore, the tables have been moved to a new Supplemental - Appendix 4 in order to support the transitory non-policy aspect of their status relative to the main body of the CM text. This discussion is noted and can continue in future WG activities.</p>
comment	<p>41 comment by: <i>Bombardier</i></p> <p>On page 13, it is stated "... it will be a particular challenge to develop appropriate knowledge and a body of data to certify AM parts of any significant criticality in the near future. However, some simple applications can readily be determined to be of no or low criticality, i.e. being of no, or minimal, safety concern...". The word 'significant' should be clarified or better defined as it is not 100% clear that this is referring to MAJOR criticality in addition to HAZ/CAT in the context of this paragraph.</p>
response	<p>Accepted: 'significant' changed to 'higher', and examples Cat (A&B) added. The corresponding text has been shifted to Appendix 2 of the final version of the CM at Issue 4.</p>
comment	<p>58 comment by: Bell</p> <p>Section 2 page 13: Second to last paragraph. Agreement with approach used on parts that have no safety concerns. This is exactly our approach using metallic AM parts and we have been successful. We need to keep this path.</p>
response	<p>Noted: Thank you</p>
comment	<p>59 comment by: Bell</p> <p>Section 2 page 12, and page 26: Need for flammability guidance. This CM should also refer to CS2X.855... some non-metallic AM parts may be installed in baggage bay and may require flammability tests. Flammability on AM component is not yet defined since % filling, print orientation may induce different results. For actual part, flammability tests have been performed on three-different orientations, we do not play with the % filling for the moment.</p>
response	<p>Accepted: Flammability is in need of further guidance/standardisations. However, this CM revision has been released to provide an update regarding AM progress, which is progressing at different rates relative to</p>

different themes. The intent is for a better standardised position to be in place for the following CM revision.
Reference to 2x.855 added to page 12 and Appendix 1. The text on page 12 of the former proposed CM at Issue 4 has been shifted to Supplemental - Appendix 2 to the final version of the CM at Issue 4.

comment	60	comment by: Bell
	Section 2 page 13: Present structural limitations of non-metallic AM for helicopters. We were not aware of the ASTM F3572 which classifies AM parts used in Aviation. Presently, Bell is using (non-metallic) AM parts only for interior components and would be classified as C and D part – non-structural parts.	
response	Noted: ASTM F3572 is not M&P specific.	

3.1. Design Certification - early engagement with EASA

p. 19

comment	32	comment by: Lorena GALI SORET
	Attachment #2 The reference link below does not work. Page not found. https://www.faa.gov/aircraft/air_cert/design_approvals/transport/media/rptTAIListForPublicWeb.PDF	
response	Accepted. Links removed because applicants need to contact FAA in order to receive the ASGM document, as described by FAA in the FAA EASA AM Event 2021.	
comment	42	comment by: Pilatus Aircraft Ltd
	Page 20: It is not clear why this information is here. We understand this chapter that in any case a certification plan has to be submitted to EASA, regardless of the applicant's experience, part criticality and change classification - can that be better clarified?	
response	Noted: However, the statement is included for awareness because there are many stakeholders in developing supply chains, some new to aviation, and who may not be directly exposed to the certification processes.	

3.5. Impact of AM on production organisations

comment	53	comment by: LBA
	Page 21: <i>"..Implementation of an AM process that is new for the POA holder is a change to the approved production organisation that may be identified as a significant change"</i>	



	Any implementation or introduction of a new production process is meant to be handled as a significant change i.a.w. 21.A.147. The expression 'May' leads definitely to another fact and is not correct at this point.
response	Partially Accepted: However, the determination is open to agreement with the regulator, subject to proportionality relative to criticality. Note: 'may' changed to 'typically'. EASA POA and DOA processes are evolving to accommodate AM.
comment	54 comment by: LBA
	<p>Page 21: "...It is ultimately the responsibility of the design approval holder to ensure that the production methods (e.g. processes, fabrication technologies etc.), or any changes, are appropriately addressed. Therefore, a robust communication process between the POA holder and the DOA holder should be demonstrated (which includes appropriate engagement with the material supplier and other impacted subcontractors). Production Organisations are therefore reminded of the published design data requirements in point 21.A.131."</p> <p>There is a necessity for more decisive approach here. Should this be part of the DO-PO Agreement?</p>
response	Partially Accepted: The stated paragraph emphasises the DO responsibilities and the importance of 'end to end' stakeholder communication to make this possible. Note: Text added to identify appropriate DO-PO agreements etc

4. Whom this Certification Memorandum affects

p. 21

comment	38 comment by: THALES
	Is this CM applicable to military certification?
response	Noted: It is primarily applicable to civil products (note that some products have both civil and military certifications, some being certified in parallel). The military may choose to use (and adapt) it, subject to military regulatory processes.
comment	55 comment by: LBA
	<p>On page 21, it is stated "...This Certification Memorandum is applicable to individuals and organisations introducing AM during certification of Products, Parts and Appliances, Design Changes to Products, Parts and Repairs to Products in compliance with the material, process, and fabrication related specifications in CS-22, CS-VLA, CS-23, CS-25, CS-VLR, CS-27, CS-29, CS-E, CS-P, CS-APU, CS-ETSO's etc., including other emerging product Certification Specifications (CSs) and Special Conditions (SCs), e.g. those addressing eVTOL etc.. It is also relevant to DOA and POA Applicants/Holders and their competent authorities, as well as other organisations declaring their capabilities under Part 21L."</p>



	Why would organisations approved/accepted under Part 21F exempt from being affected and limited to awareness?
response	Accepted: Reference to Part 21F added.

3.5. Impact of AM on production organisations

p. 21

comment	39	comment by: THALES
	What are the expectations for process control and production control?	
response	Noted: AM is not specifically addressed at the POA, DOA, and CS level. The CM starts to address the matter. However, OEM processes, project information and Standards Development Organisations (SDOs) standards will likely develop to support expectations. Some of this content may subsequently transfer to AMC, subject to normal regulatory rulemaking processes.	

Appendix 1: Applicable regulations and guidance

p. 23

comment	37	comment by: THALES
	21.A.605 (Data requirements) should be also considered as impacted: ETSO certification programme must identify this new technologie	
response	Accepted. 21.A.605 is important and added to the Appendix. Note: Applicability to ETSOs is indicated in Section 1.1, and Section 4	
comment	56	comment by: LBA
	On page 24, it is stated "...Further to the CSs above, the showing of compliance with the following PART 21 regulations may be impacted by the introduction of AM into aviation products". Taking into consideration the fact that AM is a production process, 21.A.139 (in many point especially 21.A.139a) & d)2.v); 21.A.145a) & d)2. - 3.; 21.A.163a)) should absolutely be considered as affected.	
response	Accepted: References added to PART 21.A.139, PART 21.A.145 and PART 21.A.163.	

Appendix 2: Design Certification for AM parts of no or low criticality (Class C&D only)

comment	43	comment by: Pilatus Aircraft Ltd
	Reference to ASTM 3572-22 is no longer applicable, because the tables have been included in CM-S-008 Issue 4, Chapter 2.	
response	Noted: However, part of the ASTM F3572 table has been adapted (and new columns added) for ease of reading the CM. Therefore, reference to ASTM 3572-22 remains applicable.	



The Appendix 2 of the former proposed CM at Issue 4 has been shifted to Appendix 3 in the final version of the CM at Issue 4.

Appendix 3: Design safety assessment for AM parts of no or low criticality (Class C and D)

p. 28

comment	25	comment by: <i>Federal Aviation Administration</i>
	FAA comment: Regarding classification "Minor (Cat. C)," please clarify whether this means that failure of the part would have no effect on the crashworthiness protection or emergency egress of occupants.	
response	Noted: Any assessment should consider all safety related aspects and requirements. Section 1, Section 3 'Policy', and Appendix 1 indicate this intent.	

Appendix 4: Early AM applications in certified parts of no or low criticality

p. 30

comment	3	comment by: <i>Boeing</i>
	<p>Page: 30 Paragraph: 1</p> <p>THE PROPOSED TEXT STATES: "The following are examples of early AM applications in certified parts (or parts close to being certified at the time of this CM revision) and are provided for broader industry awareness/standardisation purposes."</p> <p>REQUESTED CHANGE: Propose adding clarification that flight test projects are also included in the examples, and indicate how this may be relevant to future certification activities. Alternatively consider removal of the flight test project example. The "Airframe Example 3 (SOGELAIR): Airframe CS25: Camera housing" project covered on page 33 is identified as a "flight test installation".</p> <p>JUSTIFICATION: The intent of this memo is to address certification. The flight test example and the safety of flight approach to address flight test requirements may not serve as a good example for certification projects.</p>	
response	Partially accepted: EASA agrees with the point that this example addresses flight test, not certification. However, it did demonstrate coverage of considerations similar to the other examples. Therefore, noting that the example was shared with industry (Working Group 1	

meetings and EASA FAA AM Workshops), it has been retained for this revision of the CM.

Note: A note has been added to emphasise the point above. The corresponding text has been shifted to Supplemental - Appendix 5 to the final version of the CM at Issue 4.

comment

4

comment by: *Boeing*

Page: 30-47

Paragraph: *Appendix 4***THE PROPOSED TEXT STATES:**

Most of the examples provided do not indicate the part classification (per ASTM F3572).

REQUESTED CHANGE:

Include the part classifications for the example projects

JUSTIFICATION:

This will help the user understand how the certification guidance captured in this memo could be used for different use cases and part classifications.

response

Noted: EASA agrees that inclusion of the categories could support understanding of the interpretation of the classification process. Indeed, appendix 4 (now shifted to Supplemental - Appendix 5 to the final CM at Issue 4) originally included an estimate of classification by all contributors. However, following discussion within WG1 (2023 AM Workshop) and EAAMIRG, and noting that these examples were in project development during the period of the development of ASTM F3572-22, and the CM, it was decided not to include the categories in this revision. Noting EASA intention to quickly further develop the CM, EASA plans to further develop Appendix 4, icw WG1, to include new examples and possibly review and categorise existing examples. This will allow for presentation of more consistent categorisation for reference.

Note: EASA thanks contributors for being prepared to share what they did in order to progress the matter.

Note: EASA notes that several classifications had incorrectly been retained in the draft CM revision released for comment. These will be removed for this revision.

comment

5

comment by: *Boeing*

Page: 45

Paragraph: 2

THE PROPOSED TEXT STATES:

Example 5 (MAG): Cabin Interiors CS29 – Classification C (Negligible or No consequence of failure)- Aesthetical cabinet cover- FDM process- Ultem 9085 material

REQUESTED CHANGE:

Classification C is defined in this memo as “Low” criticality. Classification D is defined as “Negligible or No Effect” (ref. Table 1 in Section 2 of the memo). The classification in the text above should be updated to be consistent with the classification scheme in the memo.

JUSTIFICATION: The classifications identified in the Appendix 4 examples should be consistent with the definitions in the memo.

response Noted: Proposed Category incorrectly retained in this revision. Also see response to Comment 4.

comment 57 comment by: Bell

Page 30, 1st para: Agreement with approach used on parts that have no safety concerns. These examples are very good to understand the limit and the extend of the usage of AM in aircraft parts requiring certification for low criticality. It gives very good guidance of what is required for certification.

response Noted: Thank you

comment 26 comment by: *Federal Aviation Administration*

FAA comment: Please define "SABWT's" (p. 36).

response Partially accepted: Company name - Senior Aerospace BWT, provided earlier in the example. However, now included in the title. The corresponding text has been shifted to Supplemental - Appendix 5 to the final version of the CM at Issue 4.

comment 27 comment by: *Federal Aviation Administration*

FAA comment: Regarding the section title 5.1.3, please add a comma after "SABIC" to identify it as the material provider, or else clarify the meaning.

response Accepted. Comma added. The corresponding text has been shifted to Supplemental - Appendix 5 to the final version of the CM at Issue 4.

comment 28 comment by: *Federal Aviation Administration*

FAA comment: Regarding "SafranHE" (p. 39), consider identifying the party as the PAH or DAH, instead of a company name.

response Accepted for this example. Additional comment provided in Appendix 4 introduction to support intent of comment. The stakeholder responsibilities can be more systematically defined in future CM revisions.



The corresponding text has been shifted to Supplemental - Appendix 5 to the final version of the CM at Issue 4.

comment	29	comment by: <i>Federal Aviation Administration</i>
	FAA comment: Please review and potentially revise the phrase "The build files for all AM parts are revision controlled I.e. 3D machine printing parameters cannot change from build to build." (p. 36).	
response	Accepted: Slight change to text based upon the context of the example. The corresponding text has been shifted to Supplemental - Appendix 5 to the final version of the CM at Issue 4.	

comment	30	comment by: <i>Safran Seats</i>
	On Page 40 and Page 42 , replace Process Specification with Process Control Document, as follows:	
	Machines/Locations: The manufacturing approval is only valid for one specific AM printer. Therefore the Machine Type and Serial number (S/N) is specified within the Process Specification .	
	with	
	Machines/Locations: The manufacturing approval is only valid for one specific AM printer. Therefore the Machine Type and Serial number (S/N) is specified within the Process Control Document .	
response	Accepted: Amended accordingly. The corresponding text has been shifted to Supplemental - Appendix 5 to the final version of the CM at Issue 4.	

comment	36	comment by: <i>Lorena GALI SORET</i>
	It could be useful to indicate the classification of each example (Class C or D).	
	Related to Appendix 4 and Example 4 of Interiors, page 44: <i>"It is important to understand that these examples often include initial conservative practices, supported by considerable development work, considered to be necessary by applicants and regulators for the safe introduction of a new technology into aviation when taking a 'step by step' approach relative to criticality. It is also important to understand that some such practices may finally be considered to be excessively conservative for some applications of no or low criticality once confidence is better established. However, inclusion of these examples in the CM at this time is considered to help clarify to stakeholders new to AM and/or new to aviation, the extent of work which has been considered to be necessary for this purpose by those organisations already established in AM application development and certification."</i>	
	Taking Example 4 (page 44) and classified as Class D, a large test campaign has been performed. I understand the campaign covers both certification	

	<p>and qualification. Nevertheless, according to Table 2a, for class C and D and footnote (2) the qualification can be simplified.</p> <p>I would suggest clarifying in the paragraph above or in Example 4 that a simplified qualification could be accepted to demonstrate the safe introduction of the AM. The fact of showing as a reference a very extensive qualification may difficult the introduction of the technology to stakeholders new to AM.</p>
response	<p>Noted: EASA intends to take a 'step by step' approach to AM relative to criticality and recognises that the industry and regulators are iterating towards more balanced practices associated with application criticality and proportionate MoC as experience and understanding matures. Inevitably, some initial learning processes are necessary, captured within the examples within this revision. Note: Review and classification of existing examples may form part of the next CM revision content. See also comment 4 regarding intent to remove Classification status erroneously retained in this revision to the CM.</p>
comment	<p>48 comment by: LBA</p> <p>On page 35, it is stated "...Further Comments: In the first production lot one part was cutted and analysed. ...". Are there any specifications regarding the sample rates in this regard?</p>
response	<p>Minor text amendments made following communication with the example contributors. Note: EASA agrees that production sampling strategies could benefit from standardisation. The corresponding text has been shifted to Supplemental - Appendix 5 to the final version of the CM at Issue 4.</p>
comment	<p>49 comment by: LBA</p> <p>On page 44, it is stated "..... Example 4 (STAERO): Cabin Interiors CS25...". Is the Flammability parameter here not applicable because of the safety class of the part or is it just missing?</p>
response	<p>Noted: The example states Flame Retardant Nylon 12 as being used. EASA confirms understanding that the parts were subject to established interiors flammability CSs and MoCs using the same material/process and machine and paint system. Minor amendment to text completed. The corresponding text has been shifted to Supplemental - Appendix 5 to the final version of the CM at Issue 4.</p>

