European Union Aviation Safety Agency

COMMENT RESPONSE DOCUMENT

EASA CRD of Proposed CM-21.A-CS-001
Classification of design changes to cabin interiors of Large Aeroplanes
[Published on 18 December 2019 and officially closed for comments on 31 January 2020]

Commenter 1: AMES GesmbH, Part21J Airworthiness Review Board – 17.01.2020

Comment # 1

The definition of major changes is not clearly formulated within this proposed CM. If all listed items will lead automatically to an Major change, 95% of all current Minor Changes have to be classified as Major (e.g. re-pitching of one seat row from 29“ to 30“ within all ETSO and A/C limits).

Will raise yearly STC´s from 700 to several thousands. This increased numbers might only be handled if EASA keeps LOI at low level.

Result: NO safety or quality benefit (Typical Lopa changes for established DOA’s), but tremendously increase of costs and lead-times.

Therefore, our recommendation is that the “LOI and STC/Major privileges to DOA” procedures to be implemented and working, before setting this CM active.

EASA response: Partially agreed

EASA has carefully considered the impact that the Certification Memorandum may have on the workload, the costs and the increase in lead-times associated to design changes to cabin interiors of Large Aeroplanes and has determined that such impact can be managed through the provisioning . The publication of the final CM has been delayed by approximately 12 months to allow Design Organization to take benefit from the provisioning for risk-based compliance verification, i.e. the new EASA approach for the definition of Level of Involvement (LOI) in certification projects, and the new privileges for Design Organization implemented by Commission Regulation (EU) 2019/897 amending Regulation (EU) No 748/2012 in point 21.A.263. EASA would like to highlight that the classification of design changes to the cabin interiors of Large Aeroplanes must be performed solely based on the impact on airworthiness and should not be influenced by the EASA workload or the costs associated to the project.

Comment # 2

With reference to Item 1: As long as installation limitations identified in the initial compliance demonstration to CS 25.562 (e.g. max. & min seat pitch etc) given in the Declaration of Design and Performance (DDP) or Installation Limitation document and TC holder requirements are fulfilled, the level of safety is not affected by installation/relocation of dynamically certified seats. Therefore, there is no reduction in safety or performance as seats are installed within defined limits, which in our opinion results in no need for major classification.

EASA response: Not agreed

The installation of seats on aeroplanes required to comply with CS 25.562 has an impact on the level of protection offered to the cabin occupants in emergency landing conditions and is therefore considered to have an appreciable effect on the airworthiness of the product. The availability of an ETSO approval of the seats, and of the related installation limitations should be considered in the determination of the EASA LOI in the major change project. Changes limited to re-pitch seats for which the applicant has access to the installation limitations approved under the ETSO are typical examples of 'certain major changes' that may be approved by a DOA having obtained the privileges specified in point 21.A.263.

See also the reply to Comment #1.

Comment # 3

With reference to Item 3: Performance standards are defined in ETSO C127B and associated AS8049B. If a modification is not negatively affecting any of these performance standards, the overall level of safety is not affected. Guidance regarding dynamical re-testing caused by certain variations/modifications given in FAA AC25.562-1B may be considered.

Is the intention of this CM item that every modification that requires a re-test acc. FAA AC25.562-1B would lead to a major classification of change?

EASA response: Not agreed

See reply to Comment #2.

Comment # 4

With reference to Item 3: What about installation of an identical item already installed on same type of aircraft, where demonstration of compliance is based on substantiation data of existing configurations, and where all P/N, limitations, and processes are known and approved?

Considerable substantiation effort does not imply unknown, new, or novel. There are well established limitations/ processes for installation of these components, e.g underbin seat track mounted components. In cases where all existing provisions/hardpoints are installed and limits are known or shown i.e. no new "substantiation data" should be seen as Minor.

Most of the components to be installed are variants of approved P/N´s, difference in decorative laminates or installation position of lit pockets or coat hooks may occure but compliance can be shown based on similarity to a basic P/N during compliance finding – this is a standard procedure and should not gain a major change.

EASA response: Not agreed

Item #3 addresses the case in which interior components are introduced in the cabin. The effort associated to the generation of new compliance data in principle justifies the classification of the design change as major. Previous experience of the Design Organization in projects having similar scope should be considered in the determination of the EASA LOI in the major change project. Design changes having as objective the refurbishment of an already installed interior component are not addressed by this item and therefore their classification must be assessed on a case-by-case basis based on the guidance of GM 21.A.91. Availability of data already accepted by EASA in previously approved certification projects may justify classification as minor in cases in which 3.4(d) of GM 21.A.91 is the only criterion that may drive classification as major.

Comment # 5

With reference to Item 4: As long as EASA and Aircraft manufacturer limitations for width, position of aisles, cross aisles, passageways, pax count and zoning are fulfilled, there should be no adverse effect on safety as the evacuation was demonstrated during initial aircraft certification.

EASA response: Not agreed

The availability of aircraft manufacturers specifications should constitute a source of data that may guide the correct installation of seats and other interior components. The effort needed to demonstrate compliance with the requirements related to evacuation may be simplified using such specs. Nonetheless, the impact that an installation of interior components affecting evacuation is considered to have an appreciable effect on airworthiness of the product. However, this type of changes are typical examples of 'certain major changes' that may be approved by a DOA having obtained the privileges specified in point 21.A.263.

See also the reply to Comment #1 and Comment #4.

Comment # 6

With reference to Item 5: "New" means a new P/N never installed on same type of aircraft before? What about establishment of already existing configuration of same type of aircraft?

EASA response: Not agreed

The installation of new emergency egress assist means is considered to have an appreciable effect on airworthiness. Design Organizations that intend to certify the installation of emergency egress assist means cannot take any credit from previous approvals granted by EASA to the TC holder for the same configuration. The text of the CM has been revised to eliminate the potential confusion generated using the adjective 'new'.

Comment # 7

With reference to Item 8: TC holder & CS defined limitations for assist spaces, egress path, aisle width, exit clearances are met this should not drive a Major change. TC holders are allowing multiple installation positions within a defined envelope (e.g. A321 moving a Door 2 or 3 CAS fwd of door to aft of the door, or just a few inches to allow clearance to PAX seats). These limits are established and known and proven during initial airworthiness demonstration by TC holder.

However, if a new installation position is chosen which is outside the pre-defined TC-holder positions, this would be treated as Major driven by OSD.

EASA response: Not agreed

See reply to Comment #5.

The CM does not address classification driven by impact on OSD.

Comment # 8

With reference to Item 9: In general agreed but older aircraft i.e. 767 do not have the direct view requirement, & 737 has an exception in the TCDS as most typically are delivered from Boeing with an aft galley Mirror. Would installing a mirror in a B737 in the typical aft galley location constitute a major change?

For camera system as long as this would substitute a cabin member with direct view. If it is just an additional feature (e.g. for cabin crew members in the rear of the cabin, whilst fwd cabin crew members still have direct cabin view as required by requirements) we do not see the necessity to classify it as major change.

EASA response: Not agreed

The CM clearly highlights the complexity of the assessment of the level of performance of means that enhance direct view of the cabin area for which the cabin crew member is responsible.

Comment # 9

With reference to Item 10: This should be only valid for Class 1 Type – Facilities acc. FAA AC117-1.

EASA response: Not agreed

The CM clearly highlights the complexity and the criticality associated to the installation of a crew rest compartment, regardless of the applicable operation rules. Crew rest areas delimited by curtains in the passenger cabin are not addressed by this item of the CM. The classification of design changes introducing crew rest areas must be assessed on a case-by-case basis based on the guidance of GM 21.A.91.

Comment # 10

With reference to Item 11: There is material definition and repair/replacement instructions given in TC holder Maintenance Manuals. As long as a modification is considering these definitions no decrease of the level of safety is expected and thus no major change necessary.

EASA response: Not agreed

The Aircraft Maintenance Manual is not a means of compliance with CS 25.856(b). Design Organizations that intend to certify the installation of thermal/acoustic insulation cannot take any credit from previous approvals granted by EASA to the TC holder for similar installations.

Comment # 11

With reference to Item 18: If an aircraft is already equipped with ISPSS (by STC or by TC holder) and e.g. PAX capacity is increased with same seats also equipped with ISPSS, this should not drive a major change.

EASA response: Agreed

Item #18 addresses charging of PED in enclosed compartments or in stowage facilities that may allow charging more than one PED. It does not address the electrical systems aspects of In-Seat Power Supply Systems installations.

Comment # 12

With reference to Item 19: AMC 25.1541 refers to GAMA PUBLICATION NO. 15 SYMBOLIC MESSAGES as one approved source for symbolic placards but not the only approved one. As the GAMA document just contains a few symbolic placards other approved sources shall also be accepted e.g. OEM Chapter 11 definitions, e.g. door opening placards, indicator signs… only new designs different to the general GAMA and TC-holder approved ones should gain a Major Change.

EASA response: Not agreed

The demonstration of compliance with CS 25.1541 using a means of compliance other than that specified in AMC 25.1541 drives classification of major based on paragraph 3.4(c) of GM 21.A.91.

Comment # 13

With reference to Item 20: Why would installation of a halon free extinguisher either OEM TC (via IPC standard installation) or compliant with ETSO 2C515 (which establish adequate performance of extinguishing agent acc. AS6271 and UL 2129 with additions of ETSO) require any new test / substantiation data of this agent?

EASA response: Partially agreed

The availability of an ETSO-2C515 approval for a Halon-free fire extinguisher should be taken into account in the determination of the EASA LOI in the major change project. However, the approval installation of the extinguisher requires additional substantiation to demonstrate compliance with CS 25.851 requirements, e.g. assessment of toxicity of the extinguishing agent when one or more extinguishers are discharged in occupied areas.

The text of item #20 of the CM has been revised to clarify that this item applies to the installation of fire extinguishers and related agents not listed in the FAA Advisory Circular AC 20-42D.

Commenter 2: The Boeing Company – T. Sigler / Director /System Safety & Regulatory Affairs – 27.01.2020

Comment # 14

With reference to:

- pages: 4-7
- item numbers: 1, 2, 3, 8, 9, 10, 11, 12, 14, 15, 18, 19, 20

The proposed text states:

"Installation of X" where X is: seats, seat components, one or more interior components (such as seats, galleys, toilets, wardrobes), cabin crew seats, mirrors/camera systems for direct view, crew rest compartments, thermal/acoustic insulation, stretchers, floor proximity emergency escape path marking, large glass items, PED charging/stowage compartment, symbolic placards, halon-free fire extinguishers"

Requested change:

Provide general clarification that each of these items should be considered in the context of what is new about the installation and to consider that in terms of "appreciable affect" as defined in 21.A.91. Alternatively, update each item to add more specifics to each example about what make the 'installation' of the items major (such as installation of new and unique passenger seats…).

Update the justification to remove reference to the amount of data generation required to substantiate a change. The regulations define major and minor in terms of appreciable effect on the airworthiness of the product and the amount of substantiation data necessary does not correlate to appreciable effect on the airworthiness of product.

Justification:

The term "installation" in these examples is used too broadly and could be misinterpreted to mean every newly released installation drawing of the component in the example is major. Boeing does not believe that is the intent of the CM. For example, each customer introduction will have newly released engineering for the

insulation blankets in order to provide those on the specific airplanes types design. However, the design of the insulation blankets in the overwhelming majority of cases is the same materials installed in the same manner as prior airplanes and thus is typically considered minor. The same could be said for crew rests, where the "new installation" for a specific customer introduction is really the same as the prior customer introduction but may have different colors used in the design but the overall crew rest design and installation is the same as prior approvals and thus could be considered minor due to the previous certification. Similarly, installation of symbolic placards may include a new location of a symbolic placard that previously had passed comprehension testing and had been used on a prior airplane but in a different location. The new location of the symbolic placard may be considered a minor change in many cases. For halon-free fire extinguishers, once the agent is approved the installation in a slightly different location than a previous design does not necessarily constitute a major change but rather it should be evaluated in the context of appreciable effect of change within the cabin where it is being installed.

EASA response: Not agreed

See replies to Comment #1 and Comment #4.

EASA would like to clarify that, according to paragraph 3.4(d) of GM 21.A.91, a design change should be classified as major if the extent of new substantiation data necessary to comply with the applicable certification specifications and the degree to which the original substantiation data has to be re-assessed and re-evaluated is considerable.

For the installation of Halon-free extinguishers see the reply to Comment #13.

Comment # 15

With reference to:

- page: 7
- item numbers: 17

The proposed text states:

"Modification of flight deck protection systems compliant with CS 25.795 and required by the applicable operating rules"

Requested change: add the following underlined text

"Modification <u>that affect the ballistics or intrusion resistance</u> of flight deck protection systems compliant with CS 25.795 and required by the applicable operating rules"

Justification:

As written the example was too broad and Boeing does not believe that is EASA intent. For example a change to the décor of the flight deck protection system (compliance with CS 25.795) may be considered minor in some situations where the materials have known flammability properties and the décor change has no other effect on security, structural strength or cabin safety criteria.

EASA response: Agreed

The text of the CM has been modified as proposed by the Commenter.

Commenter 3: AMAC Aerospace – Office of Airworthiness – 28.01.2020

Comment # 16

AMAC Aerospace disagrees with the proposed Major Classification of Item #3: the amount of substantiation data necessary to comply with the applicable certification requirements varies a lot pending on the proposed design and may not be always considerable. For example, the installation of a wardrobe or a galley at a certain location where it will not affect the evacuation path, visibility to exit signs and direct view can be considered as minor from cabin safety point of view pending on the complexity of the design.

AMAC Aerospace recommends that the classification of the installation of interior components such as seats, galleys, toilets, wardrobes etc. is reviewed on a case by case basis.

EASA response: Partially agreed

See reply to Comment #4.

Comment # 17

AMAC Aerospace concurs with the proposed Major Classification of Item #9 concerning the installation of a camera system for direct view. However, AMAC Aerospace disagrees with the proposed Major Classification for the installation of a mirror for direct view. The installation of a small mirror doesn't represent a complex installation and assessment of direct view only requires a visual check/inspection in the cabin which has not of a considerable complexity.

EASA response: Not agreed

See reply to Comment #8.

Comment # 18

Item #11: Aircraft are required to comply with CS 25.856(b), most of the time §25.856 is part of the aircraft Type Certification Basis, generally through a Generic CRI listed in the TCDS. Therefore, AMAC Aerospace considers that the installation of thermal/acoustic insulation materials doesn't have an additional impact on classification since the additional requirements defined in the CRI are already part of the Type Certification Basis.

AMAC Aerospace considers that Major classification would therefore only apply for installation of thermal/acoustic insulation materials in Aircraft which do not have §25.856 as part of the aircraft Type Certification Basis.

EASA response: Not agreed

The classification proposed for the design changes addressed in Item #11 is based on paragraph 3.4(d) of GM 21.A.91.

See reply to Comment #1.

Comment # 19

Concerning the proposed Item #14, AMAC Aerospace recommends to add the term "system" as the wording "floor proximity emergency escape path marking" may also refer to a single light/strip.

Indeed, AMAC Aerospace considers that even though the installation of a new floor proximity emergency escape path marking system is a major modification, a modification to an existing floor proximity emergency escape path marking system may not be always major (e.g. installation/relocation of an additional light/strip, change of P/N…)

EASA response: Agreed

The text of the CM has been modified as proposed by the Commenter.

Comment # 20

AMAC Aerospace disagrees with the proposed Major Classification of Item #15: CS 25 Amdt 19 (and later amendments) includes clearly defined requirements in §25.603 and §25.788 to address the installation of large glass items and large display panels. These requirements are not subject to interpretation and clear pass/fail criteria are provided. Therefore, AMAC Aerospace considers that the installation of large glass items and large display panels can be considered as Minor providing that the applicant uses the certification specifications applicable to the changed product on the date of the application for the change in accordance with Part 21.A.101(a) or not earlier than CS 25 Amdt 19 in accordance with Part 21.A.101(b).

EASA response: Not agreed

The classification proposed for the design changes addressed in Item #20 is based on paragraph 3.4(d) of GM 21.A.91. Depending on the scope of the change, e.g. modification of an already certified large glass item installation, the extent of new substantiation data necessary to comply with the applicable certification specifications and the degree to which the original substantiation data has to be re-assessed and re-evaluated may not be considerable and therefore the design change may be classified as minor.

No change to the text of the CM is deemed necessary.

For aspects related to the determination of the EASA LOI see the reply to Comment #1.

Comment # 21

Item # 18: AMAC Aerospace requires clarification on the definition of a PED charging station/stowage compartment. Is a single PED connected to a USB port considered as a PED charging station?

EASA response: Agreed

See reply to Comment #11.

Comment # 22

Item #19: AMAC Aerospace recommends to use the wording “safety related symbolic placards”. The installation of symbolic placards for passenger convenience (e.g. toilet, IFE,…) should not be considered Major.

EASA response: Agreed

The text of the CM has been modified as proposed by the Commenter.

Comment # 23

AMAC Aerospace disagrees with the proposed Major Classification of Item #20: CS 25 Amdt 12 (and later amendments) includes clearly defined requirements and guidance material in §25.851 to address the installation of halon-free handheld fire extinguisher with approved extinguishing agents. Based on the available information provided in CS 25 Amdt 12 §25.851, AMAC Aerospace considers that the required compliance demonstration and amount of substantiation data is identical for the installation of a halon handheld fire extinguisher or a halon-free handheld fire extinguisher with approved extinguishing agents. Therefore, AMAC Aerospace considers that the installation of halon-free handheld fire extinguisher with approved extinguishing agents can be considered as Minor provided that the

applicant uses the certification specifications applicable to the changed product on the date of the application for the change in accordance with Part 21.A.101(a) or not earlier than CS 25 Amdt 12 in accordance with Part 21.A.101(b).

However, AMAC agrees that the installation of halon-free handheld fire extinguisher with unapproved extinguishing agents (i.e. not cover by AMC 25.851(c)) must be classified Major.

EASA response: Partially agreed

The approval installation of the extinguisher requires additional substantiation to demonstrate compliance with CS 25.851 requirements, e.g. assessment of toxicity of the extinguishing agent when one or more extinguishers are discharged in occupied areas. The availability of previous EASA approvals for a Halon-free fire extinguisher should be taken into account in the determination of the EASA LOI in the major change project.

See also reply to Comment #13.

Commenter 4: FACC Operations GmbH – M. Mierswa / Office of Airworthiness/ 29.01.2020

Comment # 24

Is there an intent, that EASA will extend or adapt this Certification Memorandum for Design Changes to cabin interior of CS-23 certified Aeroplane? Especially considering small business jets (e.g. TCDS EASA.IM.A.158).

EASA response: Noted

The CM is applicable to design changes to Large Aeroplanes. Although it could be used as a reference for the classification of design changes to CS-23 certified Aeroplanes, it is expected that dedicated and more specific guidance is released by EASA in the future.

Comment # 25

As the examples do not reflect the classification of surface changes such as veneered panels, decorative tedlar laminates or natural leather applications, could those be considered as a “minor change” or are they missing on purpose?

EASA response: Partially agreed

See reply to Comment #4.

Commenter 5: Airbus – Martina Dorothee Weber / Regulations & Standards / IIAIX – 30.01.2020

Comment # 26

Item #1, p. 4

This item needs to be made more specific with regard to general installation. It should apply only to new designed seats or seats, which are relocated in a way not previously approved by the agency.

With regard to relocation: Changes of row to row seat pitch within the range previously already approved by the agency or as part of a 'certain Major change' and relocation of front row seats within the range previously approved by the agency or as part of a 'certain major change should not be classified as major. These kind of changes shall be considered as minor.

EASA response: Not agreed

See reply to Comment #2.

Comment # 27

Item #2, p. 4f

This item is unclear for a scenario with an (E)TSO change - some of the examples mentioned may be classified as minor under EASA (E)TSO approval e.g. installation of seat belt approved under (E)TSO.

If the effort needed to generate new substantiation data necessary to comply with the applicable certification requirements is negligible, the change should be classified minor.

EASA response: Not agreed

See reply to Comment #2.

Comment # 28

Item #3, p.5:

Prerequisite is that these interior components are new, i.e. not previously certified.

Even if new, the certification of e.g. a lavatory with changed interiors does not constitute a situation where "the effort needed to generate new substantiation data is considerable" as the attachment points and the lavatory itself have been justified for maximum allowable weights / loads / forces.

New substantiation data may only be created for flammability based on well-known test conditions and pass / fail criteria.

EASA response: Partially agreed

See reply to Comment #4.

Comment # 29

Item #4, p.5,

This item is considered as not relevant. It is good industry practice to consider minimum requirements during evacuation justification within type certification process.

EASA response: Not agreed

See reply to Comment #5.

Comment # 30

Item #11, p.6

This item should apply to new materials only; unless the change to configuration and / or geometry has a considerable effect on substantiation.

EASA response: Partially agreed

The scope of CS 25.856(b) includes not only the evaluation of the performance of the materials that provide thermal/acoustic insulation but also of the methods used for their installation. Item # 11 of the CM covers also design changes that introduce a new method of installation of already certified materials. The text of item #11 the CM has been revised to also address the method of installation of thermal/acoustic insulation.

See also the reply to Comment #10.

Comment # 31

Item #14, p.6:

The item should apply to new floor proximity emergency escape path marking (materials and / or systems) only; unless the change to configuration, geometry and / or design principles has a considerable effect on substantiation.

EASA response: Agreed

See reply to Comment #19.

Comment # 32

Item #20, p.7:

The item should apply to new extinguishing agents only; unless the change has a considerable effect on substantiation.

EASA response: Partially agreed

See replies to Comment #13 and Comment #23.

Comment # 33

Items #1 to #5, #8 to #12, #14 to #16 and #18 to #20, p.4ff:

Installation is not by default to be classified major. Criteria for classification shall consider the effort for substantiation - e.g. for configuration and level of equipment change.

EASA response: Partially agreed

EASA agrees that, according to paragraph 3.4(d) of GM 21.A.91, a design change should be classified as major if the extent of new substantiation data necessary to comply with the applicable certification specifications and the degree to which the original substantiation data has to be re-assessed and re-evaluated is considerable. Nonetheless classification as major may be triggered by other conditions specified in other subparagraphs of paragraph 3.4 of GM 21.A.91.

Commenter 6: Aviation Traders Limited – Ray Faulkner / Head of Design Organization / 30.01.2020

Comment # 34

As a member of the Ad Hoc Working Group that was set up by EASA to address requests from DOA's for clearer guidance on the classification of Cabin Safety Changes in 2013, I welcome the issue of this long awaited proposed CM, and have reviewed its content with interest. In particular, I was keen to see if there are to be any variations from the proposed Cabin Safety Change Classification Guidance that was developed by the Working Group, and which determined examples of Major and Minor Cabin Safety Changes, as I remember that a lot of work and discussion went in to creating the guidance that was agreed within the Group.

From my review of the Working Group's proposed guidance, I would like to provide some comments on the following items:

Item 1: Whilst the Working Group proposed that a seat installation on aircraft type with CS 25.562 in its type certification basis would be a 'Major' Change, it was also considered here that such Changes could be classified as 'Minor' if the seat type can be verified as being ETSO C127a approved and data is available to show that the seat (or a seat derived from the same "family"), has previously been installed on the subject aircraft type.

Certainly, under ATL's DOA approval (EASA.21J.016), we have previously classified such Changes as 'Minor', and have worked to ensure that we obtain the OEM seat certification or qualification data to support our verification of compliance (and have on occasions had to pay for the supply of this data), and have designed the seating layout on the basis of the installation limitations (such as recommended seat pitching), contained within the OEM DDP and aircraft manufacturers Frame

Specification . Therefore, we feel that where such Changes do not affect the performance of the passenger seats, then there is a sound justification for a 'Minor' classification.

Is it possible therefore, that some further guidance be provided in the CM to indicate considerations that could be used to reclassify as Minor, as described above? We feel that this is important, particularly when the aim of the CM is to provide a level playing field for all DOA's, and will help in providing clarity.

EASA response: Not agreed

See reply to Comment #2.

Comment # 35

Item 3: Whilst we would perhaps agree that the installation of interior components such as galleys, toilets, wardrobes, etc. could be considered to be 'Major' Changes, there is we feel some justification for seat installations to be considered as 'Minor' Changes.

The Ad Hoc Working Group of 2013 considered that the classification a change of cabin overall seating layout (LOPA), retaining the existing number of seats and classes of layout, such as the replacement of an existing single, dual or triple class layout using different seats, but arranged in a similar configuration, could result in a 'Minor' Change. The justification behind this would be that where the seat count does not exceed the previously approved seat count on the subject aircraft type, the approved seat qualification data is available to the DOA, and the seat installation can be shown to comply with the aircraft type manufacturers interface or frame specification requirements.

In addition, the Ad Hoc Working Group of 2013 also considered that a 'Minor' classification could apply where the installation of ETSO approved seats on an aircraft type not having XX.562 in its type certification basis, in cases where OEM seat certification data such as, ETSO certificate, seat envelope drawings, interface loads report and flammability test report is available. Where such seat data is not available, then a Change such as this would indeed be classified as 'Major'.

EASA response: Partially agreed

See replies to Comment #1, Comment #2 and Comment #4.

Comment # 36

Item 14: In considering the installation of floor proximity emergency escape path marking systems, the Working Group did determine this as a Major Change, but this was on the basis of it being a New system such as:

1. Replacement of the electroluminescent floor path marking by fluorescent or new feature.

2. Replacement of on seat electrical floor path marking by fluorescent or new feature.

3. Installation of floor path marking associated with new cabin arrangement (layout not yet approved).

Having some experience of producing Changes that introduce the installation of photoluminescent floor path marking systems, involving previously STC approved systems such as STG Aerospace's Saf-T-Glo system, where the approved certification data is available from the system OEM, and it is installed in accordance with the OEM's approved installation instructions, we consider that this may justify a 'Minor' classification.

Again, is it possible that the CM can include further guidance as to considerations that could be used to justify a 'Minor' classification?

EASA response: Partially Agreed

The CM follows the same philosophy as that of GM 21.A.91, and includes some examples of design changes to cabin interiors that should be classified as major based on paragraph 3.4 of the GM and on the additional guidance on the classification of design changes in the cabin safety domain that is provided in paragraph 2(i) of Appendix A of GM 21.A.91. The text of item #14 of the CM has been modified to refer to the installation of a new type of floor proximity emergency escape path marking system. Adaptations of the configuration of an already installed floor path marking system may be considered as minor changes to the aircraft design. See also reply to Comment #19.

Comment # 37

Returning to the deliberations of the Ad Hoc Working Group in 2013, we also sought to provide a listing of those Cabin Safety Changes that could be considered and classified as 'Minor' Changes. We feel that in order to fully address requests from DOA's to improve the guidance on classification of design changes in the cabin safety domain, that the proposed CM should also include clear guidance on what changes can definitely be classified as 'Minor'. We firmly believe in the objective of the CM to provide for a level playing field for all affected DOA's and fully support EASA's efforts to publish the CM. However, we feel that as proposed, it does not quite go far enough to achieve its objective.

EASA response: Not Agreed

The CM follows the same philosophy as that of GM 21.A.91, and includes some examples of design changes to cabin interiors that should be classified as major based on paragraph 3.4 of the GM and on the additional guidance on the classification of design changes in the cabin safety domain that is provided in paragraph 2(i) of Appendix A of GM 21.A.91.

See also reply to Comment #1.

Commenter 7: Austro Control GmbH – Michael Bogner / Michael Markus / ACG Panel 11 – 31.01.2020

Comment # 38

For Item #1 and #2 we recommend considering changes

- without the need of new certification tests (e.g. change in compliance with tested HIC criteria), and
- without changing the assumptions applicable for emergency evacuation as defined during the TC process

as "minor change".

The wording used in paragraph 2(i) of Appendix A of GM 21.91 refers to "…. a new cabin layout of sufficient change to require a re-assessment of emergency evacuation capability…. Items to consider include… changes to or introduction of dynamically tested seats."

Considering installing/relocating already tested seats and taking into account the assumptions used for emergency evacuation during the TC process and without having a negative impact on these assumptions might not be considered as a "sufficient change to require a re-assessment".

EASA response: Not agreed

See replies to Comment #1, Comment #2 and Comment #4.

Comment # 39

For Item #3 we recommend following changes:

- Seats are already addressed in Item #1 and #2 for dynamically tested seats. For seats not required to meet 25.562 we would propose the approach proposed below.
- For wardrobes we would propose, considering that the wardrobe does not need new structural interfaces to be installed in the airplane, the approach clarified below.
- Installation of seats not required to meet 25.562 and wardrobes not requiring new structural interfaces on airplane side
  - without the need of new certification tests (e.g. static test) and
  - without changing the assumptions applicable for emergency evacuation as defined during the TC process

might be classified as minor change.

EASA response: Not agreed

See replies to Comment #1, Comment #2 and Comment #4.

Comment # 40

For Item #4 we recommend to change the following definition "*...affecting the location, or reducing the width, of aisles, cross aisles, passageways leading to the emergency exits." as follows:*

"*..affecting assumptions used during the TC process related to the location, or reducing the width of aisles, cross aisles, passageways leading to the emergency exits."*

Assumptions might be limits defined by the TC holder or dimensions defined within requirements applicable during the TC process.

EASA response: Not agreed

See reply to Comment #5.

Comment # 41

For Item #5 we recommend that changes introducing inertia reels and ropes with higher strength capabilities respectively similar operational characteristics might be classified as minor change.

EASA response: Not agreed

The installation of new emergency egress assist means is considered to have an appreciable effect on airworthiness. Design Organizations that intend to certify the installation of emergency egress assist means cannot take any credit from previous approvals granted by EASA to the TC holder for the same configuration.

Comment # 42

For Item #11 we recommend updating the justification to also address the complexity of the interface between installation and the flammability testing (joints etc). The current justification seems that "only" the flammability testing triggers a major classification (which is also not the case for heat release testing, smoke density testing).

EASA response: Agreed

See reply to Comment #30.

Comment # 43

Remark for Item #18: Austro control is in favour of this requirement, but during initial certification these "PED Stowage Compartments" might be considered as "Stowage Compartment" by the applicant and used as "PED Stowage Compartment" by the operator. It will be difficult to argue the change as major when the installation might be declared as "normal" Stowage Compartment.

EASA response: Agreed

The Commenter did not propose any change to the text of the CM. The text of the CM has been revised to clarify that item #18 does not address the installation of In-Seat Power Supply Systems (ISPSS) unless they are not installed in fully enclosed compartments.

Comment # 44

For Item #19 we recommend to further define the wording "placard". The current definition covers all placards irrespectively of its content (e.g. not only be related to be operated by naive subjects or crew). The definition in the Certification Memorandum might be limited to placards providing information for emergency scenarios for naive subjects only (e.g. not applicable for placards outlining the operation of a business class seat).

EASA response: Agreed

See reply to Comment #22.

Commenter 8: Northwest Aerospace Technologies – Ana Christofferson / Chief of Office of Airworthiness / 30.01.2020

Comment # 45

How will EASA enforce application of this new guidance? There are 2 elements to this:

a. Ensuring that all DOA's are aware of the new CM.
   DOA Team Leads would be key in ensuring awareness, by sending a communication to the DOAs they oversee, once the CM is release.
   For example, the NAT DOA team lead sent us a note after the EU 2019/897 was published last year, and, reminding us we needed to submit a Form 82 Application for Significant Change related to the introduction of LOI.
   DOA's should receive notification of the CM with the recommendation to update their DOA procedures as required. The assumption must be made that not all DOA's have signed up to receive notifications when new policies and guidance material are published.
b. DOA Team Leads will need to verify DOAs are applying the criteria in the new CM.
   DOA Team Leads would need to audit modifications approved as Minor Change to ensure the CM criteria is being used.
   Considering that some EU DOA's are audited by members of their National Agency (on behalf of EASA), some cross-training may be required.

EASA response: Noted

Comment # 46

My interpretation of the proposed CM is that all the cabin safety domain modifications listed in the CM must be considered Major Changes. EASA may consider including a statement that the listed modifications must be approved using a Major Change approval process unless the design organization coordinates and obtains concurrence from EASA for minor change classification before the change is approved.
The reason for this comments is as follows. There may be cases when one or more of the listed modifications could be justified as a Minor Change. Requiring EASA concurrence would prevent "creative reasoning" by some organizations.
For example: if NAT approves an optional stretcher installation on CX 777-300 aircraft, the same stretcher installation on CX 777-200 could be approved as a minor change, provided installation of new seats that support stretcher installation is not required. However, concurrence to approve this as a minor change should be coordinated with your office.

EASA response: Noted

The CM does not address reclassification of design changes. As clarified in paragraph 3.3. of GM 21.A.91, when the strict application of the criteria specified in paragraph 3.4 of GM 21.A.91 results in a major classification, the applicant may request reclassification, if justified, and EASA could take the responsibility for reclassifying the change.

Comment # 47

You may consider adding to the list of Major Changes adding or removing limitations
Example: An existing CAS is salvaged and relocated, installed on a new partition. The partition/CAS assy must be tested for dynamic conditions. If the test fails, an option may be to limit the use of the CAS during TTL provided direct view requirements are met. Per guidance in the proposed CM, the relocation of the CAS and installation of the new partition, would be considered a major change. However, if after STC approval the partition (or CAS) is modified and successfully tested, should incorporation of the modification SB and removing the "do not occupy during TTL" limitation also be considered major, unless previously coordinated with EASA?

EASA response: ***Partially agreed***

EASA agrees that the design change described in the example provided by the Commenter should be classified as major. Item #8 of the CM would adequately cover the case addressed in the example. The text of the CM has not been modified to include the additional item proposed by the Commenter because that item is directly addressed in paragraph 3.4(e) of GM 21.A.91.

Commenter 9: Aeroconseil – Sascha Siegel / Cabin Modification Certification Engineer / 31.01.2020

Comment # 48

General Comment:
A conservative interpretation of the CM would increase significantly major change application. What are the agencies workload increase expectations and related actions to provide sufficient resources? What will be the impact on project leadtimes?

EASA response: Not Agreed

See reply to Comment #1.

Comment # 49

General comment:

This CM does exactly define "[..]seats on an A/C required to comply with CS25.562", however the GM 21.A.91 App. A 2.(i) does not "[..] dynamically tested seats". Clarification is deemed necessary that CM interpretation shall be used.

EASA response: Partially agreed

The CM follows the same philosophy as that of GM 21.A.91, and includes some examples of design changes to cabin interiors that should be classified as major based on paragraph 3.4 of the GM and on the additional guidance on the classification of design changes in the cabin safety domain that is provided in paragraph 2(i) of Appendix A of GM 21.A.91. Item #2 covers the case in which dynamically tested seats must be installed in the cabin because 25.562 is included in the certification basis of the aircraft. Item #3 covers all other seat installation projects. The text of the CM does not contradict GM 21.A.91 and therefore has not been modified as requested by the Commenter.

Comment # 50

Item #1:

Relocation of already installed passenger seats / densification with additional identical seats: Seat pitch adaptation within equipment limitations and airframe specifications should be exempted from being major.

EASA response: Not Agreed

See reply to Comment #2.

Comment # 51

Item #2:

A definition of “dynamic performance” is deemed necessary. Is the interpretation following AC25.562-1B a valid reference?

EASA response: Agreed

The CM has been modified as requested by the Commenter.

Comment # 52

Item #3 states the installation of seats is a Major criteria based on the effort to generate substantiation data is considerable. Does it apply only for dynamics seat or also for static ones?

EASA response: Partially agreed

See reply to Comment #49.

Comment # 53

Item #3 uses term “considerable effort” as criteria. Additional clarification seems necessary at which degree existing data re-assessment is “considerable”.

EASA response: Partially agreed

See reply to Comment #4.

Comment # 54

Item #3:

The scope is very unspecific “[..] etc” and should exclude installation of previously on this A/C model approved interior components or their derivatives as long as the interface with A/C and equipment installation limitations remain unchanged.

EASA response: Partially agreed

See reply to Comment #4.

Comment # 55

Item #3:

What is the criteria for classifying major (weight?), then lightweight components should be excluded (partitions, doghouse, stowages, Movable Class Dividers..)

EASA response: Partially agreed

See reply to Comment #4.

Comment # 56

Item #3:

Seats are already addressed in Item #1 and should be excluded from this paragraph.

EASA response: Not agreed

See reply to Comment #49.

Comment # 57

Item #4:

should exclude cabin reconfigurations that are compliant with A/C type design, A/C and equipment specifications for aisle/cross aisle/passageway width, for which emergency evacuation has been demonstrated.

EASA response: Partially agreed

See reply to Comment #5.

Comment # 58

Item #8:

Should exclude Cabin Attendant seats that are installed identical to A/C type design and remaining compliant A/C and equipment specifications.

EASA response: Not agreed

The installation of cabin crew member seats is considered to have an appreciable effect on airworthiness. Design Organizations that intend to certify the installation of cabin crew member seats cannot take any credit from previous approvals granted by EASA to the TC holder for the same configuration.

Comment # 59

Item #20:

Safety benefit of individual approval of handheld fire-extinguishers identical to already in A/C type design included equipment is unclear. Is there a “white-list” foreseen or update of MPS?

EASA response: Partially agreed

See replies to Comment #13 and Comment #23.

Commenter 10: Sirium Aerotech – Alejandro Rubio Zamora / Head of Airworthiness Office / 31.01.2020

Comment # 60

Item 1: There are some airplanes affected only partially by 25.562 (excluding (c)5 and (c)6). Those airplanes require 16g seats but are not affected by installation related paragraphs, like HIC. My company proposes to clarify that the installation of seats on airplanes affected only partially by 25.562 is not always major.

EASA response: Not agreed

See reply to Comment #2.

Comment # 61

Item 18: It is not clear for me the definition of "charging station". I assume reading the justification that it means an station prepared to charge several PEDs at the same time. I kindly suggest to clarify that a single port to charge a single PED is not major. Also, maybe it would be interesting to make a difference for C-PEDs since those should be controlled by the crew and the risk is lower. I also suggest to clarify whether an installation of an in-seat power supply for a whole airplane is minor or major.

EASA response: Agreed

The text of the CM has been modified to provide additional clarifications on the intent of Item #18.

See also reply to Comment #11.