



European Aviation Safety Agency
Comment-Response Document 2017-12

Appendix 2
to ED Decision 2018/005/R

RELATED NPA 2017-12 — RMT.0673 — 27.03.2018

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1. Summary of the outcome of the consultation

42 comments were received from all interested parties, including industry (36 comments) and national aviation authorities/intergovernmental organisations (6 comments) (Aero-Club of Switzerland, Airbus, Bombardier, Stelia Aerospace, Dassault, DGAC France, Eurocontrol, Federal Office of Civil Aviation (FOCA) Switzerland, General Aviation Manufacturers Association (GAMA), GE Aviation, Luftfahrt-Bundesamt (LBA), Mitsubishi Aircraft Corporation, Safran Nacelles, Textron Aviation, Boeing, and the UK CAA).

The comments were distributed as follows:

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No comments were received on items 2 (fuel tank vent fire protection), 5 (flight instrument external probe de-icing test), 7(non-magnetic standby compass), and 11 (editorial corrections).

The received comments resulted in various improvements and clarifications of the initial proposals.

2. Individual comments

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

- (a) **Accepted** — EASA agrees with the comment and any proposed amendment is wholly transferred to the revised text.
- (b) **Partially accepted** — EASA either agrees partially with the comment, or agrees with it but the proposed amendment is only partially transferred to the revised text.
- (c) **Noted** — EASA acknowledges the comment, but no change to the existing text is considered necessary.
- (d) **Not accepted** — The comment or proposed amendment is not agreed by EASA.

(General comments)

-

comment	2	comment by: <i>Aero-Club of Switzerland</i>
	We thank the Agency for this NPA.	
response	Noted.	
comment	4	comment by: <i>UK CAA</i>
	Thank you for the opportunity to comment on NPA 2017-12.	
	Please be advised that there are no comments from the UK Civil Aviation Authority.	
response	Noted.	
comment	5	comment by: <i>Federal Office of Civil Aviation (FOCA), Switzerland</i>
	The Federal Office of Civil Aviation (FOCA) would like to thank the Agency for the opportunity to comment on the NPA 2017-12 Regular update of CS-25.	
	Please be advised that FOCA fully supports the content of this NPA.	
response	Noted.	
comment	6	comment by: <i>DGAC France</i>
	Please note that DGAC France has no specific comments on this NPA.	
response	Noted.	
comment	7	comment by: <i>Luftfahrt-Bundesamt</i>
	LBA has no comments on NPA 2017-12.	
response	Noted.	



comment	42	comment by: EUROCONTROL
	The EUROCONTROL Agency welcomes the publication of EASA Notice of Proposed Amendment 2017-12. It also thanks EASA for the opportunity that has been given to submit comments. In addition, despite the fact that the EUROCONTROL Agency has no comments to make on the NPA, it will read the future CRD with interest.	
response	Noted.	

2. In summary — why and what | 2.1. Why we need to change the rules — issue/rationale

p. 4-10

comment	14	comment by: Airbus Operations GmbH
	Airbus Comment on NPA Page 4, Section 2.1., Item 1, Landing in Abnormal Configurations General Comment no.1: To avoid introducing additional disharmonized certification specifications (or standards) among the major AAs, this topic may need to be pushed to be worked by the FAA-ARAC Flight Test Harmonisation Working Group (FTHWG) prior to EASA making a decision to amend CS25 and the associated AMC. Rationale for the Comment: · - This subject has been discussed without conclusion in the frame of JAA Flight Steering Group. At that time it appeared difficult to get a harmonized position with other AAs. - This subject has been included in the FTHWG topics to be harmonized, but with a lower priority following FTHWG members' votes. ·	
response	Noted. This topic is considered mature enough; a generic CRI has been applied consistently by EASA on various projects over the years. It is acknowledged that the topic is listed in the low-priority list of the ARAC FTHWG. Given that the FTHWG is not yet working on it and that FAA rulemaking is being slowed down, it may take years before FAA and EASA rulemaking could be conducted in parallel, after an ARAC recommendation is available. Therefore, as the revised wording is being applied through Certification Review Items anyway, EASA will amend CS-25 accordingly. If a different standard is agreed at the FTHWG at some future date, an amended standard could be adopted after that.	
comment	15	comment by: Airbus Operations GmbH
	Airbus Comment on NPA Page 4, Section 2.1., Item 1, Landing in Abnormal Configurations General Comment no.2: In order to keep the certification specifications consistent, NPA Item 1 should be worked on in parallel or in sequence with NPA 2016-11, in particular it should be in accordance with CS25.1592 and its AMC as proposed by NPA 2016-11. Rationale for the Comment: · The intent of this <i>NPA Item1</i> is to request the applicant to publish in AFM the landing distance information appropriate to abnormal landing configurations or following the loss of	



normal services. This information will assist flight crews, at the time of arrival, in producing landing performance data by taking into account the penalties caused by the failure(s) happened during flight.

· The information is not intended to be used for dispatch landing performance assessment as stated in Section 3 of proposed AMC 25.1581(c):

This AMC does not consider configuration deviation list (CDL) items or any unserviceability identified in the master minimum equipment list (MMEL) that are known prior to dispatch.

· As stated in NPA 2016-11:

o - AMC 25.1592 §2.0 "...The methods contained in this AMC 25.1592 include those for derivation of landing distance on dry and wet runways intended to be used at the time of arrival only." and,

o - AMC 25.1592 §6.1, "... the air distance determined under CS 25.125 may not be appropriate for use when making time-of-arrival landing performance assessments. ..."

Airbus considers the most appropriate assumptions to determine the landing distance with in flight failure(s) should be adapted from the one proposed by NPA 2016-11 (CS25.1592 & AMC 25.1592).

response

Noted.

The proposal of NPA 2016-11 for a new CS and AMC 25.1592 is intended to cover normal operations. Consequently, the methodology to calculate the landing distance contains assumptions that may not be valid for landing in abnormal configurations.

NPA 2017-12 provides a method to calculate the landing distances associated with abnormal landing configurations that are to be provided in the AFM.

Therefore, EASA considers that the two specifications should be maintained separately.

3. Proposed amendments and rationale in detail | 3.1. Draft Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (draft EASA decision amending CS-25) |
Item 1: Landing in abnormal configurations

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comment 16

comment by: Airbus Operations GmbH

Airbus Comment on NPA Page 13, Item 1, Landing in Abnormal Configurations / AMC 25.1587(c)

Proposal:

In the list "2. Related certification specifications", add:

CS 25.1592 Performance information for landing distance assessment

Rationale for the Comment:

- The intent of this *NPA Item1* is to request the applicant to publish in AFM the landing distance information appropriate to abnormal landing configurations or following the loss of normal services. This information will assist flight crews, at the time of arrival, in producing landing performance data by taking into account the



	<p>penalties caused by the failure(s) happened during flight.</p> <ul style="list-style-type: none"> The information is not intended to be used for dispatch landing performance assessment as stated in Section 3 of proposed AMC 25.1581(c): <p><i>This AMC does not consider configuration deviation list (CDL) items or any unserviceability identified in the master minimum equipment list (MMEL) that are known prior to dispatch.</i></p> <ul style="list-style-type: none"> As stated in NPA 2016-11: <ul style="list-style-type: none"> AMC 25.1592 §2.0 “...The methods contained in this AMC 25.1592 include those for derivation of landing distance on dry and wet runways intended to be used at the time of arrival only.” and, AMC 25.1592 §6.1, “... the air distance determined under CS 25.125 may not be appropriate for use when making time-of-arrival landing performance assessments. ...” <p>Airbus considers the most appropriate assumptions to determine the landing distance with in flight failure(s) should be adapted from the one proposed by NPA 2016-11 (CS25.1592 & AMC 25.1592).</p>
response	<p>Noted.</p> <p>The proposal of NPA 2016-11 for a new CS and AMC 25.1592 is intended to cover normal operations. Consequently, the methodology to calculate the landing distance contains assumptions that may not be valid for landing in abnormal configurations. NPA 2017-12 provides a method to calculate the landing distances associated with abnormal landing configurations that are to be provided in the AFM. Therefore, EASA considers that the two specifications should be maintained separately.</p>
comment	<p>17 comment by: Airbus Operations GmbH</p> <p>Airbus Comment on NPA Page 14, Item 1, Landing in Abnormal Configurations / AMC 25.1587(c), 4. Performance Information</p> <p>Proposed text: (delete strikethrough text, add wording gray-underlayed)</p> <p>4. Performance information</p> <p>... This information should be the horizontal distance necessary to land and come to a complete stop from a point 50 feet above the landing surface consist of the horizontal distance from the point at which the main gear of the aeroplane is 50 ft above the landing surface to the point where the aeroplane comes to a complete stop for standard temperatures at each weight, altitude and wind within the operational limits established by the applicant for landing on a dry runway. This information should be established in accordance with CS 25.125(b)(4) and (5), CS 25.125(c)(1) and (2), CS 25.125(f), CS25.1592 and AMC25.1592, and with the following conditions:...</p> <p>Rationale for the Comment:</p> <p>Same rational as for previous comment No. 16 and to keep the wording consistent with proposed CS25.1592.</p>
response	<p>Partially accepted.</p> <p>The proposed change to the description of the horizontal distance is accepted. However, the</p>

reference to CS 25.1592 and its AMC, which do not yet exist, has not been added.

comment

18

comment by: Airbus Operations GmbH

Airbus Comment on NPA Page 14, Item 1, Landing in Abnormal Configurations / AMC 25.1587(c), 5. Operating Procedures

Comment:

The current wording may be understood in the way that in the abnormal configurations, the threshold of Stall Warning should be set up to provide a nominal controllability and manoeuvrability.

It has to be highlighted that abnormal configuration cases are evaluated and rated according to the CS25.1309, meaning the classification and the A/C handling are in accordance with the probability of the failure case. There is no intention to demonstrate the nominal handling, as it would lead to approach speed increase and not necessarily better for A/C safety.

In addition, it has to be noted that it is not necessary to assess all abnormal configurations by flight test, which has been accepted by EASA for Airbus recently certified projects.

Rationale for the Comment:

Clarification and reference to recent industry practice.

response

Partially accepted.

Overall, the NPA proposed text appears to be in line with the Airbus position. Nevertheless, some clarifications have been made. A sentence has been added to recognise and clarify that the application of conventional stall and controllability margins is not always practical for failure cases. Also, the term 'flight test' has been deleted from the last sentence.

comment

19

comment by: Airbus Operations GmbH

Airbus Comment on NPA Page 14, Item 1, Landing in Abnormal Configurations / AMC 25.1587(c), 6. effects of failures on landings distance

Comment:

Airbus understands that CS25.1587(c) covers only the abnormal configurations or loss of normal services that can be detected either by the Flight Warning System or by the flight crew. Undetected failures should be out of the scope.

Proposed Text: (delete stikethrough text, add text gray underlayed)

6. Effect of failures on landing distance

Information on landing distances in abnormal configurations should ~~cover the normal and non-normal procedures~~ be determined in accordance with the procedures appropriate to the abnormal configuration for single failures and combinations of failures provided in the AFM which:



(a) have a probability of occurrence greater than approximately 10⁻⁷; and
 (b) result in more than a 10 % increase in landing distance.
 If a procedure is included in the AFM for a failure case that:
 (a) has a probability of occurrence less than 10⁻⁷; and
 (b) results in an increase in the landing distance of more than 10 %, then information about the increase in landing distance should also be included in the AFM.

Rationale for the Comment:

- The original wording may be confusing.
- In case flight crew has no awareness that a failure happened during flight, the requested information may not be valuable to them.
- Undetected failures will be handled through the compliance to CS 25.1309.

response Accepted.

comment

20

comment by: Airbus Operations GmbH

Airbus Comment on NPA Page 15, Item 1, Landing in Abnormal Configurations / AMC 25.1587(c), 9. Data derivation and AFM presentation

Comment:

Airbus recommends removing the sentence ‘the recommended operating procedures ... should be derived from flight tests results’.

Proposed Text: (delete stikethrough text)

9. Data derivation and AFM presentation
 ... The recommended operating procedures discussed in paragraph 5 ~~should be derived from flight test results. They~~ should be presented in a simple manner (e.g. as increments in the landing distance, or approach speeds)....

Rationale for the Comment:

In recently certified Airbus projects, EASA accepted that it is not necessary to assess all abnormal configurations by flight test. Airbus does not intent to do it for the next developments either.

response Accepted.

3. Proposed amendments and rationale in detail | 3.1. Draft Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (draft EASA decision amending CS-25) | p. 29
Item3: Indication that engine anti-icing systems are functioning

comment

38

comment by: MITSUBISHI AIRCRAFT CORPORATION

Page	Section	Reference	Comment/Reason for Change	Change Proposal
29	item 3	Indication that engine	Some engines have a heated spinner just to exit the air from the	The following note should be included: If an



		anti-icing systems are functioning	internal engine cooling system. Engine icing certification may be performed with this 'anti-ice system' inoperative. For such engines an indication is not needed as a/c safety is not impacted when the system fails wrt anti-icing (eg. exit spinner holes blocked)	engine anti-ice system is incorporated in the engine, but not required under part-33 certification, then no indication of the functioning of the anti-ice function is required.
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response

Not accepted.
The feature described in this comment does not belong to the powerplant ice protection system, rather to the engine cooling system, which is certified under CS-E. It is therefore outside of the scope of CS-25.

3. Proposed amendments and rationale in detail | 3.1. Draft Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (draft EASA decision amending CS-25) | p. 29-33
Item 4: Oxygen fire hazards in gaseous oxygen systems

comment

10

comment by: Airbus Operations GmbH

Section our comment is related to:

NPA Page 31, Item 4, Oxygen Fire hazards in Gaseous Oxygen System, Para.5.2. Pressure limiting devices (e.g. relief valves), 3rd section

PROPOSED TEXT / COMMENT:

The quoted section needs additional clarification for the following items:

- The NPA does not include a definition of “Transient pressure level (TPL) assessment”. Airbus recommends defining this term in the AMC.
- Why is stated “or due to an estimated low-probability occurrence”?

AIRBUS proposes the following wording:

"If any single failure identified in paragraph 4.1 that affects the pressure-regulation device (such as but not limited to poppet/ shaft/ diaphragm blockages or ruptures, seal leakages, etc. of a pressure reducer) leads to a pressure in excess of the maximum working pressure multiplied by 1.33, and is not considered in the design (such as a safety factor on the yield strength, size of damage, etc.), a detailed rationale should be provided in the certification documents and should be agreed with EASA."

JUSTIFICATION for the Comment:

Need for clarification and additional definitions.

response

Partially accepted.
The proposed change does not reflect the intent of the initial text and is therefore not

accepted. However, EASA reviewed Section 5.2 and identified that the meaning of transient pressure level (TPL) would be better understood if the order of the following two paragraphs was reversed:

- If any single failure [...] with EASA.
- For testing purposes [...] the pressure level.

This change has therefore been made.

comment

11

comment by: *Airbus Operations GmbH*

Section the comment is related to:

Section 4. Oxygen Hazards Analysis (OHA), Para 4.4 Ignition Mechanisms, NPA Page 31

Comment / Proposed Change:

The mechanism “Mechanical Stress or Vibration” is listed in the AMC. This mechanism is covered by evaluation of the “Mechanical Impact” and “Flow Friction” mechanisms, both of which are mandatory and are not defined by Characteristic Elements as the other Ignition Mechanisms in NASA Guide for Oxygen Compatibility Assessments on Oxygen Components and Systems and ASTM Manual 36.

It has thus not been directly addressed yet. The mechanism of “Fresh Metal Exposure” has been considered by Oxygen Hazard Failure Risk Assessments (OHFRA), because it relates to broken, cracked or damaged parts that may be caused by certain failure modes.

AIRBUS proposes to delete in § 4.4 the mechanism “mechanical stress or vibration” and replace it by “Fresh metal exposure”.

Justification for the comment:

The change is proposed to be in line with the ignition mechanism defined in NASA Guide for Oxygen Compatibility Assessments on Oxygen Components and Systems.

response

Accepted.

comment

43

comment by: *The Boeing Company*

<i>Non-Concur</i>	<i>Substantive</i>	<i>Editorial</i>
X		
Page: 29		
Paragraph: Item 4: Oxygen fire hazards in gaseous oxygen systems		
<u>The prescriptive nature of the AMC is restrictive.</u>		
REQUESTED CHANGE: It is requested that EASA adopt an AMC that more closely aligns with the release FAA policy PS-ANM-25.1441-01, Mitigating Fire Hazards in Gaseous Oxygen Systems, dated 9 December 2014. Consider revising the AMC to be performance based.		
JUSTIFICATION: The proposed EASA AMC provides several prescriptive design solutions to address oxygen fire threats. As technology rapidly evolves, providing performance based guidance will allow more innovation by industry to address threats, reduce risk and improve safety. Consider the performance based requirements developed by the FAA in policy PS-ANM-25.1441-01, Mitigating Fire Hazards in Gaseous Oxygen Systems, dated 9 December		

2014.

response

Not accepted.
The objective of this NPA is to implement the content of the generic and mature CRI. The need to adopt the content of the FAA policy mentioned may be considered in the future.

comment

44

comment by: *The Boeing Company*

<i>Non-Concur</i>	<i>Substantive</i>	<i>Editorial</i>
	X	
Page: 33 Paragraph: 5.5. Grounding		
THE PROPOSED TEXT STATES: All the oxygen lines and hoses should be grounded.		
REQUESTED CHANGE: All the oxygen lines and hoses should be grounded <i>as appropriate</i> .		
JUSTIFICATION: The requested change is consistent with previous generic CRI's and applications with proven in service history.		

response

Accepted.

3. Proposed amendments and rationale in detail | 3.1. Draft Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (draft EASA decision amending CS-25) | p. 34
Item 6: Flight crew seats

comment

1

comment by: *Certification/Airworthiness Manager*

ETSO-C127b is also applicable to Pilot seats. ETSO-C127b is calling AS8049 Rev B where floor warpage (Pitch&Roll) is requested as a test set up condition to the 16g structural test.

For pilot seats on board of large airplane, it is very often that an exemption to the floor warpage requirement is granted.

Now, with the updated CS25.562, it is clearly stated inside the paragraph that such misalignment is not applicable.

My questions are:

- Is it possible to apply for an ETSO-C127b without being compliant to the floor warpage?
- Does the CS25.562 wording prevails on the AS8049 Rev B for such misalignment requirement?

Response

Noted.

— First question: it is possible to apply for an ETSO C127b approval, but it is unlikely that



a deviation from the floor warpage specifications will be acceptable (because it shall be compensated for by factors or design features that provide an equivalent level of safety, per 21.A.610). Alternatively, the applicant may decide to apply for an ETSO C39c approval, which does not include warpage specifications.

- Second question: no, these are separate specifications. The ETSO approval does not authorise the installation of the seat in the aeroplane, so the CS-25 specifications must be complied with for this aspect.

comment

13

comment by: Airbus-EIAIX-SRg

Section our comment refers to:

NPA page 34, Item 6, Flight Crew Seats, CS 25.562 Emergency landing dynamic conditions (b)(2)

PROPOSED TEXT / COMMENT :

In the sentence: “With the exception of flight deck crew seats that are mounted in the forward conical area of the fuselage,…”

it should be clarified that “flight deck crew seats” also includes “observer seats” installed aft of the two pilot seats.

RATIONALE / REASON / JUSTIFICATION for the Comment:

Reason for this proposal is that observer seats are of the same design as flight crew seats and are installed in the same “forward conical area”.

Observer seats are defined with reference to FAA AC 120-83 for the purposes of conducting en-route inspections.

response

Not accepted.

Flight crew seats on the flight deck are individually mounted, single seats with both vertical and horizontal adjustments to accommodate the different sizes of crew members. Flight crew seats are required to be fairly rigid in order to withstand flight crew reaction forces from the flight controls.

In contrast, other seats in the flight deck area, including observer seats, have design features and installation characteristics (e.g. they are wall mounted) such that compliance can be shown without any particular concern. Therefore, seats other than flight crew seats are not intended to be excluded.

3. Proposed amendments and rationale in detail | 3.1. Draft Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (draft EASA decision amending CS-25) | Item 8: Security requirements

p. 36

comment

9

comment by: Dassault-Aviation

Dassault-Aviation

Text:

New paragraph S25.60 Security

Comment:

Existing security requirements 25.795 are applicable to “aeroplanes with a certificated passenger seating capacity of more than 60 persons or a maximum take-off weight of over 45 500 Kg (100 000 lb)”. Per the new paragraph S25.60 proposed in NPA 2017-12 item 8, non-commercially operated aeroplanes would be exempted from complying with 25.795(b), (c) and (d).

The effectivity of this new paragraph of the CS-25 Appendix S (“Airworthiness requirements for non-commercially operated aeroplanes and low-occupancy aeroplanes”) is limited, compared to the general conditions of applicability prescribed in S25.1(a). It is anticipated to be impractical as such. Indeed, no wide-body aeroplanes such that exceeding the minimum threshold of applicability of 25.795 are designed to exclusively operate in NCC. By consequence, none would meet the terms of applicability of S25.60.

Dassault Aviation consider security requirements 25.795(b), (c) and (d) as not being appropriate to low-occupancy aeroplanes (with a passenger seating configuration up to 19 passengers) irrespective of the type of operations, as specified in S25.1(a)(2)(i). Indeed, whether commercially or non-commercially operated, this kind of low-occupancy aeroplanes is generally used for private, executive or governmental purposes, involving the same nature of passengers in both case. Commercial operation is usually conducted through non-scheduled services with a single person/entity chartering on-demand the whole airplane. For all these reasons, the same rational about low onboard terrorist risks should apply, as developed by the FAA in the NPRM.

Proposed change:

Dassault respectfully suggest EASA to extend the exemption S25.60 to low-occupancy aeroplanes irrespective of the type of operations as specified in S25.1(a)(2)(i).

response

Not accepted.

EASA has retained the NPA proposal, which maintains harmonisation with the FAA and corresponds to the proposals made by commentators during the NPA 2015-19 consultation.

comment

32

comment by: *Bombardier*

It is recommended that CS25.60 provide relief for all aircraft that are not required by the operating rules to have a secure flight deck door or that 25.795(b) and (c) be amended so as to only apply to aircraft that are required by the operating rules to have a secure flight deck door.

Alternatively, if the least risk bomb location and system survivability requirements are to be retained for all commercially operated aircraft, then it is recommended that relief be provided for the requirements of 25.795(b), (c)(1) and (c)(3) as compliance with these requirements are affected by cabin layout as opposed to aircraft structure and systems design.

This change would provide the relief required for non-commercially operated aircraft, since a secure flight deck door is not required per ICAO Annex 6 Part II or the operating rules, but would also provide relief for commercially operated aircraft that exceed 45,500 kg if the amendment transmitted per ICAO letter AN 11/1.1.32-17/66 concerning “Proposed amendment to Annex 6, Part I regarding cockpit door requirements” is adopted.



Relief for commercially operated aircraft that do require a secure flight deck door by the operating rules is important for the following reasons:

The acceptable means of compliance for 25.795(b)(1) assumes that a flight deck door is installed; if no door is installed then there is no practical means to limit the entry of smoke, fumes, and noxious gases into the flight deck nor would there be a need from a security point of view based on (a) the security risk and (b) the fact there is no means to prevent entry into the flight deck with an explosive or incendiary device.

FAA Advisory Circular 25.795-8 concerning “Interior design to facilitate searches” specifically states the applicant is not required to address areas other than overhead bins; in the case of airplanes with executive interiors, most are not equipped at all with overhead bins but do have an assortment of stowage compartments to accommodate passengers and crew needs for storage.

Seats installed in aircraft outfitted with executive interiors tend to have fully finished seats with no under seat stowage; as a consequence, life preserver stowage locations tend to be fully enclosed and finished compartments that must be opened in order to verify the presence and condition of the life preserver. The installation of security seals poses a burden on the operator and there is little added benefit from a security point of view in light of (a) the security risk and (b) abundance of other stowage compartments.

response

Not accepted.

EASA has retained the NPA proposal, which maintains harmonisation with the FAA and corresponds to the proposals made by commentators during the NPA 2015-19 consultation.

comment

41

comment by: GAMA

GAMA supports the proposed amendment to Appendix S and furthermore encourages the Agency to adopt the increased weight thresholds for such aircraft in ORO.SEC.100 from 45,500kg to 54,500kg as proposed in ICAO State Letter AN 11/1.1.32-17/66 (issued May 2017).

The reason that Stakeholder Group who drafted NPA 2015-19 for Executive Interior Accommodation did not address the security issue was because at that time it was based on an ICAO limitation, so had to be addressed within ICAO first. Now that ICAO has made a determination to amend Annex 6 with State Letter AN 11/1.1.32-17/66, issued in May 2017, it is now up to the Agency to decide how this should be implemented in CS-25. GAMA recognises that this NPA almost achieves harmonisation with SFAR109, however it should be noted that the FAA is planning to update SFAR109 in order to harmonise with the recommendations to the Stakeholder Group which were embedded into Amdt 19 of CS-25.

response

Noted.

ICAO has not yet adopted the proposal of the State Letter. If Annex 6 is amended, then the EU will have to decide whether or not the European OPS regulation (point ORO.SEC.100) should be harmonised with this ICAO Annex 6 amendment. The final decision should be taken at the level of the European Commission.

If it is decided to amend point ORO.SEC.100, then EASA may propose an amendment of CS-25 to align the criteria used in CS 25.795(b) and (c).



3. Proposed amendments and rationale in detail | 3.1. Draft Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (draft EASA decision amending CS-25) | Item 9: Engine ETOPS capability

p. 36

comment	33	comment by: <i>GE Aviation</i>
	(b) Approval of the engine for ETOPS capability in compliance with CS-E 1040 or equivalent Cert basis	
response	Noted. This input is not a comment.	
comment	34	comment by: <i>GE Aviation</i>
	Under CS25.1535 ETOPS Design Approval 9b) should read " Approval of the engine for TOPS capability in compliance with CS-E 1040 or equivalent cert basis	
response	Not accepted. EASA CS-25 may only refer to another EASA Certification Specification, in this case CS-E 1040.	
comment	39	comment by: <i>Airbus Operations GmbH</i>
	Airbus Comment on NPA Page 36, Item 9: Engine ETOPS capability, Amendment to CS25.1535 (b)	
	Comment	
	Airbus disagrees on the proposed changes to section (b) of CS 25.1535 as it does not clarify that “the approval of the engine for ETOPS capability in compliance with CS-E 1040” is currently required only for Early ETOPS. In addition, as proposed this change does not allow harmonizing with the equivalent text in FAA FAR 25, Appendix K – Extended Operations (ETOPS), section K25.2.2 and FAR 33 paragraph 33.201.	
	Indeed, in current AMC 20-6 Rev 2, compliance with CS-E 1040 is called out only in Section (b)(1) – Early ETOPS – Acceptable Early ETOPS certification plan of Appendix 1 – Propulsion System Reliability Assessment. This is in line with the equivalent text in FAA ETOPS regulations, where the compliance with FAR 33 paragraph 33.201 Design and test requirements for Early ETOPS eligibility is called out only in FAR 25, Appendix K – Extended Operations (ETOPS), section K25.2.2 Early ETOPS method.	
	In other words, for both EASA and FAA current ETOPS rules:	
	- The assessment of the capability (or eligibility) of the propulsion system in the frame of an Early ETOPS certification (i.e. AMC 20-6 paragraph 6.2 “Method 2: Early ETOPS”, and equivalent text in FAA Appendix K – Extended Operations (ETOPS), section K25.2.2 “Early ETOPS method”) is primarily based on tests (e.g. the 3,000cy test) and analyses (e.g. lessons learned), and therefore requires compliance with CS-E 1040 or FAR 33 paragraph 33.201.	
	- The assessment of the propulsion system in the frame of an in-service ETOPS certification (i.e. AMC 20-6 paragraph 6.1 “Method 1: In-Service Experience for ETOPS Type Design Approval”, and equivalent text in FAA Appendix K – Extended Operations (ETOPS), section K25.2.1 “Service experience method”) is primarily based on a review of the in-service	



reliability data (IFSD rate, MTBF of relevant components, etc...), and demonstration of compliance against CS-E 1040 or FAR 33 paragraph 33.201 is not required.

In addition, the summary chapter 2 of this NPA stipulates that one of the intent of the proposed changes is to better harmonize with the FAA. Accordingly, it is proposed that the wording “ETOPS capability” is changed to “ETOPS eligibility”. Indeed, the FAA ETOPS rules only refer to this term “ETOPS eligibility”. In addition, as the term “ETOPS capability of the engine” is not used anywhere in AMC 20-6 or CS-E 1040, replacing this term with “ETOPS eligibility” would have no other collateral impact on existing EASA ETOPS regulations.

Proposal

In line with the comment above, Airbus proposes the following amendments (text in red, new text underlined, strikethrough text to be deleted) to section (b) of CS 25.1535:

QUOTE

(b) For Early ETOPS, Approval of the engine for ETOPS ~~capability~~ eligibility in compliance with CS-E 1040. (See AMC 20-6.)

UNQUOTE

Rationale for the comment

See in comment text above

response

Partially accepted.

The term ‘capability’ has been retained to keep consistency with CS-E 1040. The other proposed changes have been implemented. The reference to AMC 20-6 was already provided at the end of the paragraph.

We note the suggestion to use the term ‘eligibility’ instead of ‘capability’ for harmonisation with the FAA, and it will be considered in future rulemaking on ETOPS.

comment

40

comment by: *Airbus Operations GmbH*

Airbus Comment on NPA Page 36, Item 9: Engine ETOPS capability

General Comment on CS 25.1535 ETOPS Design Approval

In addition to our specific comment no. 39 on CS 25.1535, Airbus considers it necessary to discuss further changes to CS-E 1040, CS 25.1535 and AMC 20-6 to ensure and/or improve consistency in the CS’s, and between requirements and guidance material. For instance, current text of CS-E 1040 only refers to the need to “achieve an IFSD rate that is compatible with the safety target associated to the maximum flight duration and the longest diversion time for which approval is being sought”. This is redundant with the requirements for IFSD rate monitoring and reporting which are already covered by AMC 20-6 Rev.2 and Part 21.A.3A(a). In addition, current text does not refer to the need to performing other activities such as the 3,000cy test and related inspections, which are currently only called out by AMC 20-6.

Moreover, as said above, this NPA proposes changes to introduce clarification and harmonization with FAR 25. Indeed, ETOPS requirements should be further harmonized between EASA and FAA, which appears to beyond the scope of this NPA 2017-12.



Recommendation:

Therefore, Airbus recommends initiating a separate rulemaking task to clarify requirements and guidance for In-service and Early ETOPS Certifications in CS-E, CS-25 and AMC 20-6. For that rulemaking, a dedicated working group should be established comprising of foreign Authorities and concerned manufacturers.

response

Noted.

RMT.0577 'Extended diversion time operations' will propose to harmonise the EDTO rules with the related ICAO SARPs and modernise the EASA ETOPS rules.

3. Proposed amendments and rationale in detail | 3.1. Draft Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes (draft EASA decision amending CS-25) | Item 10: Engine cowl retention

p. 36-39

comment

8

comment by: *Textron Aviation*

Item 10, Pg. 36

Interesting to note that the requirement for cockpit indication in the CRI is in direct contradiction from the FAA disposition of the comments from the Mega Part 25 AC. See below:

Several commenters state that the proposed requirement for cockpit indication would cause more problems than it would solve. Their concerns include the fact that false indications could cause unnecessary delays, aborts, in-flight shutdowns, air turn backs, diversions, and unscheduled landings; in-flight warning would not preclude separation and might initiate inappropriate crew action; such systems would add complexity, cost and weight; and cockpit indication should not be necessary if the design meets all of the other proposed requirements.

The FAA agrees that cockpit indication should not be mandated and this requirement is not included in the final rule. However, if properly designed, constructed, and maintained, such an indication system could serve as part of the means "for effectively verifying that the cowling is secured prior to each takeoff," as is now required by the final rule

Suggested Change:

Harmonization between EASA and the FAA in this regard.

response

Not accepted.

The comment is not understood. The proposed amendment does not mandate a cockpit indication system.

comment

21

comment by: *Safran Nacelles*

Safran Nacelles acknowledges and supports the proposal of amendment to CS 25.1193

response

Noted.



comment	<p data-bbox="363 271 395 304">22</p> <p data-bbox="1123 271 1477 304" style="text-align: right;">comment by: <i>Safran Nacelles</i></p> <p data-bbox="363 331 695 365">Paragraph "Human Factors"</p> <p data-bbox="363 405 1485 544">The proposed wording for this paragraph seems to require that all indications should comply with the criteria mentioned. This can be impractical as most of the indications methods do not individually comply with all of the criteria. It is in fact the complementarity between the indications that provides a reliable mean of detection of an improperly closed latch.</p> <p data-bbox="363 584 1337 618">Safran Nacelles therefore proposes to amend the first sentence of the paragraph:</p> <p data-bbox="363 658 1485 797">In determining the most appropriate design feature, or combination of design features, to cope with the human-factor aspects that contribute to the risk of an aeroplane being released with unclosed or unlatched cowlings, attention should be placed on the following aspects of cowling latched/unlatched indications:</p>
response	<p data-bbox="363 819 480 853">Accepted.</p>
comment	<p data-bbox="363 904 395 938">23</p> <p data-bbox="1123 904 1477 938" style="text-align: right;">comment by: <i>Safran Nacelles</i></p> <p data-bbox="363 978 1485 1072">"The indications should draw the attention of personnel without ambiguity (e.g. by paint effects) and should not be affected by lighting conditions (night/day), weather conditions, or the operational environment."</p> <p data-bbox="363 1113 1485 1182">Proposal to replace "indications" by "combination of indications" and "affected" by "rendered ineffective":</p> <p data-bbox="363 1223 1485 1328">"The combination of indications should draw the attention of personnel without ambiguity (e.g. by paint effects) and should not be rendered ineffective by lighting conditions (night/day), weather conditions, or the operational environment."</p>
response	<p data-bbox="363 1357 480 1391">Accepted.</p>
comment	<p data-bbox="363 1442 395 1476">24</p> <p data-bbox="1123 1442 1477 1476" style="text-align: right;">comment by: <i>Safran Nacelles</i></p> <p data-bbox="363 1516 1485 1655">"The noticeability of a forced gap between the fan cowl and the surrounding structure may be adversely affected by its environment, such as the ambient lighting conditions, external painting or the condition of the surrounding structure, and may not be sufficient to draw attention to it;"</p> <p data-bbox="363 1695 1219 1729">Proposal to add "individually" before "sufficient to draw attention to it"</p> <p data-bbox="363 1769 1485 1897">"The noticeability of a forced gap between the fan cowl and the surrounding structure may be adversely affected by its environment, such as the ambient lighting conditions, external painting or the condition of the surrounding structure, and may not be individually sufficient to draw attention to it;"</p>
response	<p data-bbox="363 1926 480 1960">Accepted.</p>
comment	<p data-bbox="363 2011 395 2045">25</p> <p data-bbox="1123 2011 1477 2045" style="text-align: right;">comment by: <i>Safran Nacelles</i></p>

response	<p><u>Remark:</u> Safran Nacelles concurs with EASA’s statement that the noticeability of a forced gap between the fan cowl and the surrounding structure is affected by the environment, as any visual detection means. Nevertheless, the in-service experience of the “forced gap” device is good and demonstrates that the “forced gap” device can contribute to the noticeability of an improperly closed cowl.</p>
	Noted.
comment	<p>26 comment by: <i>Safran Nacelles</i></p> <p>“Specific tools may be improperly defined and maintained (e.g. keys required to open cowls, normally fitted with a red flag, being used without a flag);”</p> <p><u>Editorial remark:</u> This sentence seems misplaced in this list which is relative to the nacelle paintings that can defeat the design precaution.</p>
response	<p>Accepted. This was a mistake, so this bullet has been moved to the upper part of the list.</p>
comment	<p>27 comment by: <i>Airbus Operations GmbH</i></p> <p>Airbus Comment on NPA Page 38/39, AMC 25.1193(e)(4) and (f), Engine cowling retention</p> <p>Para b., human factors, sentence: <i>"Their verification by personnel should not necessitate unusual physical effort (e.g. bending down or kneeling on the groundtake into account the variability in the physical capabilities of the personnel;"</i></p> <p>Comment: Airbus requests to remove this requirement. Airbus does not wish it to mean that an indication at 6 o'clock is not acceptable for a certain ground clearance. Bending down or kneeling on the ground should not be considered an unusual physical effort, it is what personnel is doing for other areas.</p> <p>Proposal: Airbus requests to delete this requirement.</p> <p>Rationale for the Comment: Currently, indicators such as latch locked by a key with a red flag or LAD/LAP are positioned at 6 o'clock. A strict requirement as proposed by EASA could have a significant design impact if the latch have to be moved upwards, and is not inline with the Impact Assessment of chapter 4.</p>
response	<p>Not accepted. The sentence commented on is part of a list of considerations to be taken into account when making the selection of design features. It is not a requirement. A means of indication located close to the ground that requires an unusual amount of effort from personnel is obviously less efficient and should be either avoided or compensated for by other means.</p>

comment	<p data-bbox="359 235 391 280">28</p> <p data-bbox="1013 235 1484 280" style="text-align: right;">comment by: <i>Airbus Operations GmbH</i></p> <p data-bbox="359 291 1005 369">Airbus Comment on NPA Page 38/39, AMC 25.1193(e)(4) and (f), Engine cowling retention</p> <p data-bbox="359 403 1484 515">Para b., human factors, sentence: "Their verification by personnel should take into account the variability in the physical capabilities of personnel;"</p> <p data-bbox="359 548 893 616">Comment: Airbus requests to remove this requirement.</p> <p data-bbox="359 649 1484 795">Rationale for the Comment: The aircraft manufacturer cannot presume the physical capabilities of personnel, or compensate per design for it. The verification should assumed to be done by a capable person.</p>
response	<p data-bbox="359 817 526 851">Not accepted.</p> <p data-bbox="359 862 1484 1030">The sentence commented on is part of a list of considerations to be taken into account when making the selection of design features. It is not a requirement. Furthermore, the ground of the comment is not understood; for instance, maintenance procedures are basically set up to take into account the physical capabilities of personnel, so this should also apply for this topic.</p>
comment	<p data-bbox="359 1086 391 1131">29</p> <p data-bbox="1013 1086 1484 1131" style="text-align: right;">comment by: <i>Airbus Operations GmbH</i></p> <p data-bbox="359 1153 1005 1232">Airbus Comment on NPA Page 38/39, AMC 25.1193(e)(4) and (f), Engine cowling retention</p> <p data-bbox="359 1265 1484 1377">Para b., human factors, sentence: "The provision of these indications should take into account a possible lack of diligence of personnel in conducting walk-arounds and in completing their maintenance activities;"</p> <p data-bbox="359 1411 877 1478">Proposal: Airbus requests to delete this requirement.</p> <p data-bbox="359 1512 1484 1646">Rationale for the Comment: Manufacturers cannot be responsible or compensate per design for a potential lack of Airline employees diligence. Industry have to take into account that the verification is done seriously and the person performing it is qualified to do so.</p>
response	<p data-bbox="359 1668 526 1702">Not accepted.</p> <p data-bbox="359 1713 1484 1848">The sentence commented on is part of a list of considerations to be taken into account when making the selection of design features. It is not a requirement. Furthermore, the basis of the comment is not accepted; various aeroplane design features are incorporated to protect against human errors.</p>
comment	<p data-bbox="359 1904 391 1948">30</p> <p data-bbox="1013 1904 1484 1948" style="text-align: right;">comment by: <i>Airbus Operations GmbH</i></p> <p data-bbox="359 1971 1005 2038">Airbus Comment on NPA Page 38/39, AMC 25.1193(e)(4) and (f), Engine cowling retention:</p>

	<p>Para b., human factors, sentence: "A unique indication on the lower part of an engine/nacelle that has a small ground clearance may not be sufficient to draw attention to it;"</p> <p>Comment/Proposal: Airbus requests to add that a unique indication could be acceptable based on previous designs.</p> <p>Rationale for the Comment: Today, on all Airbus nacelle including the ones with small ground clearance such as on A350 or A320 NEO, only one unique indication is installed (for example: a latch locked by a key with a red flag or LAD/LAP). Airbus considers that it is sufficient justification to ensure a good reliability A strict reading as proposed by EASA could have a significant design impact if the latch have to be moved upwards, and is not inline with the Impact Assessment of chapter 4.</p>
response	<p>Not accepted. The sentence commented on is part of a list of considerations to be taken into account when making the selection of design features. It uses the wording 'may not be sufficient'. It is not a requirement. On the A320 NEO, there are two means of indication in the lower part of the nacelle (latch handles, cowl push open rods/flags), and also a cockpit indication. On the A350, which was not subject to the special condition, your statement is correct, however, a continuing airworthiness review item (CARI) has been opened to investigate the effectiveness of the Latch Access Panel (LAP) to support proper fan cowl latching indications.</p>
comment	<p>31 comment by: <i>Airbus Operations GmbH</i></p> <p>Airbus Comment on NPA Page 38/39, AMC 25.1193(e)(4) and (f), Engine cowling retention</p> <p>Para b., human factors, sentence: "A latch which is locked by a key equipped with a red flag may draw the attention of personnel, however a duplicate key without a flag could be used, and therefore the use of a flag may not be sufficient;"</p> <p>Proposal: Airbus requests to delete this requirement.</p> <p>Rationale for the Comment: The aircraft manufacturer cannot be responsible of Airline employees that purposely fraud the correct way of working and have to compensate per design for this.</p>
response	<p>Not accepted. Protecting against human factor issues is part of the design considerations in aviation.</p>
comment	<p>35 comment by: <i>GE Aviation</i></p> <p>Under section (f) (1) replace the word either with both</p>

response	<p>Not accepted.</p> <p>It is assumed that the comment refers to the proposed CS 25.1193(f)(1) sub-paragraph. The proposed change means that the cited two conditions need to happen simultaneously, which is not the intent.</p>
comment	<p>36 comment by: <i>GE Aviation</i></p> <ul style="list-style-type: none"> ○ We suggest the following comments to the regular update of CS-25, specifically item 10 (Engine cowling retention) ○ This item introduces new requirements for fan cowl retention. Service experience of fan cowl separation indicates that the majority of fan cowl separations result from the latches not being closed after under-cowl maintenance. The AMC directs the applicant to consider human factors, including “lack of diligence in conducting walk-arounds and in completing maintenance activities”. It is difficult to design a system to be completely robust to a lack of diligence, to personnel not following procedures, and to incorrect instructions for continued airworthiness. ○ It should be noted that fan cowls are correctly closed in the vast majority of occasions. The incidence of fan cowl separation is of the order of 1E-7/ flight. Conducting an in-service evaluation of a design would be unlikely to discriminate between an average and an excellent fan cowl retention system, given the low probability of event occurrence. Compliance to the new requirements would therefore be largely based on opinions of human error likelihood. Requirements based upon opinion are likely to be applied in a non-uniform and unpredictable way, which is undesirable for both applicant and regulator. ○ Also, we think the AMC takes the wrong approach in that it focuses on examples of what not to do with respect to cowl retention design features, functions and maintenance practices. This makes the advisory material’s value somewhat limited in that it can only anticipate specific retention system designs and operational aspects and not necessarily provide sufficient or applicable guidance for a system not currently known or envisioned. We would suggest something more in line with the approach taken by the FAA’s ETOPS Design Quality requirement and advisory, i.e. <ul style="list-style-type: none"> ▪ Pick representative legacy fleet(s) experience and show how events (at minimum events related to ADs & FMDs) and root cause(s) related to cowl retention are addressed/mitigated in the design to be certified; avenues available to address or mitigate legacy events being: design features; component function(s), system redundancy(s), fault enunciation and/or mandatory maintenance/inspections. ▪ Like ETOPS, the legacy fleet would have to be accepted by the agency as relevant to the proposed aircraft’s design, mission, operator base, etc. and have sufficient time (fleet size, operator base, fleet cycles/hours). ▪ Any/all new, unproven mitigation aspects require adequate testing and/or analysis (including a FMEA/fault tree) to substantiate/demonstrate effectiveness. ▪ Comprehensive FMEA/fault tree analysis (done in conjunction with CS-25 system safety analyses) of the proposed cowl retention system.
response	<p>Not accepted.</p>

EASA considers that there is enough experience gathered from in-service occurrences which shows that some designs did not have sufficient features to protect against the risk of a fan cowl separation. The approach used is performance-based and does not prescribe design features. The AMC acknowledges the elements gathered from the review of the reported occurrences and, therefore, makes various recommendations to be considered by the applicant when selecting design features. It is true that the evaluation of human factors always entails some judgment, however, this is not a reason to ignore this contribution to the safety risk.

comment

37

comment by: Airbus Operations GmbH

**Airbus Comment on NPA Page 38/39,
AMC 25.1193(e)(4) and (f), Engine cowling retention**

General Comment on Para b., human factors:

When conducting maintenance activities on an aircraft any qualified personnel shall work in accordance with Part 145/M rules

In Particular AMC M.A.607 Certifying staff stipulates *“All prospective certifying staff are required to be assessed for competence, qualification and capability related to intended certifying duties.”*

Airbus consider that the verification by personnel shall be accessible and manageable by professional, skilled and physically capable maintenance staff.

Basic and usual human capability that includes bending and kneeling shall be ensured by personnel selection in an authorized Part 145 organization

With regard to “diligence” M.A.201 Responsibilities stipulates that *“(a) The owner is responsible for the continuing airworthiness of an aircraft and shall ensure that no flight takes place unless:.... the maintenance of aircraft is performed in accordance with the maintenance programme as specified in point M.A.302.”*

Airbus produces ICA that includes maintenance task to be conducted to ensure airworthy flights. All this tasks are understood to be done by diligent personnel whose diligence is ensured by personnel selection in an authorized Part 145 organisation.

Proposal:

In this frame Airbus proposes to delete the three first bullets of the Human Factor paragraph, or to be replaced by “Their verification by personnel should not necessitate unusual physical effort”

Rationale for the Comment:

Emphasizing responsibilities of aircraft owners and Part M/145 organisations responsibilities.

response

Not accepted.

In a perfect world, we could indeed rely exclusively on personnel selection, skills and expected behaviour. The reality is that human errors happen and that this factor must be considered in relation to the associated safety effect. This principle applies not only to



maintenance staff, but also to other categories, in particular flight crews.

Please note that the personnel involved in the detection of the means of indication for unlatched or unclosed fan cowls also includes flight crews, in the frame of pre-flight inspections. As a reminder, a pre-flight inspection is not considered to be a maintenance activity under Part-M (Annex to Regulation (EU) No 1321/2014), point M.A.201(d): this inspection must be carried out by the pilot or another qualified person, but it does not need to be carried out by an approved maintenance organisation or by Part-66 certifying staff.

