European Aviation Safety Agency

Comment Response Document (CRD)
on Consultation paper nr. 11 of 4 August 2003

CS-25
Certification Specifications on Large Aeroplanes

Foreword to the Comment Response document (CRD)

To give a rapid overview of the CRD, the following keywords were used in responding to comments:

- "Carried": The proposed amendment is wholly transferred to the revised text.

- "Noted": The comment is acknowledged and where needed the text has been improved.

- "Deferred": The comment requires further assessment by the Agency under its future rulemaking programme.

- "Disagreed": The comment is not shared by the Agency.

CRD - Explanatory Note CS - 25

General Comments

Para. *Structure and format*

57 / CAA UK

Comment

The question of Structure and Format of CSs :

- Book 1 should be called Airworthiness Code. Book 2 should be called AMC and GM. Collectively the 2 books should be called Certification Specification. This is compatible with Reg 1592 Article 14 para 2 (a) and (b) and meets a general expectation that what was called JAR 25 becomes CS 25.

- It should be noted that in the proposed CS-25 Book 2 Acceptable Means of Compliance – AMC, Para 1.1 and Para 2.3 – it appears that the AMC contained in Book 2 can cover both AMC that are "Acceptable Means of Compliance" or " Interpretative Material", also by reference to the individual draft AMC texts it is noted that the AMC can sometimes cover both i.e. "Acceptable Means of Compliance and Interpretative Material". Thus it is suggested that Para 1.1 would be better written as "This Book 2 contains Acceptable Means of Compliance including Interpretative Material".

It is also noted that at times the material is called "Interpretative Material" and at others it is called "Guidance Material" – a consistent term should be adopted throughout the CS.

Response

- Noted. Art. 13 of the Basic Regulation states that the Agency shall, where appropriate, issue "certifications specifications, including airworthiness codes and acceptable means of compliance, …". The overall document is called Certification Specifications containing Book 1 which represents the airworthiness code and Book 2 with the associated acceptable means of compliance and guidance material.

- Deferred. Reference to "Interpretative Material" is maintained to facilitate transition but will be subject to further Agency review as there is a clear link with "Guidance Material' under the new EASA terminology. Need for consistency is acknowledged.

I.General

Para.

16 / AECMA

Comment

With respect to the question raised in the third block of paragraph 5 in the explanatory memorandum, we suggest that only Book 1 be called "airworthiness code", and that Book 2 be called "Acceptable Means of Compliance and Guidance Material)".

Like FAR part 25 and JAR-25 Section 1, CS 25 Book 1 is by itself the set of "Appropriate airworthiness requirements" for large aeroplanes, as defined in ICAO Annex 8 Part I: "The comprehensive and detailed airworthiness codes established, adopted or accepted by a Contracting State for the class of aircraft, engine or propeller under consideration".

CS 25 Book 1 is the means by which the EU Member States will comply with ICAO Annex 8.

Like JAR-25 Sections 2 and 3, and like FAA advisory circulars, CS 25 Book 2 is a collection of acceptable means of compliance (not the only ones) and guidance material, which are related to, but not part of, the "appropriate airworthiness requirements" (the airworthiness code).

Response

Noted. Art. 13 of the Basic Regulation states that the Agency shall, where appropriate, issue "certifications specifications, including airworthiness codes and acceptable means of compliance, …". The overall document is called Certification Specifications containing Book 1 which represents the airworthiness code and Book 2 with the associated acceptable means of compliance and guidance material.

I.General

Para. *6*

16 / AECMA

Comment

Our review of CS 25 confirms that, as stated in the explanatory memorandum, further work needs to be done by the Agency to complete the conversion of units into S.I. units, which would require the involvement of experts in this field.

We support retention of the old imperial unit between brackets for ease of reference.

It may be understandable that the required accuracy of the conversion depends on the peculiar use of the unit, but this has to be carefully checked case by case.
Consistency of units and values with those used in ICAO Annexes 5, 6 and 8 should be checked. Example: although 5670 kg is a more accurate conversion of 12500 lb, the ICAO borderline between small and large aeroplanes is 5700 kg.
Wherever compliance is determined by a number, the consequences of a rounded conversion into SI units must be carefully checked. Example: for the purpose of 25.107, 111 and 113 (takeoff speeds, path and distance), it is certainly not acceptable to convert 35 ft to 11 m instead of 10.668 m. It may mean a penalty of several tens of meters for the takeoff distance. In fact 10.7 m is probably an acceptable conversion, used in Attachment C to ICAO Annex 6 Part 1.
The accuracy of the conversion must be consistent with the accuracy and resolution of the measurement that can be done. Example: for the purpose of 25.807(d)(7) (distance between exits), rounding of 60 ft (18.288 m) to 18.3 m is questionable.

"If a unit conversion is not accurate enough, a side effect may be disharmonisation with FAA. See for instance the conversions in CS 25.815: an aisle width of 30.2 cm would be compliant with CS 25 (30 cm), but not with FAR 25 (12 inches = 30.48 cm)."

Where a formula involves several parameters, inaccurate conversions may have undesirable cumulative effects.

Response

Interface.
Deferred. This will be subject to Agency review.

General Comments

Para.

16 / AECMA

Comment

Paragraphs, which have no equivalent in the FAR 25, were marked with an X in front of the number instead of the dot (example: JAR 25X899). This indication should be kept in the Certification Specification for easy recognition of the differences between CS and FAR §§.

Text passages within paragraphs, which differ from FAR 25 to JAR 25, were marked by underlining. This indication should be kept in the Certification Specification for easy recognition of the differences between CS and FAR §§.

Response

Disagreed. CS are regulatory material issued by the Agency and require a certain degree of quality and formality in the drafting. The suggested underlining and markings do not fit with this approach. A more user-friendly text may be published by external publishers.

Historically, underlinings and markings were used to reflect the level of harmonisation, including differences, with FAR 25. At present, this is not needed anymore.

57 / CAA UK

Comment

PROPOSED TEXT/COMMENT:

1.Use of SI units
2.
3.Strict observance of the SI system of units is not compatible with current western world practice for some units in which data are scheduled in Flight Manuals and displayed on the corresponding flight deck instrumentation. Commonly:
4.
5.Airspeedknots
6.Wind speedknots
7.Distance (long)nautical miles
8.Altitudefeet
9.Elevationfeet
10.Heightfeet
11.Vertical speedft/min

are used and recognised in ICAO Annex 5 as acceptable non-SI alternative units. No dates have been agreed for the termination of their use.
12.
13.The use of these non-SI units is very widespread throughout Europe and much of the rest of the world. This practice is recognised in the proposed AMC to 25.1581 paragraph 4.e. which requires that the AFM should be given in SI units except for units of measurement related to airspeed, altitude, vertical speed and navigational distance. Since it is also required that the AFM units and flight deck instrumentation be consistent, it is illogical (and potentially unsafe) for these parameters to be expressed in other units in the flight tests of Section B. From the preceding paragraph it can be seen that compliance with ICAO Annex 5 can still be achieved by use of these acceptable non-SI units.
14.
15.General Comment on Unit Conversions

As the conversion of JAR 25 to CS 25 has involved significant elements of rounding of converted figures a degree of disharmony with FAR 25 has been introduced, the result of this is that manufacturers will need to envelope both CS 25 and FAR 25 values to satisfy both sets of requirements. Although this does not usually introduce a significant design penalty, where the figure relates to a value that may be squared to generate a loading (such as airspeed) or raised to some other power, the change can become significant from a design perspective and call into question the wisdom of the exercise of conversion.

In addition to the previous comment it is also observed that some paragraphs have not been converted at all, generally where different values within the paragraph interact and the dimensions at each step are unclear. If the intention is really to introduce SI units throughout these paragraphs will require some attention.

In addition to the previous comment it is also observed that some AMC paragraphs have not been converted at all, in the case of Book 2 this often has occurred where there are figures or tabulated data. If the intention is really to introduce correct SI units throughout the CS-25 Book 2, then these AMC paragraphs will require some further attention. Note that the SI base units are as follows :- meter (m), kilogram (kg), second (s), ampere (A), Kelvin (K), candela (cd) and mole (mol). In addition the supplementary SI units are radian (rad), and steradian (sr) , and a large list of derived SI units exists, that is based on multiple and quotient functions of the basic and supplementary SI units, (ref. Tables of Physical and Chemical Constants by G W C Kaye and T H Laby 14th Edition published by Longman - Section 1.1.1 refers).

Specific instances of incorrect or missing unit conversions are given in the following comment sheet.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;

c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

65 / CAA, Sweden

Comment

With reference to the Consultation Papers concerning the certification specifications mentioned above (CS 25 and CS VLA), we would like to make the following comments.

Since the proposed certification specifications contain regulatory material which, essentially, is presented as being identical to the content of the corresponding JARs, we are in favour of the proposed material.

However, should the proposals not have the same content as those JARs, there must be a possibility to rediscuss such items.

Response

Noted.

67 / AIA / GAMA

Comment

Editorials: SEE HARD COPY page 2 (Table)

Response

Carried.

67 / AIA / GAMA

Comment

We suggest revising the titles of CS 25 Books 1 and 2 (and all other CS "Books 1 and 2") to specify what they contain. For example, Book 1 could be titled "Airworthiness Regulations" and Book 2 could be titled "Advisory Material." Such changes would enable any applicant or other user to identify quickly and more easily where to locate needed information.

Response

(This comment was received after 16/9)
Noted. Art. 13 of the Basic Regulation states that the Agency shall, where appropriate, issue "certifications specifications, including airworthiness codes and acceptable means of compliance, …". The overall document is called Certification Specifications containing Book 1 which represents the airworthiness code and Book 2 with the associated acceptable means of compliance and guidance material.

67 / AIA / GAMA

Comment

We suggest that the format of CS 25 (as well as CS-E, CS-APU, and CS-AWO) be revised to highlight those regulations that are different from the JAR equivalent. If the JARs stay in effect after EASA commences operation, it would be useful for applicants to know where differences exist between the two sets of regulations should they need to certificate a product under both sets.

Response

(This comment was received after 16/9)

Disagreed. CS are regulatory material issued by the Agency and require a certain degree of quality and formality in the drafting. A more user-friendly text may be published by external publishers.

General Comments

Para. ***Throughout CS-25 Book 1 and Book 2***

67 / AIA / GAMA

Comment

Use of SI (metric) units: Strict observance of the SI system of units is not compatible with current Western world practice for some units in which data are scheduled in Airplane Flight Manuals and displayed on the corresponding flight deck instrumentation. Commonly, the following units:

Airspeedknots
Wind speedknots
Distance (long)nautical miles
Altitudefeet
Elevationfeet
Heightfeet
Vertical speedft/min

are used and recognized in ICAO Annex 5 as acceptable non-SI alternative units. No dates have been agreed for the termination of their use.

The use of non-SI units is very widespread throughout Europe and much of the rest of the world. This practice is recognized in the proposed AMC to 25.1581, paragraph 4.e., which requires that the AFM should be given in SI units except for units of measurement related to airspeed, altitude, vertical speed and navigational distance. Since it is also required that the AFM units and flight deck instrumentation be consistent, it is illogical (and potentially unsafe) for these parameters to be expressed in other units in the flight tests of Section B. From the preceding paragraph, it can be seen that compliance with ICAO Annex 5 can still be achieved by use of these acceptable non-SI units.

The use of metric speeds does not add any value and utility to the regulations.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the “primary units” (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the “equivalent tolerance” principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with “old” units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula’s and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B1- SUB B-CS.25.107

Para. ***(c)(3)***

57 / CAA UK

Comment

CS 25.107(c)(3) cross-reference should be to CS 25.143(g)

Response

Carried.

B1- SUB C-CS.25.335

Para.

57 / CAA UK

Comment

CS 25.335 Design Airspeeds : It appears that no attempt has been made to change the units within this paragraph. Although this is complex due to the interrelated nature of the formulae within the paragraph, consistency requires that the units are converted.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B1- SUB C-CS.25.341

Para.

57 / CAA UK

Comment

CS 25.341 Gust and turbulence loads: Sub para (a)(4), the use of converted dimensions is inconsistent. Gust gradient lengths are approximately converted into metres however the equation for gust velocity still contains the imperial figure " 350" for reference gust length. This should be changed to 107 for consistency. It should also be noted that the approximate conversions of the gust length range, from 30-350 feet to 9-107metres, introduces an element of disharmony with FAR 25. Notwithstanding the preamble statement of the General Explantory Memorandum (11/2003-08-04) regarding the conversion of units of measurement, if exact conversions are used then the approach taken in CS 25.341(a)(6), of providing in brackets the original imperial equation adjacent to the converted equation could be applied.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
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With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B1- SUB C-CS.25.345

Para. ***(b)(2)***

57 / CAA UK

Comment

CS 25.345 (b)(2) High lift devices: Replace 7,62m/sec with 7.62m/sec (decimal point rather than a comma).

Response

Carried.

B1- SUB C-CS.25.365

Para.

57 / CAA UK

Comment

CS 25.365 Pressurised Compartment loads: Sub para (e)(2), imperial dimensions within the formula and associated coefficient definitions for maximum hole size are unconverted. To gain the hole size in square metres As should be specified in square metres and the value 6240 in the expression for P should be replaced with 597.715.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B1- SUB C-CS.25.397

Para.

57 / CAA UK

Comment

CS 25.397 Control System Loads, Sub para (c) Limit pilot forces and torques : Torque values for aileron controls are incorrectly converted. If wheel diameter is specified in metres 80 D inlb converts to 14016 D Nm and 40 D inlb converts to 7008 D Nm.

Note: This comment is withdrawn on 01-10-2003 (see file No. 84)

Response

Noted.
(after withdrawal)

B1- SUB C-CS.25.481

Para. ***subpara (a)(2)***

57 / CAA UK

Comment

CS 25.481 Tail down landing conditions : sub para (a)(2), replace 22,8 with 22.8 (decimal point replaces comma).

Response

Carried.

B1- SUB C-CS.25.509

Para.

57 / CAA UK

Comment

CS 25.509 Towing loads : Units are still imperial in sub para (a)(3) Replace 30000 lb with 133494 N, replace 450000 in the equation with 2002004, replace 100000 lb with 444979 N.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B1- SUB D-CS.25.631

Para.

57 / CAA UK

Comment

CS 25.631 Bird strike damage : The altitude of 8000 feet is converted to 2438 m. While this conversion is acceptable aviation altitudes are conventionally defined in feet, not metres. Although not of technical concern this conversion may be inappropriate.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B1- SUB D-CS.25.689

Para.

57 / CAA UK

Comment

CS 25.689 Cable systems : The minimum allowable diameter for a control cable is given as 3.2mm. Although this conversion (from 0.125 inches) is technically acceptable, this is not an SI unit, SI units being defines as metres, kilograms, seconds. The strict SI figure would therefore be 0.0032 m.

Response

Disagreed. "mm" is an accepted derived unit from the SI.

B1- SUB D-CS.25.723

Para.

57 / CAA UK

Comment

CS 25.723 Shock absorption tests : Sub para (b) converts 12 feet/sec sink rate to 3.7 m/sec. As this figure relates to an energy the error between these two figures will be subject to squaring of the ratio, ie, 1-(3.6576/3.7)^2. This results in an additional conservatism for the converted value of 2.3%. This difference (and CS 25/FAR 25 disharmony) is significant and is unlikely to be acceptable to industry.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
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With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the “primary units” (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the “equivalent tolerance” principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with “old” units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula’s and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B1- SUB D-CS.25.775

Para.

57 / CAA UK

Comment

CS 25.775 Windshields and windows: Sub-para (d) converts an altitude in feet to metres. As for CS 25.631, aviation altitudes are conventionally expressed in feet.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
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With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B1- SUB D-CS.25.863

Para.

67 / AIA / GAMA

Comment

There is no CS equivalent to FAR/JAR 25.863, Flammable Fluid Fire Protection. We question whether this was an unintentional omission.

Response

Disagreed. CS 25.863 is part of the CS-25.

B1- SUB E-CS.25.901

Para. ***(c)***

8 / FAA USA

Comment

There were no noted differences between 25.901(c) in CS-25 and 25.901(c) in the JAR, Change 15/16. So, the changes proposed in NPA 25E-337 have not been incorporated.
The FAA proposes that the CS-25 should reflect the changes to 25.901(c) as proposed in NPA 25E-337.

Response

Deferred. The NPA is deemed immature. The result of this NPA will be submitted to the Agency for further consideration.

B1- SUB E-CS.25.904

Para.

8 / FAA USA

Comment

The text in CS-25 904 reflects the changes proposed in NPA 25E,F-315, but not the ARAC recommendations agreed upon on 8/7/2002.

The FAA proposes that CS-25 904 be modified to reflect the agreed upon ARAC recommendations. This would read: Each applicant seeking approval for an airplane equipped with an engine control system that automatically increases the power or thrust on the operating engine(s) either when an engine fails during a takeoff or during a go-around when an engine becomes inoperative either before or after the go-around is initiated must comply with the additional requirements of Appendix I of this part.

Response

Deferred. Further consideration may be made by the Agency.

B1- SUB E-CS.25.905

Para. ***(a)***

8 / FAA USA

Comment

There does not appear to be any NPA's supporting the change from the JAR, which stated "(a) Each Propeller must have a type certificate or" to the CS-25 text "Reserved".
The FAA requests that paragraph (a) be changed back to its JAR Change 15 wording, unless there is an NPA associated with the change.

Response

Disagreed. Under Regulation 1592/2002, art. 5(2)(a), products shall have a type-certificate (see also Subpart B of Part 21).

B1- SUB E-CS.25.933

Para. ***(a)(1)***

8 / FAA USA

Comment

The changes incorporated into CS25 25.933(a)(1) reflect the changes proposed in NPA 25E, F-315, but not those recommended by ARAC agreed to by both the FAA and JAA and reflected in the changes proposed by NPA 25E-338.

The FAA requests that the changes as proposed by NPA 25E-338 also be included in 25.933 to incorporate the harmonized ARAC recommendations.

Response

Deferred. The NPA is deemed immature. The result of this NPA will be submitted to the Agency for further consideration.

B1- SUB E-CS.25.954

Para.

5 / FAA USA

Comment

The CS 25 text for 25.954 does not reflect the changes proposed by NPA 25E,F-315.

The FAA requests that the changes as proposed by NPA 25E,F-315 be included in the CS 25 text for 25.954.

Response

Disagreed. Changes proposed by the NPA are already reflected in the original text.

B1- SUB E-CS.25.1143

Para.

8 / FAA USA

Comment

The change from the JAR text "Fluid is adequately controlled" to CS 25 text "Fluid must be adequately controlled" does not appear to be related to an NPA.

Response

Disagreed. The original text was a procedural provision (see "Part 21"):

"The applicant must show…"

A CS cannot contain such provision and was revised accordingly.

B1- SUB F-CS.25.1309

Para.

8 / FAA USA

Comment

To be consistent with the JAA-agreed ARAC recommendations, CS 25.1309(b) should be changed from:

(b) The aeroplane systems and associated components, considered separately and in relation to other systems, must be designed so that
(1) Any catastrophic failure condition
(i) is extremely improbable
(ii) does not result from a single failure; and
(2) Any hazardous failure condition is extremely remote; and
(3) Any major failure condition is remote.

To:

(b) The aeroplane systems and associated components, considered separately and in relation to other systems, must be designed and installed so that –
(1) Each catastrophic failure condition
(i) is extremely improbable
(ii) does not result from a single failure; and
(2) Each hazardous failure condition is extremely remote; and
(3) Each major failure condition is remote.

Response

Disagreed. The current text is consistent with JAR-25. Possible amendments may follow after FAA text has been published.

8 / FAA USA

Comment

During ARAC deliberations, the reference to 671(c)(1) was deleted from the recommendation. However, the JAA position was to include this reference in the proposed JAR 25.1309. The FAA does not plan to include a reference to 25.671(c)(1) in the proposed FAR 25.1309. This difference was recognized as a non-harmonized item. Thus, this will be a significant regulatory difference.

Response

Noted.

8 / FAA USA

Comment

To be consistent with the ARAC recommendations, in the introductory paragraph, the word "Certain" should be deleted from sentence four. The revised text should be:
"Single failures covered by CS 25.735(b) are excepted"

Response

Disagreed. Current text is consistent with JAR-25.

8 / FAA USA

Comment

To be consistent with the JAA-agreed ARAC recommendations, CS 25.1309(a)(2) should be changed from:
"Other equipment and systems are not a source of danger in themselves and do not adversely affect the proper functioning of those covered by sub-paragraph (a)(1) of this paragraph".
To:
"Other equipment and systems do not adversely affect the safety of the airplane or its occupants, or the proper functioning of those covered by sub-paragraph (a)(1) of this paragraph."

Response

Disagreed. The current text is consistent with JAR-25. Possible amendments may follow after FAA text has been published.

B1- SUB F-CS.25.1323

Para. ***(e)***

57 / CAA UK

Comment

CS 25.1323(e) Editorial error in introducing NPA 25F-324. Cross-reference should be to CS 25.1323(e)

Response

Carried.

B1- SUB F-CS.25.1323

Para. ***(i)***

57 / CAA UK

Comment

CS 25.1323(i) - cross-reference should be to CS 25.1323(i) and 25.1325(b)

Response

Carried.

B1- SUB F-CS.25.1337

Para. ***(f)***

8 / FAA USA

Comment

The change from the JAR text "Not required for JAR-25" to no related text in CS 25 does not appear to match the NPA 25E,F-315 proposed change.

The FAA requests the JAA verify that this change is correct in light of the NPA.

Response

Noted. The necessary verification has been made. CS are regulatory material issued by the Agency and require a certain degree of quality and formality in the drafting. The suggested reference does not fit with this approach.

B1- SUB F-CS.25.1441

Para. ***(c)***

8 / FAA USA

Comment

The ACJ 25.1441(c) states that it is not possible to determine directly the quantity available of chemically generated oxygen systems. So it is unclear the what the means of compliance would be for chemically generated oxygen.

The FAA recommends returning to the JAR Change 15 language for 25.1441(c) to exempt chemically generated oxygen from the requirement.

Response

Noted. CS consistent with the FAR text.

8 / FAA USA

Comment

The ACJ 25.1441(c) states that it is not possible to determine directly the quantity available of chemically generated oxygen systems. So it is unclear the what the means of compliance would be for chemically generated oxygen.

The FAA recommends returning to the JAR Change 15 language for 25.1441(c) to exempt chemically generated oxygen from the requirement.

Response

Noted. CS consistent with the FAR text.

B1- SUB G-CS.25.1513

Para.

57 / CAA UK

Comment

CS 25.1513 - add "CS" before 25.149

Response

Carried.

B1- SUB G-CS.25.1529

Para.

8 / FAA USA

Comment

The text has changed from JAR Change 15 to CS 25. However, there does not appear to be an NPA associated with this change, which disharmonizes FAR 25 and CS 25.

The FAA recommends reinstating the JAR Change 15 text.

Response

Disagreed. The original text was a procedural provision. A CS cannot contain such provision and was revised accordingly. The provisions relating to continued airworthiness instructions are to be found in Part 21.

67 / AIA / GAMA

B1- SUB G-CS.25.1529

Para.

Comment

CS 25.1529, "Instructions for Continued Airworthiness" (ICA) does not contain language found currently in the parallel JAR 25.1529 that allows completion of the ICA after type certification. Specifically, JAR 25.1529 includes the statement:

"The instructions may be incomplete at type certification if a programme exists to ensure their completion prior to delivery of the first aeroplane or issuance of a certificate of airworthiness, whichever occurs later."

Without similar language included, CS 25.1529 would require that all maintenance planning data be approved by EASA at TC. This may create a financial and schedule burden to manufacturers and operators.
We request that the language indicated above (from JAR 25.1529) be included in CS 25.1529.

Response

After time-period.

Disagreed. The original text was a procedural provision. A CS cannot contain such provision and was revised accordingly. The provisions relating to continued airworthiness instructions are to be found in Part 21.

B1-App. F-Part II

Para.

2 / ADSE consultancy & engineering services

Comment

Change of the header of Part I of Appendix F into:

Appendix F Part I - Test Criteria and Procedures for Showing Compliance with CS 25.853, 25.855 or 25.869

Re-introduction of 25.869 as flammability requirement for insulation on electrical wiring in the header of Appendix F Part I, due to the fact that only in this part of CS-25 the criteria and test procedure for this particular requirement are laid down. In the paragraph CS 25.869 under (a)(4) only the re-direction to the applicable portions of Part I, Appendix F is given.

Previously, before JAR25 Change 13 OP93/1 (equiv. to FAR25 Amdt. 25-72) this requirement was mentioned as 25.1359 in the header. At that time 25.1359 was deleted and replaced by 25.869, but did not return as such in the header of Appendix F Part I.

Response

Carried.

B1-App. H-H25.1

Para. ***(c)***

8 / FAA USA

Comment

There are a few changes to Appendix H which do not appear to be the result of an NPA. Most notably, paragraph H25.1(c) is deleted. The other changes are grammatical in nature.

The FAA recommends reinstating the JAR Change 15 text for H25.1(c). At the very least, if it is not reinstated, the reason for the deletion should be explained.

Response

Disagreed. The procedural provisions of this paragraph may be found in Part 21.

General Comments

Para.

57 / CAA UK

Comment

Throughout the AMC the terms "Agency" and "EASA" appear (typically in AMC 25.1581 Paragraph 6 d (18) and (20). Is it intended to use both terms?

Response

Noted. "Agency" is used by default in accordance with the Basic Regulation.

57 / CAA UK

Comment

The format of the Book 2 draft will need to be re-examined at the final draft stage once the positioning of page breaks, figures, tables etc., are finalised in order to address the following issues:

-A number of pages contain significant areas of blank paper without the "INTENTIONALLY LEFT BLANK" annotation, examples include pages 2-C-2, 2-C-4, 2-C-6, 2-C-29, 2-D-42, 2-D-48, 2-E-1 etc.,

-A number of AMC paragraphs identifiers and headers are separated from the following text by page breaks and some footnotes do not appear at the base of the page, examples include pages 2-C-4, 2-D-2, 2-D-13, 2-D-21, 2-D-31, 2-D-43, 2-E-5, etc.,

-Date formats on referenced reports and particularly for referenced FAA literature need to be made consistent. Considerable confusion has occurred in the past due to the mm/dd/yy formats being interpreted as dd/mm/yy and vice versa. It is suggested that a consistent approach be used so that for example the AMC 25.607 text would have "date 12-8-70" written as "date 8 December 1970", (similarly for AMC 25.701(d) where the text states "dated 5-4-88" and should thus read "dated 4 May 1988").

-Page header and footer information is missing off what should be Pages 2-C-13 through 2-C-20 inclusive.

Response

Deferred. The Agency will have to define its writing convention in due time.

57 / CAA UK

Comment

PROPOSED TEXT/COMMENT:

1.Use of SI units
2.
3.Strict observance of the SI system of units is not compatible with current western world practice for some units in which data are scheduled in Flight Manuals and displayed on the corresponding flight deck instrumentation. Commonly:
4.
5.Airspeedknots
6.Wind speedknots
7.Distance (long)nautical miles
8.Altitudefeet
9.Elevationfeet
10.Heightfeet
11.Vertical speedft/min

are used and recognised in ICAO Annex 5 as acceptable non-SI alternative units. No dates have been agreed for the termination of their use.
12.
13.The use of these non-SI units is very widespread throughout Europe and much of the rest of the world. This practice is recognised in the proposed AMC to 25.1581 paragraph 4.e. which requires that the AFM should be given in SI units except for units of measurement related to airspeed, altitude, vertical speed and navigational distance. Since it is also required that the AFM units and flight deck instrumentation be consistent, it is illogical (and potentially unsafe) for these parameters to be expressed in other units in the flight tests of Section B. From the preceding paragraph it can be seen that compliance with ICAO Annex 5 can still be achieved by use of these acceptable non-SI units.
14.
15.General Comment on Unit Conversions

As the conversion of JAR 25 to CS 25 has involved significant elements of rounding of converted figures a degree of disharmony with FAR 25 has been introduced, the result of this is that manufacturers will need to envelope both CS 25 and FAR 25 values to satisfy both sets of requirements. Although this does not usually introduce a significant design penalty, where the figure relates to a value that may be squared to generate a loading (such as airspeed) or raised to some other power, the change can become significant from a design perspective and call into question the wisdom of the exercise of conversion.

In addition to the previous comment it is also observed that some paragraphs have not been converted at all, generally where different values within the paragraph interact and the dimensions at each step are unclear. If the intention is really to introduce SI units throughout these paragraphs will require some attention.

In addition to the previous comment it is also observed that some AMC paragraphs have not been converted at all, in the

General Comments

Para.

case of Book 2 this often has occurred where there are figures or tabulated data. If the intention is really to introduce correct SI units throughout the CS-25 Book 2, then these AMC paragraphs will require some further attention. Note that the SI base units are as follows :- meter (m), kilogram (kg), second (s), ampere (A), Kelvin (K), candela (cd) and mole (mol). In addition the supplementary SI units are radian (rad), and steradian (sr) , and a large list of derived SI units exists, that is based on multiple and quotient functions of the basic and supplementary SI units, (ref. Tables of Physical and Chemical Constants by G W C Kaye and T H Laby 14th Edition published by Longman - Section 1.1.1 refers).

Specific instances of incorrect or missing unit conversions are given in the following comment sheet.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the “primary units” (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the “equivalent tolerance” principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with “old” units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula’s and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

67 / AIA / GAMA

Comment

Editorials: SEE HARD COPY page 3 (Table)

Response

Carried.

B2-AMC 25.177(c)

Para.

57 / CAA UK

Comment

AMC to CS 25.177(c) - add "of" between "one-half" and "the" in para 3

Response

Carried.

B2-AMC 25.253(a)(4)

Para.

57 / CAA UK

Comment

AMC to CS 25.253(a)(4) - subscript "MO" in VMO/MMO

Response

Carried.

B2-AMC 25.335(b)(2)

Para. ***a(1)***

57 / CAA UK

Comment

AMC 25.335(b)(2) : Para 4.a.(1) – The approximate conversion of units to m/s from fps has resulted in a loss of accuracy and a small reduction in the gust velocity values currently quoted in the SI units contained in this AMC. This also has the effect of introducing an element of disharmony with FAR 25. In order to maintain the required engineering accuracy, and in order to retain harmonisation with FAR 25 the values of 15.2 m/s should be replaced by 15.24 m/s and those of 7.6 m/s should be replaced by 7.62 m/s respectively, (the suggested replacement SI values are as per those originally contained in the JAR 25 Amendment 16 ACJ 25.335(b)(2) text and as harmonised with FAR 25).

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B2-AMC 25.341(b)

Para. ***Para 2.2.3 a, i & ii***

57 / CAA UK

Comment

AMC 25.341(b) : Para 2.2.3 a. i.and ii. : the Us values quoted of 25.9 m/s, 9.1 m/s and 22.9 m/s and 9.1 m/s should be replaced by 25.91 m/s, 9.14 m/s, 22.86 m/s and 9.14 m/s respectively. Justification - see remarks above on AMC 25.335(b)(2) Para 4.a.(1) retain accuracy of current JAR 25 Amendment 16 ACJ text and maintain harmonization with FAR 25.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B2-AMC 25.341(b)

Para. ***Para 2.4.1***

57 / CAA UK

Comment

, for Para 2.4.1 which refers to Para 2.2.3 a. - the Us values quoted of 25.9 m/s, 18.3 m/s and 7.6 m/s should be replaced by 25.91 m/s, 18.29 m/s and 7.62 m/s respectively – retain accuracy of current JAR 25 Amendment 16 ACJ text and maintain harmonization with FAR 25.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B2-AMC 25.415

Para. ***Para 3.a.***

57 / CAA UK

Comment

AMC 25.415 : Para 3.a. - A more precise conversion of 88 fps to km/h would yield 96.6 km/h rather than 96 km/h, however should correct SI units be used then a value of 26.82 m/s should be quoted. Note that this wind speed will be used to calculate dynamic pressure based loads which are a function of velocity squared, percentage inaccuracies in the wind speed will be effectively be factored by 2 for the derived dynamic pressure loads. Note that the design wind speed was originally set at 88 fps and the suggested values above have been converted from this basic value. Para 3. b. and d. – similarly 120 km/h (more precisely 120.5 km/h when converted from 65 knots) should be 33.46 m/s when quoted in correct SI units.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B2-AMC 25.491

Para. ***Para 4.e***

57 / CAA UK

Comment

AMC 25.491 Para 4. e. – 37 km/h should be 10.30 m/s when quoted in correct SI units, based on a conversion from 20 knots.

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B2-AMC 25.603(b)

Para. ***(b)***

57 / CAA UK

Comment

Acceptable Means of Compliance vs. Interpretative Material

AMC 25.603(b)

There is no indication next to the subject header as to whether this is "Interpretative Material" or "Acceptable Means of Compliance" etc., - as the AMC text proposes an example list of acceptable specifications then this would appear to be " Acceptable Means of Compliance" .

Response

Noted. Reference to the specific status of an AMC (e.g., Interpretative Material) will be deleted.

B2-AMC 25.723

Para. ***Para 4.a.(2)***

57 / CAA UK

Comment

AMC 25.723 Para 4. a. (2) - The value of drop height quoted should be revised to maintain the accuracy and retain harmonization with FAR 25 text i.e. the 170 mm should be revised to 170.2 mm,

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
b.The conversions made, are not accurate enough;
c.Not all units are converted;
d.correcting of mistakes.

With regard to these comments the following remarks can be made:
a.The comment is agreed in principle, however it should be noted that ICAO Annex 5 allows the use of these non-SI alternatives, but lists the SI units as the "primary units" (see table 3-4 of Annex 5). Therefore the conversion to SI units in these cases is still valid, bearing in mind that the non-SI alternative units, quoted between brackets, may continue to be used.
b.As explained under 2. above the units were converted using the "equivalent tolerance" principle, which is believed to be the right approach in general. It is however noted that some of the figures in the airworthiness codes serve only as an input to calculations and do not reflect an actual requirement to be met (e.g. CS 25.415(a)). In such case the figure has to be treated as a figure with no tolerance, and the conversion should be as accurate as possible.
From some of the comments it is also clear that people have used the figures with "old" units with a tolerance that was not reflected in the figure. There may have been a good reason to do so, but it may also have been for no good reason. It will be necessary to review all the figures to check if the tolerance as implied by the figure is sufficient for the purpose of the requirement.
c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

Para. ***Para 5.a***

57 / CAA UK

Comment

Para 5 a. - similarly the 69 cm should be revised to 685.8 mm, (also note the suggested unit change from cm to mm in order to maintain consistency with the units quoted in the referenced paragraph 4 of the AMC).

Response

Noted.
No comments were received objecting to the general idea of converting the units.
The comments received on this issue can be split up in four categories:
a.The non-SI alternative units knot, nautical mile and foot, allowed by ICAO Annex 5, should not be converted in SI units;
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c.It is acknowledged that due to lack of time and resources it was not possible to convert the units in certain formula's and in graphics. This is a task which needs to be taken up by the Agency.
d.The necessary corrections are made.

B2-AMC 25.795

Para.

57 / CAA UK

Comment

AMC 25.795

Based on the Book 1 entry the title would appear to be "Security Considerations" not as currently quoted – the header should also indicate that this is "Acceptable Means of Compliance".

Response

Noted. The title will be amended as proposed. The header will not be modified as all references to the status of AMCs have been deleted in view of other comments received.

B2-AMC 25.795(a)(1)

Para.

57 / CAA UK

Comment

AMC 25.795(a)(1)

As per remarks above on AMC 25.795, the headers should indicate "Acceptable Means of Compliance".

Response

Disagreed. The headers will not be modified as all references to the status of AMCs have been deleted in view of other comments received.

B2-AMC 25.795(a)(2)

Para.

57 / CAA UK

Comment

AMC 25.795(a)(2)

As per remarks above on AMC 25.795, the headers should indicate "Acceptable Means of Compliance".

Response

Disagreed. The headers will not be modified as all references to the status of AMCs have been deleted in view of other comments received.

B2-AMC 25.1323(e)

Para.

57 / CAA UK

Comment

AMC to CS 25.1323(e) and CS 25.1325(b) : the title should be AMC to 25.1323(i) and 25.1325(b)

Response

Noted.
Cross-references are corrected.

B2-AMC 25.1581

Para. ***General***

57 / CAA UK

Comment

General comments: It is not clear why Paragraphs 9 and 10 from JAR-25 ACJ 25.1581 have not been included.

Response

Noted. It follows from Part 21, Section B, that the Agency has to establish the procedures of the ACJ referred to in the comment. In any case, this AMC would not be the right place to put them.

Para. ***Para 6d(1)(iii)(B)***

57 / CAA UK

Comment

AMC to CS 25.1581 - convert 1.25 VS to 1.18 VSR in para 6d(1)(iii)(B)

Response

Carried.

B2-AMC 25.1581

Para. ***Paragraph 2***

57 / CAA UK

Comment

Paragraph 2 Related Certification Specifications (CS) : By deleting the last one and a half sentences, the statement "Additional related requirements are operational rules", now has no meaning. There is no indication as to whose operational rules are being referred to.

Response

Noted. In line with AMC/GM to Part 21, it now reads:

"Additional related requirements are the applicable operational rules".

Para. ***Paragraph 3***

57 / CAA UK

Comment

Paragraph 3 Definitions: The deletion of subparagraph (i) from JAR-25 ACJ 25.1581, has removed any definition of what "EASA or Agency approval" means.

Response

Noted. The meaning of approval, certificate, authorisation... is covered by the definition of "certificate" under article 2 of Regulation 1592/2002.

Para. ***Paragraph 5***

57 / CAA UK

Comment

Paragraph 5 General Guidelines Sub paragraph b(2): JAR-25 ACJ 25.1581 contained the wording "…using approval procedures acceptable to the JAA". Is there any intention of making a reference to "…procedures acceptable to EASA" or indeed to produce EASA defined procedures for this?

Response

Disagreed. Where needed, administrative procedures will be established by the Agency under art. 44 of regulation 1592/2002. In addition procedures are required by Part 21. The requirements for the content of a Flight Manual are in CS-25. The conditions and procedures for approval are in Part 21. Consequently, this phrase is deleted because it does not serve the purpose of this AMC.

57 / CAA UK

Comment

Paragraph 5 General Guidelines Sub paragraph b: JAR-25 ACJ 25.1581 Paragraph 5b(7) has been deleted - presumably because this referred to Paragraph 10 b of the ACJ, there is no longer any guidance on how to deal with aircraft being exported to non-EASA operators.

Response

Noted. This interpretation is accurate.

Para. ***Paragraph 6***

57 / CAA UK

Comment

Consideration should be given to re-writing Paragraph 6c(4)(ii), which is copied from JAR-25 ACJ 25.1581. The AMC material tries to follow AC 25.1581 in the discussion of the utilisation of other sources of procedures information, however since the AMC does not completely follow the AC the result is poor guidance, which should not be continued into AMC 25.1581.

Response

Deferred. The approach is to transpose as much as possible from existing JAR material. It is recommended that the Agency should consider the need to further review the matter.

B2-AMC 25.1583(k)

Para.

57 / CAA UK

Comment

AMC to CS 25.1583(k) - renumber as (j) to match renumbering of CS 25.1583(j)

Response

Noted. The necessary changes will be made in Book 1.