


<b>EASA</b>	<b>COMMENT RESPONSE DOCUMENT</b>
	<b>EASA PAD No. 12-029</b> <b>[Published on 13 April 2012 and officially closed for comments on 11 May 2012]</b>

**Commenter 1: Ken Dickenson – 23/04/2012**

**Comment # 1**

**COMMENTS ON PAD 12-029:**

This PAD aims at prohibiting interval escalations beyond the already established values for nine specific maintenance tasks.

- **Discussion introduction**

According to the PAD, Airbus recently performed some activities to extend the operational life of the A300 series aeroplane. An analysis of the impacts on maintenance tasks apparently revealed the need to limit the escalation for some task intervals, in other words to publish airworthiness limitations.

The way chosen to publish these airworthiness limitations is causing some concerns: Although experience has proven that accidents may occur when some maintenance is not complied with at an appropriate time, the dissemination of mandatory instructions and related airworthiness limitations within recommendations can be observed. This lack of segregation is misleading and may contribute to serious events.

The FAA stressed the impact of using ambiguous terms and the importance for providing clarity and accuracy. We have tried to pay particular attention to the terms used in this discussion: For example, “approved” does not mean “mandatory”, and “safety task” does not necessarily imply “mandatory compliance”.

Finally, our comments and recommendations take also into account experience gained on human factors.

- **Regulations review**

To understand the concerns within the frame of this PAD, some background information has to be presented:

- Certification Specifications For the Development of ICA

It is TC/Supplemental Type Certificate (STC) holders' responsibility to develop ICA in accordance with the paragraph CS/FAR 25.1529, 25.1729, and the related CS/FAR 25 Appendix H. The paragraphs H25.3(b)(1) and H25.5, and the paragraph H25.4 of the CS 25 Appendix H require respectively:

- The scheduling information that provides the recommended periods at which the aeroplane (including any of its parts/components) should undergo work, and the recommended work at these periods, and
- The mandatory airworthiness limitations and associated mandatory instructions.

The paragraph H25.4 of the CS 25/FAR 25 Appendix H relates to the following International Standards and Recommended Practices of the Annex 8 (Amdt 103) to the Convention on International Civil Aviation:

- For aeroplanes over 5700 kg for which application for certification was submitted on or after 13-Jun-1960, but before 02-Mar-2004:

Standard: **“Maintenance tasks and frequencies that have been specified as mandatory by the State of Design in approval of the type design shall be identified as such.”**

Ref.: paragraph 10.4 of Chapter 10 in the Part IIIA.

- For aeroplanes over 5700 kg for which application for certification was submitted on or after 02-Mar-2004:

Standard: **“Mandatory maintenance requirements that have been specified by the State of Design as part of the approval of the type design shall be identified as such and included in the maintenance information [...]”.**

Recommended practice: **“*Note.— Mandatory requirements identified as part of the type design approval are often referred to as Certification Maintenance Requirements (CMR) and/or airworthiness limitations.*”**

Ref.: paragraph 7.7.4 of Chapter 7 in the Part IIIB

The ICA originate from outcomes of the aeroplane design reviews carried out in accordance with CS/FAR 25 technical standards.

- Publication of ICA

Once the aeroplane design reviews are completed, some of the outcomes are converted into ICA, which are made available to operators (refer to EASA Part 21A.61): It is operators' responsibility to ensure the aeroplane continuing airworthiness. This is mainly ensured by compliance with the ICA published by holders of a design approval.

#### Deliverables

The Maintenance Review Board Report (MRBR) is the usual main means to publish the subject recommendations referred to in the previous paragraph (i.e. 2., a)). It is developed in accordance with the Air Transport Association (ATA) of America MSG-3.

Note: Additional recommendations may need to be published separately from the MRBR. The MSG-3 analyses do not always cover the requirements of CS/FAR 25 entirely: e.g. it is possible that MSG-3 does not consider systems failure conditions that have three or more failures.

At the end of the process, the MRBR is approved, but compliance is not mandatory for operators: When the MSG-3 analysis activity produces safety-related maintenance tasks, their periodicity should at the same time take into account operational and/or economic considerations (e.g. reparability). The ATA MSG-3 Revision 2007.1 explains that the approach is to accomplish the goals of efficient aeroplane scheduled maintenance “at a minimum total cost, including maintenance costs and the costs of resulting failures”.

These economic considerations perfectly suit the requirements of the CS 25 Appendix H paragraph H25.3(b)(1). However, the tasks and frequencies which the MRBR process gathers, must not be mistaken for mandatory instructions and associated airworthiness limitations, which cover safety aspects only.

The Airworthiness Limitations Section (ALS) is the means to publish the mandatory instructions and airworthiness limitations not to exceed. It includes instructions necessary to maintain those design features of the structure and systems that have been defined in the type design to preclude the development of major, hazardous and catastrophic failure conditions. This information is crucial to ensure that maintenance, repairs, or alterations do not unintentionally violate the integrity of the aeroplane type design (e.g. to ensure that this important information is evident to organizations, other than the TC holder and the EASA, that may develop, perform and/or approve repairs and/or alterations).

Finally, it is to be noted that the MRBR deals with scheduled maintenance only, while the scope of the ALS is not restricted and can cover unscheduled maintenance as well: The ATA MSG-3 is “a means for developing the scheduled maintenance tasks and intervals which will be acceptable to the regulatory authorities, the operators, and the manufacturers” (extracted from the ATA MSG-3 Revision 2007.1, Chapter 1, paragraph 1-1).

#### Interdependence

We strongly believe that the ALS and the MRBR are complementary, but not opposed to each other. Unfortunately, experience confirms the lack of coordination in the demonstration of compliance with both the paragraphs H25.3(b)(1) and H25.5, and the paragraph H25.4 of the CS/FAR 25 Appendix H:

- Can it be concluded that the publication of recommended periodicities is unnecessary when airworthiness limitations are listed in the ALS? No, of course not.  
The economical and operational aspects taken into account during the establishment of such periodicities must not be forgotten. When maintenance tasks are accomplished beyond the recommended frequency, operators are exposed to extra repair/ maintenance costs; therefore they need this information. Operators will compare the benefit of performing the task later with the potential extra repair/maintenance costs, and will adjust the periodicity to the preferred balance. At no time safety will be affected, thanks to the corresponding airworthiness limitation(s) not to exceed published in the ALS.
- Can it be also concluded that there is a burden resulting from the mandatory task (of the ALS) in comparison with the corresponding recommended task (of the MRBR, or other documents)? Not if properly managed.  
Both the ALS task and the corresponding MSG-3 task are safety tasks. Therefore, the requirements in terms of accomplishment (EASA Part M.A.302), independent check (e.g. EASA Part M.A.402(a)), accomplishment recording (e.g. EASA Part M.A.614(a)), and records keeping (e.g. EASA Part M.A.305(h)) will be the same. Misunderstandings on this issue are frequently originating from the poor consideration given to the terms used.  
The compliance with the ALS task is demonstrated for a periodic task as long as the MSG-3 task is performed as frequently as, or more frequently than, the airworthiness limitation(s). Then, no separate accomplishment is necessary. That is what we call “taking credit for the accomplishment of MSG-3 tasks to claim compliance with the ALS tasks”.

#### Interdependence benefits

When the aeroplane design review outcomes are appropriately converted into recommended and mandatory ICA, operators can optimally manage the aeroplane continuing airworthiness:

Operators and their competent National Aviation Authorities (NAA) can reasonably and safely manage (without requiring the involvement of TC/STC holders and/or EASA) some temporary and/or permanent escalations that may be justified as a result of experience or operational needs, thanks to the publication of both the recommended schedule and the airworthiness limitation(s) not to exceed.

It can be concluded with this approach that whatever happens to the MRBR tasks in the operator's aeroplane maintenance programme (e.g. schedule escalation of 400%), compliance with the mandatory tasks and associated airworthiness limitations of the ALS will be demonstrated.

From our standpoint, a reference to the relevant ALS task(s) is necessary in the MRBR (or other documents) for each (appropriate) MSG-3 task fulfilling the ALS task objectives and effectivity, (i) to show compliance with CS/FAR 25.1529, and CS/FAR 25 Appendix H, paragraph H25.3(b)(1), and (ii) to support operators and their NAA in managing this flexibility: The appropriate MSG-3 tasks must be identified to prevent selection of unsuitable task(s) on operators/NAA side.

Significant savings (on time and cost) could be made by all involved parties (i.e. operators, their NAA, TC/STC holders and the EASA) provided:

- Both the recommended frequency and the airworthiness limitation(s) not to exceed are systematically published respectively in the MRBR (or other documents) and in the ALS, and
- Cross references to the ALS are included in the MRBR (or other documents) for allowing credit for accomplishment of appropriate MSG-3 tasks to declare compliance with the referenced ALS tasks.

This will limit, without jeopardizing safety, TC/STC/EASA involvement in operators' practices on (temporary/permanent) schedule escalations to those exceeding the airworthiness limitations published in the ALS. This will focus TC/STC/EASA resources to overseeing more important issues. This is in line with one objective of the EASA, as defined in Article 2 of Regulation (EC) No 216/2008 (the 'Basic Regulation'), which is to promote cost-efficiency in the regulatory and certification processes.

#### • Present case

The previous paragraphs describe a process for the certification of a (recent) aeroplane type (and the benefits to properly comply). At the time of initial certification

of the A300, no ALS was required by the Certification Basis (and the MRBR was developed under MSG-2). However, Airbus decided to develop the A300 ALS, probably to ease the demonstration of compliance with the INT/POL/25-12 (fuel tank safety), or other FAR 26 issues.

Once the certification of the aeroplane type design is successfully completed, the Type Certificate and the Type Certificate Data Sheet (TCDS) are issued. From the standpoint of information on ICA, the TCDS EASA.A.036 (Fokker F27) is an excellent example. But, what does the TCDS for the A300 series aeroplanes show in terms of segregation of mandatory instructions and airworthiness limitations? We leave the check to the EASA...

After initial certification of the aeroplane, changes to type design are frequently necessary. Their development is governed by the EASA Part 21 subpart D. The extension of the aeroplane operational life modifies, at the product level, an assumption used for certification: e.g. the operational life is taken into account in many system safety assessments. Therefore, the maintenance tasks and related airworthiness limitations referred to in the paragraph 'reason' of this PAD should have resulted in an amendment of the ALS to allow aeroplane operation between the operational life previously approved and the new one. The revised ALS should have been submitted to the EASA for approval, at the same time as the Major Change dossier.

This raises the following questions:

- Does the extension of the aeroplane operational life cover systems or structure, or both? Experience demonstrates that they can be different (ref. A310).
- How operation beyond the new operational life will be prohibited (in absence of justifications substantiating such operations) for the aeroplanes... and their components?

It could be concluded that the approved operational life or lives are airworthiness limitations to be published in the ALS.

#### Airworthiness Directive

The need for an AD should have been reviewed at the same time as the Major Change dossier. The question is "Are the intervals in question a maximum (i.e. mandatory to not exceed) for aeroplanes that accrued a life less than the operational life previously approved (aeroplanes in pre-Major Change configuration)?" Only a positive answer to this question would justify the need for an AD. Then, the PAD 12-029 should have been issued to require the compliance with the revised ALS.

No operation beyond the approved operational life should be allowed. Therefore, no AD is necessary if these intervals are a maximum only for aeroplanes operated between the operational life previously approved and the new one (aeroplanes in post-Major Change configuration). In such a case, the revised ALS should limit the applicability of the affected tasks accordingly.

In the paragraph 'reason' of the PAD 12-029, the EASA acknowledges the difficulties encountered by operators and their competent authority in dealing with interval escalations: "[...] It is common practice to escalate the intervals of many MPD tasks, based on operator's experience and service records. Whether such escalation is acceptable from a safety perspective is usually difficult to determine by the competent authority".

Neither the MRBR (approved, compliance not mandatory) nor the Maintenance Planning Document (not approved, compliance not mandatory) is an appropriate repository for mandatory instructions and airworthiness limitations (as described in this report). A misleading message is therefore conveyed when a PAD/AD is released to require the compliance with Maintenance Planning Document (MPD) tasks. From the standpoint of communication on the segregation of mandatory instructions and airworthiness limitations, the EASA AD 2010-0113 (Fokker F27) is an example of a clearer direction (experience shows that a complete separation of the ALS from the MRBR, even from MRBR annexes, prevents misunderstandings).

One can reasonably ask why there are such disparities between TC holders under the same jurisdiction.

#### Way forward

So what is the alternative solution in the present case? We would like to propose the following answer:

**Immediate action** (in order to not further delay the compliance of the fleet):

- In the Annex 1 of the PAD, replace the MPD task references by the relevant Aircraft Maintenance Manual (AMM) task references (AMM tasks are ICA),

- Remove all references to the MPD (operators can use the search tool of Adobe Acrobat to identify the corresponding MPD tasks in the MPD),
- Add the applicable operational lives,
- Paragraph 'Required Action(s) and Compliance Time(s)' becomes:  
"Required as indicated, unless accomplished previously.
- Within 30 days after the effective date of this AD, verify that the AMM tasks, as listed in Appendix 1 of this AD, are being accomplished within the intervals as specified in Appendix 1 of this AD, as applicable.
- After the verification as required by paragraph (1) of this AD, accomplish each AMM task as specified in Appendix 1 of this AD, not exceeding the interval value specified in Appendix 1 of this AD, as applicable.
- The approved operational life for the A300 models aeroplanes is as follows:
  - A300 B2-1A: xxxxx FH or xxxxx FC, whichever occurs first
  - A300 B2-1C: xxxxx FH or xxxxx FC, whichever occurs first
  - [etc..]

After the effective date of this AD, operation beyond the applicable operational life is prohibited."

#### **Cleaning action:**

- Require the publication of an ALS revision that will address the subject within a reasonable timeframe,
- Issue an AD superseding the AD that will result from the PAD 12-029.

#### **Conclusion**

We believe that the proposal presented in the PAD 12-029 will regrettably contribute to the confusion and potentially to the excessive reduction of the flexibility to develop maintenance programmes (for the other MPD tasks) in terms of variation of task content and escalation of maintenance task periodicities based on service experience.

#### **EASA response:**

*With regards to the comments to the PAD 12-029, the comments are partially agreed. Indeed, the original text of PAD 12-029 did not emphasise that those 9 tasks were no longer MPD tasks only, but were converted as Airworthiness Limitation Items. In addition, the original PAD 12-029 did omit the fact that those ALIs only apply to aeroplanes with 60,000 FH or more. The text of the final AD has been rewritten to correct these omissions.*

*The final AD now also refers to AMM tasks as well as MPD tasks. It should be noted that the AMM does not mention any threshold or intervals, whereas the MPD does.*

*The decision to issue an AD for the 9 ALIs without waiting for a published Airbus ALS document, as suggested by the commenter, was made because it was found acceptable (type design certification before 02 March 2004) and commensurate to the current fleet of A300 series aeroplanes in service. [84 aeroplanes still in revenue service]. This AD cannot be seen as a means to reduce the flexibility to develop customized maintenance programmes based upon service experience. As those 9 ALIs already existed in the current MPD, EASA decided to mandate those 9 ALIs and their respective threshold and interval. An ALS may be published when one or more newly created airworthiness limitations are introduced.*

*In addition, the next revision of the MPD – planned in March 2013 - will reflect that the threshold and intervals of these 9 tasks have been made mandatory by AD and must be now considered as Airworthiness Limitations Items.*

*It is also agreed that for the A300, Airbus did not publish the system Limit of Validity (LoV).*

*To correct this situation, paragraph (4) of the AD has been created and indicates that the system installations for A300 aircraft type are qualified for continued operation up to 75,000 Flight Hours or 48,000 Flight Cycles, whichever occurs first.*