FAA Order 8110.42C

Comments on the Draft Order
Submitted by email to 9-AWA-AVS-AIR-110-PMA-OrderComments@faa.gov

Submitted by the
Modification and Replacement Parts Association

2233 Wisconsin Ave, NW, Suite 503
Washington, DC 20007

For more information, please contact:
Jason Dickstein
President
(202) 628-6776

MODIFICATION AND REPLACEMENT PARTS ASSOCIATION
2233 Wisconsin Avenue, NW, Suite 503
Washington, DC 20007
Tel: (202) 628-6777
Fax: (202) 628-8948
http://www.pmamarpa.com

Comments in response to Draft FAA Order 8110.42C
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December 14, 2007

John L Milewski
Aviation Safety
Aircraft Certification Service
Certification Procedures Branch, AIR-110
800 Independence Ave., SW
Washington, DC 20591

Dear Mr. Milekswi:

Please accept these comments on the draft FAA Order 8110.42C, which was offered to the public for comment.

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Who is MARPA?

The Modification and Replacement Parts Association was founded to support PMA manufacturers and their customers. Aircraft parts are a vital sector of the aviation industry, and MARPA acts to represent the interests of the manufacturers of this vital resource before the FAA and other government agencies.

MARPA is a Washington, D.C.-based, non-profit association that supports its members' business efforts by promoting excellence in production standards for PMA parts. The Association represents its members before aviation policy

makers, giving them a voice in Washington D.C. to prevent unnecessary or unfair regulatory burden while at the same time working with the FAA to help improve the aviation industry's already-impressive safety record.

The only major trade group exclusively representing the PMA industry, MARPA represents a diverse group of interests all dedicated to excellence in producing aircraft parts. Board members and other individuals involved in the association have years of expertise in the PMA world, and all MARPA member companies benefit from the collective experience within the group.

The Order

The FAA has released Order 8110.42C for public comment. This FAA Order reflects the FAA's instructions for processing applications for Parts Manufacturer Approval (PMA). These instructions have come to reflect *de facto* guidance for the aviation manufacturing industry, because of the level of detail that is contained in this order that is not contained in any other FAA resource.

As with any effort of this magnitude, there are some areas in the draft that could be improved. MARPA has collected comments from its members, has edited them as appropriate, and has aggregated them with MARPA's own comments into this single, unified comment. MARPA applauds the latest proposed revision of the Order, and we hope that our comments will make it even better.

Conventions Used in These Comments

Where MARPA has recommended specific language changes, throughout these comments, recommended additions are <u>underlined</u> to highlight them, and recommended deletions from text will be ~~struck through~~ to highlight them.

The Comments

Generally

The FAA recently published guidance on Fabrication Inspection Systems in Appendix 2 to Order 8120.2E. By doing this, the FAA has undercut the objective of maintaining a single order (8110.42) that explains how to process a PMA application.

We suggest that adding the existing FIS guidance from Appendix 2 of Order 8120.2E back into Order 8110.42 (possibly in an appendix) and changing the signature authority of 8110.42 to reflect both AIR-100 and AIR-200. We then

recommend that Appendix 2 of Order 8120.2E be removed from the “F” revision to that order.

There is a definition of “critical” in Appendix M of the document. Throughout the document, it appears that the term “critical” is used in the same manner as that term is used in 14 C.F.R. § 45.14. However, the definition in Appendix M differs from the regulatory connotation. Whereas the regulatory connotation is clear, the definition provided in Appendix M is extremely imprecise; while this definition has been used in other FAA guidance it has continue to provide vague standards that are open to much interpretation by individuals. We recommend replacing the definition of “critical” with the definition found in the bilateral agreements (which is based on 45.14), or else using another term that has not been defined or connoted in the regulations.

Chapter 1, Paragraph 5.a

Issue: A sentence reads “Only use an STC for the approval of parts that constitute a major change to the product.” The actual requirement for an STC is related to a major change in the type design – not in the product itself. For example, a change between two configurations might be a major alteration, but if both configurations are already covered by the type design, then there is not need to obtain a STC.

Proposed Remedy: We recommend that the referenced sentence be re-drafted to read: “Only use an STC for the approval of parts that constitute a major change to the <u>design of the</u> product.”

Chapter 1, Paragraph 6.a

Issue: The phrase concerning use of another’s production approval appears to be confusing – it does not adequately convey the message that if one does not have PMA, then one needs some other mechanism by which to produce an approved part.

The phrase in question also creates an appearance of conflict with the methods by which some companies currently substantiate and produce parts. A company may receive separate FAA specification approval the first time a part in a family with common plating is approved. The approval may, for example, be represented by a FAA 8110-3 approval form. For subsequent PMA packages, the company would substantiate that this approved specification is applicable to the part in the latter data package.

By clarifying the intent of the sentence, the FAA not only makes its intention clear, but it also eliminates the possibility of unintended interpretations that would interfere with existing certification practices.

Proposed Remedy: We request that FAA clarify the sentence, as follows:

> If a person who does not hold PMA or some other FAA production approval controls the design, manufacture, or quality of a part through any of these procedures or processes and intends to sell the part for installation on a type-certificated product, then that person must use another's production approval for the completed part, or meet some other exception to the PMA rules. This paragraph does not apply to a situation where a person uses such a procedure or process to produce a part that is consumed during maintenance – such procedure or processes are controlled according to the guidance published by the Flight Standards Service (see Fabrication Of Aircraft Parts By Maintenance Personnel, AC 43-17).

Chap 1, Paragraph 6.b

Issue: The sentence says "Parts produced under a "one-time only" STC or a field approval are ineligible for a PMA." But this is not really true. If you get some other data approval then you can obtain a PMA. What the sentence needs to convey is that the "one-time only" STC or a field approval is inadequate (alone) to serve as data approval. The imprecise language could be used by some FAA employees as justification for unfairly denying an otherwise valid PMA application where a previous one-off production had been made.

Proposed Remedy: We request that FAA clarify the paragraph, as follows:

> Parts produced under a "one-time only" STC or a field approval are ~~ineligible for~~ not the same as parts produced under a PMA. Modifiers with these design approvals may manufacture, install and return only one product to service without benefit of PMA If the person making the part intends to produce multiple parts for installation in more than one product then ~~Otherwise~~ we **require** the applicant to get a PMA or another production approval for the associated parts when sold to others (unless a production approval exception applies to the parts, such as the standard parts exception).

Chap 1, Paragraph 6.c

Issue: The first sentence says "Holders of a production certificate, approved production inspection system, or TSO authorization do not need a PMA." As

production approval holders begin to produce parts for other OEMs products that are not their own, it is important to make it clear that the replacement part production privileges that they enjoy are limited to their own products. For example, a TSOA holder may not produce the equivalent of PMA parts for a third party product under the TSOA.

Proposed Remedy: We request that FAA clarify the sentence, as follows:

> Holders of a production certificate, approved production inspection system, or TSO authorization do not need a PMA to produce replacement parts for the items produced under their existing production approval(s).

Chap 1, Paragraph 6.c

Issue: The third sentence says: "Also, suppliers may produce parts for sale without a PMA if a PAH grants them direct ship authority and the appropriate MIDO approves." Usually, the MIDO does not need to approve the direct ship arrangement unless it represents a change to the PC. 14 CFR § 21.153. Changes to the approved quality assurance system need only be notified to the FAA, so that the FAA may review them. 14 CFR § 21.147. The regulations require that delegations of final inspection authority be maintained in a list made available to the FAA. 14 CFR § 21.143(b). But there is no explicit requirement for approval of such delegations.

Proposed Remedy: We request that FAA clarify the sentence, as follows:

> "Also, suppliers may produce parts for sale without a PMA if a PAH grants them direct ship authority in accordance with their approved quality program ~~and the appropriate MIDO approves~~."

Chap 1, Paragraph 6.i AND Chap 2, Paragraph 10

Issue: There is a reference to Appendix 2 of FAA Order 8120.2. A better reference might be to the regulations, which are interpreted by this Order. At the very least, though, reference to the order should avoid a specific section (appendix) reference due to the fact that such items tend to be moved around. For example, while 8120.2E includes FIS information in appendix two, 8120.2D included instructions on preparing Form 8120-9 in appendix two.

Proposed Remedy: We recommend that the document avoids linking to specific sections of 8120.2, since there is no cross reference of where these references are made, and past history suggests that changes may be made to documents without updating the references.

Chap 1, Figure 1. Roles of FAA and Applicant in PMA Process

Issue: MIDO should be notified by the ACO once the design has been approved. Such notification is anticipated pursuant to in chapter 3, paragraph 12(d) of this Order.

Proposed Remedy: Under ACO Role, last bullet, change to "Notify applicant and MIDO of design approval."

Chap 2, Paragraph 5. i(1)

Issue: Simple and non-complex parts that do not affect system safety can create field issues that requires Continued Operational Safety (COS) responsibility by the PMA holder. MARPA has recommended to its members that PMA holders should be responsible for the COS of *all* their designs, even simple ones. A PMA holder can have a general COS plan that is applicable to all of their parts.

Proposed Remedy: MARPA recommends that the second sentence be amended as follows:

> Applicants who propose complex or critical parts should develop a COS plan, and all PMA applicants are encouraged to adopt COS plans for all of their parts.

Chap 2, Paragraph 5. i

Issue: MARPA has developed COS guidance in cooperation with the FAA. This guidance is available for free on MARPA's website to any party who would like to use it. The guidance supports the FAA's mission of encouraging the development of robust COS programs, without committing substantial FAA resources to the process. Since it has been developed in cooperation with the FAA, and is available for free, we would like to see this information distributed widely throughout the industry in order to help promote and facilitate robust COS programs.

Proposed Remedy: MARPA requests the addition of a subparagraph 5(i)(3) as follows:

> "(3) Applicants seeking further assistance in developing COS programs can obtain free guidance from the Modification And Replacement Parts Association (MARPA) on their website, http://www.pmamarpa.com."

Chap 2, Paragraph 5.l

Issue: Clarification is need regarding an “original part”. For example, if the “original part” was the subject to an AD, then the part is typically changed and a new part number assigned which is implemented by virtue of the AD. The PMA applicant would not want to do a PMA on the original part, as there is no market for a part that is being replaced. The new part is thus deemed to fix the unsafe condition by virtue of the AD.

Proposed Remedy: We recommend that the FAA add a clarification sentence to the end of this subparagraph that reads:

> “By ‘original part,’ the FAA means any part that the PMA applicant reasonably intends the PMA part to replace.”

Chap 2, Paragraph 5.n

Issue: If the PMA part has the same life and/or inspection requirements as the ‘original’ part, then there is no practical need for a separate ICA. Instead, it should be sufficient to make a written correspondence cross referencing the original ICA. Most life-limited parts will adopt the existing ICA limits, and that is the minimum expectation of the marketplace.

Proposed Remedy: We suggest adding the following sentence to the end of this subparagraph, in order to clarify this point:

> “If the limitations on the PMA parts are identical to those already found in the existing ICAs, then the supplement may simply state that the manufacturer and FAA have found that the limitations of the existing ICAs may be used for this PMA part (cross referencing part numbers as applicable).”

Chap 2, Paragraph 6.b

Issue: This paragraph calls out the use of either comparative or general test and analysis – it appears to limit the applicant to a choice of one or the other. In some cases, though, the testing plan calls for the use of both methods to be used to substantiate certain features of a single part – each one is used for the features that are best able to be demonstrated using that method. For instance, the tolerance of a radius can be determined using general stress analysis test methods (general analysis) in combination with feature measurements (comparative analysis).

Proposed Remedy: We recommend changing the first sentence to:

> "The applicant can prove compliance with applicable airworthiness standards by ~~either~~ comparative and/or general test and analysis."

Chap 2, Paragraph 6.c

Issue: The paragraph about Reverse Engineering has a contradiction, in that the second sentence forbids it and the fourth admits that it may be adequate for simple parts. The following subparagraphs make it clear that reverse engineering is a tool that can be used as long as it supports findings sufficient to meet the requirements and intent of the regulations.

Proposed Remedy: We recommend modifying the second sentence to eliminate this apparent discrepancy, as follows:

> "The process alone ~~is~~ may be ~~-~~inadequate in some cases to characterize and compare a new original part to a proposed replacement."

Chap 2, Paragraph 6.c(2)

Issue: Design dimensions may exceed the variation found in typed certificate holder samples because many, maybe most, manufacturing processes just do not have the inherent variability that was required by the design tolerance. An example would be a stamped shim, where width and length mean little, yet the stamping die will consistently put out part after part and lot after lot with dimensions within .0001, when +/- .010 may be perfectly adequate.

In other cases, the variations found among samples may greatly exceed design tolerances due to the fact that some designs are approved without considering tolerances of real-world manufacturing processes (and thus real-world manufacturing processes produce parts that are acceptable for airworthiness purposes when they do not really meet approved design tolerances).

The difference between these two situations – samples outside of design tolerances and design tolerance outside of sample range – are going to be based in part on the nature of the part and the safety impact of variation.

We are pleased to see that the FAA has left room for substantiation of variation from sample range; but in context that variation appears to be implicitly disparaged. This paragraph should emphasize the fact that design judgment must be used, based on knowledge of part fit and function.

Proposed Remedy: We recommend adding the following sentence to the end of the paragraph:

"Substantiation should be based upon an understanding of the actual form, fit and function of the part, and with an understanding of the role that design judgment may play in affecting airworthiness."

Chap 2, Paragraph 8.c

Issue: This paragraph includes the sentence: "This only applies if the prefix or suffix is consistent across the applicant's product line."

As consolidations continue to occur in the PMA industry, it is common for one PMA holder to have various prefixes and suffixes across their product line. It is neither economical nor practical to remark all of the existing parts and drawings. This has no benefit to flight safety, as the PMA part producer can be easily identified on the FAA web site with the given part number.

There is neither a regulatory requirement nor a safety justification for requiring that the prefix, suffix or other part identification be consistent across an applicant's own product line. On the other hand there are clear business reasons for using different identifications, like distinguishing parts meant for one type of product from parts meant for another type of product (e.g. distinguishing rotorcraft parts from fixed-wing parts among a product line).

Proposed Remedy: We recommend eliminating the sentence that reads:

"~~This only applies if the prefix or suffix is consistent across the applicant's product line.~~"

Chap 2, Paragraph 11.e(2)

Issue: There should be allowance for minor changes to critical parts without prior ACO approval. Industry is making those changes now, because there are many minor changes made (e.g. an additional inspection might be added to the part, or a pigment color may be changed). Obviously, the FAA will be appropriately notified of this minor change in accordance with the process for approving the minor change, but the minor change does not change the certification basis and as a minor change it should not always require prior approval by the FAA – such prior approval could waste valuable FAA resources that do not need to be wasted on prior approval when *post-facto* review at the FAA's convenience would have sufficed.

Proposed Remedy: We recommend that the FAA consider better guidance on what might be considered a major change to a life-limited part to assure that all changes that the FAA wants to see subject to prior approval are so-subjected.

We recommend that the FAA change the first sentence of this paragraph as follows:

> "Any ~~changes to critical or life-limited parts and~~ major change~~s~~ to ~~all other~~ a PMA part~~s~~ require<u>s</u> prior approval by the appropriate ACO."

Chap 3, Paragraph 13

Issue: It is unclear what is meant by "Usually we need an amendment …," in the next-to-last sentence and some offices could incorrectly interpret this to mean an amendment to the Data Package submitted. To clarify that is calling for an amendment level to be added to the supplement, this should be specified.

Proposed Remedy: Change the sentence to read as follows:

> Usually we need an amendment <u>to the supplement</u> when an applicant adds eligibility to the supplement.

Appendix A – PMA Process Flowchart

Issue: Box in upper right hand corner states that "Applicant and data sent to ACO, **3-1a**". Section 3-1a states that the ACO accepts the project. Recently, one of our members experienced that their ACO did not acknowledge a project application (no response letter sent and no project number issued) until the CMACO coordination and CPN coordination was complete. This reduces project visibility and has left several projects in a state of 'limbo' for many months. MARPA does not believe that this is the intended outcome of increased coordination with the CMACO and the CPN process.

Proposed Remedy: The order needs to thoroughly define and clarify the administrative handling of projects with respect to issuing project numbers, CMACO coordination, and CPN coordination.

Conclusion

The foregoing represents the issues that we have identified as targets for improvement in the draft 8110.42C.

Thank you for affording industry this opportunity to help improve the draft guidance to make it better serve the needs of the flying public (and the industry that serves them). We appreciate the efforts of the FAA in this regard.

Your consideration of these comments is greatly appreciated.

Respectfully Submitted,

Jason Dickstein
President
Modification and Replacement Parts Association