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Federal Aviation Administration  
Office of Chief Counsel  
Attention: Rules Docket  
AGC-200, Docket No. 28903  
800 Independence Avenue SW  
Washington DC 20591

August 26, 1997

1997 AUG 29 A 11:48  
OFFICE OF THE  
CHIEF COUNSEL  
RULES DOCKET

Subject: Comments to Docket 28903

Dear Docket:

This letter [three copies enclosed] provides my comments as a private citizen to the Docket 28903; Notice 97-7 issued in the Federal Register / Vol. 62, no. 85 / Friday, May 2, 1997, "Type Certification Procedures for Changed Products," starting on page 24288.

**COMMENTS ON SECTION 21.101(b)(1):**

One concern is the proposed rule deletes the original § 21.101(b)(1) from which the FAA derived its ability to apply later regulations without regard to any of the exceptions put forth in the new proposals [the proposed § 21.101(b)(1), (b)(2) and (b)(3)] when there were existing rules applicable to a new change being added to an older design. For example, consider an airplane with an early certification basis built with independent round dial instruments (as early airplane designs were). When a multifunction display or an electronic flight instrument system was installed, a number of rules were added (under the authority of § 21.101(b)(1)) to the certification basis, for example §§ 25.1303, 25.1305, 25.1322, 25.1309, 25.1321(a)(6)(d), 25.1331, 25.1333 and 25.1335. Samples of this type of application are documented in the preamble to many HIRF special conditions issued over the years relative to products certificated in the Wichita ACO [the office I am most familiar with]. Thus the proposed rule introduces an unnecessary inefficiency in the certification process and deletes an effective source of authority now available to the FAA. The FAA should reconsider its proposal to delete the existing § 21.101(b)(1).

**COMMENTS ON SECTION 21.101(b)(3):**

It may have been better if § 21.101(b)(3) had not been proposed. The process then would have been to determine by the issue paper process what are significant changes or areas effected by the change and apply the latest regulations. If the applicant did not agree with a given application of the rule once the certification basis had been established by issue paper, the applicant would have the opportunity to apply for an exemption from that rule through a public notice process and that process is already reasonably understood.

**COMMENTS ON THE AC 21.101-XX:**

The key to success (success being later rules are applied to areas of change or affected by the change) of the proposed § 21.101 lies in the AC which contains a flowchart, definitions and appendices, among other things. The critical words contained in the rule and in items contained in the AC are significant, nonsignificant, contribute materially and impractical. My comments are directed towards some of those key items.

AC 21.101, Section 12, Determination Of Significance, page 8. and Appendix 1- Classification of Changes/Examples, Section 2, Airplanes, provide a general idea on what is significant and non significant. The last sentence in Section 12, Determination Of Significance, page 8, reads: "Included in non-significant changes are changes that do not modify the general characteristics of the product, that is, (1) the general configuration and the principles of construction are retained; and(2) the assumptions used for certification of the basic product remain valid and the results can be extrapolated to cover the changed product."

I recommend the following as an improvement (my estimation only) to more clearly define the FAA's intent of the last sentence in Section 12 of the AC as follows: "Included in non-significant changes are changes that do not modify the function and general characteristic of the part, component, subcomponent or system; that is, 1) function, general configuration and construction are retained; and (2) the assumptions used for certification of the basic part, component, subcomponent or system remain valid such that extrapolation for the most part may be used to cover the change." [Of course this may not catch what the FAA had in mind for this paragraph either, so do not feel impelled to adopt this proposed change without some thought.]

**AC 21.101-XX, Appendix 2: Eliminate Appendix 2.****Justification for recommendation:**

AC 21.101-XX, Paragraph c, Practicability, references a procedure, presented in Appendix 2, developed with the intention of using it to determine the practicability of a changed product in accordance with § 21.101(b)(3). The AC notice preamble and AC also state it was included for information purposes only.

Appendix 2 provides a tool which is dependent on series of indices and chase around charts using a weighted point system. The chart itself looks like is a special industry interest group's adaptation of a chart developed to prevent the FAA from issuing an AD or a retroactive rule. Although some of this chart has merit, the numbers [resource index, table 2.2, lower portion of the chase around chart] and criteria [table 2.2] for the most part appear so biased and subjective in the direction of not applying later regulations that they are not believable nor justified; therefore, Appendix 2 should not be included in the AC 21.101-XX.

AC 21.101-XX, Appendix 2: Eliminate Appendix 2.  
Justification for recommendation: - CONTINUED

A specific comment concerning the "Occurrence per departure" chart (page 26 of AC) is that its use would lower the level of safety with regard to that expected of and by the FAA. The FAA takes mandatory airworthiness corrective action based on incidents or accidents in which significant structural damage or loss of life occur or even in some instances when an event provided the potential for damage or loss of life. The FAA would take airworthiness corrective action by Airworthiness Directive and follow-on rule changes if the rule change was considered necessary. Further, if new designs or follow-on designs were to appear in a changed product, that were similar to that addressed by the FAA's airworthiness action, the FAA would apply § 21.21(b)(2) and require the design to be changed. The use of the "Occurrence Per Departure" chart accepts something less [example using a 10% death criteria] than currently practiced and expected of and by the FAA.

**Figure 1: Flowchart, AC Page 5:** If you consider the number of arrows to an outcome, then the applicants chances of not having to comply with the later regulations versus applying those regulations in effect on the date of application are 4 to 1. Just an observation.

Comment on Impractical:

The preamble to the rule, page 24295, middle column to next column, discusses "impractical" and mentions more than once the use of a cost analysis and also mentions the use of a benefit-resource evaluation.

Any cost could be shown as a burden and that burden is easily exaggerated. The FAA would only receive a cost analysis from the applicant in this proposal, thus does not have a number of analyses to make comparisons as it normally would for rulemaking. Thus it would be difficult to confirm or estimate to what level the impact will have.

A more difficult assessment is assessing the benefit of rules like § 25.1309 where hazards or failures are addressed in very small probabilities. A good deal of newer aircraft have later rule applied as part of their certification basis, yet older aircraft may not have yet reached their total expected exposure to an unsafe condition addressed by the later rule. Thus assumptions based on current history may be masking a potential hazard as the older model is basking under the reliability glow of the newer models. Thus the application of a rule based totally on a cost/benefit analysis for every changed product from a single source and questionable data may put the FAA at a distinct disadvantage in making accurate judgments on the benefit of applying a later rule if the applicant utilizes current service history in justifying not applying the later rule.

I'm not sure the use of cost/benefit analysis to be practical as a tool to determine if a later rule should be applied under the proposed § 21.101. However, should the FAA elect to accept such an approach, then the FAA should at least eliminate Appendix 2 contained in the proposed AC in AC21.101-XX as it appears biased and without justification. See the discussion under the attached comments about the proposed AC for the justification for deleting Appendix 2.

I thank you for the opportunity to comment.

Sincerely,



Mark Quam