Federal Aviation Administration – Regulations and Policies
Aviation Rulemaking Advisory Committee

Aircraft Certification Procedures Issue Area
International Certification Procedures Harmonization Working Group

**Task 3 – Training Syllabus**

# Task Assignment

[Federal Register: October 6, 1997 (Volume 62, Number 193)]
[Notices]
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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

# Aviation Rulemaking Advisory Committee; Aircraft Certification Procedures Issues--New Task

AGENCY: Federal Aviation Administration (**FAA**), DOT.

ACTION: Notice of new task assignments for the Aviation Rulemaking Advisory Committee (ARAC).

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SUMMARY: Notice is given of two new harmonization tasks assigned to and accepted by the Aviation Rulemaking Advisory Committee (ARAC). This notice informs the public of the activities of ARAC.

FOR FURTHER INFORMATION CONTACT:
Brian A. Yanez, Aircraft Certification Service (AIR-110), Federal Aviation Administration, 800 Independence

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Avenue, SW., Washington, DC 20591, phone (202) 267-9588.

SUPPLEMENTARY INFORMATION:

## Background

The **FAA** has established an Aviation Rulemaking Advisory Committee to provide advice and recommendations to the **FAA** Administrator, through the Associate Administrator for Regulation and Certification, on the full range of the **FAA**'s rulemaking activities with respect to aviation-related issues. This includes obtaining advice and recommendations on the **FAA**'s commitment to harmonize its Federal Aviation Regulations (FAR) and practices with its trading partners in Europe and Canada.

One area ARAC deals with its Aircraft Certification Procedures Issues. These issues involve the regulatory standards and procedures for aircraft certification found in 14 CFR parts 21, 39, and 183 and Special Federal Aviation Regulation No. 36.

## The Tasks

This notice is to inform the public that the **FAA** has asked ARAC to provide advice and recommendation on the following harmonization tasks:

Task 1. Review the public comments received on Notice of Proposed Rulemaking (NPRM) 97-7, which proposes to amend the procedural Federal

Aviation Regulations for the certification of changes to type certificated products, and develop recommendations regarding the disposition of those comments. The review and recommendations must take into account the public comments received by the Joint Aviation Authorities (JAA) regarding JAA Notice of Proposed Amendment (NPA) 21.7. Prepare a recommended final rule for NPRM 97-7 that the JAA could adopt as its rule and that is harmonized with the **FAA**'s rule. Forward the final recommendations to the **FAA**.

Task 2. Develop a training syllabus for a common training course between the **FAA** and JAA and assist the **FAA** and JAA training personnel with the training program material.

The **FAA** expects ARAC to complete these tasks by March 2, 1998.

The **FAA** has asked that ARAC prepare the necessary documents, including economic analysis, to justify and carry out its recommendations.

ARAC Acceptance of Tasks

ARAC has accepted the tasks and has chosen to assign them to the existing International Certification Procedures Working Group. The working group serves as staff to ARAC to assist ARAC in the analysis of the assigned task. Working group recommendations must be reviewed and approved by ARAC. If ARAC accepts the working group's recommendations, it forwards them to the **FAA** as ARAC recommendations.

Working Group Activity

The International Certification Procedures Working Group is expected to comply with the procedures adopted by ARAC. As part of the procedures, the working group is expected to:

1. Recommend a work plan for completion of the tasks, including the rationale supporting such a plan, for consideration at the meeting of ARAC to consider Aircraft Certification Procedures Issues held following publication of this notice.
2. Give a detailed conceptual presentation of the proposed recommendations, prior to proceeding with the work stated in item 3 below.
3. For each task, draft appropriate regulatory documents with supporting economic and other required analyses, and/or any other related guidance material or collateral documents the working group determines to be appropriate; or, if new or revised requirements or compliance methods are not recommended, a draft report stating the rationale for not making such recommendations.
4. Provide a status report at each meeting of ARAC held to consider Aircraft Certification Procedures Issues

Participation in the Working Group

The International Certification Procedures Working Group is composed of experts having an interest in the assigned task. A working group member need not be a representative of a member of the full committee.

The Secretary of Transportation has determined that the formation and use of ARAC are necessary and in the public interest in connection with the performance of duties imposed on the **FAA** by law.

Meetings of ARAC will be open to the public, except as authorized by section 10(d) of the Federal Advisory Committee Act. Meetings of the

International Certification Procedures Working Group will not be open to the public, except to the extent that individuals with an interest and expertise have been selected to participate. No public announcement of working group meetings will be made.

Issued in Washington, DC, on September 29, 1997.

Brian A. Yanez,

Assistant Executive Director for Aircraft Certification Procedures Issues Aviation Rulemaking Advisory Committee.

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# Recommendation

August 4, 1998

[4910-13]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Parts 11, 21, and 25**

**[Docket No. 28903; Amdt. No. ]**

**RIN 2120-AF68**

**Type Certification Procedures for Changed Products**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final Rule.

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**SUMMARY:** This document amends the procedural regulations for the certification of changes to type certificated products. This amendment affects changes accomplished through either an amended type certificate or a supplemental type certificate. The amendments are needed to address the trend toward fewer products that are of completely new design and more products with multiple changes to previously approved designs. This final rule action will enhance safety by applying the latest airworthiness standards, to the greatest extent practicable, for the certification of significant design changes of aircraft, aircraft engines, and propellers.

**EFFECTIVE DATE:** [Insert date **[?]** months after date of

publication in the Federal Register.]

**[ARAC recommends that the compliance date for airplanes manufactured under a part 25 type certificate that are used in part 121 operations should be 18-24 months after the date of issuance of the final rule. For rotorcraft and other airplanes ARAC recommends a compliance date of 3 or more years depending on how long it will take to develop appropriate data to be used in doing a safety benefit-resource evaluation. In all cases ARAC recommends that earlier voluntary compliance be allowed.]**

**FOR FURTHER INFORMATION CONTACT:** Randy Peterson, Certification Procedures Branch (AIR-110), Aircraft Certification Service, Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591, telephone (202) 267-9583.

**SUPPLEMENTARY INFORMATION:**

**Background**

**Statement of the Problem**

Under the regulations in effect prior to the early 1940's, an applicant for a changed product, such as an alternate engine installation, was required to apply for a new type certificate and comply with the standards current at the time of application. This did not present an unreasonable burden on the applicant then because the

airworthiness standards did not change appreciably over short periods of time. That is, the standards current at the time of an application for a change were essentially the same as those with which the original product had to comply. Since the early 1940's, however, rapid changes in technology have resulted in significant changes in the airworthiness standards over relatively short periods of time. Therefore, an applicant for an extensive change to a type certificated product, which required a new type certificate, could be faced with complying with safety standards that varied considerably from the standards for the original product. To relieve this situation, the FAA's predecessor agency required an application for a new type certificate only if the change was quite extensive.

In recent years, a trend has developed towards fewer products that involve substantial design changes that would require a new type certificate. In many cases, over a period of time, a series of changes could permissively be made to a product by amending its original type certificate such that the resultant model is substantially different from the original model. Although each changed product in such a series of changes may differ little from its immediate predecessor, the changes could collectively result in a product with considerable differences from the original product. As a result, many changed aeronautical products

have not been required to demonstrate compliance with all the recent airworthiness standards. This rule is intended to clarify under what conditions more recent airworthiness amendments need to be applied to changed products.

In order to achieve this goal, the FAA published a proposed rule (Notice No. 97-7; 62 FR 24288, May 2, 1997) to amend the procedural regulations for the certification of changes to type certificated products whether the change is accomplished through an amended type certificate or through a supplemental type certificate. The FAA's purpose in including supplemental type certificates (STC) was to ensure that all significant changes to a type certificated product would follow the same procedure. A related purpose was to avoid creating a loophole that would allow an applicant to choose the STC process thereby avoid complying with later amendments.

**History of Type Certification**

Title 49 U.S.C. § 44701 authorizes the FAA Administrator to promote safety of flight of civil aircraft in air commerce by prescribing minimum standards governing the design and construction of aircraft, aircraft engines, and propellers as may be required in the interest of safety, and such minimum standards governing appliances as may be

required in the interest of safety.

Under 49 U.S.C. § 44704, the FAA may issue type certificates, including supplemental type certificates, for aircraft, aircraft engines, propellers, and certain appliances.

The general certification procedures for products (aircraft, aircraft engines, and propellers) and parts are set forth in 14 CFR part 21 (part 21). As described in §§ 21.13 and 21.15, any interested person may apply for a type certificate by submitting an application accompanied by the required documentation to the FAA. Sections 21.16 through 21.21, 21.101, and 21.115 specify certain regulations and designate the applicable airworthiness standards for type certification of both new and changed products. The term "changed product" is used throughout part 21 and throughout this preamble to include changes that are made through an amended type certificate as well as those made under a supplemental type certificate. A person who is not the type certificate holder has only the STC option while the type certificate holder has the option of applying either for an amended type certificate or for an STC.

Section 21.17 designates the applicable regulations for the issuance of type certificates. In order to be issued a type certificate, the applicant must show that the product

complies with the airworthiness standards contained in one of the following 14 CFR parts, as applicable: part 23 for normal, utility, acrobatic, and commuter category airplanes; part 25 for transport category airplanes; part 27 for normal category rotorcraft; part 29 for transport category rotorcraft; part 31 for manned free balloons; part 33 for aircraft engines; part 35 for propellers; and part 21 (§ 21.17(b) and (f)) for special classes of aircraft and primary category aircraft respectively.

The airworthiness standards in these parts of the regulations may be amended as needed to reflect continually changing technology, correct design deficiencies, and provide for safety enhancements. An applicant for a type certificate is required under current § 21.17, with certain exceptions, to show that the product meets the applicable airworthiness standards that are in effect at the date of the application. The exceptions include instances in which the Administrator specifies otherwise or in which the applicant either elects or is required under specific circumstances to comply with later effective amendments. In addition, the Administrator may prescribe special conditions.

Under § 21.16, special conditions may be prescribed if the Administrator finds that the existing airworthiness standards do not contain adequate or appropriate safety

standards because of novel or unusual design features of the product to be type certificated relative to the design features considered in the applicable airworthiness standards. Also, under § 21.21(b)(1), if any applicable airworthiness standards are not complied with, an applicant may nevertheless be entitled to a type certificate if the Administrator finds that those standards not complied with are compensated for by factors that provide an equivalent level of safety. Such determinations are commonly referred to as "equivalent safety findings" and are made with respect to the level of safety intended by the applicable standard. In addition, under § 21.21(b)(2), an applicant may be denied a type certificate if the Administrator finds an unsafe feature or characteristic of the aircraft for the category in which type certification is requested, even though the aircraft may comply fully with the applicable airworthiness standards.

Taken together §§ 21.16, 21.17, and 21.21 designate the applicable airworthiness regulations for type certification and accommodate those circumstances when the airworthiness standards do not adequately cover the design features of a product. These sections recognize and balance the following four important considerations:

(1) The FAA is obligated, under 49 U.S.C. § 44701, to keep the airworthiness standards required in the interest of

safety, (i.e., parts 23, 25, 27, 29, 31, 33 and 35) as current as practicable.

(2) The type certificate applicant needs to know, early in a certification program, what the applicable airworthiness standards will be in order to finalize the detailed design of its product and to enable the applicant to make reasonable performance guarantees to its potential customers.

(3) In the interest of safety, rapid technological advances presently being made by the civil aircraft industry necessitate that the FAA be able to issue special conditions to address novel or unusual design features that it has not yet had an opportunity to address in the airworthiness standards through the general rulemaking process, or to address novel or unusual design features that were not considered by the appropriate airworthiness standards applicable to changes to type certificates.

(4) It is also important to allow flexibility in design. Wherever possible, the airworthiness standards of 14 CFR Chapter 1, subchapter C, are intentionally objective in nature, and the procedural regulations permit design changes over the operational life of a product.

**History of Type Certification of Changes**

Part 21 designates the applicable airworthiness

standards for changed products. Section 21.19 describes the circumstances in which an applicant for type certification of a changed product must apply for a new type certificate. As previously discussed, before the early 1940's, an applicant for a changed product, such as an airplane with an alternate engine installation, was required to apply for a new type certificate. For the reasons already described, by the early 1940's, an application for a new type certificate was required only if the change was extensive.

Under § 21.101, the original type certificate may be amended to include changes to the product when the applicant demonstrates that it complies with the same airworthiness standards as the original product plus appropriate special conditions, and the change does not warrant making a new application for a type certificate under § 21.19. Because § 21.101 (a) and (b) are incorporated by reference in § 21.115, these procedures are equally applicable to persons applying for supplemental type certificates.

Section 21.101(a) requires that an applicant for a change to a type certificate must comply with either the regulations incorporated by reference in the type certificate or the applicable regulations in effect at the date of application, plus any other amendments the Administrator finds to be directly related. The "regulations incorporated by reference" are the regulations

that were the certification basis for the original issuance of the type certificate or any later regulations that were the certification basis for any changes to the original type certificate.

If an applicant chooses to show compliance with the regulations in effect at the date of the application for the change, the applicant must also comply with any other amendments that are directly related. In some instances, a regulation may have been amended to become less stringent, while a related regulation has become more stringent. In this situation, an applicant must also comply with the related more stringent regulation. Current § 21.101(a) does not otherwise require compliance with later amendments and does not grant the Administrator the authority to require compliance with later regulations as a method to increase the level of safety of a product.

An applicant for a change to a type certificated product is responsible for showing that the product, as altered, not just the change itself, complies with the certification basis, because areas that have not been changed may be affected by the change. However, the applicant need not resubstantiate those areas of the product where the original substantiation has not been invalidated by the change.

Current § 21.101(b) pertains to changes for which the

regulations incorporated by reference do not provide adequate standards. Such changes generally involve features that were not envisaged at the time the regulations incorporated by reference were adopted and are, therefore, novel or unusual with respect to those regulations. For these changes, the applicant must comply with regulations in effect at the date of application for the change as found necessary to provide a level of safety equal to that established by the regulations incorporated by reference. In this case, the applicant is not able to select any amendment of the regulation it chooses between those incorporated by reference and those in existence at the date of the application. When regulations in effect at the date of application for the change fail to provide adequate standards, the applicant must comply with special conditions to provide a level of safety equal to that established by the regulations incorporated by reference.

**Trends in Type Certification of Changes**

In recent years, a trend has developed toward fewer products that are of completely new designs, which would require new type certificates. Over a period of time, a series of changes to an original product may have been made so that the current model is considerably different from the original model. Although each changed product in such a

series of changes may differ little from its immediate predecessor, the changes could result collectively in a product with substantial differences from the original product.

Another trend in manufacturing is to keep products in production over several decades. Some currently manufactured transport category airplanes have, for example, evolved from airplane models originally type-certificated 25 years ago. This does not imply that those airplanes are "unsafe," because they do, in practice, have features that address the intent of most of the current airworthiness standards. However, current procedural regulations (part 21) do not require that changed products demonstrate compliance with all the current airworthiness standards.

The basic premise behind the FAA's current policies for the procedures and airworthiness standards for type certification is that the highest possible degree of safety in the public interest, should be achieved by products being certificated at any given time. In dealing with this premise, the FAA has had to continually weigh the desire for the highest level of safety with the cost to the manufacturers, operators, and traveling public for achieving the highest possible degree of safety in the public interest. This balance between safety and cost has been exacerbated by the introduction of highly sophisticated

products whose development and manufacture have become enormously expensive. As already stated, this is one reason manufacturers choose to produce more and more changed products that, by the FAA regulations, are not required to have new type certificates.

The FAA maintains that the issue should not be whether a product is produced under a new type certificate or an amended one. The issue is whether or not the level of safety of the product, embodied in the airworthiness standards it complies with, is as high as practicable. In addition, to require areas unaffected by the change to comply with the later standards is not only unreasonably costly but may reduce the level of safety of the product due to unforeseen developmental problems. The manufacturers are constantly issuing service information that describes approved alterations that users may make to improve the level of safety of the product.

When establishing the highest practicable level of safety for a changed product, the FAA has determined that it is appropriate to assess the service history of a product as well as the later airworthiness standards. It makes little sense to mandate changes to well understood designs, whose service experience has been acceptable, merely to comply with new standards. The clear exception to this premise is if the new standards were issued to address a deficiency in

the design in question or if the service experience is not applicable to the new standards. This consideration of airworthiness standards and service experience should form the basis for developing the certification basis for a change in a product.

While it can be argued that, for consistency, new airworthiness standards should apply across the board to the entire aircraft fleet, application of new standards would not be practicable in every case. Although newly designed aircraft are required to meet all applicable current airworthiness standards, in many cases a product being changed, for which only an amended type certificate is needed, is required to meet only the standards referenced in the original type certificate or in an amended type certificate. Thus, there may be a considerable difference between the standards required for a new product and for a product undergoing change. A product undergoing change that met the applicable standards at the time of original or amended type certification is not currently required to meet more current airworthiness standards except in those instances where retroactive regulations have been issued or the applicant elects to comply with later amendments.

In recent rulemakings, the FAA has carefully considered whether corresponding retroactive action is warranted whenever a change to the airworthiness standards for type

certification was proposed. In those cases where it has been determined that a safety benefit commensurate with the cost could be achieved, the rulemaking has also included a proposal to change the relevant operating regulations to require newly manufactured airplanes or airplanes in service, or both, to comply with the new standards, regardless of whether such compliance would be required as a condition of type certification. For instance, some of the regulations implemented in recent revisions to part 25 for newly manufactured airplanes were required for the existing fleet and were implemented in the operating regulations, such as part 121.

**Recent FAA Actions**

In addition to the safety considerations previously described, there has also been a growing international concern that some changed products are given an unfair competitive advantage over those that are of new design and must comply with later standards.

Because of these concerns, beginning in 1989 the FAA participated in an ad hoc committee sponsored by the Aerospace Industries Association of America, known as the International Certification Procedures Task Force (ICPTF). In addition to the FAA, this task force included representatives of the European Joint Aviation Authorities,

Transport Canada, Aerospace Industries Association of America, Air Transport Association of America, General Aviation Manufacturers Association, International Air Transport Association, The European Association of Aerospace Industries (AECMA), Aerospace Industries Association of Canada, Air Line Pilots Association, and Association of European Airlines.

The ICPTF was organized to develop the philosophy and the necessary regulatory text and advisory material that would provide for the implementation of later regulatory amendments applicable to aeronautical products undergoing change, products in production, and products in service. The specific tasks of the ICPTF were: (1) Develop the type certification philosophy for changes to aeronautical products, including revisions to the regulations and associated advisory material; (2) Develop the necessary guidance information on the use of "service experience" in the type certification process; and (3) Develop a method to evaluate the safety impact and cost effectiveness of revisions to the airworthiness standards.

In order to develop future proposed safety standards by using a system-type analysis, the FAA chartered a committee of safety experts, known as the Aviation Rulemaking Advisory Committee (ARAC), on February 5, 1991. This committee established the International Certification Procedures

Working Group, which consists of the original ad hoc committee formerly known as the ICPTF. The task assigned to this working group was to present to ARAC various proposals pursuant to its area of expertise. ARAC then had the option to submit these recommendations to the FAA, and the FAA would decide whether or not to issue a proposal based on the ARAC recommendations.

The Working Group presented to ARAC a recommended NPRM and associated advisory material concerning the type certification procedures for changes to aeronautical products, changed products, and products already in service. ARAC, in turn, submitted these documents, dated October 14, 1994, as recommendations to the FAA.

The rulemaking proposed by the FAA in Notice No. 97-7 reflects the ARAC recommendations in the type certification procedures for changed products with mostly minor changes in the preamble to the proposed rule. Similar proposed changes have been published by the Joint Aviation Authorities (JAA) in NPA 21-7 which the JAA circulated for public comment on June 10, 1996.

At the same time the FAA issued Notice No. 97-7, the FAA announced the availability for public comment of a proposed companion advisory circular (AC). While the FAA's proposed AC was based on a draft submitted to it by the ARAC, the FAA's version was significantly reorganized and

rewritten except for the proposed appendices which were identical to those recommended by the ARAC. Also, the FAA stated in Notice No. 97-7 that while the ARAC recommended that the safety benefit-resource evaluation guide included in the proposed AC (Appendix 2) be considered an acceptable means of showing compliance with the exceptions of proposed § 21.101(b), the FAA included this guide for information purposes only. The FAA stated, "The safety benefit-resource guide does describe some of the kinds of issues that the applicant would address, and the FAA would consider, in determining the certification basis in accordance with the proposed rule."

After the comment period on Notice No. 97-7 closed, the FAA tasked the ARAC to review the public comments and to recommend to the FAA disposition of the comments and a draft final rule document.

**FAA Rulemaking on Changed Products**

This rulemaking amends the type certification procedures for changes to type certificated products to bring the certification basis for significantly changed products (whether the change is by amended or supplemental type certificate) closer to the current regulations. The intent is to ensure that when an essentially new product is developed through a series of changes, the final product

achieves a level of safety similar to that of a comparable new product.

By this rulemaking, the FAA requires all proposed changes for all type certificated products to comply with later amendments of the airworthiness standards unless one of the stated exceptions applies. The long term result of this rule change will be that a changed product will have a certification basis that provides a similar level of safety to that provided by the certification basis of a new type certificate for the same product unless the changed product meets one of the exceptions.

As discussed more fully later in this preamble, the final rule contains an exception not in the NPRM that would, in effect, continue the existing requirements for amended type certificates and STC applications for aircraft (other than a rotorcraft) with a maximum certificated gross weight (MCGW) of 6,000 pounds or less and for non-turbine rotorcraft with a maximum certificated gross weight (MCGW) of 3,000 lbs. or less.

As stated, the FAA is issuing an advisory circular based on this rulemaking. This advisory circular will provide guidance on determining the certification basis for changed aeronautical products (both amended type certificates and STC's), including identifying the conditions under which it will be necessary to apply for a

new type certificate. For the reasons discussed below, in response to the comments received, the final advisory circular closely follows the text of the draft AC originally submitted to the FAA by the ARAC.

**Discussion of Comments Received on the NPRM**

The FAA received 71 comments on the NPRM. Commenters included aircraft manufacturers and operators, organizations representing these groups, foreign entities, and individuals.

More than half of the comments focus on the issue of applicability of the proposed rule changes to supplemental type certificates (STCs) and type certification amendments for small part 23 airplanes, particularly older airplanes. Virtually all of these commenters state that this proposed rule and advisory circular were designed for transport category aircraft by persons involved in manufacturing or using transport category aircraft. These commenters urge that non-transport category aircraft not be included in the final rule. Several request extension of or reopening of the comment period, stating that the in-service modifier community was not involved in the development of the NPRM and asserting that much of this community was not even aware of the NPRM until after the comment period closed. (For further detail, see discussion of comments under the heading

"Applicability to General Aviation Aircraft and to Supplemental Type Certificates.")

Many of the commenters request that the preamble and advisory circular be rewritten to reflect more closely the recommendations by the Aviation Rulemaking Advisory Committee (ARAC). Many of these commenters state that one of the main purposes of this NPRM was to achieve harmonization with the Joint Aviation Authorities (JAA) and that to the extent the FAA departed from the ARAC recommendation, harmonization was lost because the JAA Notice of Proposed Amendment (NPA) was very closely aligned with the ARAC recommended document. (For further detail, see discussion of comments under "ARAC Recommendation and Harmonization" and "Rewrite of AC from ARAC Draft.") Comments that suggest specific substantive changes to the proposed rule language are summarized and addressed under the section by section portion of this preamble.

Many commenters made specific comments on the proposed advisory circular. These are summarized following the discussion of comments on the proposed rule.

In view of the harmonization goal of this rulemaking and the intended close relationship between the FAA's Notice No. 97-7 and the JAA's NPA 21-7, the FAA included the comments received by the JAA in the FAA public docket and the ARAC reviewed the relevant comments on NPA 21-7. Except

for the issue of applicability to aircraft modifiers, the comments on NPA 21-7 were mostly from the same entities that commented on this rulemaking and these comments did not differ significantly from the comments on FAA's Notice No. 97-7. Therefore, this document does not separately address the comments received on NPA 21-7.

**General and Miscellaneous Comments**

Comments: One commenter, in reference to the preamble section "Recent FAA Actions," says that the FAA's mandate, under 49 USC § 44701, is to promote safety and safety regulations. This commenter says that the FAA has no mandate or legal basis for "making regulations designed to manipulate competitive forces or marketplace decisions."

Fairchild Dornier also states its concern that the real problem being addressed by the FAA is not a safety problem, but rather the potential for an unfair trade advantage.

Hiller Aircraft expresses opposition to the proposal and states that current §§ 21.16, 21.19, and 39.1 already provide the FAA with "the regulatory flexibility to prescribe applicable rules for any newly proposed design, any design being considered for change and any design found to be unsafe through field experience." Hiller says that the proposal would be administratively burdensome on both the FAA and manufacturers while not providing the FAA with

any additional regulatory power. Fairchild Dornier also concludes that the proposed rule will only create more bureaucratic paperwork, and will increase cost of the certified product without compensating increases in safety.

FAA Response: While international concern over potential unfair competitive advantages that could result if different standards are applied to similar changed products, was cited as one of the triggering events for this rulemaking, that concern was not the basis for justifying the changes proposed in Notice No. 97-7. As the NPRM preamble described at some length, the FAA's primary justification for the proposed change was a safety justification, namely, to ensure that significantly changed products comply with later requirements that apply to new products to the maximum extent practicable.

With respect to the possible increased administrative burden on the FAA, the FAA believes that this rule will actually decrease the FAA's administrative burden. Under the present rule, the FAA must take the initiative if it believes that the regulations incorporated by reference in the type certificate are not adequate to achieve the desired level of safety when an applicant applies for a change to a type certificate. Under the proposed and final rule language, the burden will be on the applicant to show that it should not be required to comply with the regulations in

effect on the date of the application because it meets one of the stated exceptions. Advisory Circular 21-101-XX being issued with this rule contains guidance intended to reduce the administrative burden on both the applicant and the FAA.

Retroactive and Retrofit Requirements

Comments: The European Association of Aerospace Industries (AECMA) states that the "key point in ensuring steps forward in safety is to clearly define the applicability of the new standards at the time of the rule elaboration." Applicability to changed, newly manufactured or in-service aircraft may be mandated through appropriate amendments to FAR sections 23.2, 25.2, 27.2 and 29.2 (special retroactive requirements), or to the operational regulations (for instance part 121 subpart J).

AECMA also states that the methodology used to assess possible retroactive applicability of new standards should follow the principles of AC 21-101-XX Appendix 2, with the necessary adjustments for each category of product. Also the harmonization process should be extended to the retroactive requirements. While promoting the implementation of the real safety improvements, this approach would allow the manufacturers to clearly anticipate the requirements applicable to their products, instead of entering into case by case non-public discussions with possible unequal treatment.

FAA Response: Whenever the FAA adopts a new design requirement, it determines whether to apply that requirement to previously type certificated but changed products through a retroactive requirement or to previously manufactured aircraft through an operating rule. However, that determination is not the same as the determination that must be made when the FAA receives an application for a changed product since the determination of which design amendments should be applied depends on the nature of the proposed change. Therefore, the FAA does not agree that the normal retroactive and retrofit determinations are sufficient for dealing with changed products.

Due Process/Justification

Comments: The Air Transport Association (ATA) raises due process concerns based on the failure of the FAA to quantify the costs and benefits of this proposal. While the NPRM states that the FAA is not able to quantify the costs and benefits of this proposal, the NPRM also states that the benefits will exceed the costs. In previous rulemakings the FAA was able to justify part 25 amendments applicable to new type designs, but failed to satisfy reasonable cost-benefit criteria essential to making them applicable to derivatives, new production units or the existing fleet. Based on this, ATA doubts that the benefits of the proposal exceed the costs.

ATA believes the "proposed rule would authorize 'blanket' applicability of later design standards to new products, regardless of the cost-benefit determination for each." Each standard would take on equal importance, and there would be no prioritization of the most important standards. ATA is concerned that such an approach would unduly inflate the cost of transportation to traveling and shipping public, and act as a deterrent to the incorporation of changes that would make gains on specific airworthiness fronts. If, for example, the airlines were to voluntarily initiate an incorporation of predictive windshear systems, ATA anticipates the proposed rule could invoke the requirement to meet other "modern" airworthiness criteria that individually do not satisfy airline criteria for voluntary action. In such a case, the existence of a rule such as the one proposed would tend to deter voluntary airline improvements.

ATA states that its members have uniformly and consistently supported the implementation of reasonable airworthiness enhancements for new type designs based on a list of principles in its comment. ATA states that it has "supported many part 25 amendments even when the FAA's cost-benefit ratio was not highly in support of a requirement, while not supporting corresponding retrofit requirements." The ATA is concerned that the proposed amendment "as it may

affect future STCs - and as it may re-introduce the specter of retrofit requirements - would ignore these principles."

FAA Response: **[Insert] [To be provided by APO and possibly moved to Regulatory Analysis Summary.]**

Consistency of Application within FAA

Comments: Raytheon suggests that in conjunction with the implementation of this rule the FAA should consider an Aircraft Certification Office (ACO) oversight program which would include (1) annual review of ACOs and new changes to type certificated products; (2) quarterly report submittal from ACOs stating amendment level of rules mandated for incremental changes; and (3) feedback from the FAA Directorate if it sees a consistent pattern from one ACO where the later rule amendments are not being imposed. Raytheon's recommendations are intended to ensure more equitable compliance requirements to avoid giving some region or manufacturer an economic advantage. Raytheon also recommends that the FAA implement an appeal process for an applicant who strongly disagrees with an ACO decision.

FAA Response: One of the tasks assigned to the ARAC was to assist the FAA in developing followup training for both government and industry to facilitate implementation of this final rule. It is the FAA's intent that all FAA employees called on to implement this final rule will

receive appropriate training and implementation documents, such as internal orders and handbooks. The FAA will also implement other appropriate followup actions to ensure that the rule is being implemented uniformly throughout the FAA.

Potential for Adverse Safety Effect

Comments: One commenter predicts that the likely effect of enacting the proposed rule will be that no changes to existing aircraft designs will be incorporated due to the increased cost of certification. As a result no safety improvements would occur.

Representatives of the in-service modifier community make the same point with respect to safety improvements that would require an STC. (See discussion under "Applicability to General Aviation Aircraft and to Supplemental Type Certificates.")

FAA Response: The FAA does not agree that this rule will be a disincentive to change because the potential for requiring compliance with airworthiness amendments adopted after the original type certification will apply in the fewer than 1% of all changes that will be considered significant.

**ARAC Recommendation and Harmonization**

Comments: The most common issue discussed by the

commenters (who were not focused on the in-service modifier/STC issue) related to the differences between the FAA NPRM and accompanying draft AC and the ARAC documents, and the resulting lack of harmonization with the JAA NPA which the commenters state is closer to the ARAC recommendation.

The United Kingdom's Civil Aviation Authority (CAA) states that in the NPRM the FAA policy appears to be moving towards accepting previously certificated products with a greater level of change before requiring certification as a new product. CAA comments support the need to positively limit the extent to which manufacturers should be allowed to change products without being required to certificate a product to the latest standards. CAA suggests that the harmonization of FAA and JAA requirements remains incomplete until it is clearly understood by both FAA and JAA the extent to which the criteria for a changed product is to be applied in a particular instance.

The General Aviation Manufacturers Association (GAMA) submitted the complete ARAC recommendation dated October 14, 1994 with its comment and requests that the FAA reconsider the original ARAC recommendation in developing the final rule. Other commenters that state their concern that the FAA's NPRM and draft advisory circular were significantly different from the original ARAC recommendation (and

therefore different from JAA's NPA 21-7) are the European Association of Aerospace Industries (AECMA), Pratt and Whitney Canada, Bombardier, and the Aerospace Industries Association.

FAA Response: A number of the commenters suggest rewording of the NPRM preamble to make it consistent with the document submitted by the ARAC to the FAA. The FAA has considered the substance of these comments and where appropriate, they are addressed in this final rule preamble. In general, the differences between Notice No. 97-7 and the document submitted to the FAA by the ARAC involved additional preamble language included by the FAA to clarify the intent of the proposed changes. With one exception the proposed rule language in Notice No. 97-7 was identical to the rule language recommended by the ARAC. The draft AC, which is a non-binding tool to aid compliance, is discussed later in this preamble.

**Applicability to General Aviation Aircraft and to Supplemental Type Certificates**

Comments: Over half of the 71 comments received focus exclusively on the question of the applicability of the proposed changes to aircraft that are not certificated under part 25 (i.e., to non-air carrier aircraft, frequently referred to by commenters as general aviation aircraft) and

the applicability to supplemental type certificates in general. Most of these commenters state that part 23 aircraft should be entirely excluded from this rulemaking. The specific substantive statements are summarized below.

The thrust of the comments from the non-air carrier community received in the public docket fell into one or more of the following categories:

1. The in-service modifier community was not aware until late in the comment period that the ARAC recommendation and the resulting FAA Notice No. 97-7 would affect it at all. Several request an extension of the comment period.

2. Notice No. 97-7 was developed by an ARAC working group composed entirely of representatives of manufacturers of transport category aircraft and their counterparts in the represented civil aviation authorities. The in-service modifier community believed that the ICPTF/ARAC working group was focused on a problem involving the manufacture of transport category aircraft, not the alteration of general aviation aircraft. The in-service modifier community argues that the older the aircraft, the more the burden would increase on STC applicants and the less relevant would be the problems and examples used to justify the rule change.

3. Notice No. 97-7 gave no indication that it would affect applicants for supplemental type certificates and

none of the stated justification warranted changing the rules for STCs.

4. Nowhere in Notice No. 97-7 is there any statement to indicate a problem with STCs. The entire discussion of the problem, the regulatory history and recent FAA actions used aircraft manufacturing examples and mostly examples involving transport category airplanes.

5. Little or no consideration was given to the potential impact of the proposed rule and associated advisory material on general aviation aircraft production or on the STC process. For example, the finding under the Regulatory Flexibility Act that the proposed amendments would not have a significant economic impact on a substantial number of small entities ignores the potential impact on persons seeking STCs for general aviation aircraft.

6. Substantively, and therefore of most significance, the proposed change would shift the burden from the FAA to the applicant to prove whether a proposed change should comply with type design amendments that have occurred after the original type certificate was issued. The in-service modifier comments and representatives state that this change in burden from a current "bottom up" approach to a "top down" approach would add significant costs to numerous small businesses which apply for the majority of current STCs.

The in-service modifiers also dispute the relevance of FAA Order 8110.23 that established a top down approach as a matter of policy in 1990. The in-service modifiers state that this order cannot be used to justify the rule changes proposed in Notice No. 97-7 because it was not enforceable since the rule was not changed and further because the FAA has not previously sought to apply this policy to STCs. For these reasons, this community was not even aware of its existence.

Specific written comments on the STC issue can be summarized as follows:

GAMA, EAA, NATA, and AOPA say that the proposal would be burdensome for older general aviation airplanes which would have to undergo significant and costly changes each time the in-service product is upgraded under STC procedures. GAMA adds that the re-entry into production of airplanes with older type certificates would be prevented because "product changes dictated by the FAA would be so extensive that changed products would not be cost effective due to the expense of such changes." EAA states that the change "will block safety improvements in general aviation aircraft by creating such a difficult barrier to approving Supplemental Type Certificates (STCs) that few improvements will be attempted on older aircraft designs." These commenters believe that the rule could have exactly the

opposite of the intended effect by discouraging general aviation aircraft owners from improving their aircraft.

GAMA and AOPA say that, if present type certificate holders were prevented from resuming production due to economic reasons, the result would be a lack of spare parts and technical assistance needed by current airplane owners for the continued airworthiness of their airplanes.

GAMA says that the proposal would, in effect, "render the type certificates for older out-of-production airplanes valueless due to the extensiveness of mandated FAA product changes..." AOPA states that the "proposed changes would have a tremendous negative impact on the fledgling revitalization of the general aviation industry in this country by rendering nearly all existing out of production type certificates virtually valueless."

NATA states that the NPRM fails to specifically limit the application of the rule and expresses concern that the rule requirements could be applied to unintended areas such as maintenance.

FAA Response: The ARAC recommended and the FAA has agreed that there is justification for excepting a significant segment of aircraft that are mostly used in general aviation operations from the most burdensome impact of this rulemaking. Therefore, as is more fully discussed and explained in the section by section discussion of

§ 21.101, aircraft (other than rotorcraft) with a maximum certificated gross weight of 6,000 pounds or less and non-turbined powered rotorcraft with a maximum certificated gross weight (MCGW) of 3,000 lbs. or less will be allowed to follow basically the same procedures for changes to a type certificate (whether through an amendment or an STC) as apply under present rules. While this exception should address the substantive concerns of most of the in-service modifiers listed above, the FAA will also address the procedural concerns expressed by these commenters.

The FAA believes that though it is unfortunate that the in-service modifier community may not have recognized the potential impact on it of this rulemaking, the in-service modifier community had full opportunity to participate in the ARAC process from the date that the ARAC was tasked by the FAA. The fact that in-service modifier interests may not have been fully represented in the ARAC working group is not because in-service modifiers were excluded but because they elected not to participate until after the NPRM was issued. Furthermore, while the FAA decided not to extend or reopen the comment period, as previously noted, representatives of the ARAC working group and the FAA met with representatives of in-service modifiers on several occasions after the comment period closed and the in-service modifier representative also met on several occasions with

the full working group. Comments by in-service modifiers at these meetings have been considered in this rulemaking.

The FAA believes that the STC issue and potential applicability to nontransport category airplanes were adequately addressed in Notice No. 97-7. Part 21 states in § 21.1(a) that it prescribes procedural requirements "for the issue of type certificates and changes to those certificates; the issue of production certificates; the issue of airworthiness certificates; and the issue of export airworthiness approvals." (Emphasis added.) The reason supplemental type certificates is not mentioned in § 21.1 is that throughout part 21 the word "changes" is clearly used to cover all possible changes to a type certificated product whether made by the type certificate holder, the aircraft owner, or a third party. Section 21.19 states that certain changes will require a new type certificate. Subpart D of part 21 prescribes "procedural requirements for the approval of changes to type certificates." Subpart E covers supplemental type certificates, which § 21.113 states must be applied for by any person "who alters a product by introducing a major change in type design, not great enough to require a new application for a type certificate under § 21.19... except that the holder of a type certificate for the product may apply for amendment of the original type certificate." Section 21.115, which Notice No. 97-7

proposed to amend, states that an applicant for an STC must "show that the altered product meets applicable airworthiness requirements" of § 21.101, that is, the same requirements that would apply to the holder of the type certificate. Thus, persons familiar with part 21, as are the representatives of the major in-service modifiers that commented on Notice No. 97-7, know that any proposed rule that affects "changes" under part 21 has potential broad application.

Notice No. 97-7 contained numerous statements that made it clear that the proposed amendments to existing regulations would affect persons other than transport category type certificate holders. Examples follow.

Section 21.115, which applies to all applicants for an STC, is referenced early in the "History of Type Certification" section of the preamble.

In the "History of Type Certification of Changes" section of the preamble the following sentence appears:

> Because § 21.101(a) and (b) are incorporated by reference in § 21.115 these procedures are equally applicable to persons applying for supplemental type certificates.

In the "Recent FAA Actions" portion of the preamble the following sentences appear:

> The ICPTF was organized to develop the philosophy and the necessary regulatory text and advisory material that would provide for the implementation of later regulatory amendments applicable to

> aeronautical products undergoing change, products in production, and products in service. (Emphasis added.)

> The Working Group presented to ARAC an NPRM and associated advisory material concerning the type certification procedures for changes to aeronautical products, changed products, and products already in service. (Emphasis added.)

In the section by section discussion of § 21.115 the following sentence appeared:

> There should not be a difference in the certification basis for a change to a type certificated product between these two methods of approval, amended type certificate or supplemental type certificate.

In the Regulatory Evaluation Summary the following sentence appears:

> The formalization of this policy by regulation would expedite decisions about the certification basis of proposed changed products and, therefore would provide manufacturers and modifiers with earlier and more dependable information on which to base their product development decisions.

In view of the opportunity provided by the ARAC process both before and after issuance of Notice No. 97-7 and the number of references to STCs and modifiers throughout the NPRM preamble, the FAA believes that the in-service modifier community had adequate notice of the potential impact of Notice No. 97-7 and adequate opportunity to participate.

**Transport Category Aircraft STC's**

Comments: ATA says that the proposal's requirement for an applicant to prove that a proposed change to be accomplished under an STC does not invoke a new safety standard will consume time and resources without improving airworthiness. ATA says that the current STC process is effective in ensuring that changes to an aircraft design are airworthy and recommends that the FAA exclude STCs from the proposed rule.

FAA Response: Since the transport category aircraft of concern to ATA do not fall within the small aircraft exceptions described above, the FAA does not believe there is any basis for excepting STC applicants for these aircraft.

**Section By Section Discussion**

**Section 11.11**

Current § 11.11 lists special conditions required as prescribed under § 21.101(b)(2) as an FAA record that is maintained in current docket form in the Office of the Chief Counsel. To remain consistent with the changes to § 21.101, described later, the NPRM proposed to amend § 11.11 to refer to § 21.101(c) (now § 21.101(d)) instead of § 21.101(b)(2).

There were no substantive comments on this section and it is adopted as proposed.

**Section 21.19**

Current § 21.19(a) states that any person who proposes to change a product must make a new application for a type certificate if the Administrator finds that the proposed change in design, configuration, power, power limitations (engines), speed limitations (engines), or weight is so extensive that a substantially complete investigation of compliance with the applicable regulations is required. In addition, current paragraphs (b), (c), and (d) list other specific types of changes that mandate a new application for a type certificate. Notice No. 97-7 proposed to include only the general language of current paragraph (a) into the new § 21.19, while the previously listed specific changes would be subject to case-specific evaluations to determine whether they are substantial.

Current § 21.19(b) describes specific changes for which the applicant must apply for a new aircraft type certificate. These include (1) changes in the number of engines or rotors; and (2) changes to engines or rotors using different principles of propulsion or to rotors using different principles of operation. Historically, these types of changes have fallen into one of two categories -- those that were not extensive enough to require a new application for a type certificate, as evidenced by the large number of exemptions that have been granted over the

past quarter century, or those that were so extensive that a new application was required because a complete investigation of compliance is required. Accordingly, as was discussed in the NPRM preamble, the provisions of current § 21.19(b) are not needed and were not included in the proposal.

Current § 21.19(c) describes another specific change in which the applicant must apply for a new aircraft engine type certificate. This change is in the principle of operation. Also, current § 21.19(d) describes specific changes in which the applicant must apply for a new propeller type certificate. The NPRM proposed to delete these types of changes from § 21.19. Under proposed § 21.101, with certain exceptions, these types of changes and all areas, systems, components, equipment, and appliances affected by the changes would have to comply with the regulations in effect at the date of application for the change to the type certificate.

Comments: CAA recommends that this section be cross-referenced in § 21.101(a).

One commenter recommends that wing modifications be added to the list of design changes listed in the preamble. This would be written as: "New wing (external geometry, structure, and performance)."

FAA Response: The CAA comment is discussed under

§ 21.101(a). The list of design changes typically regarded as substantial that were referenced in the NPRM preamble have not been included in this document. Section 21.19 is adopted as proposed.

**Section 21.101(a)**

Current § 21.101(a) states that if a person applies for a change in a type certificate, the product must comply with either the regulations referenced in the type certificate or the applicable regulations in effect at the date of the application for the change, if elected by the applicant, plus any other amendments the Administrator finds to be directly related.

In Notice No. 97-7, the FAA proposed to amend § 21.101(a) to require an applicant for a change to a type certificate to comply with the applicable regulations in effect at the date of the application for the change, and with parts 34 and 36 unless the applicant falls within one of the exceptions that would allow compliance with an earlier amendment. The primary purpose of this proposed change was to ensure that the products being changed in a significant manner meet the latest airworthiness standards wherever practicable.

Under this approach, the starting base is the applicable regulations in effect at the date of the

application for the change and the burden is on the applicant to prove that compliance with earlier regulations would provide an acceptable safety level. Under the current regulation, the starting base is the regulations incorporated by reference in the type certificate and the burden is on the FAA to find that later amendments are directly related to the proposed change or that there are other reasons (e.g., the regulations incorporated in the type certificate do not provide adequate standards with respect to the proposed change) for requiring compliance with later amendments.

For clarification purposes, the FAA points out that under both the language in present part 21 and the changes made in this rulemaking, the only type design changes that are considered under § 21.101 are design changes that have been determined to be "major" changes under § 21.93. Design changes that are determined to be "minor" are approved under § 21.95 and therefore are not considered to be changes to a type certificate within the meaning of § 21.101.

Comments: The comments that address the major substantive issue of the safety justification for, and potential cost, of changing from an original or previously amended certification base approach to a current amendments approach were addressed earlier in this preamble.

CAA says that this section should be amended to cross

reference § 21.19, which would read as follows:

Where the Administrator finds that an application for a new type certificate is not required under 21.19 and except as provided in paragraph (b)....

Raytheon recommends that paragraph (a)(1) be rewritten so that the word "and" after the term "changed product" is deleted.

FAA Response: The FAA does not agree with the recommended change. Section 21.19 stands on its own and there is no need for a cross-reference to it in § 21.101. The "and" in § 21.101(a)(1) is needed.

**Section 21.101(b) (New)**

Section 21.101(b) in this final rule contains the previously mentioned exceptions for aircraft (other than rotorcraft) of 6,000 lbs. or less MCGW and non turbine rotorcraft of 3,000 lbs. or less MCGW. Inclusion of these exceptions will address the vast majority of the concerns expressed by the aircraft modifiers who commented on Notice No. 97-7.

The primary impact of the exception language in § 21.101(b) will be that the starting point for determining the applicable regulations for a changed product will continue to be, as in current § 21.101, the regulations incorporated by reference in the type certificate rather

than the regulations in effect on the date of application for the change. To ensure that later regulations are applied when appropriate, § 21.101(b) contains language that allows the administrator "to designate an amendment to the regulation incorporated by reference that applies to the change and any regulation that the Administrator finds is directly related, unless the Administrator also finds that compliance with that amendment or regulation would not contribute materially to the level of safety of the changed product or would be impractical."

Thus, as adopted, for the excepted aircraft the starting point for determining the applicable regulations will be the existing type certification basis rather than the date of application for the change. It will be up to the FAA to take the initiative to justify applying later amendments.

The FAA believes this approach is justified because historically FAA and its predecessor agencies have treated light airplanes (6,000 lbs. or less MCGW) differently from other classes of airplanes defined in Civil Air Regulations (CAR) 4A, CAR 3, and 14 CFR part 23. Airplane certification under 14 CFR part 23 that are 6,000 lbs. or less MCGW have different certification requirements defined in performance, minimum control speed, rate of roll, floats and seaplane hulls, fire extinguishers, flight and navigation

instruments, powerplant limitations, operating limitations, performance information, and simplified design load criteria. These simplified methods and requirements provide a reduced burden on the public in showing compliance with the regulations. It has been determined and validated by years of service experience that these methods are appropriate and do not reduce the level of safety for these airplanes.

Similarly, non-turbine rotorcraft of 3,000 or less MCGW are mostly 2-seat capacity, with some 4-seat capacity, that will not ordinarily operate in the same environment as larger part 27 or 29 rotorcraft.

**Section 21.101(c) (Proposed § 21.101(b))**

Proposed § 21.101(b) (which with some modifications is now § 21.101(c)) provided exceptions to the regulation in proposed paragraph (a), that, when met, would allow the applicant to comply with earlier amendments to the regulations. A "regulation" in this case means individual paragraphs of the airworthiness regulations. When choosing the amendment level of a regulation, all regulations associated with any relevant paragraphs in that amendment level would have to be included. The amendment level chosen would not be allowed to predate either the existing certification basis or anything required by the retroactive

sections, that is, §§ 23.2, 25.2, 27.2, or 29.2.

The intent of the proposed change was to apply the applicable regulations in effect at the date of the application to those areas, systems, components, equipment, and appliances significantly affected by the change unless the Administrator finds that compliance with a regulation would not contribute materially to the level of safety of the changed product or would be impractical. For those areas, systems, components, equipment, and appliances not significantly affected by the change, or otherwise excepted, continued compliance with the regulations incorporated by reference in the type certificate would be considered acceptable.

Proposed paragraph (b)(1) stated that the applicant would be allowed to demonstrate compliance with earlier regulations, but not earlier than the regulations incorporated in the existing certification basis, if the effect of the proposed change is not significant, taking into account earlier design changes and previous updating of the type certification basis.

Proposed paragraph (b)(2) stated that the applicant may show compliance with earlier regulations for those areas, systems, components, equipment, and appliances that are not affected by the change.

Proposed paragraph (b)(3) stated that, if compliance

with a regulation in effect at the date of the application for the change would not contribute materially to the level of safety of the product to be changed, or would be impractical, the applicant may demonstrate compliance with an earlier amendment of a regulation provided that the amended regulation does not precede either the corresponding regulation in §§ 23.2, 25.2, 27.2, or 29.2 of this chapter, or the corresponding regulation incorporated by reference in the type certificate.

A proposed advisory circular contained a safety benefit - resource evaluation guide, which was recommended by the ARAC to be an acceptable means of compliance with the "impractical" exception of proposed § 21.101(b)(3) but which was included by the FAA for purposes of information only.

Comments: Erickson Air-Crane Co. states that compliance under this paragraph should mean compliance with the entire regulation at a given amendment level, and not with the amendment alone and recommends that the regulation be worded accordingly.

FAA Response: The FAA does not agree that an applicant would always have to comply with an entire amendment level. Compliance would be required only with the relevant portions of a particular amendment level.

Comments: CAA states that the objective of the certification policy for changed products should be to

ensure, as far as is practicable, that a changed product will achieve the same level of safety as a new product introduced concurrently. CAA states that the proposal, Notice No. 97-7, will not achieve this objective for the following reasons:

> (a) The proposed § 21.101(b)(2) allows areas not affected by the change being considered to continue to use superseded airworthiness requirements, some of which may have been amended with the objective of improving the general level of safety. The fact that a product is a changed product, rather than a new product, should not be the reason for allowing it to continue to use outdated safety standards indefinitely. Even for areas not affected by the changes there needs to be a point beyond which a changed product is required to comply with the latest standards where amendments have been made as part of an initiative to improve general safety levels in such areas.
>
> (b) The proposed § 21.101(b)(3) allows the continued use of superseded airworthiness requirements where compliance "*would not contribute materially to the safety of the changed product.*" Although NPRM 97-7 acknowledges the need to assess the accumulative effect of a number of small changes on the level of safety, the text of Paragraph (b)(3) is written in terms of the effect of a single change... there is a need to establish the datum as the original design standard of the product originally certificated.

CAA believes that § 21.101(b) is difficult to understand and should be re-drafted and cross referenced to paragraphs (b)(1), (b)(2) and (b)(3).

CAA states, as it did on the JAA proposal, that the phrase "For each area, system, component, equipment, or appliance" should be replaced with "For each feature of the

product." CAA acknowledges that this change, if adopted, would require extensive interpretive material to clarify what the word "feature" means.

FAA Response: There is very little language difference, and no substantive difference, between the FAA's proposed rule language and the language in JAA's NPA 21-7. Since a primary goal of this rulemaking is to achieve international harmonization, the FAA is reluctant to make any language changes that are not being made mutually by the JAA.

Comments: The ARAC working group had numerous discussions as to the meaning of "nonsignificant" in the proposed rule. The working group focused particularly on the draft Advisory Circular (AC) circulated for public comment at the same time as Notice No. 97-7 because the draft AC contained language explaining "nonsignificant" that ARAC recommended be included in the final rule. The draft AC stated that the following changes are considered nonsignificant:

"Changes that do not modify the general characteristics of the product in that: (1) The general configuration and 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."

FAA Response: In view of the ARAC discussions, the FAA has decided that it would be helpful to more fully explain in the rule itself the term "nonsignificant." The following language from the draft Advisory Circular (AC) has been included in § 121.101(c)(1) (§ 121.101(b)(1) in NPRM):

> A change is considered to be "nonsignificant" if it does not modify the general characteristics of the product in that the following conditions exist:
>
> (i) The general configuration and the principles of construction are retained; and
>
> (ii) The assumptions used for certification of the product to be changed remain valid.

This language should help both the applicant and the FAA reviewer to determine whether the effect of a change, when combined with all previous changes, is nonsignificant. As mentioned earlier, and as discussed extensively in Notice 97-7, the overall intent of this rulemaking is to ensure that when an essentially new product is developed through a series of changes, the final product achieves a level of safety similar to that of a comparable new product. Also, as discussed in the preamble of Notice No. 97-7, and consistent with this intent, the FAA will consider amendments to the airworthiness standards adopted after the most recent type certification basis in determining whether a change is nonsignificant. For example, later amendments may be of particular relevance in determining whether the

assumptions used for certification of the product to be changed remain valid.

Comments: One commenter states that the FAA should reconsider its proposal to delete the existing § 21.101(b)(1) which allows the FAA to apply later regulations without regard to the exceptions in proposed § 21.101(b)(1), (2), and (3).

This commenter suggests that proposed § 21.101(b)(3) is not an improvement over the issue paper process, where that applicant would have an opportunity to apply for an exemption from the rule, which the applicant did not agree with, through a public notice process.

This commenter also states that the preamble discussion of impractical mentions both a cost analysis and a benefit-resource evaluation and states that the applicant will only be able to provide a cost analysis and that there would not be enough data to make a comparison.

This commenter does not believe 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. He states that if such an approach is used then the FAA should at least eliminate proposed AC Appendix 2 as it appears biased and without justification.

The ARAC working group had numerous discussions on the limited applicability of the data in Appendix 2 of the draft

AC because this data was drawn from and therefore only applicable to transport category airplanes. The ARAC recommended that data be developed for other airplanes and for rotorcraft. The ARAC also recommended delayed compliance dates to allow time for development of this data.

FAA Response: In the preamble to Notice No. 97-7, the FAA stated that the safety benefit-resource evaluation guide in Appendix 2 to the draft AC was included for information purposes only. After considering the comments and after further discussion with the ARAC, the FAA has decided that an appropriate safety benefit-resource analysis provided by an applicant would be considered in the FAA's assessment of whether a change is practical. However, the safety benefit-resource analysis would not be controlling. Thus, the FAA has included the safety-benefit resource analysis in the final AC. In any case, an applicant who elects to make a showing under this guide would be required to submit data on potential benefits as well as on costs. Thus the burden of the initial showing on both costs and benefits would be on an applicant who is attempting to justify compliance with an amendment level earlier than the application for a change.

The FAA also agrees that data is needed for non-transport category airplanes and for rotorcraft and has established compliance dates to allow sufficient time for this data development.

Comments: AECMA states that few of the changes proposed during the life of a product are really significant and that therefore, it is an administrative burden to require elaboration and documentation of a justification for application of one of the exceptions in sub-paragraph (b) for each change. This commenter states that the procedure described in the Action Notice A8110.23, "requiring application of the latest requirements only for changed parts of the product and affected area warranted equivalent results with less bureaucratic burden."

FAA Response: FAA's Action Notice 8110.23 was an interim action intended to move applicants in the direction of the regulations in effect on the date of the application for a change. It did not, nor was it intended to, have the regulatory impact of the rule language proposed in Notice No. 97-7 although it was directed at all derivative aircraft, engines, and propellers where change is significant but not so extensive as to require a new type certificate. The action notice applied to all derivative products whether the approval method was an amended type certificate or an STC.

Comments: Raytheon states that the intent of the word "impractical" in proposed § 21.101(b)(3) "should be defined as not providing added value (perceived or actual) to the operator, manufacturer or traveling public, or not achieving

the desired effect, as in *non-meritorious or ineffectual.*" Raytheon suggests, "Perhaps impractical could be defined as 'without value enhancement,' to stress that any change required as a result of a new regulation which doesn't result in a value enhancement, may, with analytical substantiation, be exempted from compliance."

FAA Response: The FAA believes that there is little, if any, difference between its explanation of impractical in the preamble to Notice No. 97-7 and the explanation offered by Raytheon. The issue of impracticality arises only after it has been determined that compliance with a particular regulation would "contribute materially to the level of safety of the changed product..." Thus, as Raytheon indicates, impractical cannot be interpreted to mean "no usefulness" or "no benefit" because clearly there would be some safety benefit. It is the cost factor that is introduced by the word impractical that must be considered in relation to the potential safety benefit. In order to show impracticality or as Raytheon suggests "without value enhancement," the applicant must show that the costs to implement the potential safety benefit would exceed the potential savings from that benefit.

Comments: One commenter states that if an applicant is granted an exception under proposed § 21.101(b)(2) (unaffected areas) it should be subject to mandatory

periodic FAA reviews of safety related issues for airplanes that continue in production under the same type certificate. This commenter states that for airplanes that have continued in production for many years and at substantial quantities, the claim of excessive economic burden may be invalid and that a reasonable time period for periodic reviews would be ten years, starting from the date the exception was first granted. The commenter recommends that mandated changes should be incorporated in newly produced airplanes within three years after the review. Furthermore, the FAA should consider expected size of the future market when considering granting an exception for production airplanes.

On the topic of "impractical" this commenter believes the concept is acceptable, although balancing safety with economics is not something readily acceptable to the public at large. The commenter states that "costeffective/not costeffective" should be used instead of "practical/impractical" since the latter terms are too broad and not descriptive of the concept.

FAA Response: Since the basis for an exception under proposed § 21.101(b)(2) (final rule § 21.101(c)(2))is a finding that the area, system, component, etc. is not affected by the change, the FAA does not agree that there is a need for a periodic review of the ground for the exception, nor does the FAA agree that economic burden is a

factor in this determination. With respect to impracticality, the FAA does not agree that "cost effective/not cost effective" would be more descriptive because while costs and benefits stated in dollar terms are essential ingredients, a benefit-resource analysis involves more than just costs.

The benefit-resource analysis is a composite evaluation of four elements that are key to determining the contribution to safety made by meeting a particular rule. The four critical elements are:

(1) The frequency of occurrence of the hazard the rule is intended to mitigate;

(2) The potential severity of the hazard;

(3) How well the configuration being certified will mitigate the hazard by meeting the rule;

(4) What resources are required to meet the rule. Thus, while cost is one element of this evaluation, all four elements must be considered in a proper evaluation of the application of a rule.

**Section 21.101(d)**

Proposed § 21.101(c) contained the provisions of current § 21.101(b)(2) concerning special conditions. This paragraph addresses novel or unusual design features where the Administrator finds that the regulations incorporated by

reference in the type certificate do not provide adequate standards. In this case the applicant must comply with the regulations in effect at the date of the application for the change and any necessary special conditions "to provide a level of safety equal to that established by the regulations incorporated by reference in the type certificate for the product." For consistency with the other proposed changes to § 21.101, this proposed paragraph stated that an applicant for a change must comply with any special conditions, and amendments to those special conditions, if needed, that provide a level of safety equal to that established by the regulations in effect at the date of the application for the change.

The provisions of current § 21.101(c), concerning the replacement of reciprocating engines with turbopropeller engines, were not incorporated into the proposed regulation because a change of this nature would be considered a significant change, and compliance with the regulations in effect at the date of application by the change, therefore, would be required.

Comments: CAA recommends that the words "established by the regulations" be replaced with the words "intended by the regulations."

FAA Response: The FAA does not believe that the phrase "intended by the regulations" is appropriate rule language.

**Proposed Section 21.101(d) and Final 21.101(e)**

Proposed § 21.101(d) stated that an application for a change to a type certificate for a transport category aircraft will be effective for 5 years, and an application for a change to a type certificate for all other products will be effective for 3 years. These proposed effectivity periods for an application are the same as those in current § 21.17(c) and (d) for an application for a type certificate. The proposed section stated that if an application for a design change expires, an applicant may file a new application or apply for an extension of the original application as in present § 21.17(c) and (d).

No substantive comments were received on this section and it is adopted as proposed.

**Proposed Section 21.101(e) and Final 21.101(f)**

Proposed § 21.101(e)(1) mandated that the certification basis for a change to a product certificated under the applicable regulations that preceded parts 23, 25, 27, 29, 31, 33, or 35 are established in the same manner as a change to a product certificated under one of these parts.

Applicability of the proposed regulation includes changes to products type certificated under §§ 21.21 and 21.29. In addition, proposed paragraph (e)(2) stated that

these proposed procedures are applicable for changes of aircraft that have been type certificated under §§ 21.24, 21.25, 21.27, and special classes of aircraft, where a part of the certification basis contains regulations from the airworthiness standards listed in Chapter 1.

Comments: Pratt & Whitney Canada says that this paragraph has no counterpart in the JAA's NPA (NPA 21-7, July 1996), nor in the draft proposed Canadian regulation. This commenter recommends that this paragraph should be withdrawn. If, however, the FAA believes that there is a safety issue that can only be addressed by this paragraph, then it should be submitted to ARAC in the interest of harmonization.

Bombardier and Transport Canada state that the inclusion of restricted category aircraft (§ 21.25) in paragraph (e)(1) is contrary to the ICPTF proposal. Bombardier says that the ICPTF proposal excluded this aircraft from the new procedures because "compliance with the 'applicable' regulations (whether earlier or latest) was not required for the original model when justified with the regulating Authority."

AIA states that paragraph (e) is redundant to the requirements of § 21.101(a) "which makes no exception for products originally certificated to regulations that existed prior to the codification of the applicable part(s) of 14

CFR nor for products certificated as restricted, surplus military, or other unique types." AIA recommends eliminating paragraph (e).

Transport Canada recommends changing paragraph (e), to make it consistent with § 21.101(a)(1), to read:

For the purposes of this section, "each regulation that is applicable to the changed product" includes:

FAA Response: The primary purpose of proposed paragraph (e) (final rule paragraph (f)) was to ensure that the regulations that preceded the current set of regulations (former CAR's, etc.) would continue to be the starting basis for aircraft that were originally type certificated under those earlier regulations. The FAA agrees that restricted category aircraft are not affected by this rulemaking and the reference to § 21.25 has been deleted. However, while there is no comparable provision in the JAA regulations, the FAA believes this paragraph is needed for FAA purposes.

**Section 21.115**

Under the current rules a type certificate holder may obtain approval for a change either by amending the original type certificate under § 21.101 or by obtaining a supplemental type certificate under § 21.115. Any other modifier would have to obtain a supplemental type certificate under § 21.115. Current § 21.115 incorporates

the provisions of current § 21.101(a) and (b) by reference, making the provisions that apply to a type certificate holder who seeks to amend the type certificate equally applicable to applicants for supplemental type certificates. In view of the proposed changes to § 21.101, Notice No. 97-7 proposed to amend § 21.115 to refer simply to § 21.101 rather than specifically to § 21.101(a) and (b).

The effect of this proposed change was, as the FAA intended, to require applicants for a supplemental type certificate to show that the modified product complies with the applicable regulations in effect on the date of the application for the STC unless one of the exceptions in proposed § 21.101(b) applies.

Comments: Virtually all of the comments on proposed § 21.115 (including the oral comments from the in-service modifiers represented at the ARAC working group meetings) oppose the substantive change proposed in § 21.101(a) that affects STC applicants because of § 21.115. These commenters recommend that the requirements for an STC not be changed in this rulemaking.

FAA Response: As discussed under § 21.101(b), the FAA has decided to include an additional exception for certain aircraft. Since § 21.115 references § 21.101, this exception will also apply to applicants for STCs and should eliminate most of the concerns expressed by aircraft

modifiers.

**Section 25.2**

Current § 25.2(c) incorporates the provisions of current §§ 21.101(a)(2) and (b) by reference, addressing the subsequent revisions to the special retroactive regulations. To remain consistent with the proposed changes to § 21.101, the proposal amended § 25.2(c) to refer to § 21.101(a).

Comments: Raytheon believes that §§ 23.2, 27.2 and 29.2 should be amended to use the same language as § 25.2.

FAA Response: Since current §§ 23.2, 27.2, and 29.2 do not contain references to § 21.101 no change is needed in these sections.

**Rewrite of AC from ARAC Draft**

**[The announcement of the draft AC and request for comments was published in the same Federal Register as Notice No. 97-7 but as a separate document. Normally the FAA does not publish a summary of and response to comments on an AC and if they did, it would not be part of a final rule document. Because of the close relationship of the draft AC to this rulemaking, we have included a summary of the comments within the preamble in this draft. If the FAA follows the ARAC recommendation to essentially to return to the original**

**ARAC draft AC, many of the comments would be taken care of. In any case, it is probably a good idea to include in the final rule preamble an overview of the AC comments and a general description of the AC that is to be issued with the final rule.]**

Comments: Several commenters state that the proposed AC has significantly changed from the ARAC draft submitted to the FAA in October 1994 and that this will negatively impact previous harmonization efforts.

Commenters, including GAMA, Fairchild Dornier, AECMA, Pratt & Whitney Canada, Bombardier, AIA, and Transport Canada say that the clarity and meaning of the ARAC draft has been compromised, and that the FAA has not provided any justification for the changes. GAMA adds that the plain English used in the ARAC draft has been complicated, which contradicts the Gore Commission Report recommendation (1.4) on the use of plain English (February 1997).

AIA states that if the AC is not revised and clarified, the result will be more difficult negotiations between the applicant and FAA in agreeing on a certification basis for changed products.

AIA recommends that the draft AC be rewritten using the ARAC recommended version as the baseline document for any proposed changes having validity. Fairchild Dornier

recommends that the AC be included with the proposal as part of a comprehensive proposal and that the AC (as well as all comments for procedural changes) be returned to ARAC for consideration, consolidation, and modification of the regulatory package.

**Advisory Circular - Paragraph 3**

Transport Canada says that in paragraph 3.a., the definition of "Earlier Regulations" is more complex than what was originally proposed by the ICPTF team; the commenter recommends using the earlier definition.

**Paragraph 8**

Transport Canada says that the second sentence in paragraph 8 refers to the latest amendment level, while the third sentence refers to the more recent amendment levels; the commenter recommends removing this section from the AC and placing it in the certification handbook.

**Paragraph 9**

Transport Canada says that it did not understand in paragraph 9.c., the phrase "practicality of a changed product"; the commenter recommends that this section reflect the rule which says that "compliance...would be impractical."

**Paragraphs 11 and 12**

CAA recommends that paragraphs 11.c(1) and 12 be changed to provide detailed guidance as to what constitutes significant versus nonsignificant changes. CAA notes that some of this detail is already provided in the flow chart in the AC.

An individual commenter recommends that the last sentence of paragraph 12 be changed to read as follows:

> Included in non-significant 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.

Transport Canada says that the heading for paragraph 12, "Determination of Significance" suggests a continuous scale, rather than "significant" or "nonsignificant"; the commenter recommends rewording the heading to reflect this distinction.

**Paragraph 15**

CAA recommends that the term "impractical", as defined in paragraph 15, be simplified to read as follows:

> Compliance with the regulations in effect at the time of the application for certification of a changed

product may be considered impractical if the applicant can show that it results in costs that are not consistent with the safety benefit which would result from applying these later requirements.

**New Paragraph 16**

CAA recommends an additional paragraph 16, "Overriding safety considerations" to read as follows:

Notwithstanding the above evaluation techniques, there will be occasions when the safety considerations override all arguments with respect to the practicality of complying with the later requirements.

**Flowchart**

Transport Canada says that the term "evaluating" in the title of the flowchart is misleading and should be replaced with "establishing"; the commenter also provides a number of detailed comments on the specific parts of the flowchart.

**Advisory Circular - Appendix 1**

CAA says that it can be difficult to assess the significance of performance and handling changes as opposed to structural or systems changes. CAA therefore proposes the following definitions which could be useful in determining flight significance:

Non-significant: Can be agreed without flight testing that handling qualities are not affected and that performance is either not affected or can be determined by extrapolation of existing data.

Significant: Limited flight testing is required to substantiate that handling qualities remain acceptable and that the existing performance data remain valid.

Substantial: New performance data have to be established or substantial re-evaluation of handling qualities is required.

CAA also recommends that the word "airplane" be added in the title of paragraph 2.f. It could be added before Power or Thrust to show that the text of the paragraph addresses the total aircraft (not the type design changes of engines).

CAA also recommends amending paragraph 4.a.(1), Rotor Stages to read as follows:

4.a.(1)(i) An increase in the number of compressor or turbine stages should be regarded as significant.

4.a.(1)(ii) An increase in power or thrust will be evaluated to assess the design changes which result in the power or thrust increase in order to determine if the design change should be classified as substantial, significant or non-significant.

CAA also recommends changing the title and text of paragraph 4.a.(2) as follows:

Turboshaft, Turboprop, Turbojet and Turbofan.

A change in the principle of propulsion would normally necessitate....

If the above change were made, then the reference to the addition of a fan stage to an existing turbomachine in

paragraph 4.a.(1) should be deleted.

CAA also comments that in paragraph 4.a.(4), Structural Design Changes, the term significant seems to

> imply significant in terms of airworthiness (by reference to bird ingestion capability), rather than the significance of the design change and the necessity of applying a later standard of requirement to the change.

Finally, CAA says that paragraph 4.b.(4) implies that "a change from a float carburetor to an electronic control would be considered non-significant", while in paragraph 4.a.(3), "..a change from hydromechanical control to FADEC is deemed to be significant." CAA says "The same philosophy should apply in each case and be classified as significant."

CAA adds that a new paragraph 4.b.(5) should be added as follows:

Cooling System

Conversion from an air cooled to water cooled system would be regarded as significant.

An individual commenter recommends that the following be added to clarify paragraph 2.a.(1) which outlines substantial airframe changes:

Essentially complete new wing design (substantially new external geometry, structure and new performance characteristics).

The commenter also recommends adding the following note at the end of paragraph 2.a.(2) regarding alternatively

substantial airframe changes:

...substantial. (Note that several significant changes in combination may be substantial):

**Advisory Circular - Appendix 2**

CAA states that the Safety Benefit-Resource Evaluation Guide is technically flawed and should not be used for an FAA Economic Assessment. CAA says that these flaws include: The process is focused on large transport category airplanes; the methods used for assessing safety benefits, effectiveness, economic impact, and resources are incomplete or too simplistic (see CAA comment, pages 5-6 for further detail); the discounting method presented takes no account of future costs and benefits; and the procedure for evaluating a changed product is flawed. CAA asks the FAA to consider a simplified cost benefit assessment (included as an attachment to CAA's comment).

AECMA makes a similar point to CAA regarding the bias of Appendix 2 towards large airplanes and says that further work is needed to ensure that other products are adequately covered. AECMA adds that each applicant should not be required to develop its own Safety Index and that "the Authorities should endorse at least a baseline guide for each major class of products." Finally, AECMA expresses concern that the AC is provided for information purposes only, and can not be used as an acceptable means of

compliance.

An individual says that the numbers and criteria in table 2.2 are "...biased and subjective in the direction of not applying later regulations..." and recommends that Appendix 2 not be included in the AC. This commenter also states that the "Occurrence per departure" chart would lower the level of safety that is currently practiced and expected of and by the FAA. (Under current procedures, the FAA takes mandatory airworthiness corrective action based on incidents or accidents in which structural damage or loss of life occur or have the potential to occur.)

Bombardier believes that the Safety Benefit-Resource Evaluation Guide should be used as an acceptable means of compliance (and not just for information purposes) for the determination of "impractical."

One individual comments on the FAA's not including the length of a production run in the development of the "resource index." This commenter says that

> for products not yet delivered by the manufacturer, the length and size of the future production run should be considered, otherwise the resulting cost picture would be completely unrealistic and meaningless when comparing different scenarios.

RTEXX Consulting recommends changes to Appendix 2 so that the Safety Benefit-Resource Evaluation Guide can be used as a first step in the means of compliance with

proposed § 21.101(b)(3). For example, the commenter says that the guide can be useful in showing that "costs in providing compliance with the latest amendments will drive compliance well into the 'not effective' area of the Evaluation Guide curve."

This commenter also provides specific recommendations to change Figure 2.1 so that the occurrence curve also applies to rotorcraft operations. In addition, the commenter recommends changing Table 2.1 to remove the middle column; and changing Table 2.2 to add wording to include qualification costs in the "Labor" row. The commenter also recommends changing the definitions of "labor" and "capital" in the "Terms used in Table 2.2" chart. The recommended changes would be to include the word "test" in the labor definition (after "inspection") and include the word "testing" in the capital definition (after "design").

Finally, the commenter includes two enclosures in its comments: Enclosure 1 - Explanation of Occurrence Rate Modification Based on Service/Accident Experience; Enclosure 2 - Safety Benefit-Resource Evaluation Guide for Rotorcraft.

Transport Canada comments that, since the AC is optional, the repeated references to Appendix 2 are unnecessary and should be removed. This commenter also recommends that a blank Safety/Resource Evaluation Guide be provided.

**Advisory Circular - Appendix 3**

CAA recommends that "In-Flight Shut down rate (IFSD)" be added to the list of sources.

Transport Canada recommends changing the term "evaluating" to "establishing" in the title. This commenter also says that there is no longer a worked example contained in the appendix and that the example should be reinstated.

FAA Response: Except for minor changes recommended by the ARAC, the FAA plans to return to the original ARAC draft AC that ARAC submitted to the FAA with the ARAC's recommended NPRM. This action will resolve most of the comments received on the draft AC circulated for public comment.

**International Compatibility**

The final rule results, primarily, from a recommendation harmonized with the aviation authorities of Canada and Europe. Similar corresponding changes to regulations governing type certification procedures for changed products have been proposed by Transport Canada and the Joint Aviation Authorities.

**Paperwork Reduction Act**

In accordance with the Paperwork Reduction Act of 1980 (Pub. L. 96-511), there are no requirements for information collection associated with this final rule.

**Regulatory Evaluation, Regulatory Flexibility Determination, and Trade Impact Assessment**

**[APO to provide]**

Regulatory Evaluation Summary

**TBD**

Regulatory Flexibility Determination

**TBD**

Trade Impact Assessment

**TBD**

**Federalism Implications**

The regulations herein will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this regulation will not have

sufficient federalism implications to warrant the preparation of a Federalism Assessment.

**List of Subjects**

14 CFR Part 11

Administrative practice and procedure reporting

14 CFR Part 21

Aircraft, Aviation safety, Safety, Type certification

14 CFR Part 25

Aircraft, Aviation safety, Safety, Type certification

**Adoption of Amendments**

Accordingly, the FAA amends 14 CFR parts 11, 21, and 25 as follows:

**PART 11 -- GENERAL RULEMAKING PROCEDURES**

1. The authority citation for part 11 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40101, 40103, 40105, 40109, 40113, 44110, 44502, 44701-44702, 44711, 46102.

2. Section § 11.11 is amended by deleting the first sentence and inserting in place thereof two sentences to read as follows:

**§ 11.11 Docket.**

Official FAA records relating to rulemaking actions are maintained in current docket form in the Office of the Chief Counsel. These records include: Proposals, notices of proposed rulemaking, written material received in response to notices, petitions for rulemaking and exemptions, written material received in response to summaries of petitions for rulemaking and exemptions, petitions for rehearing or reconsideration, petitions for modification or revocation, notices denying petitions for rulemaking, notices granting or denying exemptions, summaries required to be published under § 11.27, special conditions required as prescribed under §§ 21.16 or 21.101(d) of this chapter, written material received in response to published special conditions, reports of proceedings conducted under § 11.47, notices denying proposals, and final rules or orders. * * *

**PART 21 -- CERTIFICATION PROCEDURES FOR PRODUCTS AND PARTS**

3. The authority citation for part 21 continues to read as follows:

**Authority:** 42 U.S.C. 7572; 49 U.S.C. 106(g), 40105, 40113, 44701-44702, 44707, 44709, 44711, 44713, 44715, 45303.

4. Section 21.19 is revised to read as follows:

**§ 21.19 Changes requiring a new type certificate.**

Each person who proposes to change a product must apply for a new type certificate if the Administrator finds that the proposed change in design, power, thrust, or weight is so extensive that a substantially complete investigation of compliance with the applicable regulations is required.

5. Section 21.101 is revised to read as follows:

**§ 21.101 Designation of applicable regulations.**

(a) Except as provided in paragraphs (b) and (c) of this section, an applicant for a change to a type certificate must show that the changed product complies with:

(1) Each regulation in parts 23, 25, 27, 29, 31, 33, and 35 of this chapter that is applicable to the changed product and that is in effect at the date of the application for the change; and

(2) Parts 34 and 36 of this chapter.

(b) An applicant for a change to an aircraft (other than a rotorcraft) of 6,000 lbs. or less MCGW or to a non-turbine rotorcraft of 3,000 lbs. or less MCGW may show that the changed product complies with the regulations incorporated by reference in the type certificate, except as required by §§ 23.2 or 27.2 of this chapter. However, if the Administrator finds that the change is significant in an

area, the Administrator may designate an amendment to the regulation incorporated by reference that applies to the change and any regulation that the Administrator finds is directly related, unless the Administrator also finds that compliance with that amendment or regulation would not contribute materially to the level of safety of the changed product or would be impracticable.

(c) If paragraphs (c)(1), (2) or (3) of this section apply, an applicant may show that the changed product complies with an earlier amendment of a regulation required by paragraph (a)(1) of this section, and of any other regulation the Administrator finds is directly related. However, the earlier amended regulation may not precede either the corresponding regulation incorporated by reference in the type certificate or any regulation in §§ 23.2, 25.2, 27.2, or 29.2, of this chapter that is related to the change. The applicant may show compliance with an earlier amendment of a regulation for any of the following:

(1) A change the effect of which, combined with all previous relevant changes, the Administrator finds is nonsignificant. A change is considered to be "nonsignificant" if it does not modify the general characteristics of the product in that the following conditions exist:

(i) The general configuration and the principles of construction are retained; and

(ii) The assumptions used for certification of the product to be changed remain valid.

(2) Each area, system, component, equipment, or appliance that the Administrator finds is not affected by the change.

(3) Each area, system, component, equipment, or appliance that is affected by the change, for which the Administrator finds that compliance with a regulation described in paragraph (a)(1) of this section would not contribute materially to the level of safety of the changed product or would be impractical. The applicant must show compliance with the most recent amendment to the regulation for which the Administrator finds compliance would contribute materially to the level of safety and would be practical.

(d) If the Administrator finds that the regulations in effect at the date of the application for the change do not provide adequate standards with respect to the proposed change because of a novel or unusual design feature, the applicant must also comply with special conditions, and amendments to those special conditions, prescribed under the provisions of § 21.16, to provide a level of safety equal to that established by the regulations in effect at the date of

the application for the change.

(e) An application for a change to a type certificate for a transport category aircraft is effective for 5 years, and an application for a change to any other type certificate is effective for 3 years. If the change has not been approved, or it is clear that it will not be approved under the time limit established under this paragraph, the applicant may --

(1) File a new application for a change to the type certificate and comply with all the provisions of paragraph (a) of this section applicable to an original application for a change; or

(2) File for an extension of the original application and comply with the provisions of paragraph (a) of this section for an effective date of application, to be selected by the applicant, not earlier than the date that precedes the date of approval of the change by the time period established under this paragraph for the original application for the change.

(f)

6. Paragraph (a) of § 21.115 is revised to read as follows:

**§ 21.115 Applicable requirements.**

(a) Each applicant for a supplemental type certificate must show that the altered product meets applicable

requirements specified in § 21.101 and, in the case of an acoustical change described in § 21.93(b), show compliance with the applicable noise requirements of part 36 of this chapter and, in the case of an emissions change described in § 21.93(c), show compliance with the applicable fuel venting and exhaust emissions requirements of part 34 of this chapter.

* * * * *

**PART 25 -- AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES**

7. The authority citation for part 25 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701-44702, 44704.

8. Paragraph (c) of § 25.2 is revised to read as follows:

**§ 25.2 Special retroactive requirements.**

* * * * *

(c) Compliance with subsequent revisions to the sections specified in paragraph (a) or (b) above of this section may be elected or may be required in accordance with § 21.101(a) of this chapter.

Issued in Washington, DC, on

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# MEMORANDUM

August 20, 1998

To: Bill Shultz, Assistant Chair for ARAC 21 Issues

From: Richard Peri
Manager, Technical Services
National Air Transportation Association
Issues Committee Member

The following comments are offered regarding the disposition of public comments on the Draft Final Rule:

1. NATA is disappointed with the content of the Draft Final Rule. Following months of intense meetings with the General Aviation Working Group culminating with the use of a professional facilitator, the consensus agreements (attachment 1) failed to find their way into the draft final rule.
2. Consensus Agreement Number 3. Industry representatives provided logical, substantiated support for a 4500 pound exemption for rotorwing aircraft. The Authorities did not support their desire for a 3000 pound limitation. Without substantiation and justification from the Authorities, ARAC, representing industry, should support the 4500 pound exemption for helicopters.

   Action: Correct 21.101(b) and helicopter references in the preamble to reflect industry's recommendation of 4500 pounds.

3. Consensus Agreement 14 and 15. Following hours of discussion and the agreement that the data needed to address multiple changes is proprietary and/or difficult to reverse engineer and generally not available to in-service modifiers, it was agreed to that, by addressing the effect of the proposed change on the aircraft, the proposed type design change would incorporate the desired intent of the FAA to address the effect of the proposed change against the current aircraft without documenting each change since the original certification.

   Action: Correct 21.101 (b) (1) and multiple-change references in the preamble to conform to the Consensus Agreement concept of "effect of change."

4. A Consensus Agreement that was inadvertently omitted from the original document e-mailed to working group members by Ms. Zook addressed minor changes for in-service aircraft. The preamble and the Advisory Circular were supposed to contain a reference that, for in-service aircraft, minor type design changes not covered by 21.101 are alterations which are addressed in Part 43.

   Action: Add to page 43, second paragraph following ...within the meaning of §21.101. "Design changes to in-service aircraft that have been determined to be "minor" are alterations as defined in Part 43."

Subject: ICPTF Working Group Meeting Notes – July 7-8, 1998

To: ICPTF Working Group Participants

From: Cindy Zook

Hi folks – here are the notes for you to use as a reference for the remainder of the process. I believe these agreements were negotiated with a lot of work so please "honor" them as you move on ... that means the items marked CONSENSUS AGREEMENTS should NOT be re-opened at this late date. (I hope I have captured them accurately.)

My best to all of you – I look forward to hearing that a final rule is final and harmonized soon!

With warm regards,

Cindy

## ICPTF Working Group Meeting – July 7-8, 1998

- Purpose and Outcomes
- Introductions and Expectations
- Context:
  - Activities since last meeting
  - Activities required before 9/1/98
- Final Rule
  - Review latest language
  - Identify key issues
  - Resolve and build consensus
- Advisory Circular
  - Review
  - Identify key issues
  - Resolve and build consensus
- Next Steps and Close-out

### Context: Activities since last meeting

- May meeting action items (May 22, 1998)
- Meeting with FAA (May 28, 1998)
- Meeting Notice (June 25, 1998)
- FAA letter to Bill Shultz (Issues Group to submit final package to FAA by September 1, 1998)
- Purpose of this meeting to reach CLOSURE on Rule, AC, and Disposition of comments (in the preamble of the rule)

### Context: Activities required before September 1, 1998

- Rewrite draft rule
- FAA AGC/APO internal review
- WG review of FAA changes
- Final draft to ARAC Issues Group by 8/1/98
- Issues Group special meeting for vote – late August

### Fred's Highlights of "Latest Rule Language"

- 6000 lb. non-turbine fixed wing exemption. 3000 lb. non-turbine helicopter exemption. Justification for these exemptions included (legal determination from meeting in Toulouse).
- Made use of the word "substantial" to be applied to "substantial change" for consistency with other rules.
- Paragraphs D, E, F remain the same as NPRM.
- Paragraph C remains very close to original NPRM – only edited for clarity.

## CONSENSUS AGREEMENTS

| Issue | Consensus |
|---|---|
| 1. What is the intent of the rule? | • FAA's intent is to advance the certification basis for "significant" changes. This is true no matter WHO does the change (manufacturer or modifier). This is true no matter WHEN in the process the change is proposed (at the beginning, middle or end). |
| 2. Lack of 6000 lb. turbine fixed wing exemption. | • Revise rule to exempt "non-rotorcraft aircraft under 6000 lb." |
| 3. Lack of qualifier for helicopter exemption | • Indicate that there was not a consensus position. Authorities want a 3000 lb. exemption and industry wants a 4500 lb. exemption for helicopters. |
| 4. Current language in 21.101(b) requires that "... the Administrator designates an amendment ..." | • Revise the language to provide flexibility – "... the Administrator ***may*** designate an amendment... " |
| 5. What about the training needed to clarify this rule? | • Training recommendation needs to be implemented. This is still open. |
| 6. What about delayed implementation for helicopters, GA, engines? | • Once the rule is final, any applicant has the option to use it.<br>• Part 25 aircraft in Part 121 service should be implemented within 6 months of final rule.<br>• All others (the rest of Part 25 plus Parts 25, 33, 27, 29, 23, 31, and 35) should be implemented within 24 months from final rule subject to development of advisory materials (including Safety Resource Analysis) and implementation of appropriate training. |

## CONSENSUS AGREEMENTS

| | |
|---|---|
| 7. The preamble contains a disclaimer to the Safety Resource Evaluation Guide. | • Preamble will not include a disclaimer with respect to the Safety Resource Evaluation Guide. |
| 8. Minor changes should be excluded from the rule. | • Clearly state in the preamble and the AC that minor changes are not affected by this rule change. |
| 9. The rule only applies to significant major changes. | • Clearly state in the preamble the intent of advancing the Cert. Basis for those major changes that are defined as significant. |
| 10. Confusion about how the examples in the Appendix should be applied (Illustrative vs. hard and fast rules). | • Clearly state the concept that examples are for illustrative purposes, not for limiting cases.<br>• Examples need to be consistent with the rule criteria. |
| 11. What about the term aircraft vs. airplane in terms of GA? | • See response to items #2 and #3 above. |
| 12. Review the details of 21.101F | • Fred to refer to original NPRM comments. |
| 13. Review 21.101(c)(1) for inconsistency with "non-significant" definition and rule. | • Ensure that the rule, preamble and AC are consistent with respect to the definition and use of "non-significant" changes. Simplify 21.101(c)(1) to indicate that non-significant changes are excluded from the ICPTF process. |
| 14. Over-compartmentalization by incremental changes loses sight of accumulated effect. | • Revise the language to clarify that we mean "effect" of change. The effect of change takes into account the effect of all previous changes to the product. |
| 15. Modifiers inability to have specific knowledge of prior changes. | • See response to item #14. |
| | |

## CONSENSUS AGREEMENTS

| | |
|---|---|
| 16. Confusion about whether changes are compared to "green line" vs. "red line" type certification. | • Wherever appropriate, clarify that the relevant Cert. Basis is the updated TCDS (red line) vs. the Cert. Basis for the first model without consideration of the updated certification for the relevant parts (green line). |
| 17. ~~What is the definition of non-~~ significant changes? | • ~~Revise the language to define non-~~ significant changes as those where (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.<br>• The preamble and AC should include clarification/definition of terms used in the definition of non-significant (e.g., general configuration, principles of construction, assumptions).<br>• This definition is intended to help identify the "no-brainers" that ALL parties agree should be pushed out of the ICPTF process. |
| 18. ICPTF Working Group process. | • Guidance to Fred from the ICPTF ~~WG – package should reflect the~~ agreements made by the ICPTF WG on 7/7-8/98 not agreements made "outside the room." |
| | |

## Comments about the Current AC Examples

**ACTION:** None of the following comments have been discussed or resolved yet. The agreement was that the ICPTF members who meet on July 9, 1998 from 9:00 a.m. – noon will review this input and build a framework for the examples.

**Feedback/comments to be reviewed:**

1. Current examples are not consistent with the rule as agreed to in this meeting. The examples should be aligned with the rule – needs to address "effects" of changes.

2. The current examples were intended to help sort into significant and non-significant. The current examples are too rigid. We should have fewer examples and improve the quality of the few that we include.

3. The current examples have flawed logic – they contain broad vision vs. elemental changes. We should revise to have process examples that provide a picture and then analyzes elements.

4. We should revise the examples to demonstrate how to go through the analysis and list the considerations; put in the flow of the thinking. We need to add GA examples.

5. We should have fewer examples. We should not try and cover so much – it leaves the reader with the question "why is this left out?"

6. We should consider whether we need to include any examples.

7. We should revamp the examples to use one fact pattern. Then use different regulations and show how the outcome varies by regulation.

8. We should have two examples. One should demonstrate multiple changes at one time with different characteristics. The other should demonstrate multiple changes over time on one characteristic. We should create some sort of matrix so you can see the totality.

9. A lot of time and work went into the existing examples. We need to "belly up" if we want to create new examples (volunteer to resource the effort).

10. We should consider moving the examples to the training program.

08/18/98 WED 22:20 FAX [illegible]

# AVIATION RULEMAKING ADVISORY COMMITTEE

To: Bill Schultz, Assistant Chair for ARAC 21 Issues
FAX 202-842-4063

From: Helicopter Assoc International Issues Committee Member

Subject: Concurrence and/or Comment Ballot on the Public Comment Disposition Relative to Type Certification Procedures for Changed Products Draft Final Rule and Related Guidance Materials.

_____ I concur with the disposition of the Draft Final Rule.

_____ I concur with the disposition of the public comments on the draft AC.

_____ The following comments are offered regarding the disposition of public comments on the Draft Final Rule:

HAI does not concur in the disposition of public comments on the Draft Final Rule. HAI's comments follow on additional pages.

Use additional pages as necessary.

The following comments are offered regarding the disposition of public comments on the AC:

HAI abstains with regard to the disposition of public comments on the draft AC because the draft AC has not been delivered in time to permit review and evaluation.

Use additional pages as necessary.

Your Signature [signature] Date August 20, 1998

Joseph Corrao
Director of REgulations
Helicopter Association International

Helicopter
Association
International

1635 Prince Street, Alexandria, Virginia 22314-2818 Telephone: (703) 683-4646 Fax: (703) 683-4745

August 20, 1998

**MEMORANDUM**

**TO:** Mr. William Schultz
Assistant Chair for ARAC 21 Issues

**FROM:** Joseph Corrao
Director of Regulations
Helicopter Association International

**RE:** Type Certification Procedures for Changed Products:

Comments Regarding the Disposition of Public Comments on the Draft Final Rule, Draft of August 4, 1998.

Helicopter Association International (HAI) submits these comments in support of its vote, as a member of the Aviation Rulemaking Advisory Committee (ARAC) Aircraft Certification Procedures Issues Group, not to concur in the disposition of public comments on the Draft Final Rule, "Type Certification Procedures for Changed Products," draft of August 4, 1998.

HAI is the non-profit, professional trade association of over 1,400 member civil helicopter organizations. Since 1948, HAI has been dedicated to promoting the helicopter as a safe and efficient method of transportation, and to the advancement of the civil helicopter industry.

HAI does not concur with the disposition of comments in the proposed Draft Final Rule in the following particulars (all page references are to the Draft of August 4, 1998):

- At page 27, FAA's proposed response to ATA's comment is not presented and therefore cannot be evaluated.

- At page 28, FAA proposes to state that, "the potential for requiring compliance with airworthiness amendments adopted after the original type certification will apply in fewer than 1% of all changes that will be considered significant." This conclusion is neither substantiated nor explained. Some basis for this conclusion is required.

- At page 39, FAA's proposed response to ATA's comment misses the point. FAA must respond to ATA's point that, "the current STC process is effective in ensuring that changes to an aircraft design are airworthy," and must rebut ATA's recommendation that "FAA exclude STCs from the proposed rule."

- At page 43, FAA's response misses the point. The increase in certification costs associated with the proposed rule is not estimated anywhere in the proposed Draft Final Rule and therefore is not "addressed earlier in this preamble."

- At page 46, FAA's proposed justification for the narrow measure of relief for rotorcraft is factually inaccurate and insufficient. Piston-powered rotorcraft of 3000 pounds or less MCGW "ordinarily operate in the same environment as larger part 27 or 29 rotorcraft."

- At page 51, FAA's proposed response is illogical, unworkable and contrary to the ARAC consensus. FAA proposes to state that, "FAA will consider amendments to the airworthiness standards adopted after the most recent type certification basis in determining whether a change is nonsignificant. For example, later amendments may be of particular relevance in determining whether the assumptions used for certification of the product to be changed remain valid."

This statement is illogical because a later amendment of a regulation is a legal event, while an "assumption used for certification" is an engineering fact. No subsequent legal event can possibly change an engineering fact.

FAA's proposed statement is unworkable because, according to its terms, every proposed change to a product will be rendered "significant" by every change in applicable regulations adopted since certification of the product.

FAA's proposed statement is contrary to the consensus of the ARAC working group. The working group concluded, and repeatedly confirmed, that the "change" that is the subject matter of the proposed rule and the triggering event for a certification evaluation, is a proposed change to the product, not a change in the regulations.

- At page 77, § 21.101(b), FAA's proposed measure of relief for rotorcraft is too narrow. Relief should be granted to rotorcraft having a total of 600 shaft horsepower (SHP) or less regardless of engine configuration. In the alternative, relief should be granted to rotorcraft having three or fewer passenger seats regardless of engine configuration, or to rotorcraft of 4500 pounds MCGW or less regardless of engine configuration.

- At page 78, § 21.101(c)(1), the phrase, "combined with all previous relevant changes" is misleading and contrary to the ARAC consensus. As the working group facilitator noted in her summary of consensus points dated July 8, 1998, "The effect of change takes into account all previous relevant changes to the product." The FAA's phrase suggests that the

focus of inquiry is "the change," whereas the working group agreed that the focus is on "the effect of change." Moreover, by calling this element out separately, the FAA's proposed language may mislead the reader into thinking that an inquiry must somehow sum effects, whereas the working group agreed that the effect of all previous relevant changes necessarily and automatically would be reflected in an inquiry into whether, in light of the most recent proposed change, the general configuration and principles of construction are retained and the assumptions used for certification remain valid .

- At page 79, § 21.101(c)(2), FAA's proposed language should be clarified by addition of the sentence, "A new demonstration of compliance is not required for items that are not affected by the change."

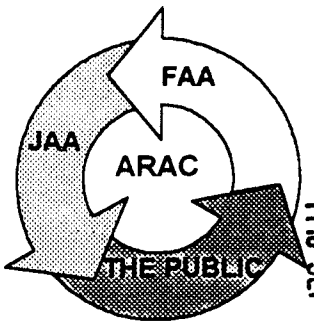
We look forward to revisions in the proposed disposition of public comments and final rule that will enable HAI to concur to accept the document and forward it to FAA for appropriate rulemaking action.

Sincerely,

Joseph Corrao
Director of Regulations

# Recommendation Letter

**AVIATION RULEMAKING ADVISORY COMMITTEE**




RECEIVED
OFFICE OF RULEMAKING
1998 SEP -4 A 11: 34

August 31, 1998

Mr. Guy S. Gardner
Associate Administrator for Regulations and Certification
Federal Aviation Administration
800 Independence Ave., S.W.
Washington, DC 20591

Subject: Aviation Rulemaking Advisory Committee Tasking

Dear Mr. Gardner:

Further to my letter of August 25, 1998, enclosed are two additional comments received on the Type Certification Procedures for Changed Products – Draft Final Rule/Advisory Circular. These should be placed with the materials submitted to your offices on August 25, 1998.

Thank you

Bill Schultz
Assistant Chair
ARAC Aircraft Certification Procedures Issues

Enclosures: Ballot from Jim Bettcher
RAA FAX Memo from David Lotterer

Copy: Tom McSweeny: FAA AIR-1
Brenda Courtney: FAA ARM-2
Web Heath: Boeing

# Acknowledgement Letter

U.S. Department
of Transportation
**Federal Aviation
Administration**

800 Independence Ave., S.W.
Washington, D.C. 20591

OCT 22 1998

Mr. Bill Schultz
Assistant Chair, Aircraft Certification
Procedures Issues
1400 K Street NW, Suite 801
Washington, DC 20005

Dear Mr. Schultz:

Thank you for your August 25 and August 31, 1998, letters forwarding the working documents developed by the International Certification Procedures Harmonization Working Group under the Aviation Rulemaking Advisory Committee (ARAC).

Although ARAC was unable to reach consensus on a rulemaking recommendation, these documents will assist the Federal Aviation Administration to determine appropriate action on this initiative. Consideration will also be given to the comments provided by individual ARAC members since these comments reflect the viewpoints of various interest groups who undoubtedly would be affected by changes in current certification policy and practice.

I would like to thank the aviation community for its commitment to ARAC and, in particular, the International Certification Procedures Harmonization Working Group for its expenditure of resources to develop the working documents. The group is commended for its extensive deliberations on this difficult task.

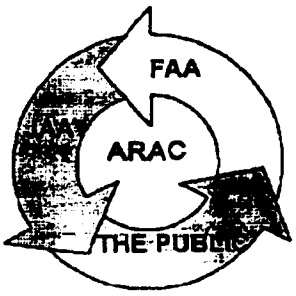
Sincerely,

Thomas E. McSweeny

Thomas E. McSweeny
Associate Administrator for Regulation
and Certification

# Recommendation

**AVIATION RULEMAKING ADVISORY COMMITTEE**




To: Bill Schultz, Assistant Chair for ARAC 21 Issues
FAX 202-842-4063

From: Transport Aircraft & Engines Issues Committee Member

Subject: Concurrence and/or Comment Ballot on the Public Comment Disposition Relative to Type Certification Procedures for Changed Products Draft Final Rule and Related Guidance Materials.

✓ I concur with the disposition of the Draft Final Rule.

____ I concur with the disposition of the public comments on the draft AC.

✓ The following comments are offered regarding the disposition of public comments on the Draft Final Rule:

Rule fails to establish a "Hard" cutoff date for the use of derivative certification. At some point FAA must hold the manufacturers to the current regulations with amendments in effect when a new or amended type certificate is applied for.

Use additional pages as necessary.

The following comments are offered regarding the disposition of public comments on the AC:

Use additional pages as necessary.

Your Signature Ian Gottlieb Date 8-18-98

Regional Airline Association
1200 19th Street, NW, Suite 300
Washington, DC 20036-2422 August 25, 1998

# FAX TRANSMITTAL SHEET

**TO: Bill Schultz** **FAX: 842-4063**

FROM: DAVID LOTTERER PHONE: 202 857-1140 FAX: 202 429-5113
E-mail: david_lotterer@dc.sba.com

THIS FAX CONSISTS OF 2 PAGES

**SUBJECT: Type Certification Procedures for Changed Products- Draft Final Rule/Advisory Circular**

At Monday's ARAC issues group meeting, RAA voiced the same concern expressed by all ARAC members present by voting that the subject draft final rule/AC should be issued as a supplemental notice of proposed rulemaking (SNPRM) before a final rule is adopted. RAA did not have sufficient time to review the draft final rule and AC before the meeting and therefore submits the following comments for consideration by the FAA:

1. The preamble to the SNPRM should specifically provide ARAC's position so that the concerns of the industry are not "lost" once the rule becomes final. In the NPRM for Service Difficulty Reporting (FAA Notice ), the FAA substantially revised the NPRM from the ARAC draft yet stated in the preamble to the NPRM that the proposed rule reflected the recommendations of ARAC. This was not true. A more recent example of the FAA inaccurately providing ARAC's position on a ARAC product is the NPRM on Part 66 changes (Docket No. 29145). RAA and two other ARAC members provided a minority position that was not mentioned in the preamble. The preamble stated that the NPRM received the support of ARAC yet in actuality, ARAC did not reach consensus on the draft ARAC NPRM but simply submitted it the FAA without recommendation. RAA is concerned that the position of the ARAC issues group will similarly be lost in the draft final rule/AC and with it valuable information on the FAA's interpretation of the final rule.

2. Draft NPRM, page 27, FAA Response: RAA obviously cannot comment when no response is provided. In general the draft document and AC do a good job of addressing differences between a new type certificates and amended type certificates but offers little guidance for STC applicants. As stated in the NPRM, "compliance with later regulations would not be required for a change that is not classified as being significant, for those areas or components not affected by the change, or where compliance with later regulations would not contribute materially to the level of safety or would be ``impractical.". Page 28 of the draft final rule states that "fewer than 1% of all changes that will be considered significant". If that is truly

the case, then the document should be clearer is describing the non-significant changes for STC applicants since they in general, represent 99% of the applicants. RAA is willing to working with the other associations that represent such applicants during the comment period for the requested SNPRM. While the FAA may have addressed the concerns of the general aviation groups by simply "excluding" their airplanes from the applicability of the proposed rule, the draft document and AC does little to ally the concerns of the other STC applicants.

3. Draft NPRM, page 28, FAA Response: As stated in the above response the FAA response does not respond to the concerns that the proposed rule will lead to a "disincentive for change" One source of confusion that I had in reading the draft document was the meaning of the term "product". This is not defined anywhere. Just what is the scope of change that a STC applicant for revised seat configuration must consider? For example would a STC applicant for seat configuration change need to consider later auto-pilot certification to accommodate a seating change? The response must surely be no, but it really isn't that clear upon reading the draft final rule and AC; consequently we must assume the worst case.

4. Draft NPRM, page 35, FAA Response: Comments that the "in-service modifier community had full opportunity to participate" really isn't realistic. The working group met alternately in Europe and the duration of the group and continued over a period of numerous years so that only employees of the larger corporations could afford to participate in the process. The original draft was developed to solely address the concerns of the airframe companies that routinely requested amended type certificates for derivative airplanes. The associations representing the STC applicants had no idea what the draft document did to them until the NPRM was issued. The lack of a cost-benefit analysis for the NPRM lead to further confusion on how exactly this rule would affect STC applicants.

5. Draft NPRM, page 39, FAA Response: The response does not address ATA's concern that the rule change will simply consume time and resources without improving airworthiness. Every one knows that ATA does not fall within the small aircraft exception. So what? ATA and RAA members routinely request STC's. The draft final rule and AC provide little guidance to STC applicants on exactly what is required of them that isn't now required under the current rules.

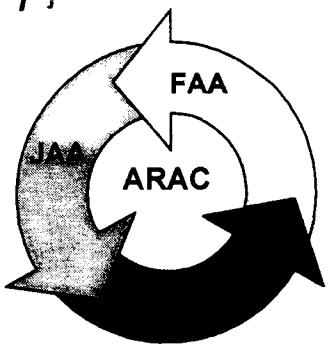
6. Draft AC, 2H), Cabin: The airlines routinely apply for STC for seat configuration changes that may increase the capacity from a previous configuration operated by that airline; yet the total capacity is below that number that was originally certified. Is the AC stating that an amended TC is required for the seat change? This is a good example to illustrate that STC applicants needed to have a chance at this document before it was issued.

7. In general: The shortcomings of the draft final rule and AC represent in hindsight, the shortcomings of the ARAC process. It should have been recognized early-on that the STC applicants would be significantly affected yet the original working group who primarily wanted a more restrictive STC process, kept working the draft document. Yes, I know that Web Heath kept telling the ARAC constituents in the 2nd or 3rd year of working the document that they might be affected and that they should join the working group on their next week-

long trip to Paris. **The portions of the rule change affecting STC applicants should have been a separate task from the type certificate/amended type certificate task.** There was no need to "harmonize" the STC changes because the Europeans don't have a comparable STC process. For example ARAC/TAE AAWG worked well because they only worked on those issues affecting the working group members. A distinct group the small aircraft group, worked on the aging aircraft issues affecting the other airplane types. The subject NPRM should have been worked by two distinct working groups each responding to their area of interest.

RAA appreciates the opportunity to submit comments on the proposed rule after the closing of the comment period.

# AVIATION RULEMAKING ADVISORY COMMITTEE




Mr. Guy S. Gardner
Associate Administrator for
Regulations and Certification
Federal Aviation Administration
800 Independence Ave., S.W.
Washington, DC 20591

August 25, 1998

Subject: Aviation Rulemaking Advisory Committee Tasking

Dear Mr. Gardner:

On September 26 and October 27,1997, you tasked the ARAC Aircraft Certification Procedures Issues Group with the following:

*Task 1. Review the public comments received on NPRM 97-7, which proposes to amend the procedural Federal Aviation Regulations for the certification of changes to type certificated products, and develop recommendations regarding the disposition of those comments. The review and recommendations must take into account the public comments received by the Joint Aviation Authorities (JAA) regarding JAA Notice of proposed Amendment (NPA) 21-7. Prepare a recommended final rule for NPRM 97-7 that the JAA could adopt as its rule that is harmonized with the FAA's rule. In addition, prepare harmonized advisory material to support the rule. Forward the final recommendation to the FAA.*

*Task 2. Develop a training syllabus for a common training course between the FAA and JAA and assist the FAA and JAA training personnel with the training program material.*

At the outset, the FAA asked the ARAC to complete these tasks by March 2, 1998. However, because of the extensiveness of Task 1, FAA extended the deadline to not later than Sept 1, 1998.

The Working Group (WG) began to work this assignment in August 1997 and met nearly every month since that time in an effort to expeditiously complete the assignment. Completion within the allotted time has been difficult and members of both the Issues and WG's have expressed a concern about being rushed to complete this assignment

On July 7-8, 1998, the WG met for the last time and, with the assistance of facilitator Cindy Zook, a Consensus Agreement was developed to aid in the writing of the draft final rule, rule preamble and AC.

In reality, the WG operated at a disadvantage because it did not have an opportunity to review and approve the draft final rule package before its submittal to the Issues Group Members for vote.

During its meeting of July 22,1998, the ARAC 21 Issues Group was informed that the draft final rule package and ballots would be mailed to each voting member in the first week of August and that the AC would follow as soon as it became available. Actual mailing dates were August 4 and August 14 respectively. Document transmittal to WG members occurred shortly after each of these dates.

The final meeting of the ARAC 21 Issues Group was conducted on August 24, 1998 to discuss the dispositioning of ballot responses from Issues Group members and to address the preparation of the final work product for transmittal to the FAA.

A total of 10 sets of responses were received by the time of the August 24 meeting. It is important to note that no responses have been received from the JAA or AECMA. We understand they have been on European holiday during the period of the balloting. Both the JAA and AECMA have participated throughout the entire series of WG meetings. However, at no time has the WG been able to assess the JAA position regarding the success of harmonizing these work products.

Responses received to date, together with the additional concerns expressed by members during the August 24 meeting, produce an Issues Group response that has not reached consensus. Because of this situation, and the FAA deadline, the Issues Group proposed, and unanimously agreed, to forward all materials listed below to the FAA for its consideration and final action. In addition, the Issues Group respectfully recommends that the FAA consider issuing a supplemental notice of proposed rulemaking on this matter. However, should the FAA elect to proceed to final rulemaking, the Issues Group requests that the FAA delineate and disposition the ARAC concerns in the preamble of the final rule.

The materials transmitted herewith include the following:

ICPTF Working Group Meeting Notes-July 7-8, 1998 ( Includes CONSENSUS AGREEMENT )

Draft Final Rule and Preamble dated August 4, 1998

Draft Final Advisory Circular dated August 14, 1998

10 Vote Responses from Issues Group Members

Draft Minutes for the August 24, 1998 ARAC Aircraft Certification Procedures Issues Meeting

Thank you for the opportunity to serve the FAA.

Sincerely yours,

Bill Schultz
Assistant Chair
ARAC Aircraft Certification Procedures Issues

FAA Action

Federal Register: May 17, 2001 (Volume 66, Number 96)]
[Rules and Regulations]
[Page 27450-27452]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr17my01-4]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 97

[Docket No. 30248; Amdt. No. 2051]

# Standard Instrument Approach Procedures; Miscellaneous Amendments

AGENCY: Federal Aviation Administration (**FAA**), DOT.

ACTION: Final rule.

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SUMMARY: This amendment establishes, amends, suspends, or revokes Standard Instrument Approach Procedures (SIAPs) for operations at certain airports. These regulatory actions are needed because of changes occurring in the National Airspace System, such as the commissioning of new navigational facilities, addition of new obstacles, or changes in air traffic requirements. These changes are designed to provide safe and efficient use of the navigable airspace and to promote safe flight operations under instrument flight rules at the affected airports.

DATES: An effective date for each SIAP is specified in the amendatory provisions.

Incorporation by reference-approved by the Director of the Federal Register on December 31, 1980, and reapproved as of January 1, 1982.

ADDRESSES: Available of matter incorporated by reference in the amendment is as follows:

For Examination--

1. **FAA** Rules Docket, **FAA** Headquarters Building, 800 Independence Avenue, SW., Washington, DC 20591;

2. The **FAA** Regional Office of the region in which affected airport is located; or

3. The Flight Inspection Area Office which originated the SIAP.

For Purchase--Individual SIAP copies may be obtained from:

1. **FAA** Public Inquiry Center (APA-200), **FAA** Headquarters Building, 800 Independence Avenue, SW., Washington, DC 20591; or

2. The **FAA** Regional Office of the region in which the affected airport is located.

By Subscription--Copies of all SIAPs, mailed once every 2 weeks, are for sale by the Superintendence of Documents, U.S. Government Printing Office, Washington, DC 20402.

FOR FURTHER INFORMATION CONTACT: Donald P. Pate, Flight Procedure Standards Branch (AMCAFS-420), Flight Technologies and Programs

[[Page 27451]]

Division, Flight Standards Service, Federal Aviation Administration, Mike Monroney Aeronautical Center, 6500 South MacArthur Blvd., Oklahoma City, OK 73169 (Mail Address: P.O. Box 25082, Oklahoma City, OK 73125) telephone: (405) 954-4164.

SUPPLEMENTARY INFORMATION: This amendment to part 97 of the Federal Aviation Regulations (14 CFR part 97) establishes, amends, suspends, or revokes Standard Instrument Approach Procedures (SIAPs). The complete regulatory description on each SIAP is contained in the appropriate **FAA** Form 8260 and the National Flight Data Center (FDC)/Permanent (P) Notices to Airmen (NOTAM) which are incorporated by reference in the amendment under 5 U.S.C. 552(a), 1 CFR part 51, and Sec. 97.20 of the Federal Aviation's Regulations (FAR). Materials incorporated by reference are available for examination or purchase as stated above.

The large number of SIAPs, their complex nature, and the need for a special format make their verbatim publication in the Federal Register expensive and impractical. Further, airmen do not use the regulatory text of the SIAPs, but refer to their graphic depiction of charts printed by publishers of aeronautical materials. Thus, the advantages of incorporation by reference are realized and publication of the complete description of each SIAP contained in **FAA** form documents is unnecessary. The provisions of this amendment state the affected CFR (and FAR) sections, with the types and effective dates of the SIAPs. This amendment also identifies the airport, its location, the procedure identification and the amendment number.

The Rule

This amendment to part 97 of the Federal Aviation Regulations (14 CFR part 97) establishes, amends, suspends, or revokes SIAPs. For safety and timeliness of change considerations, this amendment incorporates only specific changes contained in the content of the following FDC/P NOTAMs for each SIAP. The SIAP information in some previously designed FDC/Temporary (FDC/T) NOTAMs is of such duration as to be permanent. With conversion to FDC/P NOTAMs, the respective FDC/T NOTAMs have been canceled.

The FDC/P NOTAMs for the SIAPs contained in this amendment are based on the criteria contained in the U.S. Standard for Terminal Instrument Procedures (TERPS). In developing these chart changes to SIAPs by FDC/P NOTAMs, the TERPS criteria were applied to only those specific conditions existing at the affected airports. All SIAP amendments in this rule have been previously issued by the **FAA** in a National Flight Data Center (FDC) Notice to Airmen (NOTAM) as an emergency action of immediate flight safety relating directly to published aeronautical charts. The circumstances which created the need for all these SIAP amendments requires making them effective in less than 30 days.

Further, the SIAPs contained in this amendment are based on the criteria contained in the TERPS. Because of the close and immediate relationship between these SIAPs and safety in air commerce, I find that notice and public procedure before adopting these SIAPs are impracticable and contrary to the public interest and, where

applicable, that good cause exists for making these SIAPs effective in less than 30 days.

Conclusion

The **FAA** has determined that this regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore--(1) is not a ``significant regulatory action'' under Executive Order 12866; (2) is not a ``significant rule'' under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. For the same reason, the **FAA** certifies that this amendment will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 97

Air traffic control, Airports, Navigation (air).

Issued in Washington, DC on May 11, 2001.
L. Nicholas Lacey,
Director, Flight Standards Service.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me, part 97 of the Federal Aviation Regulations (14 CFR part 97) is amended by establishing, amending, suspending, or revoking Standard Instrument Approach Procedures, effective at 0901 UTC on the dates specified, as follows:

PART 97--STANDARD INSTRUMENT APPROACH PROCEDURES

1. The authority citation for part 97 is revised to read as follows:

Authority: 49 U.S.C. 40103, 40113, 40120, 44701; 49 U.S.C. 106(g); and 14 CFR 11.49(b)(2).

2. Part 97 is amended to read as follows:
By amending: Sec. 97.23 VOR, VOR/DME, VOR or TACAN, and VOR/DME or TACAN; Sec. 97.25 LOC, LOC/DME, LDA, LDA/DME, SDF, SDF/DME; Sec. 97.27 NDB, NDB/DME; Sec. 97.29 ILS, ILS/DME, ISMLS, MLS/DME, MLS/RNAV; Sec. 97.31 RADAR SIAPs; Sec. 97.33 RNAV SIAPs; and Sec. 97.35 COPTER SIAPs, Identified as follows:

* * * Effective Upon Publication

| FDC Date | State | City | Airport | FDC No. | Subject |
|---|---|---|---|---|---|

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03/02/01.....  CA  Oakland.....
Metropolitan Oakland  1/2278  NDB Rwy 27R, Amdt 5

Intl.
04/12/01.....  SD  Watertown.....
Watertown Muni.....  1/3577  ILS Rwy 35, Amdt 10 VOR or GPS Rwy 2
04/16/01.....  VA  Richmond.....
Richmond Intl.....  1/3633  Amdt 5 RNAV (GPS) Rwy 3
04/18/01.....  WA  Spokane.....
Spokane Intl.....  1/3688  Orig
04/26/01.....  CA  Oakland.....
Metropolitan Oakland  1/3962  ILS Rwy 27R Amdt 33

Intl.
04/26/01.....  CA  Oakland.....
Metropolitan Oakland  1/3965  ILS Rwy 29 (CAT I, II, III) Amdt 23B

Intl.
04/26/01.....  CA  Oakland.....
Metropolitan Oakland  1/3967  VOR/DME Rwy 29 Orig

Intl.
04/26/01.....  CA  Oakland.....
Metropolitan Oakland  1/3968  VOR/DME Rwy 27L Amdt 11

Intl.
04/26/01.....  CA  Hayward.....
Hayward Executive.....  1/3969  VOR or GPS-A Amdt 6B
04/26/01.....  CA  Hayward.....
Hayward Executive.....  1/3970  VOR/DME or GPS-B Amdt 1B
04/26/01.....  CA  Hayward.....
Hayward Executive.....  1/3971  LOC/DME Rwy 28L Amdt 1A
04/26/01.....  CA  Oakland.....
Metropolitan Oakland  1/3978  ILS Rwy 11 Amdt 4A VOR or GPS Rwy 9R

Intl.
04/26/01.....  CA  Oakland.....
Metropolitan Oakland  1/3980  Amdt 7A

Intl.



04/30/01.....  TX  Dallas-Fort Worth.....
Dallas-Fort Worth Intl  1/4048  ILS Rwy 36L, Amdt 6A Converging ILS
04/30/01.....  TX  Dallas-Fort Worth.....
Dallas-Fort Worth Intl  1/4049  Rwy 36L, Amdt 3C
04/30/01.....  TX  Mesquite.....
Mesquite Metro.....  1/4054  ILS Rwy 17, Amdt 1

04/30/01.....  TX  Mesquite.....
Mesquite Metro.....  1/4056  NDB or GPS Rwy 17, Amdt 5A
04/30/01.....  TX  Mesquite.....
Mesquite Metro.....  1/4057  LOC BC Rwy 35, Amdt 2
04/30/01.....  HI  Kaunakakai.....
Molokai.....  1/4059  VOR or TACAN or GPS-A, Amdt 15A
05/02/01.....  AR  Carlisle.....
Carlisle Muni.....  1/4156  VOR/DME Rwy 9, Amdt 2
05/03/01.....  OH  Columbus.....
Rickenbacker Intl.....  1/4185  HI-ILS Rwy 5R, Amdt 2
05/04/01.....  CA  Marysville.....
Yuba County.....  1/4218  ILS Rwy 14, Amdt 4D
05/07/01.....  ND  Grand Forks.....
Grand Forks Intl.....  1/4257  ILS Rwy 35L, Amdt 11B
05/07/01.....  WA  Everett.....
Snohomish County  1/4272  NDB RWY 16, Amdt 12A

(Paine Field).
05/07/01.....  WA  Everett.....
Snohomish County  1/4273  GPS Rwy 16R, Orig

(Paine Field).
05/07/01.....  WV  Lewisburg.....
Greenbrier Valley.....  1/4292  ILS Rwy 4, Amdt 9
05/07/01.....  ND  Bismarck.....
Bismarck Muni.....  1/4297  ILS Rwy 31, Amdt 32A
05/08/01.....  PW  Babel Thuap Island....
Babel Thaup/Kor Or....  1/4320  GPS Rwy 27, Amdt 1
05/08/01.....  PW  Babel Thuap Island....
Babel Thuap Island/Kor  1/4321  GPS Rwy 9, Amdt 1

Or.
05/09/01.....  VA  Saluda.....
Hummel Field.....  1/4328  GPS Rwy 36, Orig
05/09/01.....  MN  Duluth.....
Duluth Intl.....  1/4354  GPS Rwy 21, Orig
05/09/01.....  TX  Cleveland.....
Cleveland Muni.....  1/4368  GPS Rwy 16, Orig
05/09/01.....  WA  Everett.....
Snohomish County  1/4386  VOR or GPS-B, Orig-A

(Paine Field).
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