Task Assignment

Aviation Rulemaking Advisory Committee ; Parts Working Group

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of establishment of the Parts Working Group.

SUMMARY: Notice is given of the establishment of the Parts Working Group of the Aviation Rulemaking Advisory Committee (ARAC). This notice informs the public of the activities of the ARAC on aircraft certification procedures issues.

FOR FURTHER INFORMATION CONTACT: Mr. William J. (Joe) Sullivan, Assistant Executive Director, Aviation Rulemaking Advisory Committee, Aircraft Certification Service (AIR-3), 800 Independence Avenue, SW., Washington, DC 20591, Telephone: (202) 267-9554; FAX: (202) 267-5364.

SUPPLEMENTARY INFORMATION: The Federal Aviation Administration (FAA) has established the Aviation Rulemaking Advisory Committee (ARAC) (56 FR 2190, January 22, 1991; and 58 FR 9230; February 19, 1993). One area of the ARAC deals with is aircraft certification procedures (57 FR 39267; August 28, 1992). These issues involve the procedures for aircraft certification found in parts 21, 39, and 183 of the Federal Aviation Regulations (FAR), and Special Federal Aviation Regulation No. 36 (SFAR 36), which are the responsibility of the FAA Director of Aircraft Certification. By this notice, these issues are expanded to include advice on requirements relating to parts found in FAR parts 43, 45, and 145.

Section 601 of the Federal Aviation Act of 1958 provides, among other things, statutory authority for the Administrator to set minimum standards governing the design, materials, workmanship, construction, and performance of aircraft, aircraft engines, and propellers (referred to below as "products"), and for parts for these products. Under this authority, the FAA regulates the manufacture, maintenance, and modification of these products, as well as the design and production of parts used in the manufacture, maintenance, and modification of those products.

Replacement and modification parts are approved in several ways. Parts used during the original manufacture of the product are approved under the type and production certificates, or a technical standard order approval for that product. Thus, a part purchased from the holder of a production certificate or technical standard order approval is approved by virtue of those certificates. An owner-operator may produce parts for maintaining or altering his or her own product. Standard parts such as nuts and bolts which conform to an established industry or U.S. specification are considered to be approved parts. Any replacement or modification part which does not fall into any of the above categories must be produced under the procedures for a Parts Manufacturer Approval (PMA).

The holder of a PMA is authorized to produce replacement and modification parts for sale for installation on aviation products. Regulations in subpart K of FAR part 21, FAR part 43, and FAR part 45, prescribe requirements for obtaining, and the responsibilities of holding a PMA. The regulations governing PMA have remained essentially unchanged since their inception. However, the original intent and scope of the PMA rules no longer respond to industry needs. Today, parts produced under PMA account for a significant portion of all aviation parts sold. There also have been fundamental changes in the aviation industry in the production and distribution of replacement parts. The Parts Working Group is being formed to review and recommend changes to the rules governing PMA, and replacement and modification parts.

Specifically, the Parts Working Group's task is the following:

Task: The Parts Working Group is charged with making recommendations to the ARAC concerning the need for new or revised rules governing Parts Manufacturer Approvals, and for replacement or modification parts in Subpart K of FAR Part 21, FAR part 43, and FAR part 45 (specifically section 45.15) and Part 145. The Parts Working Group will submit recommendations to the ARAC, which will determine whether to forward them to the FAA.

Reports: A. Recommend time line(s) for completion of the task, including rationale, for consideration at the ARAC meeting to consider aircraft certification procedures issues held following publication of this notice.

B. Give a detailed conceptual presentation on the proposed recommendations to the ARAC before proceeding with the work stated in Item C, below.

C. Develop a Notice of Proposed Rulemaking (NPRM) proposing the new or revised rules for PMA holders and for replacement and modification parts, a supporting economic and other required analysis, advisory and guidance material, and any other collateral documents the Working Group determines to be needed. Present these recommendations to the ARAC for further consideration and disposition.

D. Given a status report on the task at each meeting of the ARAC held to consider aircraft certification procedures issues.

The Parts Working Group will be comprised of experts from those organizations having an interest in the task assigned to it. A Working Group member need not be a representative of one of the member organizations of the ARAC. An individual who has expertise in the subject matter and wishes to become a member of the Working Group should write the person listed under "FOR FURTHER INFORMATION CONTACT" expressing that desire, describing his or her interest in the task, and the expertise he or she would bring to the Working Group. The request will be reviewed with Chairs of the ARAC Issue Group and the Parts Working Group; and the individual will be advised whether or not the request can be accommodated.

The Secretary of Transportation has determined that the information and use of the ARAC is necessary in the public interest in connection with the performance of duties imposed on the FAA by law. Meetings of the ARAC will be open to the public, except as authorized by section 10(d) of the Federal Advisory Committee Act. Meetings of the Parts Working Group will not be open to the public, except to the extent that individuals with an interest and expertise are selected to participate. No public announcement of Working Group meetings will be made.

Issued in Washington, DC, on March 19, 1993.

William J. Sullivan,

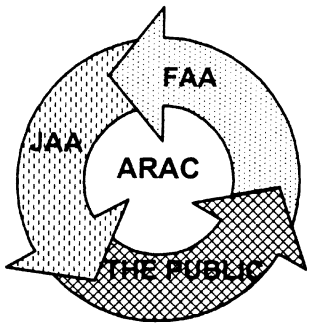
Assistant Executive Director for Aircraft Certification Procedures Issues, Aviation Rulemaking Advisory Committee.

[FR Doc. 93-7088 Filed 3-26-93; 8:45 am]

BILLING CODE 4910-13-M

Recommendation Letter

AVIATION RULEMAKING ADVISORY COMMITTEE



February 23, 1999

Mr. Thomas E. McSweeny
Associate Administrator for
Regulations and Certification AVR-1
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591

Subject: Aviation Rulemaking Advisory Committee Tasking on Production Certification and Parts, Reference Federal Register Notices 58FR16572 and 58FR16574.

Dear Mr. McSweeny:

The ARAC 21 Issues Group met on January 21, 1999 to disposition the joint recommendations of the Production Certification and Parts Working Groups that were developed in response to FAA taskings under the leadership of Don Van Burkleo, Cessna and Peter Gallimore, Boeing. The Issues Group favorably supported and approved the transmittal to your office of the enclosed draft NPRM.

During the meeting, the Experimental Aircraft Association wished to register a continued concern for the manufacturing of parts for older aircraft where data is not available and "identicality" or "form, fit and function" is used to construct such parts. Draft NPRM pages 81 thru 84 presently speak to this subject and it is very necessary that this language be retained in the final rule preamble for posterity as there is no specific coverage of this situation in the proposed rule.

Also, during the meeting, two minority opinions were raised. Meeting attendees recommended that the draft NPRM not be revised at that time to desposition these matters, but rather to transmit them to your office for consideration as appropriate. I am, therefore, please to submit the recommendations herewith, together with copies of the minority opinion.

ARAC 21 looks forward to the FAA's earliest possible issuance of an appropriate public notification and final rule processing of these recommendations. The globalization of the aviation industry and, in particular, the increased use of foreign suppliers dictates that revision of production certification regulations is needed as soon as possible. The requirements for parts manufacturing were greatly enhanced by the release of FAA Order 8110.42, PMA Procedures. The requirements of this order now need to be formalized by the implementation of the recommended draft NPRM.

It should be noted that the FAA General Counsel and Economist final reports had not been received at the time of the January 21, 1999 Issues Group meeting. APO and AGC have each generated previous reviews and have maintained regular contact with the working groups.

Their final report will be forthcoming and they have agreed that this draft NPRM should be formally submitted to the FAA for your processing in advance of their final reports.

Thank you for the opportunity to serve you.

Sincerely yours,

Bill Schultz
Assistant ARAC Chair
ARAC Aircraft Certification Procedures Issues

Enclosures: Draft ODA NPRM, Aircraft Electronics Association Fax Dated January 21, 1999, and Airline Suppliers Association Memorandum Dated January 20, 1999.

Cc: Don Van Burkleo
Peter Gallimore

Acknowledgement Letter

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

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

AUG 4 1999

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

Dear Mr. Schultz:

Thank you for your February 23 letter forwarding the working documents developed by the Production Certification and Parts Working Groups under the Aviation Rulemaking Advisory Committee (ARAC).

As indicated in your letter, the recommendation lacks formal economist and legal reviews. In addition, the Federal Aviation Administration (FAA) must consider and resolve concerns raised by members of ARAC. While we are unable to project an expected completion date, every effort will be made to establish a priority and allocate resources to complete this effort in consideration of other agency priorities.

I would like to thank the aviation community for its commitment to ARAC and, in particular, the Production Certification and Parts Working Groups for their expenditure of resources to develop the working documents. The groups are commended for their extensive deliberations on this difficult task.

Sincerely,

Thomas E. McSweeny
Associate Administrator for
Regulation and Certification

Recommendation

[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 1, 21, 45

[Docket No. FAA-98- ; Notice No. 98-]

RIN 2120 -

Production Certification and Parts Manufacturing

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of Proposed Rulemaking (NPRM).

INTRODUCTION:

The Current Manufacturing Environment

The U.S. manufacturing environment has changed in several respects that are not reflected in current regulations. When those regulations were established, a relatively small number of companies manufactured either the complete aircraft, or aircraft engines and propellers, or just propellers under a type certificate and production certificate. Those manufacturers typically licensed and oversaw the manufacturing of replacement parts for their products. The environment has greatly changed, particularly in the production of replacement parts. The U.S. aircraft fleet is aging. Many companies that originally manufactured the complete aircraft, aircraft engine, or propeller and that oversaw replacement part manufacturing have gone out of business. Thus, the manufacture of replacement parts is a major

business and competition is increasing. In addition, aircraft production and parts production are increasingly global. Often manufacturing is under the control of a consortium of U.S. and foreign manufacturers.

The current regulations are for the most part based on the "old" way of doing business when a few major U.S. TC/PC holders, PMA holders, STC holders, and TSOA holders constituted the industry. With airline deregulation and globalization, major changes have and are still taking place in the aviation community. These changes have significantly increased competition among airlines who have in turn passed their competitive pressures on to their suppliers. The airlines' demand for lower costs has resulted in a surge of PMA and STC activity as additional manufacturers have competitively entered the replacement parts market. This activity has already provided individual airlines with millions of dollars in annual savings on the purchase of new replacement parts. An increase in product liability costs and other factors have resulted in more aircraft models that are out of production, are not supported by the original TC/PC holder, and are depending on the PMA process for replacement parts.

In addition, the perception of the airworthiness of replacement parts by elements of the aviation industry is that products or parts produced under an FAA production certificate are more reliable than parts produced under some other FAA form of approval. To the extent that this perception is based on

administrative differences, standardizing the system so that all parts manufacturers would have separate design and production approvals could help to eliminate any perceived inequality among either design or production approvals.

The above reasons, in addition to others, have prompted the review of part 21. The proposed changes are intended to provide a greater credibility to the PMA and STC process, assure a continuation of the excellent safety of flight record of replacement parts and articles, and simplify production and airworthiness certification procedures. The proposed changes to part 21 are needed to assure a safe growth of the aviation industry.

FAA and Industry Cooperation to Resolve the Problems

The FAA established the Aviation Rulemaking Advisory Committee (ARAC) in January 1991 to provide an ongoing mechanism to involve the aviation industry in the regulatory process (56 FR 2190; January 22, 1991; and 58 FR 9230; February 19, 1993). In March 1993, the FAA established the Parts Working Group as part of ARAC (58 FR 16572, March 29, 1993).

The Parts Working Group was tasked with making recommendations to the ARAC concerning the need for new or revised rules governing Parts Manufacturing Approvals, and for replacement or modification parts in subpart K of 14 CFR parts 21 and 45.

At the same time, the FAA also established the Production Certification Working Group.

The Production Certification Working Group was tasked "with making recommendations to ARAC concerning the modernization of requirements applicable to production approval holders in subparts F, G, H, J, K and O of part 21."

The stated objective of potential recommendations was "to establish a more modern, standardized set of production approval requirements more responsive to current industry production practices." On November 22, 1994, the charter was amended to add subpart L of part 21 and subparts A and B of part 45 to the list of subparts for the Production Certification Working Group to review. In 1995, the FAA issued Order No. 8110.42, Parts Manufacturers Approval Procedures. This order has been used as a basis for the ARAC review and recommendations.

Specifically excluded from the FAA task assigned to the Production Certification Working Group were changes to the design requirements for Type Certificate (TC), Supplemental Type Certificate (STC) and Technical Standard Order (TSO). This exclusion was respected by the Production Certification Working Group. Only the design requirements for a Parts Design Approval (previously Parts Manufacturing Approval, PMA) have been changed in accordance with the task assigned to the Parts Working Group. These changes are in accord with FAA AC 8110.42.

Following the release of FAA policy on enforcement (reference FAA Policy Memo, February 27, 1995) the Parts Working

Group was requested by the FAA to define a Standard Part and a Commercial Part and later still, following Federal Register release (reference Proposed Interpretation of "Standard Parts", 61 FR 47671; September 10, 1996), a definition of an Electrical/Electronic Standard Part.

In 1998 the Production Certification Working Group was asked to work with the FAA, JAA, and Transport Canada to harmonize the use of the Form 8130-3 Airworthiness Approval Tag with the JAA Form 1 and Transport Canada Form 24-0078.

In order to provide for a clear delineation of the Parts Working Group responsibilities relative to those of the Production Certification Working Group, the working group chairs, together with the Issues Group Vice Chair, agreed on the following:

The following differentiates the responsibilities of the Production Certification Working Group and the Parts Working Group relating to Parts Manufacturer Approvals (PMA). Both groups, of course, will additionally have the responsibility of fulfilling all their charter requirements.

The Production Certification Working Group will address the FAR Part 21 quality system requirements governing Parts Manufacturer Approvals (PMA). This will be accomplished to the extent that the result will be a single set of quality assurance requirements for all current Production Approval Holders (PAH); i.e., Production Certificate, Approval Production Inspection

System, Technical Standard Order Authorizations and Parts Manufacturer Approvals.

The Parts Working Group will address the technical (engineering) requirements for parts manufacturing approval which currently fall into the category of PMA parts. It will also address replacement and modification technical approval requirements and all the associated regulatory requirements in 14 CFR parts 21 and 45.

The recommendations to modernize part 21 of the Federal Aviation regulations are a combined effort of the Production Certification and Parts Working Groups and recommended to the FAA by the ARAC. They are needed to standardize the design and production approval processes, to recognize the global nature of aircraft and parts manufacturing, and to help eliminate the potential for installing unapproved parts on FAA type certificated aircraft. This proposal is the result of a cooperative effort of the aviation industry and the FAA through the Aviation Rulemaking Advisory Committee.

DATES: Comments must be received on or before (Insert date 120 days after date of publication in the Federal Register).

ADDRESSES: Comments on this proposed rulemaking should be mailed or delivered, in duplicate, to: U.S. Department of Transportation Dockets, Docket No. FAA-98- (insert), 400 Seventh

Street, SW., Room Plaza 401, Washington D.C. 20590. Comments may also be sent electronically to the following Internet address: 9-NPRM-CMTS@faa.dot.gov. Comments may be filed and/or examined in Room Plaza 401 between 10 a.m. and 5 p.m. weekdays except Federal holidays.

FOR FURTHER INFORMATION CONTACT: (INSERT CONTACT NAME, OFFICE, PHONE NUMBER), Federal Aviation Administration, 800 Independence Avenue, SW., Washington D.C. 20591; telephone (202) 267-

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in this rulemaking by submitting written data, views, or arguments, and by commenting on the possible environmental, economic, and federalism-or energy-related impact of the adoption of this proposal. Comments concerning the proposed implementation and effective date of the rule are also specifically requested.

Comments should carry the regulatory docket or notice number and should be submitted in duplicate to the Rules Docket address specified above. All comments received and a report summarizing any substantive public contact with FAA personnel on this rulemaking will be filed in the docket. The docket is available for public inspection both before and after the closing date for receiving comments.

Before taking any final action on this proposal, the Administrator will consider the comments made on or before the closing date for comments, and the proposal may be changed in light of the comments received.

The FAA will acknowledge receipt of a comment if the commenter includes a self-addressed, stamped postcard with the comment. The postcard should be marked "Comments to Docket No. FAA-98-XXXXX." When the comment is received by the FAA, the postcard will be dated, time stamped, and returned to the commenter.

Availability of the NPRM

An electronic copy of this document may be downloaded using a modem and suitable communications software from the FAA regulations section of the Fedworld electronic bulletin board service (telephone: (703) 321-3339) or the Federal Register's electronic bulletin board service (telephone: (202) 512-1661).

Internet users may reach the FAA's web page at http://www.faa.gov or the Federal Register's webpage at http://www.access.gpo.gov/su_docs for access to recently published rulemaking documents.

Any person may obtain a copy of this NPRM by mail by submitting a request to the Federal Aviation Administration, Office of Rulemaking, 800 Independence Avenue, SW., Washington D.C. 20591 or by calling (202) 267-9677. Communications must identify the notice number of this NPRM.

Persons interested in being placed on the mailing list for future NPRM's should request from the FAA's Office of Rulemaking a copy of Advisory Circular No. 11-2A, Notice of Proposed -- Rulemaking Distribution System, that describes the application procedure.

OVERVIEW

The following provides an overview of the major proposed revisions, deletions and additions to the current regulations. Each of these items is followed by the summary and then a detailed Section by Section Discussion.

1). **STANDARD QUALITY SYSTEM:** The quality system requirements which currently are inconsistent and scattered throughout part 21 for various production approvals, would be standardized for all production approval holders and presented in just one area of the production approval regulations.

2). **SUBPART L:** This subpart, which currently contains detailed instruction for export airworthiness approvals, has been simplified into proposed regulations which cover documentation of all airworthiness approvals. Detailed export airworthiness approval instructions would be relocated to FAA directives and advisory material. This would include the ability of a production approval holder to split lots of parts at its distribution facility, and the ability of a production certificate holder to partially disassemble a product for

shipment after the airworthiness document was issued. The proposal would recognize the current industry practice of using the airworthiness approval form (FAA Form 8130-3) as a common identifiable birth certificate of aviation parts and products (other than aircraft) and a common identifiable return-to-service document for aviation parts and products (other than aircraft), as well as the export airworthiness approval tag specified in the current regulation. The proposed regulation is consistent with the "paper trail" recommendations of the FAA/Industry Suspected Unapproved Parts (SUPs) Steering Group, and is in harmony with European and Canadian practices.

3). **PARTS MANUFACTURING:**

DESIGN: Reinforcement of the design data requirements of the current regulations for all products and parts would be accomplished by incorporating language from FAA Order No. 8110.42 which more clearly addresses "Design Data."

Parts Manufacturer Approval (PMA) as a combined FAA design and production approval would be replaced by separate design and production approvals. The current PMA design approval aspects would be replaced with a requirement for an applicant to obtain a parts design approval (PDA). The current PMA production approval aspects would be replaced with a requirement for an applicant to obtain a parts production approval (PPA). The methodology for obtaining design approval has been modified by introducing the more comprehensive approach of "Test reports and computations,

using a comparative or general analysis." This proposal is discussed in more detail under subpart K.

4). PART MARKING: Parts manufactured under a production approval would be required to be individually marked. Also, parts marking would be simplified partly by eliminating the requirement to include "Installation Eligibility" and "FAA-PMA." In today's environment many parts are eligible for multiple installations. Considerable confusion exists among parts installers when a part is marked with the installation eligibility of a specific model when it has also been determined by the FAA to be eligible on a number of variants of the same model.

5). TSO AUTHORIZATION: Technical Standard Order authorization as a combined FAA design and production approval would be replaced by separate design and production approvals. The current TSOA design approval aspects remain unchanged. The current TSOA production approval aspects would be moved to subpart G and would be replaced with a requirement for an applicant to obtain a parts production approval.

6). STANDARD PART: The definition of a "Standard Part" would be specifically identified in the regulation and it would include standard parts manufactured to specifications prepared by a design approval holder. This would be in addition to the currently understood definition which limits standard parts to those manufactured to specifications prepared by a consensus standards organization such as SAE, NIST, etc.

Current definition wording "U.S. Government..." will change to "government" so that standards manufactured to specifications prepared by foreign governments are included.

In accordance with an FAA release in the Federal Register (62 FR 9923; March 5, 1997), certain discrete (non programmable) electrical and electronic parts which meet a performance standard will be classified as standard parts and exempt from the requirements of FAA production approval.

7). **COMMERCIAL PART:** The regulations would establish a new definition for "Commercial Parts" to recognize a class of parts which are neither referred to in the current FAA regulations nor in any advisory material. The industry has used the terminology "Commercial Part" for many years to describe such parts as light bulbs, batteries, fire axes, smoke detectors etc., since the supply of these parts is predominantly procured by other commercial operations such as the automobile, tractor, home/office building industries etc.

8). **ENFORCEMENT:** The proposed rule would strengthen the prohibition against falsification of applications, reports, or records to increase the FAA's enforcement ability.

Part 21 Summary

Differences Between Current and Proposed Part 21

ITEM	PROPOSAL
~~Part 1, Definitions~~	~~**Change:** Standard part definition has been moved from §21.303 and expanded to include parts manufactured to specifications prepared by a design holder. It also includes standard parts manufactured to specifications prepared by foreign consensus standards setting organizations and certain discrete (non-programmable) electrical and electronic parts such as diodes, resistors, etc., which may be conformed solely on the basis of performance criteria.~~ ~~**Reason:** Many specifications for parts which are in the AN, Military Specification category are prepared by design approval holders and foreign consensus standards setting organizations.~~ ~~For electrical and electronic non-programmable parts the FAA made a determination (62 FR 9923; March 5, 1997) that if conformity could be established on the basis of performance criteria, these would be classified as standard parts.~~ ~~NOTE: Certain parts such as some mechanical fasteners, bearings and seals which would have been considered standard parts had the specification not been proprietary, are handled within the TSO concept and do not require rulemaking.~~ ~~**Change:** Commercial part has been specifically defined for the first time.~~ ~~**Reason:** There are many parts such as light bulbs, batteries, and fire axes which are included in the type design, which will never become PMA'd and which currently lack any form of regulatory recognition. Today they are all considered suspected unapproved parts (SUPS).~~

Part 1, Definitions	Change: Standard part definition has been moved from §21.303 and expanded to include parts manufactured to specifications prepared by a design holder. It also includes standard parts manufactured to specifications prepared by foreign consensus standards setting organizations and certain discrete (non-programmable) electrical and electronic parts such as diodes, resistors, etc., which may be conformed solely on the basis of performance criteria. Reason: Many specifications for parts which are in the AN, Military Specification category are prepared by design approval holders and foreign consensus standards setting organizations. For electrical and electronic non-programmable parts the FAA made a determination (62 FR 9923; March 5, 1997) that if conformity could be established on the basis of performance criteria, these would be classified as standard parts. NOTE: Certain parts such as some mechanical fasteners, bearings and seals which would have been considered standard parts had the specification not been proprietary, are handled within the TSO concept and do not require rulemaking. Change: Commercial part has been specifically defined for the first time. Reason: There are many parts such as light bulbs, batteries, and fire axes which are included in the type design, which will never become PMA'd and which currently lack any form of regulatory recognition. Today many are considered suspected unapproved parts (SUPS).

Part 21 Subpart A	
§ 21.1 Applicability	**Change:** The terms for Parts Design Approvals and Production Approvals are introduced. **Reason:** The separation of the design approval from the manufacturing approval of the previous process under PMA and TSOA requires new terminology. The Production Approval refers to all approvals to manufacture aeronautical parts and products. These include the Parts Production Approval and the traditional Production Certificate. **Change:** The general term Design Approval is introduced. **Reason:** The use of this term like Production Approval above applies to all design approvals including PDA and the more traditional TC and STC.
§ 21.2 Falsifications	**Change:** Added "omission of a material fact" as an act of fraud in the submission of an application to the Administrator. **Reason:** Enhance the enforceability of fraud in making applications for certificate.
§§ 21.3, 21.5	**Change:** Unchanged.
~~§ 21.7 Compliance~~	~~**Change:** Discretion added for the Administrator to deny and application for a certificate under this part.~~ ~~**Reason:** This brings the Production Approval discretionary action on a par with that held by the Administrator under §119.39~~

§ 21.7 Compliance	**Change: Discretion added for the Administrator to deny an application for a certificate under this part.** **Reason: This brings the Production Approval discretionary action on a part with that held by the Administrator under §119.39**
Subparts B,C,D and E	**Change:** The requirements for achieving design approval for a Type Certificate

Part 21 Summary (Continued)

Differences Between Current and Proposed Part 21

	(TC), Supplemental Type Certificate (STC) and Technical Standard Order (TSO) remain unchanged. **Reason:** Beyond the tasking scope of the working group.
Subpart F	**Change:** Eliminated. **Reason:** The essence of this deleted subpart has been incorporated in Subpart G and the Single Quality System.
Subpart G § 21.131 Applicability	**Change:** Expanded to include all existing and future production approvals. Incorporates a statement for the manufacture of replacement parts from the current §21.303. This latter statement also clarifies the several sources of approved parts beyond those produced by Production Approval Holders. **Reason:** This is the foundation for the implementation of a single quality system for all Production Approval Holders.

~~§ 21.133 Eligibility~~	~~**Change:** An applicant must hold an approved design or have the right to the use of such a design. Other requirements such as an approved quality system and facilities within the U.S. are consistent with existing rules and policies.~~ ~~**Reason:** This expands the availability of a Production Approval beyond the holders of Type Certificates.~~
§ 21.133 Eligibility	**Change: An applicant must hold an approved design or have the right to the use of such a design. Other requirements, such as an approved quality system, are consistent with existing rules and policies.** **Reason: This expands the availability of a Production Approval beyond the holders of Type Certificates.**
~~§ 21.135 Issuance~~	~~**Change:** The Administrator may impose restrictions on the use of elements of the manufacturer's quality system or permit the expansion of the system for manufacture and conforming development parts for design approval purposes.~~ ~~**Reason:** The restrictions will most commonly occur when the manufacturer and the design approval holder are separate~~
§ 21.135 Issuance	**Change: The Administrator may authorize a PAH to proceed with the manufacture of products or parts prior to meeting all requirements for a production approval. In such cases, the Administrator may restrict functions of certain portions of the quality system, or may require additional inspections and tests.** **Reason: The restrictions will allow the**

Part 21 Summary (Continued)
Differences Between Current and Proposed Part 21

	~~entities and there can only be a coordinated material review board and the manufacturer must coordinate with the design approval holder in the instance of §21.3 reporting requirements. The ability to use the approved quality system for inspecting and documenting development material used for design approval, will be an element that must be in the approved quality system.~~
	FAA to impose additional requirements such as those currently included in Subpart F, if required. The ability to use the approved quality system for inspecting and documenting development material used for design approval, as well as production material produced prior to production certification, will be an element that must be in the approved quality system.
~~§ 21.137 Production System Limitation~~	~~**Change:** The Administrator may issue a Production Approval with restrictions based on the approved quality system. The PLR will also reflect the complete design approval list for the production approval.~~ ~~**Reason:** The first item is for the ability to manufacture development parts for design approval or to restrict the manufacturer's ability to exercise a material review board. The second condition reflects the new operating philosophy of the PDA.~~
§ 21.137 Production System Limitation	**Change: The Administrator may issue a Production Approval with restrictions based on the approved quality system. The PLR will also reflect the complete design approval list for the production approval.** **Reason: The first item is for the ability of the FAA to document any restrictions imposed on a PAH's quality system, as well as any special inspection or test requirements. The second condition reflects the new operating philosophy of the PDA, and is consistent with the current use of a PLR with relation to a Production Certificate.**

~~§ 21.139 Privileges~~	~~**Change:** The PAH may, with an approved Quality System, manufacture a limited quantity of parts for design approval purposes. The PAH may also issue Airworthiness Certificates without further showing.~~ ~~**Reason:** Provides a capability consistent with current practice wherein parts for new products are produced under the manufacturing controls of PAH's. The issuance of Airworthiness Certificates will bring the U.S. manufacturers up to the same capability and response time as the European and Canadian manufacturers who already issue such certificates.~~
§ 21.139 Privileges	**Change: The PAH may, with an approved Quality System, manufacture a limited quantity of parts for design approval purposes. The PAH may also issue Airworthiness Approvals without further showing.** **Reason: Provides a capability consistent with current practice wherein parts for new products are produced under the manufacturing controls of PAH's. The issuance of Airworthiness Approvals will bring the U.S. manufacturers up to the same capability and response time as the European and Canadian manufacturers who already issue such approvals.**
~~§ 21.141 Responsibility~~	~~**Change:** The PAH must report any potential § 21.3 reporting situation to the Design Approval Holder, if they are separate entities (e.g. Licensees). In the event of the cancellation of a license, subsequent MRB, escapes and reporting~~
§ 21.141 Responsibility	**Change: The PAH must report any potential § 21.3 reporting situation to the Design Approval Holder, if they are separate entities (e.g. Licensees). In the event of the cancellation of a license,**

Part 21 Summary (Continued)
Differences Between Current and Proposed Part 21

	~~required by § 21.3, must be coordinated with the Administrator.~~ ~~**Reason:** This is brought about with the licensing of the use of approved design data, which has become common practice.~~ ~~**Change:** A new requirement is to issue an Airworthiness Certificate with each shipment of parts or products, except aircraft.~~ ~~**Reason:** This change is in support of the Suspected Unapproved Parts Team request to provide an initial parts release document with new parts.~~ ~~**Change:** The PAH must maintain quality records for 2 years for all parts produced and for 10 years for all critical parts produced.~~ ~~**Reason:** The requirement is to bring consistency with that imposed on PMA Holders.~~

	subsequent MRB, escapes and reporting required by § 21.3, must be coordinated with the Administrator. **Reason: This is brought about with the licensing of the use of approved design data, which has become common practice.** **Change: A new requirement is to issue an Airworthiness Approval with each shipment of parts or products, except aircraft.** **Reason: This change is in support of the Suspected Unapproved Parts Team request to provide an initial parts release document with new parts.** **Change: The PAH must maintain quality records for 2 years for all parts produced and for 10 years for all critical parts produced.** **Reason: The requirement is to bring consistency with that imposed on PMA Holders.**
§ 21.145 Quality System	**Change:** Establish a singular definition of a Quality System, which incorporates the several (4) systems formerly throughout Part 21. The single system reflects the global trend toward ISO 9000 **(Specific Name)** while it is not a slavish incorporation of that Standard. The single system modernizes the requirements defined by the Administrator. Some of the specifics not previously enumerated include a gage calibration system (21.158) and an internal audit (21.164). The remaining elements of the Quality System reflect similar requirements as were in the previous rule. **Reason:** The consolidation of the quality requirements throughout Part 21 into one section will present a single profile for part manufacture/quality airworthiness.

~~Subparts K and O Design Approval/ Production Approval~~	~~**Change:** The current FAA letter informing an applicant that approval is granted for both design and production of TSO article(s) or modification and replacement part(s) (currently a Parts Manufacturer Approval; PMA) has been changed. Design approval and production approvals have been separated in the proposal. For a TSO article, the FAA will issue a Parts Design Approval (PDA) for design and a Production Parts Approval (PPA), with an accompanying Production Limitation Record (PLR) for production approval. For modification and replacement part(s), the FAA will issue a Parts Design Approval (PDA) for design and a separate Production Parts Approval (PPA) with accompanying PLR for production approval. The Type Certificate for products design approval and Production Certificate (PC) with accompanying PLR remain unchanged.~~ ~~**Reason:** This is an attempt at applying the same requirements to all production approval holders (PAH). Each PAH will meet the requirements for achieving design approvals and all will receive a separate production approval; i.e., PC or PPA and PLR. All production approval holders must meet the proposed common quality system requirements whether they produce aircraft, engines, propellers, TSO articles or modification and replacement parts. Each must first receive design approval and subsequently receive production approval separately based on compliance with the proposed common quality system with a listing of each item authorized to produce on the PLR.~~

Subparts K and O Design Approval/ Production Approval	**Change: The current FAA letter informing an applicant that approval is granted for both design and production of TSO article(s) or modification and replacement part(s) (currently a Parts Manufacturer Approval; PMA) has been changed. Design approval and production approvals have been separated in the proposal. For a TSO article, the FAA will issue a Parts Design Approval (PDA) for design and a Parts Production Approval (PPA), with an accompanying Production Limitation Record (PLR) for production approval. For modification and replacement part(s), the FAA will issue a Parts Design Approval (PDA) for design and a separate Parts Production Approval (PPA) with accompanying PLR for production approval. The Type Certificate for products design approval and Production Certificate (PC) with accompanying PLR remain unchanged.** **Reason: This is an attempt at applying the same requirements to all production approval holders (PAH). Each PAH will meet the requirements for achieving design approvals and all will receive a separate production approval; i.e., PC or PPA and PLR. All production approval holders must meet the proposed common quality system requirements whether they produce aircraft, engines, propellers, TSO articles or modification and replacement parts. Each must first receive design approval and subsequently receive production approval separately based on compliance with the proposed common quality system with a listing of each item authorized to produce on the PLR.**
Subpart K Parts Manufacturing Approval (PMA)	**Change:** Subpart K "Approval of Material, Parts, Processes, and Appliances," is now titled "Parts Design Approval," and only deals with the design approval requirements for replacement or modification parts.

	~~**Reason:** Production and quality requirements have been moved to Subpart G which provides a common system.~~ ~~**Change:** Approval by identicality of design has been removed from the regulation.~~ ~~**Reason:** This methodology has not always been applicable or appropriate. It isn't adequate for all design aspects or applications where criticality is a significant consideration. This methodology remains viable when appropriate as discussed in the preamble and orders.~~ ~~**Change:** An application for PDA must address any variance in the IFCA applicable to the original design.~~ ~~**Reason:** This has always been a practice and is currently specified in orders, this proposal would make the requirement a regulation.~~ ~~**Change:** The proposed Parts Design Approval is transferable and the PMA is not.~~ ~~**Reason:** The separation of design and production approval allows the design approval to be transferable.~~ ~~**Change:** Design approvals under PMA issued before the effective date of the final rule will meet the design approval requirements for a PDA.~~ ~~**Reason:** This will in effect convert all existing PMA design approvals to PDA's and thereby extend all PDA privileges and responsibilities to them.~~

	Reason: Production and quality requirements have been moved to Subpart G which provides a common system. **Change:** Approval by identicality of design has been removed from the regulation. **Reason:** This methodology has not always been applicable or appropriate. It isn't adequate for all design aspects or applications where criticality is a significant consideration. This methodology remains viable when appropriate as discussed in the preamble and orders. **Change:** An application for PDA must address any variance in the Instructions for Continued Airworthiness applicable to the original design. **Reason:** This has always been a practice and is currently specified in orders, this proposal would make the requirement a regulation. **Change:** The proposed Parts Design Approval is transferable and the PMA is not. **Reason:** The separation of design and production approval allows the design approval to be transferable. **Change:** Design approvals under PMA issued before the effective date of the final rule will meet the design approval requirements for a PDA. **Reason:** This will in effect convert all existing PMA design approvals to PDA's and thereby extend all PDA privileges and responsibilities to them. **Change:** The requirements for changing a PDA have been added to Subpart K.

	Reason: These requirements have never been specifically addressed in the regulations for replacement or modification parts.
Subpart L	**Change:** Title of Subpart L changed from Export Airworthiness Approvals to Airworthiness Approvals. **Reason:** Based on harmonization with other airworthiness authorities, and efforts to combat Suspect Unapproved Parts (SUPs), the FAA has already allowed extended use of the export airworthiness approval form (FAA Form 8130-3) for domestic use and return-to-service, through policy change. The title change reflects the extended use of the form. **Change:** Detailed export airworthiness approval requirements removed from the regulation. **Reason:** These detailed requirements will be placed in Directives and Advisory Circulars. This will allow more flexibility for change. **Change:** Form numbers have been removed from the regulation. **Reason:** These detailed requirements will be placed in Directives and Advisory Circulars. This will allow more flexibility for change. **Change:** Class I, II and III product definitions have been eliminated. **Reason:** There is no distinction between Class II and III parts in the proposed regulation. An FAA airworthiness approval must be issued for all new part shipments (reference proposed § 21.141(h)).

Subpart L (continued)	**Change:** References to FAA Designees required to issue the airworthiness approvals for parts and products other than aircraft have been eliminated. **Reason:** This reflects a fundamental change in the way airworthiness approvals for parts and products other than aircraft are issued. For new parts and products, original airworthiness approvals will be issued by the production approval holder. For repaired and overhaul parts and products, these forms will be issued by the certificated entity returning the part or product to service. **Change:** Export Certificates are only required for aircraft, not propellers or engines. **Reason:** This is consistent with domestic airworthiness approvals, where only aircraft receive an airworthiness certificate, and all other products receive an airworthiness approval. **Change:** Airworthiness approvals may be issued for parts or products other than aircraft prior to type certification if there is an acceptable recall system if the parts or products are not approved as part of the subsequent type certificate approval. **Reason:** This will allow airworthiness certificates to be issued for parts which are pre-positioned prior to type certification, as allowed under current Advisory Circular 21-32A, and proposed § 21.139(c).

Item	Proposal
Part 45 Part Marking	**Change:** Applicability has been added for: (a). Owner/Operator produced parts (b). Identification of critical components **Reason:** To recognize expanded requirements for parts marking. **Change:** Detail parts whose markings become obliterated during normal manufacturing assembly need not be remarked. **Reason:** To clarify that individual piece parts must be marked when handled as replacement parts, but when used in a top assembly and a marking is obliterated it need not be remarked. **Change:** 45.14 has been modified to note that non-life limited structural components are not subject to the identification of critical components. **Reason:** Embedded structural components not normally considered replaceable would have presented a problem. **Change:** Eliminate requirement for eligibility marking. **Reason:** Many parts have multiple installation eligibilities. Eligibility information is available in other required documents. **Change:** Address TSO, subcomponents and replacement part marking. **Reason:** To cover part marking in single Part 45 location.

SECTION BY SECTION DISCUSSION

In the following discussion, each proposed substantive change, addition, or deletion in the rule language is explained. Rule language taken from the present rules, but not substantively changed, is not explained in detail.

~~**[NOTE:** DEFINITIONS ARE WRITTEN ON THE ASSUMPTION THAT THE DEFINITIONS OF STANDARD PART, COMMERCIAL PART AND ELECTRICAL/ELECTRONIC STANDARD PART ARE ALL APPROVED BY THE FAA AND THE PARTS WORKING GROUP IN TIME FOR THE FINAL RELEASE OF THE PART 21 NPRM TO THE FAA. IT IS PROPOSED TO PLACE THEM IN PART 1.]~~

Section 1.1 Definitions

New definitions for "standard part" and "commercial part" are proposed to be added to the list of definitions in part 1.

Standard Part: Although "standard part" is not currently defined in the regulations, § 21.303 (b) (4) refers to "standard parts (such as bolts and nuts) conforming to established industry or U.S. specifications" and "standard part" is defined in Order 8110.42. The current FAA interpretation as stated in this order is as follows:

"Standard Part is an item manufactured in complete compliance with an established U.S. government or industry accepted specification which includes design, manufacturing and uniform identification requirements. The specification must include all information necessary to produce and conform the part. The specification must be published so that any party may

manufacture the part. Examples include, but are not limited to, National Aerospace Standards (NAS), Air Force-Navy Aeronautical Standard (AS), Military Standard (MS)."

The definition proposed for § 1.1 also would include as a standard part, parts manufactured to specifications prepared by the holder of a design approval. Including some specifications prepared by a design approval holder in the category of a standard part recognizes the current situation wherein many thousands of part numbers manufactured to specifications prepared by a design approval holder have been accepted by the FAA as standard parts for many years, although the current regulations do not specifically recognize such parts as standard. The proposed definition also recognizes that as more MIL-Specs are canceled, design approval holders may need the flexibility of developing their own specifications for standard parts in order to respond rapidly to their on-going production requirements. The proposed definition replaces "U.S. Government" with "a government agency" so that parts of foreign manufacture which meet all of the standard parts criteria would also be acceptable.

The expansion of the ability to use specifications published by government agencies other than the U.S. Government reflects the global reality of the industry. Component that are designed and manufactured by suppliers outside the U.S., use "standard part" manufactured to specifications established within their

country. The issue with a standard part specification is not the design criteria itself because that is resolved as acceptable when the Type Design or TSODA is approved. The issue is their relevant Government Agencies publishes the specification and it contains Design, Manufacture, Test, Acceptance Criteria and Marking requirements such that anyone may perform conformity inspection. The specification must also be subject to revision controls. The responsibility of conformity of standard of standard parts, irrespective of the ownership of the specification, always resides with the user of the part. This responsibility is the basis for the requirement that the specification for a Standard Part must be in the public domain. The Production Certification and Parts Working Groups proposed that an Advisory Circular be maintained which lists the accepted standard parts specification published by government agencies, consensus standard setting organization and industry. Consensus standard setting organizations are those associations such as American Society of Mechanical Engineers (ASME), IEEE, ANSI, etc. Industry Specifications are those specifications that meet the content and revision requirements and are placed in the public domain by a holder of a Type Certificate, Supplemental Type Certificate or a ~~TSODA.~~**Parts Design Approval**.

During the course of developing a definition of "standard part" various minority opinions arose all of which were satisfied

or withdrawn so that the definition is supported by 100 percent of the Production Certification and Parts Working Groups.

At one stage in the definition development process, the definition contained the words "or designated by a type certificate holder." There were two objections to this wording - one from the holder of a design approval other than a type certificate and one from FAA General Counsel.

In resolving these objections the working group agreed that if one design approval holder had the right to designate specifications as standards, all design approval holders should have the same right.

The second objection, raised by FAA General Counsel, offered an opinion that the FAA had not granted the delegated right for design approval holders to <u>designate</u> parts as "standard." This resulted in the development of criteria by which the FAA might support a delegated right for design approval holders to "designate" parts as standard parts, with the FAA making the final determination.

In addition to the expansion of the standard part definition to include specifications prepared by design approval holders, the definition would include certain discrete (meaning non-programmable) electrical and electronic parts such as transistors, diodes, resistors, and non-programmable integrated circuits, e.g., amplifiers, bridges, switches, relays, gates,

etc. which are manufactured to specifications which are essentially standard specifications, established by standards organizations such as the Society of Automotive Engineers (SAE), the American Electronics Association, Semite, Joint Electron Tube Engineering Council and the American National Standards Institute (ANSI). Such standards developed by these bodies are overseen by the Institute of Electrical and Electronics Engineers (IEEE), the IEEE Standards Committee, as well as the electrical and electronics industry at large, who depend upon characteristic design standards for consistency in operation and performance. **To be considered standard, t**he parts must be used within the published operating characteristics and environmental ranges for the part.

The proposal excludes programmable electrical and electronic parts such as programmable integrated circuits, hybrids, gate arrays, memories, etc.

Programmable logic devices are not discrete due to the programming required to control timing, functionality, performance and overall operating parameters.

The concept of establishing certain electrical and electronic parts as standard parts was released in the Federal Register for public comment (61 FR 47671; September 10, 1996). The comments were substantially supportive. Following a review of these comments, the FAA published in the Federal Register an

expanded interpretation of the definition of standard parts (62 FR 9923; March 5, 1997). Specifically the FAA broadened its interpretation of what is an acceptable specification for establishing conformity.

In the past the FAA only applied the exception in § 21.303 (b) (4) to standard parts that had specifications that contained information on the design, materials, manufacture, and uniform identification requirements. The specification had to include all the information necessary to produce the part and ensure its conformity to the specification. This application largely excluded classes of parts where the parts are conformed not on the basis of their physical configuration but by meeting the specified performance criteria.

Under this broadened interpretation, the FAA currently only recognizes discrete electrical and electronic parts that conform to their specifications as standard parts for the purposes of subpart K.

This NPRM proposes to codify this FAA interpretation into the regulations. The NPRM also stipulates that prior to a manufacturer declaring a part to be standard (excluding it from ~~the design approval requirements),~~**FAA manufacturing oversight)**, the FAA must make a finding that the airworthiness of the part can be established solely on the basis of meeting a performance only specification.

Also considered by the working group was how to handle electrical and electronic parts which are manufactured to exactly the same specification as the electrical and electronic part previously discussed, but which operate in an environment outside the published operating characteristics and environmental ranges for the part, such as those for temperature, humidity, etc. The group decided that these electrical and electronic parts, which are purchased as standard parts and then subjected to processing according to the desired environmental operating conditions, could no longer be considered standard parts as there are additional tests done to qualify the part. These parts would need a part number change and they would be supplied to production approval holders under their production approval as an approved supplier, or to the after-market under the production approval of the equipment manufacturer holding the design approval and the requirements for the desired additional processing.

The proposed wording of the standard part definition, which would be placed in § 1.1 of title 14 of the Code of Federal Register (14 CFR) is therefore as follows:

> **Standard part** means a part manufactured in conformance with one of the following:

1). A specification established by a government agency or consensus standards organization acceptable to the Administrator that -

a). Contains design, manufacturing, test and acceptance criteria, and uniform marking requirements.

b). Is made available so that anyone may manufacture that part.

2). A specification established and designated by a FAA design approval holder that is included in the type design and meets the following criteria:

(a). The specification contains design, manufacturing, test and acceptance criteria, and uniform marking requirements;

(b). The specification is available to any person so that anyone may manufacture the part; and

(c). The part is not subject to special quality assurance oversight

3). A specification that the Administrator finds will result in a part that can be conformed (airworthiness established) solely on the basis of meeting performance criteria and uniform marking requirements.

4). A specification for an electrical or electronic part produced in conformance with a specification published and maintained by a consensus standards organization, a government agency or a holder of a design approval; or in conformance with the manufacturer's internal specifications or standards. The internal specifications or standards must include manufacturing controls, quality and reliability test methods, and identification requirements; they may include acceptance test criteria. With the exception of parts manufactured to U.S. Military specifications, designs of which are controlled by the Defense Supply Center, Columbus (DSCC), the specifications or standards do not include electrical parameters and data which are obtained from the supplier's data sheet. The part is used within the manufacturer's published operating characteristics and environmental ranges.

During the process of establishing a definition of a standard part a difficulty arose with regard to certain types of parts (Briles rivets, Hy-Lock nuts, bearings and seals/o'rings, etc.); manufactured to specifications which are proprietary to the manufacturer. The specifications are not freely distributed

for anyone to make and, therefore, such parts do not meet the test for a standard part.

Since these proprietary parts are represented by thousands of part numbers to account for various lengths, diameters, thickness, grip length, etc. and installed on multiple type certificated products in multiple locations, the alternative of Parts Manufacturing Approval (PMA) was unattractive due to the burden which PMA application paperwork might create for the FAA. The FAA (AIR-100) recommended that we look closely at Technical Standard Order (TSO) as an alternative.

TSO products meet a performance standard. The proprietary fasteners, o'rings/seals and bearings also meet a performance standard, however, the standard specified varies according to length, diameter, etc. Shear strength, for example, varies with fastener diameter. In all other respects, these are large families of similar parts made from the same material and manufactured to the same process, finish, etc. They meet the TSO concept.

Small groups of fastener, bearing and o'ring/seal manufacturers, working under the authority of the ARAC Parts Working Group, prepared draft TSO's for recommendation to the FAA. The FAA determined that these TSO's would not require rulemaking and they were released in the Federal Register for public comment in March 1997 (62 FR 10107; March 5, 1997). The

comments were generally favorable with the exception of Transport Canada and the Joint Aviation Authorities both of whom objected to the increased regulatory oversight a TSO would involve. In dispositioning the comment of the foreign regulatory agency, the FAA determined that for the U.S. regulatory process there was no suitable alternative and proceeded with the TSO concept.

Although determined to be independent of rulemaking, the TSO concept for propriety design fasteners, o'rings/seals and bearings will remain in the ARAC Parts Working Group until the task assigned to the ARAC is complete.

Commercial Part: In addition to establishing a proposed definition for standard parts, the working group has proposed a definition of a "commercial part." Commercial parts are neither referred to in the FAA regulations nor in any advisory material yet the industry has used this terminology for many years when referring to such items as light bulbs, batteries, fire axes, smoke detectors, etc., that are included in the type design and which have been installed on type certificated products and accepted by the FAA as being exempt from the requirements of a production approval.

The definition of a commercial part proposed for § 1.1 is as follows:

Commercial part means a~~detail~~ part~~of subcomponent~~ included in the type design that is designated by the design approval holder based on the following criteria:

1). The part is not necessarily designed or produced for applications in commercial aviation; and

2). The part is manufactured to a specification or catalog description and marked under the identification scheme of the manufacturer.

Originally the definition considered by the working group would have required that the type certificate holder should designate parts as "commercial" to avoid the possibility of the manufacturer of a more sophisticated piece of equipment than a light bulb, advertising the part in a catalog and selling it as a commercial part. Subsequently, the working group voted to extend to all design approval holders the right to designate parts as commercial. At this point FAA General Counsel expressed the same concern as noted under standard part, expressing an opinion that design approval holders had no FAA-delegated right to make such a designation. Criteria by which FAA counsel might be comfortable with design approval holders designating parts "commercial" were embodied in the final proposed definition which was approved by the working group 100 percent.

Although at certain stages in the development of the definition of a commercial part, various working group members

expressed a sense of unease with the project, the majority of members voted in favor of proceeding with the definition work. It was realized that to expect manufacturers of light bulbs, batteries, resistors, etc., manufacturing millions of parts per day, to obtain PMA, was probably impractical and an exemption from FAA production approval requirements was essential.

In order to memorialize standard and commercial parts it is intended that by application of each definition (i.e. Standard or Commercial), the design approval holder will prepare a tabulation for submittal to the FAA Aircraft Certification Office (ACO) for approval and subsequent release to the public. Similarly, to maintain configuration control, parts so designated by the design approval holder as standard or commercial parts, will include in the tabulation the part description and part number and update periodically the tabulations to account for new products, substitutions or revisions to the specifications.

Section 21.1 Applicability

Paragraph (a)(1) of this section is proposed to be amended by more completely specifying all the pertinent contents of part 21, and using the term "design approvals" in place of the term "type certificates" to reflect the proposed split between design and production approvals for PMA parts and TSO articles. Proposed paragraph (b) of this section explains that the term

"production approval holder" is used to identify a holder of either a production certificate or a parts production approval. Proposed paragraph (c) explains what is meant by the broader term "design approval."

Under the proposed rule "design approval" means type certificate, supplemental type certificate, parts design approvals, and TSO design approvals. Paragraph (c) includes the statement that standard parts are excluded from parts design and production approval requirements, although they may be detail components of an approved design.

Proposed paragraph (d) broadens the use of "product" to include any appliance for which the Administrator issues a type certificate. This change is necessary to make part 21 consistent with 49 U.S.C. 44704(a), which allows the Administrator to "specify in regulations those appliances that reasonably require a type certificate in the interest of safety." Paragraph (e) proposes that "part" means an article; accessory; items for which the FAA has issued a Technical Standard Order design approval; airborne software, included as defined in the type design; and components and parts of a product or part.

Section 21.2 Falsification of applications, reports, or records

Paragraph (a)(1) and (a)(2) are proposed to be amended to make it clear that the FAA will treat the omission of a material

fact as seriously as a fraudulent or intentionally false statement. This change is intended to strengthen the ability of the FAA to ensure that design, production, and airworthiness certifications and approvals are accurate.

In addition, the public should be aware of the intent of paragraph (b) of § 21.2 with respect to potential FAA enforcement. Some have interpreted the absence of a reference, in the current rule, to enforcement actions other than suspension or revocation to mean that the FAA intended to limit its enforcement discretion in cases of falsification. However, the intent of that provision was and is to notify the public that falsification may result in the suspension or revocation of part 21 certificates or approvals that may not be directly related to the certificate or approval for which the falsification occurred, hence the use of the word "any." For example, a person might hold a production certificate for a type certificated product and also hold a PMA for a part eligible for installation on a completely different type certificated product. Falsification by that person with respect to the production certificate could result in revocation of both the production certificate and the PMA. The public should also be aware that falsification can be the basis for the assessment of a civil penalty.

Section 21.7 Compliance disposition

This NPRM would incorporate a new provision, § 21.7, Compliance disposition, which would state that the FAA could deny an application for a design or production certificate or approval to an applicant who lacks the care, judgment, or integrity necessary to hold the certificate or approval. The provision would apply when the applicant intends to fill, or fills, a key management position with an individual who exercised control over, or held, a similar position with a certificate or approval holder whose certificate was or is being revoked, and that individual materially contributed to the circumstances causing the revocation or the revocation process. "Key management position" would include the personnel described in § 21.149.

A denial of the application could also be premised on a finding that an individual who will have control over, or will have a substantial ownership interest in, the applicant had similar control over or interest in a certificate or approval holder whose certificate or approval was or is being revoked, and that individual materially contributed to the circumstances causing the revocation or the revocation process.

The proposed standards described above are similar to those contained in current § 119.39 of Title 14 of the CFR.

In addition, the denial could be premised on a finding that an individual in one of the capacities described above committed an act of falsification, in contravention of the relevant

provisions of Title 18 of the U.S. Code, the provisions commonly referred to as the Federal Aviation Act, or the Federal Aviation Regulations. For example, the FAA has discovered instances in which persons knowingly presented parts for airworthiness approval that have not been properly produced or inspected.

The safety of the aviation design and production system depends, to a large degree, on the truthfulness of certificate and approval holders. While the FAA monitors holders to the extent its limited resources allow, deliberate deceit by persons under, or purporting to hold, production approvals can and does occur, because such deceit is usually detected after the fact, if at all. Amendment 21-70 (57 FR 41360; September 9, 1992) addressed this problem in part by establishing sanctions for falsification of applications, reports, and records.

However, the FAA believes that it is appropriate to further strengthen its regulatory safeguards. The FAA needs to deny a certificate or approval to an applicant that attempts to employ a key management individual, or is subject to the control of another, who has committed an act of misconduct. The commission of such an act demonstrates a contemptuous disregard for the law, and it is reasonable to conclude that such a person cannot be relied on for future compliance with the requirements incumbent on a certificate or approval holder.

The FAA has, on occasions, found itself in the position of receiving applications for new certificates or approvals from persons with known criminal records or histories of non-compliances with FAA regulations; this proposal would address those kinds of situations. This proposal would prevent a company, whose certificate or approval has been, or is being, revoked for non-compliances due to misconduct, from simply changing its name but retaining the same employee(s) responsible for the original misconduct. This would apply to any certificate or approval issued under any provision of Title 14 of the CFR, including certificates or approvals issued by either the FAA or the Office of the Secretary of Transportation.

This proposal would apply to each application for a certificate or approval in process on or after the effective date of the final rule, if adopted, even if the disqualifying conduct is found to have occurred before the effective date.

Finally, the proposal would also address the situation where a certificate or approval holder has employed an individual in a key management position, or an individual has obtained control over or a substantial ownership interest in the holder, and the Administrator finds that the individual is in a position to materially affect the holder's ability to comply with part 21 and has committed an act of misconduct. Unless the individual's involvement in the current holder is otherwise approved by the

Administrator, the certificate or approval holder would be subject to enforcement proceedings if the individual continues in that position. This part of the proposal would mean that the kinds of circumstances that the Administrator would consider potentially disqualifying for an applicant for a certificate or approval, should not be created after the FAA issues the certificate or approval.

Section 21.45 Privileges

Section 21.45 is proposed to be amended to correct a typographical error in paragraph (b) by changing "or certificated aircraft" to "on certificated aircraft" and by changing the cross-referenced sections in paragraph (c) to coincide with the changes to subpart G contained in this document.

Subpart F - Production Under Type Certificate Only

Present subpart F of part 21 allows for production under a type certificate. The present subpart F production under TC provisions normally cover the period between issuance of a type certificate and issuance of a production certificate. The FAA proposes to delete subpart F since under proposed § 21.135(c) an applicant for a production approval who wishes to proceed with the manufacture of a limited quantity of products or parts prior to obtaining the design approval and production approval would be

able to do so provided certain conditions are met. Also, under subpart F, the FAA issues an ~~APIS~~**approved production inspection system (APIS)** provided certain requirements are met. The APIS is a production approval for producing the same type of products that can be produced under a production certificate. Although APIS and PC use different terms to describe the quality control requirements, the two quality control requirements contain the same basic controls. For this reason and the fact that there are very few APIS holders as compared to PC holders, the FAA proposes to eliminate the dual production approval system. All persons who wish to produce products would have to obtain authorization under proposed § 21.135.

As noted above, under the proposed regulation, a manufacturer must have a production approval under § 21.135 to produce aviation products or parts. As part of the production approval process, the FAA may grant a production approval similar to production "under type certificate only" which invokes limitations on a manufacturer until that manufacturer demonstrates compliance to all quality assurance system requirements to the satisfaction of the FAA. Those limitations, which (at the discretion of the FAA) may include the specific tests and conformity inspections in the current Subpart F, would be specified on the production limitation record under proposed § 21.137(b). It should be noted that the MRB section in the

current Subpart F has been incorporated into the quality system requirements for all production approval holders (proposed § 21.160).

Subpart G - Production Approvals

The FAA proposes a complete revision of subpart G, which now covers the issuance of production certificates. The goal of the proposed revision is to create a single uniform production approval process and single quality systems appropriate to the products, parts and articles for which the design approvals are held. Under the present rules, quality control is addressed under four subparts. Current subpart F contains quality control (production inspection) requirements for persons who hold a type design and who **either** want to~~obtain an APIS so that they can~~ manufacture before they have obtained a production certificate **or who want to obtain an APIS**. Subpart G contains quality control requirements for persons who hold a type design and who want to obtain a production certificate. Subpart K contains quality control (fabrication inspection) requirements for persons who wish to produce materials, parts, processes, and articles under a Parts Manufacturer Approval. Subpart O contains quality control requirements based on subpart G requirements for persons who produce parts or articles under a TSO authorization. A detailed discussion of each section in proposed subpart G follows.

Section 21.131 Applicability and compliance

Proposed § 21.131(a) would state the broader coverage of subpart G to include within production approvals both production certificates for products and parts production approvals for parts and articles currently manufactured under a PMA or TSO. Thus throughout this preamble and the proposed rule wherever the term "production approval" is used readers should keep in mind that it includes both production certificates and parts production approvals.

Proposed § 21.131(b) is a new provision that would provide a two year period after the effective date of any new rule for transition from the present production approval requirements to the new requirements. This provision would require all present production approval holders within the two-year period to show that their quality systems meet the new requirements of part 21. The FAA would develop guidance materials, such as an Advisory Circular to tell approval holders how to make this showing. The FAA would review the approval holder's quality manual and conduct on site evaluations as necessary. The approval holder should be prepared to show the FAA what changes have been made to comply with the new rule. The FAA expects that the quality systems of some approval holders already meet the new requirements. The

current design approvals for a type certificate, PMA, or TSOA would not require review.

Proposed § 21.131(c) would replace current § 21.303(a) as the basic prohibition against production without an FAA production approval. Current § 21.303(a) prohibits a person from producing a part "for sale for installation on a type certificated product" unless the part is produced pursuant to a PMA or the part comes under an exception in § 21.303(b). The intent described in "for sale for installation on a type certificated product" is, in many instances, difficult to prove.

Therefore, the FAA proposes to adopt a prohibition that would be violated only if the producer represents that the product or part is suitable for installation on an FAA type certificated product, such as an aircraft, or on an FAA approved part, such as an article. This would be a more objective standard, which the public could more easily understand, and the FAA would be more capable of developing the evidentiary record necessary to prove a violation. Note that the proposal would state "suitable" for installation on an FAA type certificated product or FAA approved part, rather than the more specific word "eligible," which connotes that the FAA has already made a determination. The FAA intends to allow the producer to imply that the part, if installed, would return the product or other part to its "original or properly altered condition" only if the

part is produced under the appropriate FAA certificate or approval, or under an exception stated in paragraph (d). Accordingly, a producer's statement that the part is "equal to" or "as good as" one produced under an approval could result in producer liability.

Paragraph (d) would state the exceptions to § 21.131(c). The first would except a "standard" part, as defined in §1.1. This exception would be similar to current § 21.303(b)(4). The second would except a part "produced by ~~an~~ owner or operator for maintaining or altering the owner's or operator's product or [other] part." This exception would be similar to current § 21.303(b)(2), but would also incorporate a definition of the salient phrase; the definition is derived from an interpretation that was previously made publicly available by the FAA, but not published in the Federal Register. The third would except a part that is produced by a person certificated by the FAA to perform maintenance or alteration on a product or another part under that person's certificate. This exception would be required because the basic prohibition on production no longer would be premised on the producer's intent to produce a part for sale for installation on a type certificated product. The exception would be incorporated to acknowledge that a repair station or airman is required, ~~when the~~ product or part is returned to service after

authorized maintenance or alteration, to represent a part's suitability for installation on that product or part.

While some Working Group members recommended that the exception for owner/operator produced parts should be limited, such as to parts produced for experimental aircraft or for older small aircraft no longer in production, the ARAC did not recommend any such limit. Thus, this proposal is consistent with the current rule and the current FAA policy as stated in Order No. 8110.42. However, as stated in this proposal and that order, if a part is offered for installation on a product other than the owner's or operator's, then a parts production approval would be required.

Section 21.133 Eligibility

Proposed § 21.133 is mostly based on present § 21.133 with some additions to cover the broadened coverage of subpart G. Section 21.133(a)(1)(i) is based on present § 21.133(a)(1), but uses the term "design approval" rather than "type certificate" or "STC." This change is proposed because persons who manufacture under a PMA or a TSO do not obtain a type certificate. Under the proposed rules, the design approval issued under subpart K for parts would be called a "Parts Design Approval" and the design approval issued under subpart O for TSO articles would also be called a "Parts Design Approval." The design approvals issued

under subparts B and E would continue to be called "type certificates" and "supplemental type certificates," respectively. Proposed § 21.1(c) lists the types of design approvals covered by part 21.

Proposed § 21.133(a)(1)(ii) is based on current § 21.133(a)(2), but again, the language would be modified. The current rule language refers to persons who have rights to the benefits of a type certificate "under a licensing agreement." The proposed language is "written authorization to use the existing design approval." "Design approval" is used for the reasons already stated. "Written authorization" is used rather than "licensing agreement" because it more simply expresses the requirement that the applicant for a production approval have written legal authority from the holder of the design approval. When the applicant is seeking a production approval under the written agreement, the agreement would reflect the design change responsibilities between the parties. However, the essence of the agreement is to identify the existing approved data as being that design data in the approved design of the writer of the agreement and that the data is in the possession of the applicant. That data does not change effectively irrespective of changes in the agreement. Subject only to the controls of the Administrator through Airworthiness Directives, the data remains approved data. The issuance of a written authorization for one to

use an approved design for purposes of applying for a Parts Production Approval is a means of communicating to the Administrator that the applicant is in possession of the approved design data for the part or product concerned. While such written authorization may be the subject of a business relationship between the Design Approval Holder and the applicant, withdrawal of the business agreement does not change the design of the part or product being produced. It will impact the § 21.141(d) reporting requirement and would require the PPA Holder to inform the Administrator. The Production Limitation Record for such PPA Holders may reflect that all MRB and reporting under §21.3 must be coordinated with the Design Approval Holder and the withdrawal of such support may require additional application information from the PPA Holder.

Proposed § 21.133(a)(2), which is included for harmonization, would add to the eligibility requirements specific language that would require the applicant to have manufacturing facilities or to maintain quality surveillance over manufacturing facilities capable of producing the product or part for which approval is sought. Proposed new § 21.133(a)(3) would require the applicant to establish and maintain a quality system that meets proposed § ~~21.145 at a manufacturing facility within the United States. While new specific language would be added to~~

~~§ 21.133, this is not considered a new requirement because it is stated in current § 21.137 and~~ **21.145.**

~~is stated in current subparts K and O.~~

Proposed § 21.133(b) is based on present § 21.133(b), but refers to a "production approval" rather than to a "production certificate."

Section 21.135 Issuance of production approval

Proposed § 21.135(a) and (b) are virtually identical to present §§ 21.135 and 21.149, respectively, except that they are broadened to include parts production approvals presently in § 21.303(d)(2) for PMA's and in § 21.605(c) for TSO articles. Proposed § 21.135(c), while new, is in effect partly based on present subpart F of part 21 in that it would, as previously discussed, provide for the temporary manufacture of a product or part before a design or production approval has been issued. The ability of a production approval holder to use its approved quality system for the production of parts to be used in the design approval process and during the interim between the issuance of the design approval and the Production Limitation Record amendment, is a recognition of an existing approach used by essentially all production approval holders. This enables delivery of parts and products as soon as the design receives FAA approval. To exercise this capability using an approved quality

system, the PAH must be in the process of furthering the design by actual development of the new part or product. Any limitations on the use of the producer's quality system, or the imposition of any additional inspections and tests required by the Administrator, would be noted on the Production Limitation Record, as specified in proposed § 21.137(b). The limited quantity to be produced under these circumstances must be reasonable to the product or part to be developed and approved. The specific quantities and duration of the process must be acceptable to the Administrator. The FAA plans to issue advisory material covering the kinds of details that are in present subpart F but would not be included in proposed § 21.135(c).

A system to manage this limited production at the production approval holder (PAH) who is the developer of new products must be part of the approved Quality System for that PAH. The extent of the controls to be in place for such an approval would be defined in advisory material but must include the configuration control of the product or part from the design inception. All component and part release must include the identification of those parts developed for testing purposes only as distinguished from those intended to be used in the approval process. Provisional Approval would be provided only to those PAH's that have an approved system to manufacture like products or parts to the new one being developed. Provisional Approval would permit

the PAH to fully utilize the approved manufacturing processes Quality System for the production of the approval material used for any tests necessary for design approval of the new product or part. After production approval these limited ~~production parts~~**Parts Production** are eligible for airworthiness approval.

All parts/components that leave the direct control of the PAH must be released under an approved system of tracking and be subject to recall in the event any particular part or component is not used in the final approved product or part. The documentation accompanying any pre-approval released parts must reflect the conditional release status of the part/component and the part is not to be considered airworthy until a subsequent notification of the completion of the approval process for the new product or part. All parts/components that are pre-released and subsequently determined to be not suitable for approval purposes must be recalled in accordance with the PAH's approved recall procedures, upon that determination.

Proposed § 21.135(d), which relates to manufacturing facilities located outside the United States, is based on current §§ 21.137, 21.303(g), and 21.601(c), which state that the Administrator does not issue a production certificate, PMA, or TSOA for manufacturing facilities located outside the United States unless the Administrator finds no undue burden on the United States in administering the applicable statutory or

See 59 which is positioned after 61 and in front of 62.

A consortium may also have one or more partners which hold a foreign Civil Aviation Authority (FCAA) production approval for the same type of product or part. The FAA should allow such a partner the same consideration and privileges as a partner which holds an FAA production approval, as long as there is FAA recognition of the FCAA (through a bilateral airworthiness agreement or equivalent) and agreement by the FCAA to perform surveillance on the consortium products and parts.

Section 21.137 Production system limitations

The first two sentences of the introductory paragraph of proposed § 21.137 are virtually identical with present § 21.151. Proposed paragraphs (a) and (b) are new and would prescribe the details that must be included in a production limitation record (PLO). The details are needed in the regulation so that the PLR would contain the approved listings separate from the design approvals. Today these are handled by issuing supplements to PMA and TSOA holders. The intent is to limit the PLR to those products, parts and articles that are referenced in the design

When a consortium is comprised of two or more partners which hold existing FAA production approvals for the type of product or part to be produced under the consortium's production approval, special consideration should be given to the consortium. That special consideration could include: use of the partners' FAA designees for conformity inspection (and other FAA functions given to designees) of consortium products and parts; direct use by the consortium (by reference in the consortium's quality assurance procedures) of the partners' quality assurance systems; use of the partners' inspection symbols and trademarks to meet part 45 requirements; and FAA surveillance of consortium products as part of the surveillance (including ACSEP) of each partner.

Any partners of the consortium that do not hold an FAA production approval must be treated as a supplier to either the consortium or to one of the partners which hold an FAA production approval. The consortium must maintain a central office to interface with the FAA on all engineering, continuing airworthiness, manufacturing, and quality assurance matters involving the consortium and its products or parts.

inconsistency in application and an inability on the part of industry to determine when it would be invoked. The clause remains and the FAA has committed to develop advisory material that would clearly define the requirements to overcome the undue burden.

In a related action, the FAA published a final rule on October 27, 1997 (62 FR 55696) that establishes fees by voluntary agreement for production certification-related services pertaining to aeronautical products manufactured or assembled outside the United States.

Proposed § 21.135(e) addresses circumstances under which parts can be manufactured outside of the United States, assuming that the Administrator has found no undue burden under proposed § 21.135(d). The specific language for TSO articles in proposed § 21.135(e)(1) and (e)(2) is based on current § 21.617.

There was considerable discussion within the Production Certification Working Group about adding a separate section in the regulation on production approval held by a consortium. Although it was decided not to incorporate such a section in the regulation (since a consortium must meet all production approval requirements), there was overwhelming support to address this issue in the preamble, and assure follow-up in directives and advisory circulars (as needed).

regulatory requirements. The Production Certification Working Group wanted to eliminate the FAA "undue burden" clause due to an

AIRCRAFT ELECTRONICS ASSOCIATION Office of Governmental and Industry Technical Affairs

46946 Trumpet Circle
Sterling, VA 20164
Tel: (703) 421-0762
Fax: (703) 421-0763
Pager: (800) 505-2958

FAX TRANSMITTAL

Total Pages 4 (Including Cover)

TO: Bill Schultz, Assistant ARAC Chair, Aircraft Certification Procedures Issues

FROM: Aircraft Electronics Association, Governmental and Industry Technical Representative

DATE: January 21, 1999

SUBJECT: Objecting to elements of "Production Certification and Parts Manufacturing" NPRM, dated November 6, 1998, and registered negative vote to adopt

On behalf of the Aircraft Electronics Association (AEA) and its member companies consisting of avionics equipment and appliance manufacturers, distributors, certificated repair stations, and Designated Alteration Stations, we register the vote of NO to adopt the NPRM for the following reasons:

1. The NPRM removes the previous privilege of thirty (30) days for production approval (TSO authorization) of applications found to meet the standards of or any authorized deviations for issuance of TSO. The previous procedures allowed a manufacturer of an appliance to obtain design and production approval providing that such technical data submitted met the requirements and that the applicant could show that a production quality control system had been established and approved by the Administrator. A TSO manufacturer's production quality control system requisite met the requirements of Subpart G - Production Certificates, and for initial issuance and provided for continuous inspections under ACSEP audits. Removal of this privilege jeopardizes a qualified manufacturer from making available to the market, satisfactorily designed and manufactured appliances. The Working Group failed to make a satisfactory technical or safety argument for making such change and also failed to observe the impact to small business in its analysis.

2. The NPRM fails to define the word "article", as used as a subordinate to "part" as observed on page 125 of the NPRM. AEA filed a "Minority Position Opposing Certain Elements" in respect to this issue. See attached memorandum letter dated October 24, 1996 to Don Van Burkleo, Chairman, that identifies in the second paragraph, such deficiency and potential consequences if not in agreement with the FAA act. Failure to define article complicates possible reciprocity in obtaining a letter of TSO design approval for foreign manufactured appliances or conveying a JTSO with foreign authorities. Such action may have consequences in import of parts or products, including appliances, into JAA operating countries, since NPA 21-7 and Subpart N of JAR 21 does not observe "articles" in its lexicon whereby an appliance is not a "part".

AIRCRAFT ELECTRONICS ASSOCIATION Office of Governmental and Industry Technical Affairs

46946 Trumpet Circle
Sterling, VA 20164
Tel: (703) 421-0762
Fax: (703) 421-0763
Pager: (800) 505-2958

TO: Don Van Burkleo, Chairman, Production Certification Working Group

FROM: Aircraft Electronics Association, Governmental and Industry Technical Representative

DATE: October 24, 1996

SUBJECT: Minority Position Opposing Certain Elements

On behalf of the Aircraft Electronics Association (AEA) and its member companies consisting of avionics equipment and appliance manufacturers, FAA certificated repair stations, and Designated Alteration Stations, we register the following formal Minority Position Opposing Certain Elements with attached comments. While AEA supports the general goals which the Production Certification Working Group is attempting to achieve, AEA will not support the effort to remove Subpart O nor any of the parts of Technical Standard Order (TSO) from 14 CFR Part 21 for reassignment within Subparts G and K (proposed F) of this chapter.

Counsel has advised the AEA that the inference of "articles" misrepresents "appliance" as defined within Part (1) of this chapter and [44102] of the recodified FAA Act, wherein stated "an(y) instrument, (mechanism), equipment, [a] part, apparatus, [an] appurtenance, or [an] accessory (used), [capable of being used, or intended to be used,] in operating or controlling an aircraft in flight, [including a parachute, communications equipment, and another mechanism] installed in or attached to (the) aircraft [during flight], and (is) not part of the [aircraft] (airframe), [aircraft] engine or propeller". (emphasis added). This is not consistent with "articles" referred to in the proposed Subpart K on Page 90 of the proposed TRG Draft, dated August 30, 1996.

Further, the omission of a means to qualify an appliance type design which is qualified under a published minimum performance standard requirement is mutually exclusive to qualifying a part, which has no minimum performance requirement or standard, other than those provided for in "standard parts". ((see §21.303(b)(4) of this chapter)). (emphasis added).

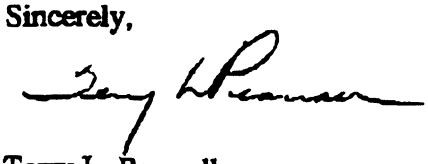
It is regrettable that the Working Group has expended effort to promote this action. While AEA is sympathetic to one Working Group member, whose company [person] was not able to protect its interest in transacting a TSO with its geographic aircraft certification office, AEA is reminded that if satisfaction is not realized or inequitable treatment is experienced, such company [person] may seek alternate aircraft certification offices within which to apply for and process its TSO.

In closing, AEA has repeatedly objected to the aforementioned actions taken by the Working Group who insisted on "leveling the playing field" without justifying their reasons for change. Failing to make the safety case alone is sufficient evidence that removal of the TSO production approval from the TSO design approval aspects is quantifiably undesirable.

I regret that I could not attend the Issues Group meeting and appreciate your registration of AEA's vote.

Thanks for your consideration and with kindest regards.

Sincerely,



Terry L. Pearsall
Government and Industry Technical Representative

The action to remove Subpart O and consolidate the tenets of processes and requirements into Subparts G and K (proposed F) seems to only divide a process of effective application and due process for applicants for TSO. TSO applicants and holders of TSO authorizations are afforded privileges and are required to self-manage and control the configuration of their design data. Such privileges and requirements, if TSO were adopted within Subpart K (proposed F), would be diminished and the burden shifted to the FAA for evaluating and analyzing TSO applicants and TSO holders design data. This would be prohibitive in view of the current FAA obligations to provide intangible services to industry.

The FAA is currently reviewing its policy for processing TSO applications. Such action will result in a change to FAA Order 8150.1A. AEA has the assignment to assist the Working Group with recommended language on the revision to Order 8150.1A, which is consistent with its goals to improve the TSO processes. Order 8150.1( ) is the mechanism to improve the TSO system and force uniform practices among the Aircraft Certification Offices in processing TSO applications and issuing TSO Authorization.

AEA requests that this Minority Position Opposing Certain Elements be entered into the preamble of the proposed notice of proposed rulemaking (NPRM) titled "TRG Draft: August 30, 1996. AEA further requests that the Aviation Rulemaking Advisory Committee, Production Certification Working Group act responsibly to revise the proposed NPRM to reestablish the TSO application and authorization processes under Subpart O.

Thank you for your attention and compliance with our requests.

Respectfully Submitted

Terry L. Pearsall
Governmental and Industry Technical Representative

cc: Mr. John Lundin, Counsel
Mr. James Lauer, Chairman, AEA
Ms. Paula Derks, President AEA
Ms. Angela Washington, FAA
File

1/20/99

Airline Suppliers Association
636 Eye Street, NW, Suite 301
Washington, DC 20001-3736
Voice: (202) 216-9140
Fax: (202) 216-9227

Info@airlinesuppliers.com

Respond to: Jason Dickstein
Direct Dial: (202) 216-9142
Jason@airlinesuppliers.com

AIRLINE SUPPLIERS ASSOCIATION

Memorandum

To: Aviation Rulemaking Advisory Committee

From: Jason Dickstein, Airline Suppliers Association

Re: Minority Opinion to the Draft Regulations Proposed by the Parts and Production Approval Working Group: Commercial Part Definition

§ 1.1 - Commercial Part Definition

The Airline Suppliers Association (ASA) objects to the proposed definition of a "commercial part" on three grounds: the proposed definition does not have any regulatory effect, the proposed definition does not represent current industry practice, and there is no genuine safety justification for modifying the rule.

I

~~The term "commercial part" is not currently used in the existing federal aviation regulations, nor is it used in the proposed regulatory changes. Since the term is not used in the regulations, there is no need to define it.~~

Issue I resolved by amendment to proposed 14 C.F.R. 21.31 Jason Dickstein 1/21/99

II

The term in question is currently used in a colloquial fashion by the industry to describe parts that are not manufactured with the intention that they be offered for sale for installation on a type certificated product. These are parts that fall outside the scope of the current rule 14 C.F.R. § 21.303(a). People in the aviation industry generally use the term "commercial part" to mean a part that falls outside the FAA's regulatory scope - one that is not manufactured for sale for installation on a type certificated product. The proposed definition would change this usage. It would narrow the scope of this term, excluding a class of parts that fall outside of the scope of 14 C.F.R. § 21.303(a), but do not meet the

approval for type certificated products, parts, and articles. Component parts of approved parts would be included in the design approval, but would not be separately listed in the PLR.

Under proposed § 21.137(a), the PLR would have a "ratings" section which would reflect the parts or products authorized to be produced under the production approval. For current production certificate holders, the list of approved products and their corresponding type certificate numbers on their existing PLR would remain the same. For current PMA and TSOA holders, the list of approved parts under the PPA would be the same as their current authorized list, but there would be an additional column identifying the design authorization for each manufacturing approval (since the authorization of design and manufacturing would be separated for these products).

Under proposed § 21.137(b), for both PPA and PC Holders there would be an additional "limitations" section of the PLR to list all special limitations on the production system based on existence and scope of the approval holder's quality system elements. If an applicant has a production quality system that does not fully meet the proposed Subpart G, the PLR would list resulting restrictions imposed by the FAA. These restrictions could include the inability to utilize certain systems (e.g., if the Material Review Board procedures are not acceptable, DER's must be used to approve use of nonconforming material) or could

impose additional inspections and tests similar to tests required under the current Part 21 Subpart F). For example, under proposed § 21.139(a)(2), a production approval holder may issue an airworthiness approval for products (other than aircraft) or parts produced under the production approval; however, if the production approval holder does not have an FAA approved system to issue such airworthiness approvals (see proposed § 21.141(i)), the FAA can restrict or revoke this privilege in the limitations section of the PLR.

Section 21.139 Privileges

Proposed § 21.139(a)(1) is partially based on current § 21.163(a)(1). Proposed § 21.139(a)(2) would allow a production approval holder to issue an airworthiness approval for products other than aircraft (i.e., engines and propellers) or parts produced under a production approval.

Under the proposal, PAH's would be allowed to issue Airworthiness Approvals utilizing PAH selected employees to act on behalf of the PAH as a representative of the Administrator. The reason for this proposal is that, by virtue of the production approval, PAH's currently make a determination of airworthiness acceptable to the FAA for domestic shipments. This proposal takes credit ~~for~~ that determination of airworthiness for all shipments, thereby providing flexibility with the PAH system

while relieving the FAA from administrating the designee system for airworthiness approvals at those PAH's. The PAH would have the responsibility for establishing and maintaining the system for issuing airworthiness approvals; this system would be subject to approval and audit by the FAA.

Proposed § 21.139(a)(3) would explicitly allow a production approval holder to perform maintenance or preventive maintenance of products not yet released to service under the production approval without the need for a repairman or mechanic certificate. This section has been added in order fill a gap in the current regulation, and harmonize with the Joint Airworthiness Authorities.

It has generally been the interpretation of the FAA that once a product ~~leaves the control of the production approval holder,~~**is issued an airworthiness certificate**, it immediately falls under 14 CFR part 43. According to § 43.3, a manufacturer may only alter or rebuild; there is no provision for a manufacturer to perform maintenance and preventive maintenance in part 43. Instead, a production approval holder may without further showing obtain a Manufacturer's Maintenance Facility (MMF) license under 14 CFR part 145, subpart D, which would allow that production approval holder to perform maintenance and preventive maintenance on its own product if it employs an FAA

certificated repairman or mechanic directly in charge of the maintenance or preventive maintenance.

According to § 43.1, however, part 43 only applies to— aircraft having a U.S. airworthiness certificate; foreign-registered civil aircraft used in common carriage or carriage of mail under the provisions of part 121, 127, or 135; and airframe, aircraft engines, propellers, articles, and component parts of such aircraft; and it does not apply to an aircraft for which an experimental airworthiness certificate has been issued, unless a different kind of airworthiness certificate had previously been issued for that aircraft.

There are occasions when engines, propellers, and parts made by a production approval holder and delivered to an aircraft manufacturer~~for installation in a new aircraft~~ may require maintenance or preventive maintenance **prior to leaving the control** ~~either prior to installation on an aircraft or prior to the airworthiness certificate being issued for~~**of** the aircraft ~~on which these products or parts are installed.~~ **manufacturer**. As noted above, under current regulation authorization for maintenance or preventive maintenance of these products and parts is not covered by either part 21 or part 43, however common practice has been to require the work to be performed under part 43.

The intent of the proposed regulation is to explicitly state that a manufacturer may perform maintenance and preventive maintenance on these parts under its manufacturing approval. This would allow the manufacturer to perform work under its quality assurance system (without repairmen or mechanics), and would assure that the work is done to manufacturing standards and tolerances, so that the aircraft, when delivered, would meet all new product standards. This would also resolve a conflict between JAA requirements and current FAA practice on this issue.

Proposed paragraphs (b) and (c) of § 21.139 are derived from comparable requirements in Transport Canada's regulations. Proposed paragraph (b) would allow a production approval holder who is proceeding with a design approval for a new product or part that is similar to those on the production limitation record to, without further showing, manufacture under its production approval a limited quantity of products or parts prior to meeting all of the requirements of subpart G including all elements of the approved quality system. After design approval these limited ~~production parts~~**Parts Production** would be eligible for airworthiness approval, as specified in § 21.329(c). Similarly, under proposed paragraph (c), a production certificate holder who is proceeding with a design approval would, without further showing, be allowed to issue airworthiness approvals as specified in proposed § 21.333. That section states that the airworthiness

approvals may be issued only when the production certificate holder has an acceptable means of recalling products or parts that are not approved as part of the subsequent design approval. If the production certificate holder does not have such a system, an entry should be made in the limitations section of the PLR to restrict the production certificate holder from issuing these airworthiness approvals. Since an airworthiness approval must be issued for each shipment of products or parts (see proposed § 21.141(h)), this privilege would allow a production certificate holder to release parts prior to design approval. The option for a production certificate holder to release such parts, though not specified in current regulation, has been available since 1992, as documented in Advisory Circular 21-23A "Control of Products and Parts Shipped Prior to Type Certificate Issuance". There was considerable discussion during the ARAC process whether or not to extend this privilege to all PAH's, and it was decided to restrict this privilege to only production certificate holders. This was based on the fact that only production certificate holders have demonstrated the need to pre-position products (other than aircraft) and parts prior to design approval. It should be noted that all other PAH's may manufacture parts prior to design approval (under proposed §§ 21.135(c) and 21.139(b)), and may ship those parts with airworthiness approvals as soon as the design approval is granted.

Proposed § 21.139(d), which relates to training and the issue of competency certificates by the holders of production certificates for specified aircraft categories, is based on present § 21.163(b).

Section 21.141 Responsibility of the production approval holder

Proposed § 21.141(a) concerning documenting, maintaining, and assuring compliance with the quality system is based on present § 21.165(a). Proposed § 21.141(b), which concerns notifying the FAA in writing of changes to a quality system or location of a manufacturing facility, is based partially on present § 21.147 and partially on § 21.303(j). Notification in writing would include electronic communication. Proposed § 21.141(c), which would require the holder of a production certificate or parts production approval to determine that each completed product or part conforms to the approved design and is in condition for safe operation, is based on present §§ 21.165(b), 21.303(k), and 21.607. Although the language of proposed paragraph (c) is more general than in these present sections, it would have the same substantive effect and would apply to products and parts produced by present PMA holders, TSOA holders, and production certificate holders, including primary category aircraft assembled under a production certificate by another person from a kit provided by the production certificate

holder. Proposed § 21.141(d), which would require that the production approval holder report to the design approval holder, if different from the production approval holder, all deviations from the quality system necessary for analysis and possible reporting under § 21.3, is based on the need to ensure that persons responsible for the original design and who hold the design approval are kept informed.

Proposed new paragraphs (e) through (m) of proposed § 21.141 would include the following responsibilities for production approval holders:

1. Reporting to the design approval holder (if different from the production approval holder) all undocumented nonconforming products or parts which could have left the quality system. This proposal would assure continuing communication between the production approval holder and the design approval holder when they are separate entities.

2. Maintaining a complete and current technical data file consisting of all the approved data and manufacturing processes for each product or part manufactured under the production approval. The file would be retained for the period of manufacture of the part or product or as agreed upon with the Administrator. This requirement currently exists for TSOA holders (§§ 21.607(c), 21.613).

3. Maintaining complete quality records for 2 years for manufactured products or parts and 10 years for critical components as defined under 14 CFR 45.14. Except for critical products, comparable requirements currently exist in §§ 21.303(h)(9) and 21.613.

4. Issuance of an airworthiness approval (in accordance with proposed subpart L) for each shipment. This would provide a standardized "birth certificate" for each part or batch of parts, as recommended by the FAA/Industry Suspect Unapproved Parts (SUPs) Steering Group. Issuance of airworthiness approval documentation is an expressed desire of the industry to provide documentation from the original manufacturer for the parts shipped. The use of the FAA Form 8130-3 is proposed for providing this documentation with each shipment. The issuance of such documentation, domestically, is optional today, at the request of the purchaser of such parts. This change would make it a requirement. An increasing number of manufacturers are providing this documentation today as a service to the industry.

5. Assuring that only authorized personnel issue FAA airworthiness approvals.

6. Maintaining proper maintenance records for 2 years for all products or parts that have not been released-to-service but have been maintained under a production approval as would be allowed under proposed § 21.139(a)(3) on products of their own

manufacture and by personnel from the manufacturer's operations. For cases where maintenance is necessary before a customer gets the product, the record should be made of all maintenance performed.

7. Mark products in accordance with part 45. This proposal would clearly tie the responsibility to mark products to the PAH and is based on present § 21.607(d).

8. Allow the Administrator to make inspections, tests, and investigations at its facilities or any supplier facilities necessary to determine compliance with applicable regulations. This requirement is found in present §§ 21.157, the introduction to 21.303(e), and 21.615.

9. Display the approval and ratings at an accessible place in the manufacturing facility. Proposed paragraph (m) is based on present § 21.161.

As previously noted, many of these proposed provisions are based on existing requirements, most of which do not apply to all PAH's. The goal is to standardize the requirements for all PAH's, building on the best current requirements.

21.143 Amendments, transferability, and duration of a production approval

Proposed § 21.143(a) is a slightly reworded version of present § 21.153 which addresses amendments of production

certificates only. Proposed paragraph (b) states, as does present § 21.155 for production certificates, that a production approval is not transferable. This paragraph is also based on present §§ 21.303(i) and 21.621. Proposed paragraph (c) deals with the duration of a production approval and is based on present §§ 21.159, 21.303(i), and 21.621, except that the requirement that a production certificate would terminate if the location of the manufacturing facility is changed, is deleted. Rather than terminating a production approval when a facility is moved, the FAA would amend the approval once it is determined that the quality system remains adequate.

21.145 Quality system

Proposed § 21.145 is based on present §§ 21.139, 21.303(h), 21.605(a)(3), and 21.607(b) with new language that would require that documentation must be in a retrievable form acceptable to the Administrator. The term "retrievable form" allows for the use of computer or other electronic format, that may be used instead of printed documentation as long as the form is acceptable to the Administrator. The proposed language is also broader to cover "approved design" rather than "type certificate" since this subpart would apply to parts for which type certificates would not be issued.

21.147 Quality system documentation

Proposed § 21.147(a) is new and contains a detailed listing of all of the elements that would be required for quality system documentation. Proposed § 21.147(b) is new and contains details of how an applicant for a production approval would be required to establish and maintain a system for receiving and processing feedback on service problems.

21.149 Management responsibility

The proposed requirement in § 21.149(a) that each applicant shall appoint a management representative with defined authority to ensure implementation and compliance with the quality system is based on existing JAR and ISO requirements.

Proposed § 21.149(b) is based on current § 21.143(a)(1).

21.151 Design and data control

Proposed § 21.151 would require each applicant for a production approval to establish and each holder to maintain procedures for the control of design data and subsequent configuration control to ensure that only approved current and correct configuration data is used for parts and products produced and processes performed under the authority of the production approval. These procedures would be required to include a method to ensure conformance of products manufactured

under a pending design or production approval pursuant to the provisions of § 21.135(c). The proposed language is based on present §§ 21.143(a)(5), 21.303(h)(6) and (h)(7).

21.153 Document control

Proposed § 21.153 is a new requirement that would require each applicant to establish and each holder to maintain procedures to control documents and data that form a part of the quality system, as well as any subsequent changes to the documents and data. The required procedures would have to ensure that documents and data are reviewed by appropriate personnel prior to incorporation into the quality system. The documents to be controlled will be those that establish the approved quality system, as well as those documents that define and document the quality of the parts or products, including manufacturing processes when appropriate.

21.155 Supplier control

Proposed § 21.155 is based on present §§ 21.143(a)(2) and (b), and 21.303(h)(1) and (h)(2) but contains more detail concerning the procedures that would be established and maintained to ensure conformance of supplier furnished products, parts, materials, and services to the approved design prior to release for installation. The goal of this proposed requirement

is to put the burden on the applicant to ensure that each supplier has a quality control system that is appropriate for the complexity of the products, software, parts, materials, or services supplied to the production approval holder.

21.156 Process control

Proposed § 21.156 is partially based on present §§ 21.143(a)(3), and 21.303(h)(4) and (h)(5) and is intended to require applicants to document and holders to maintain the processes, where applicable, established to ensure the manufacture and assembly of products of a quality that is consistent with the approved design. For example, in some instances the process can be a particular heat treat or coating process. If the applicant does not have the correct process, it cannot make the part.

21.157 Inspecting and testing

Proposed § 21.157, which would require an applicant to establish and each holder to maintain procedures for inspection and test activities to verify conformity of products and parts to the approved design, is partially based on current §§ 21.143(a)(3) and 21.303(f). The goal is to establish a broadly worded test requirement that allows for flexibility and for change as is appropriate to an applicant's or approval

holder's situation. The applicant would have to document procedures to ensure the conformity of parts not inspectable upon receipt from suppliers. Also the applicant would have to document procedures for planning, implementing, and maintaining statistical techniques, if statistical process control is used for in-process or final inspection of the product or part.

21.158 Inspection, measuring, and test equipment control

Proposed new § 21.158 would require an applicant to establish and each holder to maintain procedures to control and maintain the accuracy and precision of inspection, measuring, and test equipment used in determining conformity to the approved design. Such equipment would have to be calibrated, controlled, and serviced before use in determining conformity of products and parts to the approved design. The calibration accuracy would have to be appropriate for its intended measurement and traceable to the National Institute of Standards and Technology, or other standards acceptable to the Administrator. While the proposed language would be new to part 21, it is based on existing production certification advisory material and is similar to requirements currently applicable to repair stations.

21.159 Inspection and test status

Proposed new § 21.159 would require the applicant to establish and each holder to maintain procedures for the identification of process, final inspection, and test status of materials, products, and parts supplied, manufactured, and assembled to the approved design.

21.160 Nonconforming products, parts, materials, and services control Proposed § 21.160 would be mostly a new requirement that deals with the need for an applicant to establish and each holder to maintain procedures to prevent the use of products or parts that do not conform to the approved design. This proposed requirement is the equivalent function of present §§ 21.143(a)(4) and 21.303(h)(8), which reference a materials review board system of procedures for recording board decisions and disposing of rejected parts. Thus, the current regulation assumes that there would be a procedure for identifying products that should be rejected.

21.161 Corrective and preventive action

Proposed new § 21.161 would require the applicant to establish and each holder to maintain procedures for implementing a corrective and preventive action system to eliminate or minimize the causes of actual or potential nonconformities and would result in corrective measures to preclude recurrence. The

use of metrics to track the effectiveness of the corrective action should be part of this system.

21.162 Handling, storage, packaging, preservation, and delivery

Proposed new § 21.162, which is partially based on present § 21.303(h)(5), would require the applicant to establish and each holder to maintain procedures for the control and protection of work in progress and for materials, products, and parts in storage or transit.

21.163 Control of quality records

Proposed new § 21.163 would require the applicant to establish and each holder to maintain procedures for identification and retrieval of acceptance and test records specified in proposed § 21.141(g) that demonstrate the product's conformance to the approved design. This proposed requirement would impose current record requirements of subparts K and O on all PAH's (§§ 21.303(h)(9) and 21.613). This proposal would help the FAA to monitor compliance of all production approval holders.

21.164 Internal quality audits

Proposed new § 21.164 would require an applicant to establish and each holder to maintain procedures for planning and conducting internal quality audits for the purpose of

assuring compliance with the approved quality system. This proposed requirement is consistent with existing ISO requirements and, as a harmonization effort, would facilitate international approval of United States approved production systems.

21.165 Final release of product or part

Proposed new § 21.165 would require an applicant to establish and each holder to maintain procedures for issuing an airworthiness approval for each shipment of products or parts, as required by § 21.143(h), and in compliance with Subpart L. The procedures should contain a means of verification that, prior to shipment, the product(s) or part(s) conform to the FAA approved design, and is in condition for safe operation. This may be done by verifying that the product(s) or part(s) have been approved and remained under the control of the approved quality system, have not been exposed to handling damage, and have not exceeded any shelf life limits. The airworthiness approvals may only be issued by personnel authorized under these procedures.

Subpart K - Parts Design Approval

Proposed subpart K would contain the provisions of present subpart K that relate to obtaining what would be called a parts design approval (PDA). The PDA would be a separate and stand

alone design approval. As previously discussed, the parts production approval requirements have been included in subpart G. Organizational and substantive changes are proposed in the following areas:

1. Proposed § 21.301(a) is based on present § 21.301. Proposed § 21.301(b) and (c) are based on present § 21.303(a). Proposed § 21.301(d) is new language that is intended to make it clear that when an applicant obtains a parts design approval, that approval includes the approval of all parts within that design.

2. Proposed § 21.303 introductory text and paragraphs (a) and (b) are based on portions of present § 21.303(c).

A minor change from current § 21.303(c) in proposed § 21.303 would be omission of the specific office to which an application is submitted. While applications would continue to be submitted to the appropriate local FAA office in the geographic area in which the manufacturing facility is located, this omission means that a regulation change would not be necessary each time the FAA reorganizes.

3. Proposed § 21.303(c), which is based on the present § 21.303(c)(4), has deleted the specific language regarding "Identicality" from the rule. ~~The~~**Nevertheless, the** methodology of "Identicality" ~~has been incorporated into the~~**may, under** ~~general requirements~~**appropriate circumstances, be utilized** for

showing compliance, i.e.: "Test reports and computations, *using a comparative or general analysis*, as necessary to show...." The need for this proposed change has been created by the growth of the replacement part market segment. The significant growth of this activity has resulted in more PMA applications on more parts involving sophisticated designs and state-of-the-art technology. In these types of parts, a showing of identical design may not in-and-of-itself be sufficient to assure that parts will meet the airworthiness requirements. The broader term "comparative analysis" is proposed to provide a means for an applicant to compare his design to an already FAA approved design. The applicant can be issued a PDA based solely on a design comparison if the applicant can substantiate that the nature of the **part, taking** ~~part~~**into account its criticality and complexity**, does not warrant any further showing.

The applicant may show by comparative analysis that the part is equal to or better in functional design than the design of the type certificated or PDA part that would be replaced. The applicant would thoroughly analyze the type certificated part and compare it with the proposed PDA part, report all differences and provide sound technical justification for these differences. If testing is required, a new (zero time since new) part from the TC holder tested under the same procedures and conditions as the applicant's part would be used as a test standard.

The applicant may demonstrate by general analysis that the functional design of the part otherwise meets the requirements of all applicable airworthiness standards. This analysis should discuss how the part meets each of the Federal Aviation Regulations or specific TSO functional requirements and address material composition and condition, fabrication, configuration, and interface with other parts. Functional testing as necessary would be related to the criticality and complexity of the part.

As stated, identicality would still be a viable methodology for showing the design meets the airworthiness requirements as long as the applicant and the FAA exercise the proper considerations. The applicant would substantiate the identicality methodology by providing the FAA with necessary data based on the complexity and criticality of the part. Identicality would also be used in conjunction with other methods to show the design meets the airworthiness requirements. For instance, identicality could be combined with a test reports and computation method where testing may or may not be required depending on the criticality and complexity of the part.

Aircraft that no longer have an active design approval holder or production approval holder from which data can be obtained to support the manufacture of parts need consideration in order to continue flying. These aircraft are primarily and almost exclusively involved with personal or sport flying and are

not being used for carriage of passengers for hire. In these instances where data is not available or where the needed part is not critical to safety, more consideration should be given to the use of identicality, or a "form, fit, and function" analysis.

4. Proposed § 21.303(d) uses the broader term "written authorization" but would contain the provisions of the present § 21.303(c)(4) that require the applicant to include a copy of the written evidence to use another party's approval.

A written authorization is to identify the existing approved data as being that design data in the type certificated product or TSO article of the writer of the authorization and that the data is in the possession of the applicant for the PDA. When the PDA is issued to the applicant, the applicant becomes the holder of a design approval and can exercise all the privileges of such a holder including passing the total or a part of the design to another through a transfer under § 21.307 or an authorization for another applicant to seek a new PDA. Each PDA holder is responsible for their own approved design when the PDA is granted by the FAA and carries the responsibility of a PDA holder for the products they manufacture or cause to be manufactured. A transfer is to be distinguished from a written authorization to seek a PDA. The transfer of an approved design is simply a transfer of ownership of the design and does not require FAA approval. The new owner, however, may not make changes to the

design without FAA approval as is always the case for design changes. A written authorization for an applicant to seek a PDA is to establish a new design approval equal to the first unless specifically restricted by the written authorization and agreed to by the Administrator.

5. Proposed new § 21.303(e) provides continued airworthiness requirements for a Parts Design Approval. This requirement has been a practice under PMA, but was never delineated in the FAR's. The proposed rule is intended to implement the guidance provided in FAA Order 8110.42, dated August 4, 1995. Part 21, § 21.50(b) states that a holder of a design approval, including either the type certificate or supplemented type certificate for an aircraft, aircraft engine, or propeller for which application was made after January 28, 1981, shall furnish at least one set of complete instructions for continued airworthiness (IFCA), etc. If the part for which PDA is sought would be eligible for installation on a product for which application was made after that date, the PDA applicant must furnish data sufficient for the FAA to determine that the IFCA will continue to be valid for the product with the part installed. In this regard, the applicant will need to furnish supplementary IFCA if installation of the part results in changes to the validity of the IFCA. For parts which would be eligible for installation only on a product for which the application for

TC was made on or before January 28, 1981, the PDA applicant must furnish maintenance and related instructions, if the TC or STC holder's instructions are not adequate.

6. Proposed § 21.305, which would address issuance of a parts design approval, is based on present § 21.303(d)(1). In addition to tests and inspections, the Administrator may require a demonstration that a replacement part meets the performance characteristics of the original part in those instances where performance is deemed necessary in the showing of airworthiness for that part.

7. Proposed § 21.307 would allow a parts design approval to be transferable or made available for use by another company through a written agreement. The present § 21.303(i) prohibits the transfer of a PMA. The basis for this change is that since design approval would be separated from production approval, design approval could be transferred. Because production approval is specific to a company and its facility, it is not transferable and thus when design approval and production approval are combined they cannot be transferred.

8. Proposed new § 21.309, which is partially based on present § 21.303(i), would provide for the duration of a parts design approval and also cover the automatic conversion of design approval aspects of existing PMA's to parts design approvals.

9. Proposed § 21.311 would propose to change PDA designs in a manner similar to the procedure for the current TSOA's.

Subpart L - Airworthiness Approvals

The current subpart L is for Export Airworthiness Approvals. It specifies the procedures to be followed when U.S. produced products and parts are exported. Export Airworthiness Certificates (FAA Form 8130-4) are issued for aircraft, aircraft engines, and propellers to be exported and Airworthiness Approval Tags (FAA Form 8130-3) are issued for components, parts, materials, articles, and TSO items to be exported. These approvals are issued by FAA aviation safety inspectors or their designees (i.e., Designated Airworthiness Representatives, Organizational Designated Airworthiness Representatives, and Designated Manufacturing Inspection Representatives). Although there are no current regulations governing issuance of domestic Airworthiness Approval Tags (FAA Form 8130-3) for parts and products other than aircraft, there has been a growing demand within the U.S. aviation industry to require FAA airworthiness tags for domestic shipments in order to better identify and track aviation products.

This proposed revision would reflect current industry practice in the regulation for all airworthiness approvals - exports and domestic. For example, the revision would provide a

regulatory basis for issuance of airworthiness approvals for products other than aircraft and parts shipped within the U.S., and recognize the existence of satellite parts stores located outside the U.S., but which are an extension of the production approval holder's quality system.

This proposed revision would also initiate a fundamental change in the manner in which airworthiness approvals are issued for parts and products other than aircraft. Under the proposed regulation, the FAA would no longer be responsible for the issuance of these airworthiness approvals. Instead, it would be the responsibility of the PAH to issue original airworthiness approvals for new parts and products other than aircraft (see § 21.141(h)). In addition, for exports it would be the responsibility of the importer and exporter, rather than the FAA, to assure that the requirements of the importing country are met.

The title of subpart L would be changed from "Export Airworthiness Approvals" to "Airworthiness Approvals" because the proposed revision of subpart L would provide regulations for all airworthiness approvals, both export and domestic. However, the issuance of airworthiness certificates for aircraft to be used within the U.S. is regulated under the procedures of subparts H and I of part 21. That process is not being changed or affected by this NPRM.

The current definitions of Class I, Class II, and Class III products in § 21.321 are not included in the proposed revision. This distinction between types of products and parts is no longer necessary because the proposed regulation would provide for equal documentation of airworthiness for all parts. Also, in § 21.321, references to "newly overhauled" would be removed. This information would be placed in an order or other advisory material as necessary. Further, as a result of changes to the FAA Form 8130-3, which now allow use of that document for return-to-service of products maintained under part 43, and recent FAA/JAA harmonization efforts, many countries would accept an FAA Form 8130-3 completed after maintenance as a valid airworthiness document, and would not require a separate form for export.

In the proposed revision of subpart L, form names and numbers and detailed application requirements would be taken out of the regulation, referring instead to "in a form, manner, and location as prescribed by the Administrator." This information would be placed in FAA Order and Advisory Circular material, to give the FAA flexibility to make changes more easily, when necessary (e.g., harmonization of airworthiness form names with foreign air agencies, ability to respond to changes in technology for electronic documentation, etc.).

Proposed §§ 21.323(a), which is based on present §§ 21.329 and 21.331(a) and also includes new language, would provide

requirements the product has to meet to be eligible for an airworthiness approval. Under proposed § 21.323(b), which is based on present § 21.325(c) and also includes new language, the limited airworthiness approval has been added as a means to document the status of a product that does not meet all the requirements for a regular airworthiness approval. The exception from requirements resulting in the limited airworthiness approval (i.e., what requirement has not been met) should be specified on the document. A product with a limited airworthiness approval may be considered airworthy only after the specified exception is either corrected by an approved source or the design with the exception is approved by the FAA (or importing civil aviation authority). For example, if an engine is shipped without a component specified on the TC data sheet, the airworthiness approval document accompanying the engine would specify this discrepancy to the type design. The engine would not be considered airworthy until that component is installed on the engine by an approved source. Since there would be this "exception" listed on the airworthiness approval document, it would be considered a "limited" airworthiness approval. Of course, in order for such an engine to be data plated before shipment, the engine must have been fully tested and accepted with the component installed.

In proposed § 21.323, references to Class I, II, and II products are removed as discussed above.

Under current § 21.323 production approval holders must have employees who are representatives of the Administrator (DMIR or ODAR) issue airworthiness forms. This requirement has been removed from proposed § 21.323 because proposed § 21.139(a)(2) would allow production approval holders to issue these forms under the PAH Quality Assurance System, without representatives of the Administrator for products and parts other than aircraft. The qualified personnel authorized under this system would not need to be employees of the PAH (e.g., supplier, distributors). This change would provide flexibility within the PAH system while relieving the FAA from administrating the designee system at PAH's who issue approvals other than airworthiness certificates.

Current § 21.325 has been renamed in the proposal as "Kinds of approvals" because this is the title from the current paragraph (a), which is the only portion of this section that has been included in the proposal. Information in current paragraph (b) on "Products which may be approved" would be provided in order and advisory material, as appropriate. The requirement that parts be "manufactured and located in the United States" in current § 21.325(b)(3) would be eliminated for FAA production approval holders since they currently may make an airworthiness determination anywhere in the world as controlled by the approved

production system. Dropping this requirement would allow a PAH to document that determination, even if the determination was made outside the United States. To ensure that the proper level of safety is maintained, the PAH would have to establish and maintain a system that ensures that manufacturing, quality control, and inspection processes, for it as well as any suppliers, works as well outside of the United States as within. A system that ensures that the manufacturer has adequate control in each of these areas throughout the world is sometimes referred to as a "closed system."

Also, form names and numbers were removed from this section, referring instead to "in a form, manner, and location prescribed by the Administrator," as discussed above.

For products other than aircraft or parts, proposed § 21.325(c) only refers to airworthiness approvals, making no distinction between export airworthiness approvals and domestic airworthiness approvals, and stating that these approvals are documented in a form, manner, and location prescribed by the Administrator. It is intended that the details of airworthiness approval documentation would be specified in Directive and Advisory material. This was done to allow flexibility in the airworthiness approval documentation process in order to be responsive to harmonization efforts with foreign authorities and provide for future changes in technology which may lead to a

"paperless" airworthiness approval documentation system. Proposed § 21.325(c) is based on present §§ 21.325(c) and (a)(2), and also includes new language.

A review of Advisory Circular 21-2H, which specifies the special requirements of importing countries, show that for parts, countries either require an FAA Form 8130-3 or require a document issued in accordance with part 21, subpart L. There are no special requirements on the parts themselves, only on the documentation of the parts. Therefore, in most instances the issuance of an FAA Form 8130-3 documenting the airworthiness approval of a part (without necessarily specifying the fact that this was a domestic shipment or export) would be sufficient without a change to the bilateral airworthiness agreements. Further, an effort is underway between European and U.S. manufacturers and the FAA, JAA and Transport Canada, to develop a common form which would be accepted as an airworthiness approval by all parties. If this effort is successful, and is adopted by other aviation authorities, the need for distinction between domestic and export airworthiness approval would be eliminated.

The language of current § 21.327, Application, was simplified in this proposal because the details provided in the current regulation are too specific, do not cater to current practices and may not be appropriate for future practices. These

details are better placed in order and advisory material, which would be modified accordingly.

The current requirements in §§ 21.329, 21.331, and 21.333 on issue of export airworthiness approvals for Class I, II, and III have been simplified and combined into proposed § 21.329, Issue of airworthiness approvals, because the details are better placed in order and advisory material, which would be modified accordingly. Also, some requirements common to all paragraphs are considered "eligibility" requirements and have been placed in proposed § 21.323.

Proposed new § 21.329(d) would specify under what conditions an airworthiness approval form may be used under part 43 for return-to-service. This is consistent with information currently in FAA Order 8130.21A, Procedures for Completion and Use of FAA Form 8130-3 Airworthiness Approval Tag.

Under this proposal, present § 21.335 would be renumbered as § 21.331 and simplified because the details provided in the current regulation are too specific, do not cater to current practices and may not be appropriate for future practices. These details are better placed in order and advisory material, which would be modified accordingly.

Current § 21.337, Performance of inspection and overhauls, and § 21.339, Special export airworthiness approval for aircraft, would be removed for the same reason.

A new § 21.333, Airworthiness approval of products or parts prior to issuance of a design approval, would be added to specify requirements for the issuance of airworthiness approvals under proposed § 21.139(c) for applicable products or parts by a production certificate holder prior to issuance of the pending type certificate. The airworthiness approval could not be issued unless the production certificate holder has an acceptable means of recalling any products or parts that are not approved as part of the subsequent type certificate approval. This authorization would be limited to only production certificate holders and is based on the need for pre-positioning of parts at customers' facilities prior to type certification or other design approval (e.g., engineering change).

Subpart N - Approval of Engines, Propellers, Materials, Parts, and Appliances: Import

In 1998 the FAA, JAA, Transport Canada, and the Production Certification Working Group met to harmonize the use of the Form 8130-3 Airworthiness Approval Tag with the JAA Form 1 and Transport Canada Form 24-0078. As a result of this effort, the FAA proposes changes to §§ 21.500 and 21.502 to allow the use of an airworthiness approval authorized by the country of manufacture.

Subpart O - Parts Design Approval for Technical Standard Order Articles

The present subpart O contains provisions for issuance of a design approval for both United States and foreign manufactured TSO articles. Proposed subpart O would contain the provisions of present subpart O that relate to the issuance of a letter of TSO design approval for foreign designed TSO articles. As discussed previously, the proposed subpart O would, for U.S. designed/manufactured TSO articles, separate the design and production approval aspects. The present design approval aspects of the TSOA are proposed to be replaced with a parts design approval for an article of TSO compliance. As previously discussed, the production approval requirements have been proposed for subpart G.

The TSO marking requirements of the present subpart O have been removed and placed in the proposed part 45. The present subpart O contains a reference to the part 45 marking requirements for foreign manufactured TSO articles, while subpart G contains the reference to the part 45 marking requirements for a U.S. manufactured TSO article produced under a U.S. production approval.

The proposed subpart O would replace the term "authorization" with the term "approval". This change would more clearly link the action of issuing an approval as an action

performed by the Administrator. This change is in-line with the definition of "approved" contained in part 1. Also, the change provides more uniformity with other design, and production approvals issued under part 21.

Organizational and minor changes that would be included to format this subpart more in line with subpart B are proposed in the following areas:

1. Proposed § 21.601, Applicability, is based on present § 21.601 without those provisions that relate to production approval.

2. Present § 21.603, TSO marking and privileges, would be deleted since paragraph (a) relates to general marking requirements that would be covered in part 45 and paragraphs (b) and (c) no longer apply. Specific marking requirements may be included in an individual TSO. Depending on the article or component part, these requirements vary widely, particularly in the case of articles that employ software.

3. Proposed § 21.603, Application for parts design approval for TSO articles, is based on present § 21.605 without the provisions that relate to the FAA issuing the TSOA and the provisions that relate to the production approval. The present § 21.605(c), (d), and (e) requirements relating to issuing a TSOA would be covered in proposed § 21.607. Proposed § 21.603(a) would omit the office (currently specified in § 21.605(a)) to

which an application is submitted. While applications would continue to be submitted to the appropriate cognizant, responsible or geographic office, this omission would mean that a regulation change would not be necessary each time the FAA reorganizes.

4. Proposed § 21.605, Approval for deviation, is based on present § 21.609 but the reference to submitting data to a specific FAA office would be omitted. The rationale for this omission has been previously discussed.

5. Present § 21.607 which covers rules governing TSOA holders as it relates to production and marking of articles would be deleted. As previously discussed production approval aspects would be covered under subpart G and the marking requirements would be covered under part 45.

6. Proposed § 21.607, Issue or denial of TSO parts design approval, is based on present § 21.605(c), (d), and (e) without the provisions relating to the production approval and marking.

The time limit referenced in proposed § 21.607(c) is carried over from present § 21.605(e). This requirement allows for planning and scheduling of applications for design and production approval as well as type certification of original installation. This aspect is invaluable in the completion of most certifications and therefore remains an integral segment of this part.

7. Present § 21.609, Approval for deviations, would be covered in proposed § 21.605.

8. Proposed § 21.609, Design changes, is based on present § 21.611(a) and (b) with minor editorial changes. The FAA proposes to remove the language regarding changes by persons other than the manufacturer (present § 21.611(c)). This material is deemed to be inappropriate for part 21, but appropriate for part 43. The alteration authorization process remains in part 43 as noted. This pertains to maintenance activity, but is not applicable to design or production approvals and therefore would be removed from this section of part 21. Major design changes by a manufacturer (other than a holder of a design approval for that TSO article) could be accomplished under existing STC procedures or under the proposed PDA procedures.

9. Proposed § 21.611, Issue of parts design approval for TSO articles: import articles, is based on present § 21.617 with only minor editorial changes, except that design approval does not include manufacturing approval. Manufacturing requires a separate production approval or an approved supplier quality system.

10. **Present** § 21.613, Recordkeeping requirements, would be deleted, **since** it contains provisions related to production which, as previously discussed, would be covered in subpart G.

11. Proposed § 21.613, Inspection and test, is based on the present § 21.615 that allows the FAA to conduct any inspections or tests but focuses these inspections and tests on those associated with the design approval process in subpart O.

12. Present § 21.615, FAA inspection, would be deleted, since it contains provisions related to production approval which, as previously discussed, are covered in subpart G. However, those FAA inspections and tests that relate to the design approval process would be covered in the proposed § 21.613.

13. Proposed § 21.615(a) would allow a parts design approval for TSO articles to be transferable, while the present § 21.621 prohibits the transfer of a TSO design approval. The basis for this change is that, since design approval would be separated from production approval, design approval could be transferred. Because production approval is specific to a company and its facility, it is not transferable. The task of this ARAC revision of part 21 was to level the playing field as it pertains to all types of approvals in the production process. The transfer of "parts design approval" has been included in the new part 21 to create the identical policy for the TSO design area, as already exists in the area of type certificates and parts design approvals.

The same paragraph as in the Type Certificates and Parts Design Approvals was placed in the Technical Standard Order parts design approval section. This addition is possible at this time due to the separation of design approval from production approval for TSO articles. Previously they were tied to the same approval which encompassed design and production.

This also allows the design approval to become more marketable as a stand alone data package. However, the production approval remains intact with the production approval holder which has been authorized under a separate approval process.

Proposed § 21.615(b) is based on present § 21.621 and proposed § 21.615(c) contains new language. These proposed sections would cover the automatic conversion of design approval aspects of existing TSOA's to parts design approvals of TSO articles.

14. Present § 21.617, Issue of letters of TSO design approval: import articles, would be deleted since it would be covered in proposed §§ 21.135, 21.611, and 45.17.

15. Present § 21.619, Noncompliance, would be deleted since it is not needed. The Administrator, under the proposed § 21.615 as well as under the present § 21.621, has the authority to withdraw or otherwise terminate a parts design approval for misuse or at the discretion of the Administrator.

16. Present § 21.621, Transferability and duration, would be deleted since it would be covered in the proposed § 21.615.

Part 45 - Identification and Registration Marking

The continued validity of an airworthiness certificate issued under part 21 rests on conformity to the approved design. Proper identification of products and parts is therefore key to determining the airworthiness status of an aircraft. Traceability and the ability to determine the airworthiness status of a part or product are of concern to the aviation industry, due to the increasing traffic in counterfeit and unapproved parts and the exploding international market in aviation parts. Furthermore, a person who receives a product or part needs to know the conformity and other status of the product or part.

The current marking regulations were developed in a somewhat piecemeal fashion in tandem with the associated production approval regulations. As a result, both parts 21 and 45 contain marking requirements for new products and parts. Marking requirements for products produced under a type certificate or production certificate and PMA parts are in part 45, while TSO authorization marking requirements are scattered among the procedural requirements in part 21.

To assist manufacturers and maintenance personnel subject to the identification marking requirements of part 45 new guidance material has been developed that lists additional marking requirements found elsewhere in title 14. It lists the additional marking requirements that relate to specific certification standards that appear in parts 23, 25, 27, 29, and 33 and in SFAR 23, as well as additional marking requirements that relate to specific operations that appear in parts 91, 121, 125, 133, and 135. AC 45-XX is available on-line at http://www.faa.gov/abc/ac-chklst or by mail from U.S. Department of Transportation, TASC, Subsequent Distribution Section, SVC-121.23, 3341 Q 75th Avenue, Landover, MD 20785.

The regulations do not currently require parts produced under a type certificate or a production certificate to be individually marked, although most production certificate holders do so for their own quality assurance and traceability purposes. The lack of marking requirements down to the part or component level has sometimes hindered field identification when parts must be replaced, serviced, or removed from service, and during accident investigations.

Other omissions in the current marking requirements concern parts produced by the owner or operator of an aircraft, as well as parts that are installed and approved in connection with one-time approvals, such as STC's and field approvals. The proposed

regulations would consolidate and extend marking requirements to all such parts.

Therefore, the FAA proposes a complete revision of subparts A and B of part 45, Identification and Registration Marking, to consolidate in part 45, to the extent practicable, all product marking requirements and to add additional marking requirements that would facilitate the traceability of parts. Subpart C of part 45 would not be changed.

Section 45.1 - Applicability

Present § 45.1 covers identification of aircraft, aircraft engines, and propellers, and certain replacement and modified parts, namely those produced under a PMA. As proposed, § 45.1 would cover all products and parts manufactured under a production approval and also owner or operator produced parts that would be manufactured under the provisions of § 21.131(d)(2), and parts for which there is a replacement time, inspection interval, or other procedure related to the criticality of the part.

Section 45.3 - Identification Responsibilities and Restrictions

Proposed new § 45.3 would include the following:

1. Products and parts and owner/operator produced parts must be identified.

2. Only production approval holders or owner/operators or their designated representatives are allowed to apply required marking.

3. Markings on parts that are subjected to a major alteration must be modified to reflect that alteration.

4. Conditions under which persons performing maintenance are allowed to remove, change, or place identification markings or remove and replace identification plates.

5. A prohibition against the removal, changing, or placing of identification information unless as part of maintenance.

This proposal would provide uniform marking requirements for all modification and replacement parts sold as spares to assure that all individuals can readily determine whether a part is eligible for installation on a product for which a type certificate has been issued.

Section 45.5 - Identification requirements

Proposed § 45.5 would cover the identification data now contained in § 45.13(a). However, the requirement would apply to all parts, not just PMA produced parts, as is the case under present § 45.15. The requirements in current § 45.15 to mark PMA parts with "FAA-PMA" and to show installation eligibility would be deleted because many parts have multiple installation eligibilities. Eligibility information is available in other

required documents. Proposed § 45.5 contains the basic marking requirements across the board; specific marking requirements for certain types of products are contained in subsequent sections. Proposed § 45.5(b) states that "detail parts whose markings become obliterated during normal manufacturing processes need not be remarked." The "manufacturing processes" referred to in paragraph (b) refers to those involved in the completion of the top assembly, not the manufacture of the piece part. For example, if, during the assembly of the wing on a Cessna 172, the markings are obliterated on a rib brace, it would not have to be remarked. However, if a like item were to be sold as a replacement part, the marking would have to be intact since the marking of the part is a final acceptance requirement of the "manufacturing process" for that single item.

Section 45.11 - Type Certificated Products

Proposed § 45.11 contains detailed marking requirements that are mostly based on present § 45.11, but with some reorganization. The current § 45.11(a) requires that aircraft covered under § 21.182 must be identified by means of a fireproof identification plate that is secured to the aircraft fuselage.

Current § 45.11(a) contains two exceptions, manned free balloons and aircraft manufactured before March 7, 1988. This proposed change would include as exceptions aircraft: (1)

manufactured for operation under part 121 or 127, (2) in commuter air carrier operation (as defined in part 119 of this chapter) and (3) manufactured for export. The proposal provides definitions for the three exceptions.

The FAA recognizes that the rationale for the requirement that identification plates be attached to the aircraft fuselage exterior and visible to persons on the ground was an effort to enhance the effectiveness of drug interdiction activities of the U.S. Government.

The FAA has determined that aircraft operations of the types contained in the proposed new exceptions are unlikely to be connected with drug smuggling activities. Consequently, compliance with the identification plate location rule by manufacturers of aircraft for use in these operations would not significantly enhance the effectiveness of the narcotic interdiction operations. The requirement in current § 45.11(b) that propellers and propeller blades and hubs be identified by means of a fireproof plate or other approved fireproof method has not been included in proposed § 45.11 because the FAA has determined that such plates are not practical for propellers and propeller blades and hubs.

Section 45.13 - Owner or Operator Produced Parts

Proposed new § 45.13 would prescribe the minimum marking requirements for owner or operator produced parts.

Section 45.14 - Identification of Critical Components

Proposed § 45.14 is based on present § 45.14 and contains the marking requirements for parts for which a replacement time, inspection interval, or related procedure has been specified. The original wording in this section made it subject to varying interpretations that could lead to requirements for marking imbedded structural components and other items that have an "inspection interval or related procedure," but are not subject to replacement or even accessible without disassembling other major areas. Such assemblies could have been identified under this section with a literal interpretation of the original wording. Therefore, the wording was modified in an attempt to provide clarification and definition of the intent of this identification and serialization requirement.

Section 45.17 - TSO Parts and TSO Replacement Parts.

Proposed § 45.17 would require that TSO parts and replacement parts be marked the same as other products and parts and must also comply with specific TSO marking requirements as well as have the TSO number on it.

Derivation and Distribution Tables

In this NPRM, the FAA proposes to completely revise subparts G, K, L, and O of part 21 and subparts A and B of part 45. The Derivation Tables below show the current part 21 or part 45 sections on which the proposed sections in those subparts are based. The Distribution Tables show which proposed sections would replace the current sections.

DERIVATION TABLE FOR PART 21
SUBPARTS G, K, L, AND O

New Section - Subpart G	Based on:
21.131(a)	21.131; 21.301; 21.601(a)
21.131(b)	New language
21.131(c)	21.303(a)
21.131(d)(1)-(3)	21.303(b)(2), (b)(4); New language (d)(3)
21.131(e)(1)-(3)	New language
21.133(a)(1)-(3)	21.133(a)(1)-(3), (a)(3); 21.303(d)(2); 21.303(g); 21.601(b)(4); 21.605(a)(3)
21.133(b)	21.133(b); 21.303(c); 21.605(a)
21.135(a)	21.135; 21.303(d)(2); 21.605(c)
21.135(b)	21.147
21.135(c)(1)-(2)	21.123; New language
21.135(d)	21.137; 21.303(g); 21.601(c)
21.135(e)	21.617(a)(1),(c)
21.137 Introductory paragraph	21.151
21.137(a)	New language

21.137(b)	New language
21.139(a)(1)-(2)	21.163(a)(1)-(2); New language
21.139(a)(3)	New language
21.139(b), (c)	21.121-21.130; New language
21.139(d)(1)-(2)	21.163(b)
21.141(a)	21.165(a)
21.141(b)	21.147; 21.303(j)
21.141(c)	21.165(b); 21.303(k); 21.603(a) **[?]**; 21.607
21.141(d)	New language
21.141(e)	New language
21.141(f)	21.607(c); 21.613
21.141(g)	21.303(h)(9); 21.613(a)
21.141(h)	New language
21.141(i)	New language
21.141(j)	New language
21.141(k)	21.607(d)
21.141(l)	21.157; 21.303(e), Introduction; 21.615
21.141(m)	21.161
21.143(a)	21.153
21.143(b)	21.155, 21.303(i), 21.621
21.143(c)	21.159, 21.303(i), 21.621
21.145	21.139, 21.303(h), 21.605(a)(3), 21.607(b)
21.147(a)(1)-(13)	New language
21.147(b)	New language
21.149(a)	New language (based on) current JAR and ISO requirements
21.149(b)	21.143(a)(1)

21.151	21.143(a)(5); 21.303(h)(6); 21.303(h)(7); New language
21.153	New language
21.155(a)-(f)	21.143(a)(2); 21.143(b); 21.303(h)(1) and (h)(2); New language
21.156	21.143(a)(3); 21.303(h)(4); 21.303(h)(5) **[?]** New language
21.157	21.143(a)(3); 21.303(f)
21.158	New language
21.159	New language
21.160	21.143(a)(4); 21.303(h)(8); New language
21.161	New language
21.162	21.303(h)(5); New language
21.163	21.303(h)(9); 21.613; New language **[?]**
21.164	New language

New Section - Subpart K	**Based on:**
21.301(a) 21.301(b) 21.301(c)	21.301 21.303(a) New language
21.303 Introduction 21.303(a) 21.303(b) 21.303(c) 21.303(d)	21.303(c) Introduction 21.303(c)(1) 21.303(c)(3); New language 21.303(c)(4) 21.303(c)(4); New language

21.303(e)	New language
21.305	21.303(d)(1)
21.307	21.303(i); New language
21.309	21.303(i); New language
21.311	**[?]**

New Section - Subpart L	**Based on:**
21.321(a)	21.321(a)(1); New language**[?]**
21.321(b)	21.321(a)(2)
21.323(a)(1)-(4) 21.323(b)	21.329; 21.331(a); New language 21.325(c); New language
21.325(a) 21.325(b) 21.325(c)	New language 21.325(a)(1) 21.325(c); 21.325(a)(2); New language
21.327	21.327
21.329(a) 21.329(b) 21.329(c) 21.329(d)	New language 21.329 21.331; 21.333 New language; Order 8130.21A
21.331	21.335
21.333	New language

New Section - Subpart O	**Based on:**
21.601(a)(1)-(3) 21.601(b)(1)-(3)	21.601(a)(1)-(3) 21.601(b)(1)-(3)

21.603(a)(1)-(2) 21.603(b)	21.605(a)(1)-(2) 21.605(b)
21.605(a) 21.605(b)	21.609(a) 21.609(b)
21.607(a) 21.607(b) 21.607(c)	21.605(c) 21.605(d) 21.605(e)
21.609(a) 21.609(b)	21.611(a) 21.611(b)
21.611(a)(1)-(2) 21.611(b) 21.611(c)	21.617(a)(1)-(2) 21.617(b) 21.617(c)
21.613	21.615
21.615(a) 21.615(b) 21.615(c)	New language 21.621 New language

DERIVATION TABLE FOR PART 45
SUBPARTS A AND B

New Section - Subpart A	**Based on:**
45.1(a)(1) 45.1(a)(2) 45.1(a)(3) 45.1(a)(4) 45.1(b)	45.1(a)(1) 45.1(b) **[?]** 45.14 45.1(c) New language
New Section - Subpart B	
45.3(a) 45.3(b) 45.3(c) 45.3(d) 45.3(e)	45.11(a)-(b) 45.13(b) New language 45.13(d) 45.13(e)

45.5(a)	45.13(a); 45.15(a)(2), a)(3)
45.5(b)	45.15(a) Introduction
45.5(c)	45.15(b)
45.5(d)	New language **[?]**
45.11(a)(1)	45.11(a)
45.11(a)(2)	45.11(c)
45.11(a)(3)	45.11(d)
45.11(a)(4)	45.11(a)
45.11(b)(1)	45.11(a)
45.11(b)(2)	45.13(a)(7)
45.11(b)(3)	New language
45.11(c)	45.11(b)
45.13	New language
45.14	45.14
45.17	21.607(d); 21.617(c)

DISTRIBUTION TABLE FOR PART 21
SUBPARTS G, K, L, AND O

Current Subpart G	**Replaced by:**
21.131	21.131(a)
21.133(a)	21.133(a)
21.133(b)	21.133(b)
21.135	21.135(a)
21.137	21.135(d)
21.139	21.145
21.143(a)(1)	21.149(b)
21.143(a)(2)	21.155
21.143(a)(3)	21.156; 21.157
21.143(a)(4)	21.160
21.143(a)(5)	21.151
21.143(a)(6)	Deleted
21.143(b)	21.155

21.147	21.141(b)
21.149	21.135(b)
21.151	21.137, Introduction
21.153	21.143(a)
21.155	21.143(b)
21.157	21.141(l)
21.159	21.143(c)
21.161	21.141(m) **[?]**
21.163(a)(1)-(2) 21.163(b)(1)-(2)	21.139(a)(1)-(2) 21.139(d)(1)-(2)
21.165(a) 21.165(b)	21.141(a) 21.141(c)

Current Subpart K	**Replaced by:**
21.301	21.131(a); 21.301(a)
21.303(a)	21.131(c); 21.301(b)
21.303(b)(1), (3)	Deleted
21.303(b)(2), (4)	21.131(d)(1)-(2)
21.303 Intro.	21.303 Intro.
21.303(c)(1)	21.303(a)
21.303(c)(2)	Deleted
21.303(c)(3)	21.303(b)(1) and (b)(2)
21.303(c)(4)	21.303(c) and (d)
21.303(d)(1)	21.305
21.303(d)(2)	21.135(a)
21.303(e) Intro.	21.141(1)
21.303(e)(1)	Deleted
21.303(e)(2)	Deleted
21.303(f)	21.157
21.303(g)	21.135(d)
21.303(h) Intro.	21.145
21.303(h)(1)	21.155(e)
21.303(h)(2)	21.155(e)
21.303(h)(3)	21.162
21.303(h)(4)	21.156
21.303(h)(5)	21.162 **[?]**; 21.156 **[?]**
21.303(h)(6)	21.151 **[?]**
21.303(h)(7)	21.151 **[?]**
21.303(h)(8)	21.160
21.303(h)(9)	21.163; 21.141 **[?]**
21.303(i)	21.307; 21.309; 21.143
21.303(j)	21.141(b)
21.303(k)	21.141(c)
21.305(a)-(d)	Deleted

Current Subpart L	**Replaced by:**
21.321(a)(1)-(2)	21.321(a)
21.321(b)(1)-(4)	Deleted
21.323(a), (b)	Deleted **[?]**
21.325(a)(1)	21.325(b)
21.325(a)(2)	21.325(c)
21.325(b)(1)-(3)	Deleted?
21.325(c)	21.323(b) **[?]**

21.327	21.327; Advisory material
21.329 Intro.	21.329(b)
21.329(a)	21.329(b)
21.329(b)	Deleted
21.329(c)	Deleted
21.329(d)	Deleted
21.329(e)	Deleted
21.329(f)	21.331
21.329(g)	21.331
21.331	21.329(c); 21.323
21.333	21.329(c); 21.323
21.335	21.331; Advisory material
21.337	21.329(d) **[?]**
21.339	Deleted

Current Subpart O	**Replaced by:**
21.601(a)(1)-(3)	21.601(a)(1)-(3); 21.131(a)
21.601(b)(1)-(3)	21.601(b)(1)-(3)
21.601(b)(4)	21.131(b)(4)
21.601(b)(5)	21.131(e)(1)
21.601(c)	21.135(d)
21.603(a)	45.3(b)
21.603(b)	21.131(b); 21.615(c)
21.603(c)	Deleted
21.605(a)(1)-(2)	21.603(a)(1)-(2)
21.605(a)(3)	21.133(a)(3); 21.145
21.605(b)	21.603(b)
21.605(c)	21.607(a)
21.605(d)	21.607(b)
21.605(e)	21.607(c)
21.607(a)	21.141(c)
21.607(b)	21.141(a) & (c)
21.607(c)	21.141(f)
21.607(d)	21.141(k)
21.609(a)	21.605(a)
21.609(b)	21.605(b)

21.611(a) 21.611(b) 21.611(c)	21.609(a) 21.609(b) Deleted
21.613(a)(1) 21.613(a)(2) 21.613(b)	21.163; 21.141(g) 21.141(f) 21.163
21.615	21.613; 21.141(l)
21.617(a)(1)-(2) 21.617(b) 21.617(c)	21.611(a)(1)-(2); 21.135(e) 21.611(b) 21.611(c); 45.17
21.619	21.143(c)
21.621	21.615(a) and (b); 21.143

DISTRIBUTION TABLE FOR PART 45
SUBPARTS A AND B

Current Subpart A	**Replaced by:**
45.1(a) 45.1(b) 45.1(c)	45.1(a)(1) 45.1(a)(2) **[?]** 45.1(a)(4)
Current Subpart B	
45.11(a) 45.11(b) 45.11(c) 45.11(d)	45.3(a), 45.11(a)(1), (a)(4), b)(1) & (b)(4) 45.3(a), 45.11(c) 45.11(a)(2) 45.11(a)(3)
45.13(a) 45.13(b) 45.13(c) 45.13(d)(1) 45.13(d)(2) 45.13(e)	45.5(a) 45.3(b) Deleted **[?]** 45.3(d)(1) 45.3(d)(2) 45.3(e)
45.14	45.1(a)(3); 45.14
45.15(a) Introduction	45.5(b)

45.15(a)(1)	Deleted
45.15(a)(2)	45.5(a)(1)
45.15(a)(3)	45.5(a)(2)
45.15(a)(4)	Deleted
45.15(b)	45.5(c)

Regulatory Evaluation Summary

Costs

Benefits

International Trade Impact

Initial Regulatory Flexibility Determination

Federalism Implications

The proposed regulations would not have substantial direct effects on the states, on the relationship between national government and the states, or on the distribution of power and responsibilities among various levels of government. Thus, in accordance with Executive Order 12612, it is determined that such a regulation would not have federalism implications warranting the preparation of a Federalism Assessment.

Paperwork Reduction Act

The reporting and recordkeeping requirements associated with this proposed rule have previously **[?]** been approved by the Office of Management and Budget under the provisions of the

Paperwork Reduction Act of 1980 (Pub. L. 96-511) and have been assigned OMB Control Number 2120-XXXX.

List of Subjects

14 CFR Part 1

Aircraft.

14 CFR Part 21

Air transportation, Aircraft, Aviation safety, Safety.

14 CFR Part 45

Air safety, Air transportation, Airplanes, Aviation safety, Safety, Transportation.

THE PROPOSED AMENDMENT

In consideration of the foregoing, the Federal Aviation Administration proposes to amend the Federal Aviation Regulations (14 CFR parts 1, 21, and 45) as follows:

PART 1 -- DEFINITIONS AND ABBREVIATIONS

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

Authority: 49 U.S.C. 106(g), 40113, 44701.

?. Section 1.1 is amended by adding the definition "Commercial part" after "Commercial operator"; and "Standard part" after "Standard atmosphere" to read as follows:

§ 1.1 General definitions.

* * * * *

Commercial part means a~~detail~~ part~~or subcomponent~~ included in the type design that is designated by the design approval holder based on the following criteria:

(1) The part is not necessarily designed or produced for applications in commercial aviation; and

(2) The part is manufactured to a specification or catalog description and marked under the identification scheme of the manufacturer.

* * * * *

Standard part means a part manufactured in conformance with one of the following:

(1) A specification established by a government agency or consensus standards organization acceptable to the Administrator that -

(i) Contains design, manufacturing, test and acceptance criteria, and uniform marking requirements.

(ii) Is made available so that anyone may manufacture that part.

(2) A specification established and designated by a FAA design approval holder that is included in the type design and meets the following criteria:

(i) The specification contains design, manufacturing, test and acceptance criteria, and uniform marking requirements;

(ii) The specification is available to any person so that anyone may manufacture the part; and

(iii) The part is not subject to special quality assurance oversight.

(3) A specification that the Administrator finds will result in a part that can be conformed (airworthiness established) solely on the basis of meeting performance criteria and uniform marking requirements.

(4) A specification for an electrical or electronic part produced in conformance with a specification published and maintained by a consensus standards organization, a government agency or a holder of a design approval; or in conformance with the manufacturer's internal specifications or standards. The internal specifications or standards must include manufacturing controls, quality and reliability test methods, and identification requirements; they may include acceptance test criteria. With the exception of parts manufactured to U.S. Military specifications, designs of which are controlled by the

Defense Supply Center, Columbus (DSCC), the specifications or standards do not include electrical parameters and data which are obtained from the supplier's data sheet. The part is used within the manufacturer's published operating characteristics and environmental ranges.

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. 7252; 49 U.S.C. 106(g), 40105, 40113, 44701-44702, 44707, 44709, 44711, 44713, 44715, 45303.

4. Section 21.1 is revised to read as follows:

§ 21.1 Applicability.

(a) This part prescribes -

(1) Procedural requirements for the issue of type certificates and changes to those certificates; the issue of parts design approvals including design approvals for TSO articles and changes to those approvals; the issue of production approvals and changes to those approvals; the issue of airworthiness certificates; the issue of airworthiness approvals;

the issue of delegation option authorizations and changes to those authorizations; and the issue of designated alteration station authorization and changes to those authorizations.

(2) Requirements governing applicants for and holders of any certificate, approval, or authorization specified in paragraph (a)(1) of this section; and

(3) Procedural requirements for the approval of materials, parts, processes, and articles that require a production approval.

(b) For the purpose of this part, "production approval holder" means a production certificate holder or a parts production approval holder.

(c) For the purpose of this part, "design approval" means type certificate (TC), supplemental type certificate (STC), and parts design approval (PDA). "Standard" parts are excluded from parts design, production certification, and parts production approval requirements, although they may be detail components of an approved design.

(d) For the purpose of this part, "product" means--

(1) **Aircraft;**

(2) **Aircraft engine;**

(3) **Propeller;** and

(4) Any appliance that has been designated by the Administrator as type certificated.

(c) For the purpose of this part, "part" means any item that is not identified as a product, including but not limited to --

(1) Article for which the FAA has issued a Technical Standard Order;

(2) Accessory;

(3) Appliance that has not been designated by the Administrator as type certificated;

(4) Airborne software and firmware; and

(5) Components and parts of a product or part.

5. Section 21.2 is revised to read as follows:

§ 21.2 Falsification of applications, reports, or records.

(a) No person shall make or cause to be made -

(1) Any fraudulent or intentionally false statement or material omission of fact on any application for a certificate or approval under this part;

(2) Any fraudulent or intentionally false entry or material omission of fact in any record or report that is required to be kept, made, or used to show compliance with any requirement for the issuance or the exercise of the privileges of any certificate or approval issued under this part;

(3) Any reproduction for a fraudulent purpose of any certificate or approval issued under this part; or

(4) Any alteration of any certificate or approval issued under this part.

(b) The commission by any person of an act prohibited under paragraph (a) of this section is a basis for denying issuance of, suspending, or revoking any certificate or approval issued under this part and held by that person.

6. Section 21.7 is added to read as follows:

§ 21.7 Compliance disposition.

(a) An application for a certificate or approval under this part may be denied if the Administrator finds, under paragraph (a)(1), (a)(2), or (a)(3) of this section that:

(1) An individual will hold a key management position for the applicant, and that individual --

(i) Exercised control over or held a similar position with a certificate or approval holder whose certificate or approval was or is being revoked; and

(ii) Materially contributed to the circumstances causing the revocation or the revocation process.

(2) An individual will have control over or will have a substantial ownership interest in the applicant, and that individual --

(i) Had a similar control over or a similar interest in a certificate or approval holder whose certificate or approval was or is being revoked; and

(ii) Materially contributed to the circumstances causing the revocation or the revocation process.

(3) An individual will hold a key management position for the applicant, or will have control over or a substantial ownership interest in the applicant, and that individual committed an act of falsification in violation of 18 U.S.C. section 1001, Title 49 of the U.S. Code, or Title 14 of the Code of Federal Regulations.

(b) If a holder employs a new individual in a key management position, or a new individual obtains control over a substantial ownership interest in the holder, the holder must immediately inform the Administrator. If the Administrator finds that the individual is in a position to materially affect the holder's ability to comply with this part, and that the individual has committed an act described in paragraph (a) of this section, the individual may not continue in the position where he or she can materially affect the holder's ability to comply with this part, unless the Administrator approves otherwise. Exercise of the privileges of the certificate or approval after the Administrator makes the findings described in

this paragraph will subject the holder to enforcement proceedings.

(c) For purposes of this section:

(1) "Key management position" includes the positions of each representative and other persons described in § 21.149.

(2) "Certificate or approval was or is being revoked" refers to any certificate or approval issued under this title.

§ 21.45 [Amended]

7. Section 21.45 is amended in paragraph (b) by changing the words "or certified aircraft" to "on certificated aircraft"; and in paragraph (c) by changing "21.163" to "21.164".

§§ 21.121 - 21.130 [Removed and Reserved]

8. Subpart F (§§ 21.121 - 21.130) is removed and the subpart heading is reserved.

9. Subpart G is revised to read as follows:

SUBPART G -- PRODUCTION APPROVALS

§ 21.131 Applicability; requirement for production approval.

(a) This subpart prescribes procedural requirements for the issue of production certificates and other production approvals, and requirements governing the holders of those certificates and approvals.

(b) All persons holding production certificates, approved production inspection systems, Parts Manufacturer Approvals, or Technical Standard Order authorizations issued before [insert effective date of rule] are required to show compliance with the rules for the quality system in this subpart in effect on [insert effective date of rule] by [insert two years after effective date].

(c) Except as provided in paragraph (d) of this section, no person may produce a product or part and represent that product or part **as suitable** for installation on a type certificated product **or on an FAA-approved** part, unless that product or part was **produced under an FAA** production certificate or other FAA production approval.

(d) A person may produce one of the following parts and represent that part as suitable for installation on a type certificated product or an FAA-approved part if:

(1) For a standard ~~part~~ or a commercial part the part conforms to the definition in § 1.1 of this chapter.

(2) The part is produced by an owner or operator for maintaining or altering that owner's or operator's product or other part.

(3) The part is produced by a certificated repair station or a certificated airman and installed on a product or other part in accordance with part 145 or part 43 of this chapter.

(e) For purposes of this section:

(1) A person "produces" a part if that person controls the design, manufacture, or quality of the part.

(2) An owner or operator produces a part "for maintaining or altering the owner's or operator's product or other part" if the owner or operator produces the part and the part is installed on the owner's or operators' product or other part.

(3) If a part is offered for transfer to anyone other than the owner or operator who produced it, or the certificated repair station or airman who produced it, it must be produced under a production certificate or approval.

§ 21.133 Eligibility.

(a) A person is eligible to apply for a production approval if the person --

(1) Holds for the product or part concerned:

(i) The existing design approval; or

(ii) Written authorization to use the existing design approval;

(2) Has facilities to manufacture the product or part or maintains quality surveillance over manufacturing facilities capable of producing the product or part for which approval is sought; and

(3) Has established and maintains a quality system as specified in § ~~21.145 at a manufacturing facility within the United States.~~ **21.145.**

(b) Each application for a production approval must be made to the FAA and must be in a form, manner, and location prescribed by the Administrator.

§ 21.135 Issuance of production approval.

(a) An applicant is entitled to a production approval if the Administrator finds, after examination of the supporting data and after inspection of the organization and production facilities, that the applicant has complied with the requirements of this subpart.

(b) The Administrator may authorize more than one product or part that has received design approval to be manufactured under the terms of one production approval.

(c) The Administrator may authorize a production approval holder to proceed with the manufacture of a limited quantity of products or parts prior to meeting all of the conditions set out in this subpart. The Administrator may, under § 21.137(b), specify restrictions on the use of elements of the manufacturer's quality system, and may impose specific inspections and tests for products and parts produced in this manner. This authorization may be made if the production approval holder is proceeding with its design or production approval process for that aeronautical product or part.

(d) The Administrator does not issue a production approval if the manufacturing facilities concerned are located outside the United States, unless the Administrator finds no undue burden on the United States in administering the applicable requirements of this chapter.

(e) If acceptable to the Administrator, parts manufactured outside of the United States may be produced under a parts production approval or an equivalent production approval of the

country of manufacture or an FAA approved supplier control system. For TSO articles, the country of manufacture must --

(1) Certify that the article has been examined, tested, and found to meet the applicable TSO or the applicable performance standards of the country in which the article was manufactured and any other performance standards the Administrator may prescribe to provide a level of safety equivalent to that provided by the TSO; and

(2) Issue ~~a Certificate of Airworthiness for Export~~**an airworthiness approval,** as specified in § 21.502(a).

§ 21.137 Production system limitations.

A production limitation record is issued as part of the production approval. The record lists products or parts as defined in § 21.1(d) and (e) that the production approval holder is authorized to manufacture under the terms of the production approval. The production limitation record must include the following:

(a) Production approval ratings and limitations on the products or parts authorized for production, referencing the

design approval.

(b) All special limitations on the production system based on existence and scope of the quality system elements specified in this subpart.

§ 21.139 Privileges.

(a) The holder of a production approval may, without further showing:

(1) Obtain an airworthiness certificate for aircraft produced under a production certificate;

(2) Except for aircraft, issue an airworthiness approval for products or parts produced under the production approval; and

(3) Perform maintenance or preventive maintenance of its products or parts prior to initial release-to-service.

(b) The holder of a production approval who is proceeding with a design approval for a new product or part that is similar to those on the production limitation record may, without further showing, manufacture under its production approval a limited quantity of products or parts prior to meeting all of the requirements set out in this subpart, including all elements of the approved quality system. After design approval these limited ~~production parts~~**Parts Production** are eligible for airworthiness approval, as specified in § 21.329(c).

(c) The holder of a production certificate who is proceeding with a design approval for a new product or part of the same type as that on the production limitation record may, without further showing, issue airworthiness approvals on products other than aircraft or parts pending the issue of design approval for those products or parts, as specified in § 21.333.

(d) Notwithstanding the provisions of § 147.3 of this chapter, the holder of a production certificate for a primary category aircraft, or for a normal, utility, or acrobatic category aircraft of a type design that is eligible for a special airworthiness certificate in the primary category under § 21.184(c), may --

(1) Conduct training for persons in the performance of a special inspection and preventive maintenance program approved as a part of the aircraft's type design under § 21.24(b), provided the training is given by a person holding a mechanic certificate with appropriate ratings issued under part 65 of this chapter; and

(2) Issue a certificate of competency to persons successfully completing the approved training program, provided the certificate specifies the aircraft make and model to which the certificate applies.

§ 21.141 Responsibility of the production approval holder.

The holder of a production approval shall --

(a) Document, maintain and assure compliance with the quality system in accordance with the approved documentation;

(b) Immediately notify the FAA in writing of any changes to the quality system or location of a manufacturing facility that could affect the inspection, conformity, or airworthiness of the product or part;

(c) Determine that each product or part conforms to the approved design and is in a condition for safe operation prior to release;

(d) Report to the design approval holder, if different from the production approval holder, all deviations from the quality system necessary for analysis and possible reporting under § 21.3;

(e) Report to the design approval holder all undocumented nonconforming products or parts which could have left the quality system, if the production approval holder is different from the design approval holder;

(f) Maintain a complete and current technical data file for each product or part manufactured under the production approval;

(g) Maintain complete quality records for 2 years for the products or parts manufactured under the approval and for 10 years for critical components identified under § 45.14 of this chapter;

(h) Issue an FAA airworthiness approval for each shipment;

(i) Assure that only authorized personnel issue FAA airworthiness approvals;

(j) Maintain proper maintenance records for 2 years for each product or part that has been maintained under the production approval prior to release to service;

(k) Mark all products or parts in accordance with part 45 of this chapter;

(l) Allow the Administrator to make all inspections, tests, and investigations at its facilities or any supplier facilities necessary to determine compliance with the applicable regulations in this subchapter; and

(m) Display the approval and ratings at a place in the manufacturing facility that is normally accessible to the public and is not obscured. The approval must be available for inspection by the Administrator.

§ 21.143 Amendment, transferability, and duration of a production approval.

(a) The holder of a production approval may request an amendment to the approval by applying to the FAA in a form, manner, and location prescribed by the Administrator.

(b) A production approval is not transferable.

(c) A production approval is effective until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator.

§ 21.145 Quality system.

Each applicant shall establish and document and each holder shall maintain a quality system that ensures that each product or part conforms to the approved design and is in a condition for safe operation prior to release. The documentation must be in a retrievable form acceptable to the Administrator.

§ 21.147 Quality system documentation.

(a) The quality system shall be documented and submitted to the Administrator for approval. Documentation that defines the quality system shall be available for review by the Administrator. This quality system documentation must describe the following elements:

(1) Management responsibility.

(2) Design and data control.

(3) Document control.

(4) Supplier control.

(5) Process control.

(6) Inspection and testing.

(7) Inspection, measuring, and test equipment control.

(8) Inspection and test status.

(9) Nonconforming materials, products, and parts control.

(10) Corrective and preventive action.

(11) Handling, storage, packaging, preservation, and delivery.

(12) Quality records control.

(13) Internal quality audits.

(14) Final release of products or parts.

(b) Each applicant for a production approval shall establish and document and each holder shall maintain a method for receiving and processing feedback on service problems from users and installers of the product. Included shall be a method of providing assistance to the design approval holder, if different from the production approval holder--

(1) In dealing with any service problems involving potential design changes; and

(2) In determining if any changes to the instructions for continued airworthiness are necessary.

§ 21.149 Management responsibility.

Each applicant shall:

(a) Appoint a management representative with defined authority and responsibility to ensure implementation and compliance with the approved quality system.

(b) Define and document the responsibility, authority, and interrelation of key personnel who manage work affecting the approved quality system. Each applicant shall include in their approved quality system an organization chart showing the chain of authority to include any delegations of that authority.

§ 21.151 Design and data control.

Each applicant shall establish and each holder shall maintain procedures for the control of design data and subsequent configuration control to ensure that only approved current and correct configuration data is used for parts and products produced, and processes performed under the authority of the production approval. The procedures shall include a method to ensure conformance of products or parts manufactured under a pending design or production approval pursuant to the provisions of § 21.135(c).

§ 21.153 Document control.

Each applicant shall establish and each holder shall maintain procedures to control documents and data that form a

part of the quality system and any subsequent changes. The procedures shall ensure that documents and data are reviewed for adequacy and approved by authorized personnel prior to incorporation into the quality system.

§ 21.155 Supplier control.

Each applicant shall establish and each holder shall maintain procedures to ensure conformance of supplier furnished products, parts, materials, and services to the approved design prior to release for installation in the product or part.

§ 21.156 Process control.

Each applicant shall establish and each holder shall maintain processes to control the manufacture, assembly, and quality of products or parts to the approved design.

§ 21.157 Inspecting and testing.

Each applicant shall establish and each holder shall maintain procedures for all types of inspection and test activities to verify conformity of products and parts to the approved design.

§ 21.158 Inspection, measuring, and test equipment control.

Each applicant shall establish and each holder shall maintain a system to ensure that all inspection, measuring, and test equipment is calibrated, controlled, and serviced before use in determining conformity of products and parts to the approved design. The calibration accuracy must be appropriate for its intended measurement and traceable to the National Institute of Standards and Technology, or other standards acceptable to the Administrator.

§ 21.159 Inspection and test status.

Each applicant shall establish and each holder shall maintain procedures for the identification of in-process, final inspection, and test status of materials, products, and parts supplied, manufactured, and assembled to the approved design.

§ 21.160 Nonconforming products, parts, materials, and services control.

Each applicant shall establish and each holder shall maintain procedures to ensure that products, parts, materials, and services that do not conform to approved design are prevented from unintended use or installation. This control shall provide for identification, documentation, evaluation, segregation, and disposition of nonconforming products or parts, and notification to qualified functions of the approval holder's organization.

Disposition determinations are to be accomplished by qualified functions within the approval holder's organization.

§ 21.161 Corrective and preventive action.

Each applicant shall establish and each holder shall maintain procedures for implementing a corrective and preventive action system to eliminate or minimize the causes of actual or potential nonconformities to the approved design.

§ 21.162 Handling, storage, packaging, preservation, and delivery.

Each applicant shall establish and each holder shall maintain procedures for the control and protection of work in progress and for materials, products, and parts in storage or transit.

§ 21.163 Control of quality records.

Each applicant shall establish and each holder shall maintain procedures for identification and retrieval of the quality records specified in § 21.141(g) that demonstrate the product's or part's conformance to the approved design.

§ 21.164 Internal quality audits.

Each applicant shall establish and each holder shall maintain procedures for planning and conducting internal quality audits for the purpose of assuring compliance with the approved quality system.

§ 21.165 Final release of product or part.

Each applicant shall establish and each holder shall maintain procedures for issuing an airworthiness approval for each shipment of products or parts after verifying that the product(s) or part(s) conform to the approved design and is in condition for safe operation. The airworthiness approvals may only be issued by personnel identified within this quality system.

10. Subpart K is revised to read as follows:

SUBPART K - PARTS DESIGN APPROVAL FOR REPLACEMENT AND MODIFICATION PARTS

§ 21.301 Applicability.

(a) This subpart prescribes the procedural requirements for the issue of parts design approvals, changes to parts design

approvals, and the requirements governing holders of a parts design approval.

(b) A parts design approval is issued for a replacement or modification part.

(c) A parts design approval includes the approval of all parts within the design.

§ 21.303 Application for parts design approval.

An application for a parts design approval for a part is made to the FAA in a form, manner, and location prescribed by the Administrator. The application must include the following:

(a) The identity of the product or part on which the part is to be installed.

(b) The design of the part which consists of --

(1) Drawings and specifications necessary to show the configuration of the part;

(2) Information on the dimensions, materials, manufacturing and quality processes necessary to define the structural strength and operational performance of the part; and

(3) Information on the marking requirements necessary to ensure **part 45** requirements are met.

(c) **Test** reports and computations, using a comparative or general analysis, as necessary **based on the criticality and complexity of the part**, to show that the design of the part meets

the airworthiness requirements of this chapter applicable to the product on which the part is to be installed.

(d) If the design of the part was obtained by a written authorization from a design approval holder, evidence of that authorization must be furnished.

(e) Instructions for Continued Airworthiness~~in accordance with § 21.50~~ that address any variance from those requirements applicable to the original design.

§ 21.305 Issue of parts design approval.

An applicant is entitled to a parts design approval for a part, if the Administrator finds, upon examination of the design and after completing any required tests and inspections, that the design meets the performance and airworthiness requirements of this chapter applicable to the product or TSO article on which the part is to be installed.

§ 21.307 Transferability.

A parts design approval issued under this subpart may be transferred to or made available to a third person by written authorization. Each grantor shall, within 30 days after transfer of the parts design approval or execution or termination of a written authorization, notify in writing, the FAA office that issued the parts design approval. The notification must state

the name and address of the transferee or authorized person, date of the transaction, and, in the case of a written authorization, the extent of the authority granted the authorized person.

§ 21.309 Duration.

A parts design approval issued under this section is effective until surrendered, withdrawn or otherwise terminated by the Administrator. The design approved under a Parts Manufacturer Approval issued before (***effective date of final rule)*** is considered to meet the parts design approval requirements of this subpart.

§ 21.311 Design changes.

A holder of a parts design approval may only make design changes in accordance with the following:

(a) Minor design changes under a parts design approval may be approved in a method acceptable to the Administrator before submitting to the Administrator any substantiating or descriptive data.

(b) Major design changes in a parts design approval must have the substantiating data and necessary descriptive data submitted to the Administrator for approval prior to inclusion into the parts design approval.

11. Subpart L is revised to read as follows:

SUBPART L -- AIRWORTHINESS APPROVALS

§ 21.321 Applicability.

This subpart prescribes --

(a) Procedural requirements for the issue of airworthiness approvals; and

(b) Rules governing the issuance of those approvals.

§ 21.323 Eligibility.

(a) To be eligible for an airworthiness approval, a product or part must be:

(1) In conformance with approved design;

(2) In a condition for safe operation prior to release;

(3) Identified as required by part 45 of this chapter; and

(4) Manufactured under a production approval, except for those aircraft eligible for an airworthiness certificate under § 21.183(d).

(b) To be eligible for a limited airworthiness approval, a product or part must meet all the requirements specified in

paragraph (a) of this section except for specified exceptions listed on the limited airworthiness approval document. A product or part with a limited airworthiness approval may be considered airworthy only when the specified exception is either corrected or approved, and the product or part meets the requirements of paragraph (a) of this section.

§ 21.325 Kinds of approvals.

(a) Domestic airworthiness approval of aircraft is documented in the form of an Airworthiness Certificate.

(b) Export airworthiness approval of aircraft is documented in a form, manner, and location prescribed by the Administrator.

(c) Airworthiness approval of a part or product other than an aircraft or a part is documented in a form, manner, and location prescribed by the Administrator.

§ 21.327 Application.

An application for airworthiness approval is made in a form, manner, and location prescribed by the Administrator.

§ 21.329 Issue of airworthiness approvals.

(a) An applicant is entitled to a domestic airworthiness approval for aircraft as prescribed in Subparts H or I of this part.

(b) An applicant is entitled to an export airworthiness approval for an aircraft if that applicant shows that eligibility requirements of § 21.323 have been met.

(c) An applicant is entitled to an airworthiness approval for a product other than aircraft or a part if that applicant shows all eligibility requirements of § 21.323 have been met.

(d) A person authorized to return products other than aircraft or parts to service as provided in § 43.5 of this chapter may issue an airworthiness approval for return to service without further showing provided the~~part or~~ product other than a aircraft or part has been maintained or altered within the limits of that person's authorization.

§ 21.331 Responsibility of exporters.

Unless an exception from the Importing Authority is granted, each exporter shall meet the requirements of the importing country. The agreement shall be a written statement by the importing country. The written statement must list the requirements not met. The requirements not met must also be listed on the airworthiness approval.

§ 21.333 Airworthiness approval of products or parts prior to issuance of a design approval.

An applicant who manufactures products or parts under § 21.139(b), or such applicant's authorized representative, may issue an airworthiness approval under § 21.139(c) for applicable products other than aircraft or parts prior to issuance of the pending type certificate when the applicant has an acceptable means of recalling products or parts that are not approved as part of the subsequent type certificate approval.

12. **Section 21.500 is revised to read as follows:**

§ 21.500 Approval of engines and propellers.

Each holder of licensee of a U.S. type certificate for an aircraft engine or propeller manufactured in a foreign country with which the United States has an agreement for the acceptance of those products for export and import, shall furnish with each such aircraft engine or propeller imported into this country, an airworthiness approval authorized by the country of manufacture certifying that the individual aircraft engine or propeller conforms to its approved design and is in condition for safe operation.

13. Section 21.502 is amended by revising paragraph (a) to read as follows:

§ 21.502 Approval of materials, parts, and appliances.

(a) A material, part, or appliance manufactured in a foreign country with which the United States has an agreement for the acceptance of those materials, parts, or appliances for export and import, is considered to meet the requirements for approval in the Federal Aviation Regulations when an airworthiness approval authorized by the country of manufacture is issued certifying that the individual material, part, or appliance meets those requirements, unless the Administrator finds, based on the technical data submitted under paragraph) of this section, that the material, part, or appliance is otherwise not consistent with the intent of the Federal Aviation Regulations.

* * * * *

14. Subpart O is revised to read as follows:

SUBPART O -- PARTS DESIGN APPROVAL FOR TECHNICAL STANDARD ORDER ARTICLES

§ 21.601 Applicability.

(a) This subpart prescribes --

(1) Procedural requirements for the issue of parts design approvals for TSO articles.

(2) Requirements governing the holders of Technical Standard Order parts design approvals; and

(3) Procedural requirements for the issuance of parts design approval for import TSO articles.

(b) For the purpose of this subpart --

(1) A Technical Standard Order (referred to in this subpart as "TSO") is issued by the Administrator and is a minimum performance standard for specified articles (materials, parts, items, processes, or appliances) used on civil aircraft.

(2) A parts design approval for TSO articles is issued by the FAA to the applicant for an article found to meet the applicable requirements of a specific TSO.

(3) A parts design approval for TSO import articles is an FAA approval for a foreign designed article which has been found to meet a specific TSO in accordance with § 21.611.

§ 21.603 Application for TSO parts design approval.

(a) **An application** for TSO parts design approval is made in a form, **manner,** and location prescribed by the Administrator and is submitted to the FAA. The application must include the following:

(1) A statement of conformance certifying that the applicant has met the requirements of the applicable TSO that is effective on the date of application for that article,

(2) One copy of the technical data required in the applicable TSO.

(b) When a series of minor changes in accordance with § 21.609 is anticipated, the applicant may set forth in its application the basic model number of the article and the part number of the components. A method to indicate how the configuration will be changed from time to time should be added if applicable.

§ 21.605 Approval for deviation from Technical Standard Order.

(a) An applicant who requests approval to deviate from any requirement of a TSO shall show that the requirement from which a deviation is requested is compensated for by factors or design features providing an equivalent level of safety.

(b) The request for approval to deviate, together with all pertinent data, must be submitted to the FAA in a form, manner, and location prescribed by the Administrator. If the applicant is located in another country, the request for approval to deviate, together with all pertinent data, must be submitted through the civil aviation authority in that country to the FAA.

§ 21.607 Issue or denial of TSO parts design approval.

(a) Except as provided in paragraph (b) of this section, an applicant is entitled to a TSO parts design approval (including all TSO deviations granted to the applicant) when the applicant substantiates compliance with this part.

(b) The applicant must, when requested by the Administrator, submit any additional information necessary to show compliance with this part. If the applicant fails to submit the additional information within 30 days of the Administrator's request, the applicant will be notified that the application is denied.

(c) The Administrator will issue or deny the application within 30 days after its receipt or, if additional information has been requested, within 30 days after receiving that information.

§ 21.609 Design changes for TSO articles.

(a) The holder of design approval for TSO articles may make minor design changes (any change other than major) without further approval by the Administrator. In this case, the changed article keeps the original model number (part numbers may be used to identify minor changes) and the manufacturer shall forward to the appropriate Aircraft Certification Office for the geographic

area, all revised data that are necessary for compliance with § 21.603(a).

(b) Each change to the approved design that is extensive enough to require a substantially complete investigation to determine compliance with a TSO is a major change. Before making such a change, the holder of a TSO design approval shall assign a new type or model designation to the article and apply for a TSO design approval under § 21.603.

§ 21.611 Issue of parts design approval for TSO articles: import articles.

(a) A parts design approval for a TSO articles may be issued for an article that is designed in a foreign country with which the United States has an agreement for the acceptance of these articles for import and that is to be imported into the United States if --

(1) The design meets the applicable TSO or the applicable performance standards of the country in which the article was designed and any other performance standards the Administrator may prescribe to provide a level of safety equivalent to that provided by the TSO; and

(2) The applicant has submitted one copy of the technical data required in the applicable TSO through its civil aviation authority.

(b) The parts design approval will be issued by the Administrator and must list any deviations granted to the applicant under § 21.605.

§ 21.613 Inspection and tests.

Each applicant and each TSO parts design approval holder must allow the Administrator to make any inspection or test necessary to determine compliance with this subpart.

§ 21.615 Transferability and duration.

(a) A parts design approval for a TSO article issued under this subpart may be transferred to or made available for use by another person by written authorization. Each grantor shall, within 30 days after transfer of the parts design approval or execution or termination of a written authorization, notify in writing the FAA office that issued the parts design approval. The notification must state the name and address of the transferee or authorized person, date of the transaction, and, in the case of a written authorization, the extent of the authority granted the person using the approval.

(b) A parts design approval issued under this subpart is effective until surrendered, withdrawn or otherwise terminated by the Administrator.

(c) The design approved under a Technical Standard Order Authorization issued before (***effective date of final rule***) is considered to meet the parts design approval requirements of this subpart.

PART 45 -- IDENTIFICATION AND REGISTRATION MARKING

13. The authority citation for part 45 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40103, 40109, 40113-40114, 44101-44105, 44107-44108, 44110-44111, 44704, 44701, 44708-44709, 44711-44713, 45302-45303, 46104, 46304, 46306, 47122.

14. Subparts A and B are revised to read as follows:

SUBPART A -- GENERAL

45.1 Applicability.

SUBPART B -- IDENTIFICATION OF PRODUCTS AND PARTS

45.3 Identification responsibilities and restrictions.
45.5 Identification requirements.
45.11 Type certificated products.
45.13 Owner or operator produced parts.
45.14 Identification of critical components.
45.17 TSO parts and TSO replacement parts.

SUBPART A -- GENERAL

§ 45.1 Applicability.

This part prescribes the requirements for --

(a) Identification of products and parts manufactured under a production approval:

(b) Identification of owner or operator produced parts manufactured under the provisions of § 21.131(d)(2) of this chapter.

(c) Identification of critical parts, as specified in § 45.14; and

(d) Nationality and registration marking of U.S. registered aircraft.

SUBPART B -- IDENTIFICATION OF PRODUCTS AND PARTS

§ 45.3 Identification responsibilities and restrictions.

(a) Products and parts produced under a production approval or by an owner/operator shall be identified in accordance with this part.

(b) Except as provided in paragraph (d) of this section, marking required by this part may only be applied by the production approval holder or the owner/operator for that product or part or the designated representative of the production approval holder or owner/operator.

(c) **No person may perform a major alteration of a product or part that is marked in accordance with this part, unless the marking is modified to reflect incorporation of such alteration.**

(d) Persons performing work under the provisions of part 43 of this chapter may, in accordance with methods, techniques, and practices acceptable to the Administrator --

(1) Remove, change, or place the identification information required by § 45.5; or

(2) Remove an identification plate required by § 45.11 when necessary during maintenance operations.

(e) No person may install an identification plate removed in accordance with paragraph (d)(2) of this section other than on the product or part from which it was removed.

§ 45.5 Identification requirements.

(a) Unless otherwise specified in this part, products, parts, and components of products and parts shall be identified, as a minimum, with the production approval holder's or builder's:

(1) Name, trademark, or symbol.

(2) Product or part identification number.

(b) Identification marks required by this section shall be permanent and legible at the time of application. Detail parts whose markings become obliterated during normal manufacturing processes need not be remarked.

(c) If the Administrator finds that a part is too small or otherwise impractical to mark with any of the information required by this part, a document attached to the part or its

container must include the information that could not be marked on the part.

(d) For the purposes of §§ 45.11, 45.13, 45.14, and 45.17, a serial number may be composed of any series of unique identifying letters, numbers or combinations of both that allow the unique identification of two like items.

§ 45.11 Type certificated products.

(a) Aircraft. (1) Aircraft covered under § 21.182 of this chapter must be identified with the information identified in § 45.5 and with a serial number. This data shall be supplied by means of a fireproof plate that has been permanently and legibly marked. The identification plate shall be placed on a noncritical surface that will not be likely to be defaced or removed during normal service, or lost or destroyed in an accident. Except as provided in paragraphs (a)(2), (a)(3), and (a)(4) of this section, the aircraft identification plate must be secured to the aircraft fuselage exterior so that it is legible to a person on the ground, and must be either adjacent to and aft of the rearmost entrance door or on the fuselage near the tail surfaces.

(2) For manned free balloons, the identification plate prescribed in paragraph (a)(1) of this section must be secured to the balloon envelope. In addition, the basket and heater

assembly must be permanently and legibly marked with the manufacturer's name, part number (or equivalent) and serial number.

(3) On aircraft manufactured before March 7, 1988, the identification plate required by paragraph (a)(1) of this section may be secured at an accessible exterior or interior location near an entrance, if the model designation and builder's serial number are also displayed on the aircraft fuselage exterior. The model designation and builder's serial number must be legible to a person on the ground and must be located either adjacent to and aft of the rear-most entrance door or on the fuselage near the tail surfaces. The numbers must be displayed in such a manner that they are not likely to be defaced or removed during normal service and maintenance.

(4) On aircraft manufactured for operation under part 121 or 127, or in commuter air carrier operation (as defined in part 135 and SFAR 38-7 of this chapter), or manufactured for export, the identification plate required by paragraph (a)(1) of this section may be secured to the aircraft at an accessible location near an exit.

(b) **Engines.** (1) Aircraft engines manufactured under a production certificate shall be identified in accordance with § 45.5, and shall include a serial number. This data shall be supplied by means of a fireproof plate that has been permanently

and legibly marked. The identification plate shall be placed on a noncritical surface that will not be likely to be defaced or removed during normal service, or lost or destroyed in an accident.

(2) In addition to the information required by paragraph (a)(1) of this section, on or after January 1, 1984, engines specified in part 34 of this chapter, shall be identified by the date of manufacture as defined in § 34.1 of this chapter, and a designation, approved by the Administrator, that indicates compliance with the applicable exhaust emission provisions of part 34 of this chapter and 40 CFR part 87.

(3) Each module of a modular engine configuration, as defined by the type design, shall be identified with information required in § 45.5 and with a serial number. This data shall be specified by means of a fireproof plate that has been permanently and legibly marked.

(c) Propellers, propeller blades, or propeller hubs. Propellers, propeller blades, or propeller hubs manufactured under a production certificate shall be identified in accordance with § 45.5 and with a serial number. The identification and serial number shall be placed on a noncritical surface that will not be likely to be defaced or removed during normal service or destroyed in an accident.

§ 45.13 Owner or operator produced parts.

Parts produced by an owner or operator shall be identified with:

(a) A part number with the prefix or suffix "OP."

(b) A date of manufacture or the serial number.

(c) A unique identification number (e.g., the number from a relevant airman certificate or operator certificate).

§ 45.14 Identification of critical components.

Parts produced under a production approval for which a replacement time, inspection interval, or related procedure is specified by the design approval holder in the Airworthiness Limitations section of a manufacturer's maintenance manual or Instructions for Continued Airworthiness shall be identified in accordance with § 45.5 and shall include a serial number. Non-life limited structural components are not subject to the requirements of this section.

§ 45.17 TSO articles and TSO replacement parts.

TSO articles shall be identified with the information required **in § 45.5**, the serial number or date of manufacture or both, **the TSO number** and letter designation, plus all markings specifically required by the applicable TSO. TSO replacement

parts shall be identified with the information required in § 45.5.

Issued in Washington, DC, on

Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, DC

TSO-C149

Date: 4/24/98

Technical Standard Order

Subject: **TSO-C149, AIRCRAFT BEARINGS**

1. PURPOSE. This technical standard order (TSO) prescribes property test requirements to obtain the minimum performance of aircraft bearings to be identified with the applicable TSO marking.

2. APPLICABILITY. The standards of this TSO apply to the types of bearings described in appendix 1, Aircraft Bearing Property Test Requirements, intended for rotation and/or oscillatory applications in the manufacture and maintenance of aircraft products. The standards of this TSO are also adaptable to manufacturer's catalog bearings and bearings of proprietary designs. This TSO shall not be used for standard parts or parts known to be used in critical applications.

3. REQUIREMENTS. Aircraft bearings that are to be identified with this TSO and that are manufactured on or after the date of this TSO must meet the minimum performance standards specified in the manufacturer's part drawing(s) and applicable part specification(s) submitted with the bearing manufacturer's application for TSO authorization.

a. Test Requirements. The required performance shall be demonstrated by accomplishing the tests specified for each property in the part drawing(s) and applicable part specification(s), in accordance with the test procedures specified in appendix 1.

b. Deviations. Alternative test procedures or analytical data that produce an equivalent level of safety may be used if specified at the time of TSO application and approved in accordance with 14 CFR §21.609.

4. MARKING.

a. In addition to the marking specified in 14 CFR §21.607(d), the bearing type, the lubrication date (if applicable), and the manufacturer's inspection lot number shall be permanently and legibly marked on each package or container.

b. Each individual bearing that is manufactured under this TSO must be permanently and legibly marked with at least the name or symbol of the manufacturer, the manufacturer's part number, and TSO number. When this is not practical, marking may be accomplished in a manner acceptable by the Administrator.

5. DATA REQUIREMENTS.

a. In accordance with 14 CFR §21.605(a) the following data must be furnished to the Aircraft Certification Office (ACO) manager having purview of the manufacturer's facility with each TSO application:

(1) Part drawing(s) and applicable specifications necessary to define the design and minimum performance for each bearing part number.

(2) Manufacturer's TSO qualification test report in accordance with the test procedures specified in appendix 1.

(3) Inspection lot number(s) of qualification parts.

b. In addition to the data required by paragraph 5.a., the following data must be available for review by the ACO manager having purview of the manufacturer's facility:

(1) Copies of all standards/specifications used in the manufacturer's application for TSO authorization.

(2) Inspection lot number and quantity for each production lot of bearings.

(3) Acceptance inspection test results for each lot of bearings.

c. Data and information that must accompany aircraft bearings manufactured under this TSO:

(1) Inspection lot number(s) and quantity of parts shipped.

(2) Date of lubrication (if applicable) or date of manufacturer.

(3) A note with the following statement: "The parts contained in this shipment have been manufactured and inspected in accordance with TSO-C149. The conditions and tests required for TSO approval of this article are minimum performance standards. Aircraft bearings approved under this TSO are not necessarily interchangeable with other aircraft bearings approved under this TSO. Bearings of similar dimensional properties may have widely varying performance properties. Substitution of bearings may only be done if approved by the Administrator."

6. INSPECTION LOT OF BEARINGS. An inspection lot consists of assembled bearings of a particular part number, assembled at the same time and processed through all final assembly operations as a single group, and subsequently submitted for final inspection at one time.

7. AVAILABILITY OF REFERENCE DOCUMENTS.

a. Military documents may be purchased from: DoDSSP, Customer Service Subscription Service Desk, 700 Robins Avenue, Building 4D, Philadelphia, PA 19111-5094.

b. American National Standards Institute/American Bearing Manufacturers Association (ANSI/ABMA) documents may be purchased from, ABMA, 1200 19th Street NW, Washington, DC 20036.

c. American Society for Testing and Materials (ASTM) documents may be purchased from: ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

d. Federal Aviation Regulations Part 21, Subpart O, may be purchased from: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325.

e. Advisory Circular 20-110 (current revision), "Index of Aviation Technical Standard Orders," may be obtained from: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

Abbas A. Rizvi
Acting Manager, Aircraft Engineering Division
Aircraft Certification Service

APPENDIX 1, AIRCRAFT BEARING PROPERTY TEST REQUIREMENTS

Table 1 - Aircraft Bearing Property Test Requirements, Rotational Motion

	Design Properties					Performance Properties	
Bearing Type	Materials	Hardness	Dimensions	Radial Internal Clearance	Radial Runout	Static Radial Load Rating	Dynamic Radial Load Rating
Ball	X	X	X	X	X	X	X
Miniature/Inst. Ball	X	X	X	X	X	X	X
Roller	X	X	X	X	X	X	X
Needle Roller	X	X	X	X	X	X	X
Applicable Documents	Drawing or Specification	ASTM E18	ANSI/ABMA, Standard 4 ANSI/ABMA, Standard 12.1 ANSI/ABMA, Standard 12.2			ANSI/ABMA, Standard 9 ANSI/ABMA, Standard 11 ANSI/ABMA, Standard 12.1 ANSI/ABMA, Standard 12.2	

Table 2 - Aircraft Bearing Property Test Requirements, Slow Rotational and Oscillatory Motion

	Design Properties							
Bearing Type	Materials	Hardness	Dimensions	Surface Treatment	Lubrication	Radial Internal Clearance	Axial Internal Clearance	**Applicable Documents**
Ball	X	X	X	X	X	X	X	MIL-B-7949
Rod ends with integral ball bearing	X	X	X	X	X	X	X	MIL-B-6039
Roller	X	X	X	X	X	X	X	MIL-B-8914
Rod ends with integral roller bearing	X	X	X	X	X	X	X	MIL-B-8952
Needle Roller	X	X	X	X	X	X	X	MIL-B-3990
Needle track rollers, Stud type	X	X	X	X	X	X	X	MIL-B-3990
Needle track rollers, yoke type	X	X	X	X	X	X	X	MIL-B-3990
Spherical plain, lubricated	X	X	X	X	X			MIL-B-8976
Rod ends with integral spherical plain bearings, lubricated	X	X	X	X	X			*MIL-B-81935 and *MIL-B-8976
Spherical plain bearings, self- lubricated	X	X	X	X				MIL-B-81820
Rod ends with integral spherical plain bearings, self-lubricated	X	X	X	X				MIL-B-81935
Journal bearings, straight and flanged, self-lubricated	X	X	X	X				MIL-B-81934

*MIL-B-81935 is applicable to testing; MIL-B-8976 is referenced for product features.

APPENDIX 1, AIRCRAFT BEARING PROPERTY TEST REQUIREMENTS (continued)

Table 2 (continued)

Bearing Type	Design Properties		Performance Properties					
	Radial Runout	Axial Runout	No-Load Breakaway Torque	Static Radial Limit Load	Static Axial Limit Load	Dynamic Radial Load Rating	Ultimate Static Radial Limit Load	Applicable Documents
Ball	X	X	X	X	X	X	X	MIL-B-7949
Rod ends with integral ball bearing	X		X	X			X	MIL-B-6039
Roller	X		X	X			X	MIL-B-8914
Rod ends with integral roller bearing	X		X	X			X	MIL-B-8952
Needle Roller				X			X	MIL-B-3990
Needle track rollers, Stud type				X			X	MIL-B-3990
Needle track rollers, yoke type				X			X	MIL-B-3990
Spherical plain, lubricated			X	X	X	X	X	MIL-B-8976
Rod ends with integral spherical plain bearings, lubricated			X	X	X	X	X	*MIL-B-81935 and *MIL-B-8976
Spherical plain bearings, self-lubricated			X	X	X	X	X	MIL-B-81820
Rod ends with integral spherical plain bearings, self-lubricated			X	X	X	X	X	MIL-B-81935
Journal bearings, straight and flanged, self-lubricated				X	X	X	X	MIL-B-81934

*MIL-B-81935 is applicable to testing; MIL-B-8976 is referenced for product features.

AIRCRAFT BEARING PROPERTY TEST REQUIREMENTS

1. BEARING PROPERTIES. Tables 1 and 2 specify bearing property test requirements for each bearing type, as defined on the manufacturers drawing(s) and/or specification(s). The specific material and specific design property values, such as, hardness or dimensions, form the basis of the bearing design; the specific values for performance properties, such as, static radial load rating or ultimate static radial load limit form the basis of the bearing "minimum performance."

2. BEARING SERIES TEST SAMPLE. A bearing series (model) of a particular design and type, with a range defined in the bearing manufacturer's application for TSO authorization, may be qualified by submitting test data for a sample that is most representative of the design encompassed by the series.

APPENDIX 1, AIRCRAFT BEARING PROPERTY TEST REQUIREMENTS (continued)

Applicable Documents. The revision of the documents (or successor documents) listed below in effect on the date of TSO application must be acceptable to the administrator and used to establish the procedures for test and evaluation of aircraft bearings, as indicated in the part drawing and procurement or product specification(s). All additional specifications governing test and evaluation of a bearing covered by this TSO must be specified at the time of application for TSO authorization.

MIL-B-3990	Military Specification, Bearings, Roller, Needle, Airframe, Anti-friction, Inch
MIL-B-6039	Military Specification, Bearing, Double Row, Ball Sealed, Rod End, Anti-friction, Self-Aligning
MIL-B-7949	Military Specification, Bearings, Ball, Airframe, Anti-friction
MIL-B-8914	Military Specification, Bearing, Roller, Self-Aligning, Airframe, Anti-friction
MIL-B-8952	Military Specification, Bearing, Roller, Rod End, Anti-friction, Self-Aligning
MIL-B-8976	Military Specification, Bearing, Plain, Self-Aligning, All-Metal
MIL-B-81820	Military Specification, Bearings, Plain, Self-Aligning, Self-Lubricating, Low Speed Oscillation, General Specification For
MIL-B-81934	Military Specification, Bearings, Plain, Sleeve, Plain and Flanged, Self-Lubricated
MIL-B-81935	Military Specification, Bearings, Plain, Rod End, Self-Aligning, Self-Lubricating, Low Speed Oscillation, General Specification For
ANSI/ABMA	Standard 4, Tolerance Definitions and Gauging Practices for Ball and Roller Bearings
ANSI/ABMA	Standard 9, Load Ratings and Fatigue Life for Ball Bearings
ANSI/ABMA	Standard 11, Load Ratings and Fatigue Life for Roller Bearings
ANSI/ABMA	Standard 12.1, Instrument Ball Bearings, Metric Design
ANSI/ABMA	Standard 12.2, Instrument Ball Bearings, Inch Design
ASTM E 18	Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, DC

TSO-C150

Date: 4/24/98

Technical Standard Order

Subject: **TSO-C150, AIRCRAFT SEALS**

1. PURPOSE. This technical standard order (TSO) prescribes property test requirements to obtain the minimum performance of aircraft seals to be identified with the applicable TSO marking.

2. APPLICABILITY. The standards of this TSO apply to the types of seals described in appendix 1, Aircraft Seal Property Test Requirements, intended for static and dynamic applications in the manufacture and maintenance of aircraft products. The standards of this TSO are also adaptable to manufacturer's catalog seals and seals of proprietary designs. This TSO shall not be used for standard parts or parts known to be used in critical applications.

3. REQUIREMENTS. Aircraft seals that are to be identified with this TSO and that are manufactured on or after the date of this TSO must meet the minimum performance standards specified in the manufacturer's part drawing(s) and applicable part specification(s) submitted with the seal manufacturer's application for TSO authorization.

a. Test Requirements. The required performance shall be demonstrated by accomplishing the tests specified for each property in the part drawing and applicable part specification(s) in accordance with the test procedures specified in appendix 1.

b. Deviations. Alternative test procedures that produce an equivalent level of safety may be used if specified at the time of TSO application and approved in accordance with 14 CFR §21.609.

4. MARKING.

a. In addition to the marking specified in 14 CFR §21.607(d), the seal type, the manufacturer's inspection lot number, and the expected shelf life shall be permanently and legibly marked on each package or container.

b. Each individual seal that is manufactured under this TSO must be permanently and legibly marked with at least the name or symbol of the manufacturer, the manufacturer's part number, and TSO number. When this is not practical, marking may be accomplished in a manner approved by the Administrator.

5. DATA REQUIREMENTS.

a. In accordance with 14 CFR §21.605 (a) the following data must be furnished to the Aircraft Certification Office (ACO) manager having purview of the manufacturer's facility with each TSO application:

(1) Part drawing and applicable specifications necessary to define the design and minimum performance for each seal part number.

(2) Manufacturer's TSO Qualification test report in accordance with the test procedures specified in appendix 1.

(3) Seal limitations.

(4) Inspection lot number(s) of qualification parts.

(5) Batch traceability number(s) of the qualification parts material.

b. In addition to the data required by paragraph 5.a., the following data must be available for review by the ACO manager having purview of the manufacturer's facility:

(1) Copies of all standards/specifications used in the manufacturer's application for TSO authorization.

(2) Inspection lot number and quantity for each production lot of seals.

(3) Batch traceability number of the material for each lot of seals.

(4) Acceptance test results for each lot of seals.

c. Data and information that must accompany aircraft seals manufactured under this TSO:

(1) Inspection lot number(s) and quantity of parts shipped.

(2) A note with the following statement: "The parts contained in this shipment have been manufactured and inspected in accordance with TSO-C150. The conditions and tests required for TSO approval of this article are minimum performance standards. Aircraft seals approved under this TSO are not necessarily interchangeable with other aircraft seals approved under this TSO. Seals of similar dimensional properties may have widely varying performance and material properties. Substitution of seals may only be done if acceptable to or approved by the Administrator."

6. INSPECTION LOT OF SEALS. An inspection lot consists of a quantity of seals with one part number produced consecutively from a single batch of material and finished in one continuous process and subsequently submitted for final inspection at one time.

7. AVAILABILITY OF REFERENCE DOCUMENTS.

a. American Society for Testing and Materials (ASTM) documents may be purchased from: ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

b. Federal Aviation Regulations Part 21, Subpart O, may be purchased from: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325.

c. Advisory Circular 20-110 (current revision), "Index of Aviation Technical Standard Orders," may be obtained from: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

Abbas A. Rizvi
Acting Manager, Aircraft Engineering Division
Aircraft Certification Service

APPENDIX 1, AIRCRAFT SEAL PROPERTY TEST REQUIREMENTS

Table 1 - Aircraft Seal Property Test Requirements

Seal Type	Design Properties		Performance Properties		
Static, Dynamic Reciprocating, or Dynamic Rotating	Material	Dimensions/ Configuration	Fluid Compatibility	Heat Resistance	Abrasion Resistance
Pneumatic	X	X		X	X
Hydraulic	X	X	X	X	
Environmental	X	X		X	
Insulating	X	X		X	X
Dampening	X	X			
Anti-Extrusion	X	X	X		X
Applicable Documents	Table 2 (below)	Seal Drawing	ASTM D471	ASTM D395, D573	ASTM D2228

Table 2 - Aircraft Seal Property Test Requirements for Materials

Material Properties	ASTM Test Method	
	Plastic	**Rubber**
Hardness	D2240 ("D" Scale)	D2240 ("A" Scale)
Specific Gravity	D792	D297
Tensile Strength at Break	D4894	D412, D1414
Ultimate Elongation	D4894, D4745	D412, D1414
Optional Testing		
Compression Set	D695	D395
Heat Resistance	D3045, D5510	D573
Fluid Compatibility	D543	D471
Water Absorption	D570	N/A
Abrasion Resistance	Determined by Manufacturer (repeatability must be demonstrated)	D2228

AIRCRAFT SEAL PROPERTY TEST REQUIREMENTS

1. SEAL PROPERTIES. Table 1 specifies seal property test requirements for each seal type, as defined on the manufacturers drawing(s) and/or specification(s). The specific material, meeting the material test property requirements of Table 2, and specific design property values for dimensions/configuration form the basis of the seal's design. The specific values for fluid compatibility, heat resistance, and abrasion resistance form the basis of the seal's "minimum performance."

2. SEAL SERIES TEST SAMPLE. A seal series (model) of a particular design and type, with a range defined in the seal manufacturer's application for TSO authorization, may be qualified by submitting test data for a sample that is most representative of the design encompassed by the series.

APPENDIX 1, AIRCRAFT SEAL PROPERTY TEST REQUIREMENTS (continued)

Applicable ASTM Test Methods. The revision of the documents (or successor documents) listed below in effect on the date of TSO application must be acceptable to the Administrator and used to establish the procedures for test and evaluation of aircraft seals as indicated in the part drawing and procurement or product specification(s). All additional specifications governing test and evaluation of a seal covered by this TSO must be specified at the time of application for TSO authorization.

D297 Test Methods for Rubber Products - Chemical Analysis

D395 Test Method for Rubber Property - Compression Set

D412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension

D471 Test Method for Rubber Property - Effect of Liquids

D543 Test Methods for Resistance of Plastics to Chemical Reagents

D570 Test Method for Water Absorption of Plastics.

D573 Test Method for Rubber - Deterioration in an Air Oven

D695 Test Method for Compressive Properties of Rigid Plastics

D792 Test Method for Specific Gravity and Density of Plastics by Displacement

D1414 Test Methods for Rubber O-Rings

D2228 Test Method for Rubber Property - Abrasion Resistance (Pico Abrader)

D2240 Test Method for Rubber Property - Durometer Hardness

D3045 Practice for Heat Aging Plastics Without Load

D4745 Specification for Filled Compounds of Polytetrafluorethylene (PTFE) Molding and Extrusion Materials

D4894 Specification for Polytetrafluorethylene (PTFE) Granular Molding and Ram Extrusion Materials

D5510 Practice for Heat Aging of Oxidatively Degradable Plastics

AIRCRAFT ELECTRONICS Office of Governmental and Industry Technical Affairs
A S S O C I A T I O N
46946 Trumpet Circle
Sterling, VA 20164
Tel: (703) 421-0762
Fax: (703) 421-0763
Pager: (800) 505-2958

FAX TRANSMITTAL

Total Pages ___4___ (Including Cover)

TO: Bill Schultz, Assistant ARAC Chair, Aircraft Certification Procedures Issues

FROM: Aircraft Electronics Association, Governmental and Industry Technical Representative

DATE: January 21, 1999

SUBJECT: Objecting to elements of "Production Certification and Parts Manufacturing" NPRM, dated November 6, 1998, and registered negative vote to adopt

On behalf of the Aircraft Electronics Association (AEA) and its member companies consisting of avionics equipment and appliance manufacturers, distributors, certificated repair stations, and Designated Alteration Stations, we register the vote of NO to adopt the NPRM for the following reasons:

1. The NPRM removes the previous privilege of thirty (30) days for production approval (TSO authorization) of applications found to meet the standards of or any authorized deviations for issuance of TSO. The previous procedures allowed a manufacturer of an appliance to obtain design and production approval providing that such technical data submitted met the requirements and that the applicant could show that a production quality control system had been established and approved by the Administrator. A TSO manufacturer's production quality control system requisite met the requirements of Subpart G - Production Certificates, and for initial issuance and provided for continuous inspections under ACSEP audits. Removal of this privilege jeopardizes a qualified manufacturer from making available to the market, satisfactorily designed and manufactured appliances. The Working Group failed to make a satisfactory technical or safety argument for making such change and also failed to observe the impact to small business in its analysis.

2. The NPRM fails to define the word "article", as used as a subordinate to "part" as observed on page 125 of the NPRM. AEA filed a "Minority Position Opposing Certain Elements" in respect to this issue. See attached memorandum letter dated October 24, 1996 to Don Van Burkleo, Chairman, that identifies in the second paragraph, such deficiency and potential consequences if not in agreement with the FAA act. Failure to define article complicates possible reciprocity in obtaining a letter of TSO design approval for foreign manufactured appliances or conveying a JTSO with foreign authorities. Such action may have consequences in import of parts or products, including appliances, into JAA operating countries, since NPA 21-7 and Subpart N of JAR 21 does not observe "articles" in its lexicon whereby an appliance is not a "part".

AIRCRAFT ELECTRONICS ASSOCIATION Office of Governmental and Industry Technical Affairs

46946 Trumpet Circle
Sterling, VA 20164
Tel: (703) 421-0762
Fax: (703) 421-0763
Pager: (800) 505-2958

TO: Don Van Burkleo, Chairman, Production Certification Working Group

FROM: Aircraft Electronics Association, Governmental and Industry Technical Representative

DATE: October 24, 1996

SUBJECT: Minority Position Opposing Certain Elements

On behalf of the Aircraft Electronics Association (AEA) and its member companies consisting of avionics equipment and appliance manufacturers, FAA certificated repair stations, and Designated Alteration Stations, we register the following formal Minority Position Opposing Certain Elements with attached comments. While AEA supports the general goals which the Production Certification Working Group is attempting to achieve, AEA will not support the effort to remove Subpart O nor any of the parts of Technical Standard Order (TSO) from 14 CFR Part 21 for reassignment within Subparts G and K (proposed F) of this chapter.

Counsel has advised the AEA that the inference of "articles" misrepresents "appliance" as defined within Part (1) of this chapter and [44102] of the recodified FAA Act, wherein stated "an(y) instrument, (mechanism), equipment, [a] part, apparatus, [an] appurtenance, or [an] accessory (used), [capable of being used, or intended to be used,] in operating or controlling an aircraft in flight, [including a parachute, communications equipment, and another mechanism] installed in or attached to (the) aircraft [during flight], and (is) not part of the [aircraft] (airframe), [aircraft] engine or propeller". (emphasis added). This is not consistent with "articles" referred to in the proposed Subpart K on Page 90 of the proposed TRG Draft, dated August 30, 1996.

Further, the omission of a means to qualify an appliance type design which is qualified under a published minimum performance standard requirement is mutually exclusive to qualifying a part, which has no minimum performance requirement or standard, other than those provided for in "standard parts". ((see §21.303(b)(4) of this chapter)). (emphasis added).

It is regrettable that the Working Group has expended effort to promote this action. While AEA is sympathetic to one Working Group member, whose company [person] was not able to protect its interest in transacting a TSO with its geographic aircraft certification office, AEA is reminded that if satisfaction is not realized or inequitable treatment is experienced, such company [person] may seek alternate aircraft certification offices within which to apply for and process its TSO.

In closing, AEA has repeatedly objected to the aforementioned actions taken by the Working Group who insisted on "leveling the playing field" without justifying their reasons for change. Failing to make the safety case alone is sufficient evidence that removal of the TSO production approval from the TSO design approval aspects is quantifiably undesirable.

I regret that I could not attend the Issues Group meeting and appreciate your registration of AEA's vote.

Thanks for your consideration and with kindest regards.

Sincerely,

Terry L. Pearsall
Government and Industry Technical Representative

The action to remove Subpart O and consolidate the tenets of processes and requirements into Subparts G and K (proposed F) seems to only divide a process of effective application and due process for applicants for TSO. TSO applicants and holders of TSO authorizations are afforded privileges and are required to self-manage and control the configuration of their design data. Such privileges and requirements, if TSO were adopted within Subpart K (proposed F), would be diminished and the burden shifted to the FAA for evaluating and analyzing TSO applicants and TSO holders design data. This would be prohibitive in view of the current FAA obligations to provide intangible services to industry.

The FAA is currently reviewing its policy for processing TSO applications. Such action will result in a change to FAA Order 8150.1A. AEA has the assignment to assist the Working Group with recommended language on the revision to Order 8150.1A, which is consistent with its goals to improve the TSO processes. Order 8150.1( ) is the mechanism to improve the TSO system and force uniform practices among the Aircraft Certification Offices in processing TSO applications and issuing TSO Authorization.

AEA requests that this Minority Position Opposing Certain Elements be entered into the preamble of the proposed notice of proposed rulemaking (NPRM) titled "TRG Draft: August 30, 1996. AEA further requests that the Aviation Rulemaking Advisory Committee, Production Certification Working Group act responsibly to revise the proposed NPRM to reestablish the TSO application and authorization processes under Subpart O.

Thank you for your attention and compliance with our requests.

Respectfully Submitted

Terry L. Pearsall
Governmental and Industry Technical Representative

cc: Mr. John Lundin, Counsel
Mr. James Lauer, Chairman, AEA
Ms. Paula Derks, President AEA
Ms. Angela Washington, FAA
File

1/20/99

Airline Suppliers Association
636 Eye Street, NW, Suite 301
Washington, DC 20001-3736
Voice: (202) 216-9140
Fax: (202) 216-9227

Info@airlinesuppliers.com

Respond to: Jason Dickstein
Direct Dial: (202) 216-9142
Jason@airlinesuppliers.com

Memorandum

To: Aviation Rulemaking Advisory Committee

From: Jason Dickstein, Airline Suppliers Association

Re: Minority Opinion to the Draft Regulations Proposed by the Parts and Production Approval Working Group: Commercial Part Definition

§ 1.1 - Commercial Part Definition

The Airline Suppliers Association (ASA) objects to the proposed definition of a "commercial part" on three grounds: the proposed definition does not have any regulatory effect, the proposed definition does not represent current industry practice, and there is no genuine safety justification for modifying the rule.

I

~~The term "commercial part" is not currently used in the existing federal aviation regulations, nor is it used in the proposed regulatory changes. Since the term is not used in the regulations, there is no need to define it.~~

II

The term in question is currently used in a colloquial fashion by the industry to describe parts that are not manufactured with the intention that they be offered for sale for installation on a type certificated product. These are parts that fall outside the scope of the current rule 14 C.F.R. § 21.303(a). People in the aviation industry generally use the term "commercial part" to mean a part that falls outside the FAA's regulatory scope - one that is not manufactured for sale for installation on a type certificated product. The proposed definition would change this usage. It would narrow the scope of this term, excluding a class of parts that fall outside of the scope of 14 C.F.R. § 21.303(a), but do not meet the

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

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

MAY 23 1997

Mr. William H. Schultz
Assistant Chair, Aviation Rulemaking
Advisory Committee
1400 K Street NW, Suite 801
Washington, DC 20005-2485

Dear Mr. Schultz:

This letter is in response to your April 30 letter forwarding the Aviation Rulemaking Advisory Committee (ARAC) recommendation regarding Technical Standard Order (TSO) C149, Aircraft Bearings, and TSO-C150, Aircraft Seals. You state that the last sentence in TSO-C149, paragraph 5(c)(6) should be deleted. You also recommend the issuance of the TSO's in a timely manner.

The recommended documents were submitted in a format suitable for processing and, therefore, will be presented to Federal Aviation Administration (FAA) management as quickly as possible. If management agrees with the recommendation, taking into consideration the minority opinion presented in your submittal, a notice of availability will be published in the Federal Register and the TSO's will subsequently be issued.

I would like to thank the aviation community for its commitment to ARAC and its expenditure of resources to develop this recommendation. We in the FAA pledge to process it expeditiously as a high-priority action.

Again, let me thank the ARAC, and in particular the Parts Working Group, for this action on the task assigned by the FAA.

Sincerely,

Guy S. Gardner
Associate Administrator for
Regulation and Certification

COPY
Action ARM

GAMA

General Aviation Manufacturers Association
1400 K Street NW, Suite 801
Washington, DC 20005-2485
(202) 393-1500 • Fax (202) 842-4063

April 30, 1997

Mr. Guy S. Gardner
Associate Administrator for
Regulation and Certification, AVR-1
Federal Aviation Administration
800 Independence Avenue, SW, Room 1000W
Washington, DC 20591

Dear Mr. Gardner:

On April 17, a vote was taken by the Aviation Rulemaking Advisory Committee (ARAC) on Aircraft Certification Procedures Issues to recommend that the Federal Aviation Administration (FAA) issue notices of availability of proposed Technical Standard Order (TSO) C149, Aircraft Bearings, and TSO-C150, Aircraft Seals, in the Federal Register with one change: **delete the last sentence in paragraph 5.c.(6) of TSO-C149**. Prior to this recommendation, concurrence was obtained from the ARAC Parts Working Group. These TSO's were developed by and have the consensus of the bearings and seals representative associations. Enclosed are copies of TSO-C149 and TSO-C150.

The vote on this matter passed with six votes in favor, two opposed and two abstentions. Transport Canada's minority opinion, copy enclosed, indicates the possible need for such specifications but it prefers it not be in the TSO format. Transport Canada does not believe a sufficient safety basis exists to warrant allocation of its surveillance resources. We also understand that few parts organizations of the type that would take advantage of the proposed TSO's exist in Canada.

The other minority opinion was voiced by the Regional Airlines Association (RAA). RAA believes the proposed documents should be harmonized with Europe. In addition, the two abstentions were from AECMA and AIRBUS. The ARAC Parts Working Group has considered the principles of harmonization in the development of these proposals and concludes the European procedure for handling this matter would not likely have much reliance on the proposed TSO's, if adopted.

The ARAC 21 Issues Area, therefore, recommends that the FAA issue the notice of availability of these proposed TSO's in the Federal Register and proceed with their issuance in a timely manner.

The ARAC on Aircraft Certification Procedures Issues will be readily available to assist in resolving any comments received.

Sincerely,

William H. Schultz
Assistant Chair, Aircraft Certification
Procedures Issues (ARAC 21)

cc: P.L. Gallimore, ARAC Parts Working Group Chairman

Enclosures

- Draft TSO C149
- Draft TSO C150
- Transport Canada Civil Aviation Minority Opinion 267-5340

MINORITY OPINION ON PROPOSED:

TSO - C149 Aircraft bearings
TSO - C150 Aircraft Seals
TSO-C148 Mechanical fasteners

Transport Canada Civil Aviation (TCCA) is objecting to the issuance of the above proposed TSOs for the following reasons:

TCCA may see a need for specifications covering the subject material but definitely not for those specifications to be TSOs. This process will convert some standard parts into aircraft parts. We have no indication of a safety issue, the present system has been working for decades and has served the industry well.

The introduction of the above TSOs will have significant implications in the design, the manufacturing and in the maintenance sectors of Canadian civil aviation.

The aircraft designers selected fasteners, bearings and seals based usually on MIL-HNDK-5 or other accepted specification and incorporated them in their designs and those designs are approved by the FAA, very similar to the Canadian approval process. Under the Canada-USA bilateral agreement, a Canadian applicant for TSO is processed by TCCA, the design review is forwarded to the FAA for final approval. With the application to the FAA, TCCA has to provide the FAA with a statement that the manufacturing of these TSO items are under the control of TCCA.

TCCA does not approve and does not plan to approve standard parts manufacturers. There is a significant resource implication with the approval of the above TSO manufacturers, as the TSO approval also include production approval.

The Canadian manufacturer approval policy is: an applicant is eligible for a manufacturing approval, if the applicant holds or has the right to use an approved design; meaning a type certificate for an aircraft, engine, propeller or an appliances; the holder of a Supplemental Type Certificate, the holder of a TSO in the C series; and the applicant has the right to use an approved design to produce replacement parts/components for sale to operators.

The Canadian manufacturing policy was developed based on the FAA export policy stated in Federal Aviation Regulation Part 21 subpart L more specifically to 21.333. It is our understanding that the approval of Class III product are controlled and approved by the FAA via the type certificate holder.

The aircraft maintenance sector will be more confused with the introduction of the above TSOs. For those people the TSO is more a production approval, there will be more confusions when purchasing approved replacement parts, when in fact these TSOs upgrade some Class III standard parts into Class II aircraft parts. Incorporating (the

proposed) TSOs in other TSOs is adding complications to a system already perceived to be too complex and misunderstood.

TCCA is a strong supporter of the concept being formalized by the ARAC Production Certification Working group, where it wants to bridge the gap between the FAR class III and the Class II parts, by creating the "Commercial parts" definition. TCCA is in the process of accepting this concept in the Canadian Aviation Regulations.

Please note that during the discussions the European representatives are not supportive of the proposed TSOs, and abstained to vote as not being the JAA official representatives, mostly because their industry is not geared that way.

Roger Menard
Chief, Standards & Procedures
Aircraft Maintenance and Manufacturing Branch
Transport Canada Civil Aviation

Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, DC

TSO-C149

Date:

Technical Standard Order

PROPOSED

Subject: **TSO-C149, AIRCRAFT BEARINGS**

1. PURPOSE. This technical standard order (TSO) prescribes the minimum performance standards that aircraft bearings must meet to be identified with the applicable TSO marking. The standards of this TSO are also adaptable to manufacturer's catalog bearings.

2. APPLICABILITY. The standards of this TSO apply to the types of bearings described in Appendix 1, Aircraft Bearing Property Test Requirements, intended for anti-friction rotation and/or oscillatory applications in the manufacture and maintenance of aircraft products.

3. REQUIREMENTS. Aircraft bearings that are to be identified with this TSO and that are manufactured on or after the date of this TSO must meet the minimum performance standards specified in the manufacturer's part drawing and applicable part specification(s) submitted with the bearing manufacturer's application for TSO authorization.

a. Test Requirements. Testing for each bearing property shall be demonstrated by accomplishing the tests specified in the part drawing and applicable part specification(s) in accordance with the test procedures specified in Appendix 1.

b. Deviations. Alternative test procedures that produce an equivalent level of safety may be used if specified at the time of TSO application and approved in accordance with 14 CFR §21.609.

4. MARKING.

a. In addition to the marking specified in 14 CFR §21.607(d), the bearing type, the lubrication date (if applicable), and the manufacturer's inspection lot number shall be marked legibly and permanently on each package and container.

b. In lieu of the marking specified in 14 CFR §21.607(d), each individual bearing or bearing package must be permanently and legibly marked with at least the name or symbol of the manufacturer, the manufacturer's part number, and TSO number.

7. AVAILABILITY OF REFERENCE DOCUMENTS.

a. Military documents may be purchased from: DoDSSP, Customer Service Subscription Service Desk, 700 Robins Avenue, Building 4D, Philadelphia, PA 19111-5094.

b. American National Standards Institute/American Bearing Manufacturers Association (ANSI/ABMA) documents may be purchased form, ABMA, 1200 19th Street NW, Washington, DC 20036.

c. American Society for Testing and Materials (ASTM) documents may be purchased from: ASTM, 100 Barr Harbor Drive, West Conshohocken PA 19428-2959.

d. Federal Aviation Regulations Part 21, Subpart O, may be purchased from: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325.

e. Advisory Circular 20-110 (current revision), "Index of Aviation Technical Standard Orders," may be obtained from: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

John K. McGrath
Manager, Aircraft Engineering Division
Aircraft Certification Service

Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, DC

Date:

Technical Standard Order

PROPOSED

Subject: **TSO-C150, AIRCRAFT SEALS**

1. PURPOSE. This technical standard order (TSO) prescribes the minimum performance standards that aircraft seals must meet to be identified with the applicable TSO marking. The standards of this TSO are also adaptable to standard manufacturer's catalog seals.

2. APPLICABILITY. The standards of this TSO apply to the types of seals described in Appendix 1, Aircraft Seal Property Test Requirements, intended for static and dynamic applications in the manufacture and maintenance of aircraft products.

3. REQUIREMENTS. Aircraft seals that are to be identified with this TSO and that are manufactured on or after the date of this TSO must meet the minimum performance standards specified in the manufacturer's part drawing and applicable part specification(s) submitted with the seal manufacturer's application for TSO authorization.

a. **Test Requirements.** Testing for each seal and material property shall be demonstrated by accomplishing the tests specified in the part drawing and applicable part specification(s) in accordance with the test procedures specified in Appendix 1.

b. **Deviations.** Alternative test procedures that produce an equivalent level of safety may be used if specified at the time of TSO application and approved in accordance with 14 CFR §21.609.

4. MARKING.

a. In addition to the marking specified in 14 CFR §21.607(d), the seal type, the manufacturer's inspection lot number, and the expected shelf life shall be marked legibly and permanently on each package and container.

b. In lieu of the marking specified in 14 CFR §21.607(d), each individual seal or seal package must be permanently and legibly marked with at least the name or symbol of the manufacturer, the manufacturer's part number, and TSO number.

5. DATA REQUIREMENTS.

a. In accordance with 14 CFR §21.605 (a) data that must be furnished to the ACO manager having purview of the manufacturer's facility with each TSO application.

(1) Drawings and specifications necessary to define the seal design.

(2) Seal limitations.

(3) Manufacturer's TSO Qualification test report.

(4) Lot number(s) of qualification parts.

(5) Batch traceability number(s) of materials for each finished part or component of the qualification lot(s).

(6) Material composition of qualification parts.

b. Additional data that must be available for review by the ACO manager having purview of the manufacturer's facility.

(1) Manufacturing processes and specifications.

(2) Test report(s) showing compliance with this TSO.

(3) Copies of all standards/specifications used in the manufacturer's application for TSO authorization.

c. Data and information that must accompany aircraft seals manufactured under this TSO.

(1) Manufacturer's part-number.

(2) Lot number(s) and quantity of parts shipped.

(3) Batch traceability number for each lot of seals.

(4) Acceptance test results for each lot of seals.

(5) A note with the following statement: "The parts contained in this shipment have been manufactured and inspected in accordance ... C150. The conditions and tests required for TSO approval of this article are minimum performance standards. Aircraft seals approved under this TSO are not necessarily interchangeable with other aircraft seals approved under this TSO. Substitution of seals may only be done if acceptable to or approved by the Administrator".

6. INSPECTION LOT OF SEALS. An inspection lot consists of a quantity of seals with one part number produced consecutively from a single batch of material and finished in one continuous process and subsequently submitted for final inspection at one time.

7. AVAILABILITY OF REFERENCE DOCUMENTS.

a. American Society for Testing and Materials (ASTM) documents may be purchased from: ASTM, 100 Barr Harbor Drive, West Conshohocken PA 19428-2959.

b. Federal Aviation Regulations Part 21, Subpart O, may be purchased from: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325.

c. Advisory Circular 20-110 (current revision), "Index of Aviation Technical Standard Orders," may be obtained from: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

John K. McGrath
Manager, Aircraft Engineering Division
Aircraft Certification Service

APPENDIX 1: Aircraft Seal Property Test Requirements

Table 1 - Aircraft Seal Property Test Requirements

Seal Type	Properties				
Static, Dynamic Reciprocating, or Dynamic Rotating	Material	Dimensions/ Configuration	Fluid Compatibility	Heat Resistance	Abrasion Resistance
Pneumatic	X	X		X	X
Hydraulic	X	X	X	X	
Environmental	X	X		X	
Insulating	X	X		X	X
Dampening	X	X			
Anti-Extrusion	X	X	X		X
Applicable Documents	Table 2 (below)	Seal Drawing	ASTM D471	ASTM D395, D573	ASTM D2228

Table 2 - Aircraft Seal Property Test Requirements for Materials

Properties	ASTM Test Method	
	Plastic	**Rubber**
Hardness	D2240 ("D" Scale)	D2240 ("A" Scale)
Specific Gravity	D792	D297
Tensile Strength at Break	D4894	D412, D1414
Ultimate Elongation	D4894, D4745	D412, D1414
Optional Testing		
Compression Set	D695	D395
Heat Resistance	D3045, D5510	D573
Fluid Compatibility	D543	D471
Water Absorption	D570	N/A
Abrasion Resistance	Determined by Manufacturer (repeatability must be demonstrated)	D2228

These tables define seal and seal material property test requirements for each seal type. Seal performance data for each type seal, based on the property test requirements, must be included with the applicable seal drawing(s) and/or specification(s). The properties necessary to define performance may vary depending on the specific seal function.

APPENDIX 1: Aircraft Bearing Property Test Requirements

Table 2 - continued

Bearing Type	Properties							
	Radial Runout	Axial Runout	No-Load Breakaway Torque	Permissible Static Radial Load Limit	Permissible Static Axial Load Limit	Permissible Dynamic Radial Load Limit	Ultimate Static Radial Load Limit	Applicable Documents
Ball	X	X	X	X	X	X	X	MIL-B- 7949
Rod ends with integral ball	X		X	X			X	MIL-B-6039
Roller	X		X	X			X	MIL-B--8914
Rod ends wirh integral roller	X		X	X			X	MIL-B-8952
Needle Roller				X			X	MIL-B-3990
Needle track rollers, Stud type				X			X	MIL-B-3990
Needle track rollers, yoke type				X			X	MIL-B-3990
Spherical plain, lubricated			X	X	X	X	X	MIL-B-8976
Rod ends with integral spherical plain bearings, lubricated			X	X	X	X	X	MIL-B-81935
Spherical plain bearings, self-lubricated			X	X	X	X	X	MIL-B-81820
Rod ends with integral spherical plain bearings, self-lubricated			X	X	X	X	X	MIL-B-81935
Journal bearings, straight and flanged, self-lubricated			X	X	X	X	X	MIL-B-81934

These tables define bearing property test requirements for each bearing type. Bearing performance data for each bearing type, based on the property test requirements, must be included with the applicable bearing drawing(s) and/or specification(s). The properties necessary to define performance may vary depending on the specific bearing function.

Note: A bearing series of a particular design and type may be qualified by using a test bearing(s) that is approximately in the center range of sizes encompassed by the series.

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

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

NOV 21 1996

Mr. William H. Schultz
Assistant Chair, Aviation Rulemaking
Advisory Committee
1400 K Street NW, Suite 801
Washington, DC 20005-2485

Dear Mr. Schultz:

This letter is in response to your November 6 letter forwarding the Aviation Rulemaking Advisory Committee (ARAC) recommendation regarding Technical Standard Order (TSO) C148, Aircraft Mechanical Fasteners.

The recommendation was submitted in a format suitable for processing and, therefore, will be presented to the Federal Aviation Administration (FAA) management as quickly as possible. If management agrees with the recommendation, a notice of availability will be published in the Federal Register and the TSO will subsequently be issued.

I would like to thank the aviation community for its commitment to ARAC and its expenditure of resources to develop this recommendation. We in the FAA pledge to process it expeditiously as a high-priority action.

Again, let me thank the ARAC, and in particular the Parts Working Group, for this action on the task assigned by the FAA.

Sincerely,

Guy S. Gardner
Associate Administrator for
Regulation and Certification

Action: ARM

GAMA

General Aviation
Manufacturers Association
1400 K Street NW, Suite 801
Washington, DC 20005-2485
(202) 393-1500 • Fax (202) 842-4063

November 6, 1996

Mr. Guy S, Gardner
Associate Administrator for
Regulation and Certification, AVR-1
Federal Aviation Administration
800 Independence Avenue, SW., Room 1000W
Washington DC 20591

Dear Mr. Gardener:

On October 24 a vote was taken by the Aviation Rulemaking Advisory Committee on Aircraft Certification Procedures Issues to recommend that the Federal Aviation Administration (FAA) issue a notice of availability of proposed Technical Standard Order (TSO) C148, Aircraft Mechanical Fasteners in the Federal Register. Prior to this recommendation, concurrence was obtained from the ARAC Parts Working Group. The TSO was developed by and has the consensus of the fasteners industry and their association, the Industrial Fasteners Institute.

I ask that the FAA issue the notice of availability of proposed TSO-C148 in the Federal Register and proceed with its issuance in a timely manner. The ARAC on Aircraft Certification Procedures Issues will be readily available to assist on resolving any comments received. The most current copy of this document may be obtained from your Aircraft Engineering Division, AIR-100.

Sincerely.

W. H. Schultz

William H. Schultz
Assistant Chair, Aircraft Certification
Procedures Issues (ARAC 21)

cc: P.L. Gallimore

Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, DC

TSO-C148

Date:

Technical Standard Order

PROPOSED

Subject: **TSO-C148, AIRCRAFT MECHANICAL FASTENERS**

1. APPLICABILITY.

a. **Minimum Performance Standard**. Aircraft mechanical fasteners that are to be identified with this TSO and that are manufactured on or after the date of this TSO must meet the minimum performance standards specified in the manufacturer's part drawing and/or part specification submitted with the fastener manufacturer's application for TSO authorization.

b. **Test Requirements**. The required performance shall be demonstrated by accomplishing the tests specified for each property in the part drawing and/or part specification in accordance with the test procedures specified in Appendix 1. Properties important to the performance of the fastener vary depending on the function of the specific fastener.

c. **Functionality**. Principal product families which describe the mechanical fasteners included under this TSO include, but are not limited to, bolts, nuts, rivets, screws, pins, washers, inserts, and collars used in tension and or shear applications in the manufacture and maintenance of aircraft, aircraft engines, and propellers.

d. **Deviations.** Alternate test procedures which produce an equivalent level of safety may be used if specified at the time of TSO application in accordance with 14 CFR 21.609.

2. MARKING.

a. In addition to the marking specified in 14 CFR 21.607(d), the fastener type and the manufacturer's inspection lot number shall be marked legibly and permanently on each package and container.

b. Individual parts must be permanently and legibly marked with at least the manufacturer's part number (or identification as defined on part drawing), and symbol, where practicable.

3. DATA REQUIREMENTS.

a. **In accordance with 14 CFR 21.605 (a) data that must be furnished to the ACO manager having purview of the manufacture's facilities with each TSO application.**

(1) Fastener drawing.

(2) Fastener specification(s) providing performance requirements and limitations.

(3) Manufacturer's TSO Qualification test report.

(a) Lot number(s) of qualification parts.

(b) Raw material heat number or certification number for each finished part or component of the qualification lot(s).

(c) Material composition of qualification parts.

(d) Test results showing compliance with this TSO.

b. **Data that must be available for review by the ACO manager having purview of the manufacturer's facilities.**

(1) Drawings, specifications, and processes necessary to define the fasteners design.

(2) Manufacturing specifications.

(3) Test reports showing compliance with this TSO.

(4) Copies of all documents used in the manufacturer's application for TSO authorization.

c. **Data and information that must accompany aircraft fasteners manufactured under this TSO.**

(1) Manufacturer's part-number.

(2) Lot number(s) and quantity of parts shipped.

(3) Raw material heat (lot) or certification number for each lot of fasteners.

(4) Acceptance test results for each lot of fasteners.

(5) A note with the following statement: "The parts contained in this shipment have been manufactured and inspected in accordance with TSO-C148. The conditions and tests required for TSO approval of this article are minimum performance standards. Aircraft fasteners approved under this TSO are not necessarily interchangeable with other aircraft fasteners approved under this TSO. Substitution of parts may only be done in accordance with a procedure approved by the Administrator".

4. DEFINITIONS.

a. **Fastener Manufacturer**. The organization or firm which meets the requirements specified in 14 CFR 21.21.605(a)(3). and procures a raw material, fabricates it into a mechanical fastener, and then processes it to have certain mechanical properties.

b. **Inspection Lot of Fasteners**. An inspection lot consists of a quantity of product of one part number produced consecutively from a single mill heat of material, heat treated and finished in one continuous process or single batch, and subsequently submitted for final inspection at one time.

5. AVAILABILITY OF REFERENCE DOCUMENTS

a. Copies of the following reference materials may be purchased from the sources listed below:

(1) American Society for Testing and Materials (ASTM) documents from: ASTM, 916 Race Street, Philadelphia, PA 19103-1187.

(2) Military documents from: DoDSSP, Customer Service Subscription Service Desk, 700 Robins Avenue, Building 4D, Philadelphia, PA 19111-5094.

b. Federal Aviation Regulations Part 21, Subpart O, may be purchased from: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325. Advisory Circular 20-110 (current revision), "Index of Aviation Technical Standard Orders," may be obtained from: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

John K. McGrath
Manager, Aircraft Engineering Division
Aircraft Certification Service

APPENDIX 1
AIRCRAFT MECHANICAL FASTENER TEST REQUIREMENTS

	Property Requirements *									
Fastener Type	Material	Dimen-sions	Heat Treat	Tensile	Shear	Torque	Fatigue	Preload	Metal-lurgy	Discon-tinuities
Bolts, Screws, Studs	X	X	X	X	X		X		X	X
Structural Nuts	X	X	X	X		X			X	X
Skin Fasteners, Threaded	X	X	X		X		X		X	X
Collars	X	X	X	X		X		X	X	X
Inserts and Washers	X	X	X					X	X	X
Skin Fasteners, Unthreaded	X	X	X	X	X		X	X	X	X
Rivets, Pins	X	X	X		X				X	X
Blind Fasteners	X	X	X	X	X				X	X
Captive Screws & Panel Fasteners	X	X	X	X	X				X	X
Sandwich Panel Fasteners, Threaded	X	X	X	X		X			X	X
Sandwich Panel Fasteners, Unthreaded	X	X	X						X	X
Applicable Documents	per Part Drawing	per Part Drawing	MIL-H-6088 MIL-H-6875 MIL-H-81200	MIL-STD-1312	MIL-STD-1312	MIL-STD-1312	MIL-STD-1312	MIL-STD-1312	ASTM E 3 ASTM E 140	ASTM E 1417 ASTM E 1444

* This table defines fastener characteristics important to a particular fastener type. Actual fastener performance data for each type fastener covered under this TSO must be included in the TSO application. Detailed requirements on fastener performance characteristics can be found on the applicable product drawing and/or specification.

Applicable Documents. The latest revision of the documents listed below establish the procedures for test and evaluation of aircraft fasteners as indicated in the part drawing and procurement or product specification. Additional specifications governing test and evaluation of a fastener covered by this TSO must be specified at the time of application for TSO authorization.

ASTM E 3	Preparation of Metallographic Specimens
ASTM E 140	Standard Hardness Conversion Tables for Metals
ASTM E 1417	Standard Practice for Liquid Penetrant Examination
ASTM E 1444	Standard Practice for Magnetic Particle Examination
MIL-H-6088	Heat Treatment, Aluminum Alloys
MIL-H-6875	Heat Treatment of Steel, Process for
MIL-H-81200	Heat Treatment of Titanium and Titanium Alloys, Process for
MIL-STD-1312	Fastener Test Methods

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Technical Standard Orders: Aircraft Bearings

AGENCY: Federal Aviation Administration.

ACTION: Notice of availability for public comment.

SUMMARY: This notice announces the availability of and requests comments on a proposed Technical Standard Order (TSO) pertaining to aircraft bearings. The proposed TSO prescribes the regulatory performance standards that manufacturer-specified parts and appliances must meet to be identified with the marking "TSO–C149."

DATES: Comments must identify the TSO file number and be received on or before January 5, 1998.

ADDRESSES: Send all comments on the proposed technical standard order to: Technical Programs and Continued Airworthiness Branch, AIR–120, Aircraft Engineering Division, Aircraft Certification Service—File No. TSO–C149, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591. Or deliver comments to: Federal Aviation Administration, Room 815, 800 Independence Avenue, SW., Washington, DC 20591.

FOR FURTHER INFORMATION CONTACT: Ms. Bobbie J. Smith, Technical Programs and Continued Airworthiness Branch, AIR–120, Aircraft Engineering Division, Aircraft Certification Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, FAX No. (202) 267–5340.

Comments Invited

Interested persons are invited to comment on the proposed TSO listed in this notice by submitting such written data, views, or arguments as they desire to the above specified address. Comments received on the proposed technical standard order may be examined, before and after the comment closing date, in Room 815, FAA Headquarters Building (FOB–10A), 800 Independence Avenue, SW., Washington, DC 20591, weekdays except Federal holidays, between 8:30 a.m. and 4:30 p.m. All communications received on or before the closing date for comments specified above will be considered by the Director of the Aircraft Certification Service before issuing the final TSO.

Background

The FAA established the Aviation Rulemaking Advisory Committee (ARAC) in January 1991 to provide an ongoing mechanism to accept recommendations from the aviation industry in the regulatory process (56 FR 2190; January 22, 1991; and 58 FR 9230; February 19, 1993). In March 1993, the FAA established the Parts Working Group as part of ARAC (58 FR 16572; March 29, 1993). The Parts Working Group was tasked with recommending to ARAC new regulations and guidance material, as appropriate, pertaining to the issuance and administration of approvals of replacement and modification parts for civil aircraft. The proposed TSO in this notice is based on a draft proposed TSO developed by the Parts Working Group and recommended to the FAA by the ARAC.

The standards or proposed TSO–C149 apply to aircraft bearings intended for anti-friction rotation and/or oscillatory applications in the manufacture and maintenance of aircraft products. Proposed TSO–C149 provides alternative requirements for making each individual bearing. Each bearing must be marked with at least the name or symbol of the manufacturer, the manufacturer's part number, and the TSO number. When this is not practical, marking may be accomplished in a manner approved by the Administrator. Also, in addition to the marking specified in 14 CFR 607(d), the seal type, the lubrication date (if applicable), and the manufacturer's inspection lot number shall be marked on each package and container.

How to Obtain Copies

A copy of the proposed TSO–C149 may be obtained via Internet (http://www.faa.gov/avr/air/100home.htm) or on request from the office listed under **FOR FURTHER INFORMATION CONTACT.**

Issued in Washington, DC, on October 27, 1997.

Abbas A. Rizvi,

Acting Manager, Aircraft Engineering Division, Aircraft Certification Service.

[FR Doc. 97–29351 Filed 11–5–97; 8:45 am]

BILLING CODE 4910–13–M

Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, DC

TSO-C149

Date: 4/24/98

Technical Standard Order

Subject: **TSO-C149, AIRCRAFT BEARINGS**

1. PURPOSE. This technical standard order (TSO) prescribes property test requirements to obtain the minimum performance of aircraft bearings to be identified with the applicable TSO marking.

2. APPLICABILITY. The standards of this TSO apply to the types of bearings described in appendix 1, Aircraft Bearing Property Test Requirements, intended for rotation and/or oscillatory applications in the manufacture and maintenance of aircraft products. The standards of this TSO are also adaptable to manufacturer's catalog bearings and bearings of proprietary designs. This TSO shall not be used for standard parts or parts known to be used in critical applications.

3. REQUIREMENTS. Aircraft bearings that are to be identified with this TSO and that are manufactured on or after the date of this TSO must meet the minimum performance standards specified in the manufacturer's part drawing(s) and applicable part specification(s) submitted with the bearing manufacturer's application for TSO authorization.

a. Test Requirements. The required performance shall be demonstrated by accomplishing the tests specified for each property in the part drawing(s) and applicable part specification(s), in accordance with the test procedures specified in appendix 1.

b. Deviations. Alternative test procedures or analytical data that produce an equivalent level of safety may be used if specified at the time of TSO application and approved in accordance with 14 CFR §21.609.

4. MARKING.

a. In addition to the marking specified in 14 CFR §21.607(d), the bearing type, the lubrication date (if applicable), and the manufacturer's inspection lot number shall be permanently and legibly marked on each package or container.

b. Each individual bearing that is manufactured under this TSO must be permanently and legibly marked with at least the name or symbol of the manufacturer, the manufacturer's part number, and TSO number. When this is not practical, marking may be accomplished in a manner acceptable by the Administrator.

5. DATA REQUIREMENTS.

a. In accordance with 14 CFR §21.605(a) the following data must be furnished to the Aircraft Certification Office (ACO) manager having purview of the manufacturer's facility with each TSO application:

(1) Part drawing(s) and applicable specifications necessary to define the design and minimum performance for each bearing part number.

(2) Manufacturer's TSO qualification test report in accordance with the test procedures specified in appendix 1.

(3) Inspection lot number(s) of qualification parts.

b. In addition to the data required by paragraph 5.a., the following data must be available for review by the ACO manager having purview of the manufacturer's facility:

(1) Copies of all standards/specifications used in the manufacturer's application for TSO authorization.

(2) Inspection lot number and quantity for each production lot of bearings.

(3) Acceptance inspection test results for each lot of bearings.

c. Data and information that must accompany aircraft bearings manufactured under this TSO:

(1) Inspection lot number(s) and quantity of parts shipped.

(2) Date of lubrication (if applicable) or date of manufacturer.

(3) A note with the following statement: "The parts contained in this shipment have been manufactured and inspected in accordance with TSO-C149. The conditions and tests required for TSO approval of this article are minimum performance standards. Aircraft bearings approved under this TSO are not necessarily interchangeable with other aircraft bearings approved under this TSO. Bearings of similar dimensional properties may have widely varying performance properties. Substitution of bearings may only be done if approved by the Administrator."

6. INSPECTION LOT OF BEARINGS. An inspection lot consists of assembled bearings of a particular part number, assembled at the same time and processed through all final assembly operations as a single group, and subsequently submitted for final inspection at one time.

7. AVAILABILITY OF REFERENCE DOCUMENTS.

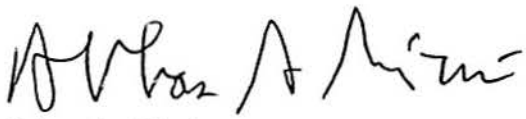
a. Military documents may be purchased from: DoDSSP, Customer Service Subscription Service Desk, 700 Robins Avenue, Building 4D, Philadelphia, PA 19111-5094.

b. American National Standards Institute/American Bearing Manufacturers Association (ANSI/ABMA) documents may be purchased from, ABMA, 1200 19th Street NW, Washington, DC 20036.

c. American Society for Testing and Materials (ASTM) documents may be purchased from: ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

d. Federal Aviation Regulations Part 21, Subpart O, may be purchased from: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325.

e. Advisory Circular 20-110 (current revision), "Index of Aviation Technical Standard Orders," may be obtained from: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.



Abbas A. Rizvi
Acting Manager, Aircraft Engineering Division
Aircraft Certification Service

APPENDIX 1, AIRCRAFT BEARING PROPERTY TEST REQUIREMENTS

Table 1 - Aircraft Bearing Property Test Requirements, Rotational Motion

	Design Properties					Performance Properties	
Bearing Type	Materials	Hardness	Dimensions	Radial Internal Clearance	Radial Runout	Static Radial Load Rating	Dynamic Radial Load Rating
Ball	X	X	X	X	X	X	X
Miniature/Inst. Ball	X	X	X	X	X	X	X
Roller	X	X	X	X	X	X	X
Needle Roller	X	X	X	X	X	X	X
Applicable Documents	Drawing or Specification	ASTM E18	ANSI/ABMA, Standard 4 ANSI/ABMA, Standard 12.1 ANSI/ABMA, Standard 12.2			ANSI/ABMA, Standard 9 ANSI/ABMA, Standard 11 ANSI/ABMA, Standard 12.1 ANSI/ABMA, Standard 12.2	

Table 2 - Aircraft Bearing Property Test Requirements, Slow Rotational and Oscillatory Motion

	Design Properties							
Bearing Type	Materials	Hardness	Dimensions	Surface Treatment	Lubrication	Radial Internal Clearance	Axial Internal Clearance	**Applicable Documents**
Ball	X	X	X	X	X	X	X	MIL-B-7949
Rod ends with integral ball bearing	X	X	X	X	X	X	X	MIL-B-6039
Roller	X	X	X	X	X	X	X	MIL-B-8914
Rod ends with integral roller bearing	X	X	X	X	X	X	X	MIL-B-8952
Needle Roller	X	X	X	X	X	X	X	MIL-B-3990
Needle track rollers, Stud type	X	X	X	X	X	X	X	MIL-B-3990
Needle track rollers, yoke type	X	X	X	X	X	X	X	MIL-B-3990
Spherical plain, lubricated	X	X	X	X	X			MIL-B-8976
Rod ends with integral spherical plain bearings, lubricated	X	X	X	X	X			*MIL-B-81935 and *MIL-B-8976
Spherical plain bearings, self- lubricated	X	X	X	X				MIL-B-81820
Rod ends with integral spherical plain bearings, self-lubricated	X	X	X	X				MIL-B-81935
Journal bearings, straight and flanged, self-lubricated	X	X	X	X				MIL-B-81934

*MIL-B-81935 is applicable to testing; MIL-B-8976 is referenced for product features.

APPENDIX 1, AIRCRAFT BEARING PROPERTY TEST REQUIREMENTS (continued)

Table 2 (continued)

	Design Properties		Performance Properties					
Bearing Type	Radial Runout	Axial Runout	No-Load Breakaway Torque	Static Radial Limit Load	Static Axial Limit Load	Dynamic Radial Load Rating	Ultimate Static Radial Limit Load	**Applicable Documents**
Ball	X	X	X	X	X	X	X	MIL-B-7949
Rod ends with integral ball bearing	X		X	X			X	MIL-B-6039
Roller	X		X	X			X	MIL-B-8914
Rod ends with integral roller bearing	X		X	X			X	MIL-B-8952
Needle Roller				X			X	MIL-B-3990
Needle track rollers, Stud type				X			X	MIL-B-3990
Needle track rollers, yoke type				X			X	MIL-B-3990
Spherical plain, lubricated			X	X	X	X	X	MIL-B-8976
Rod ends with integral spherical plain bearings, lubricated			X	X	X	X	X	*MIL-B-81935 and *MIL-B-8976
Spherical plain bearings, self-lubricated			X	X	X	X	X	MIL-B-81820
Rod ends with integral spherical plain bearings, self-lubricated			X	X	X	X	X	MIL-B-81935
Journal bearings, straight and flanged, self-lubricated				X	X	X	X	MIL-B-81934

*MIL-B-81935 is applicable to testing; MIL-B-8976 is referenced for product features.

AIRCRAFT BEARING PROPERTY TEST REQUIREMENTS

1. BEARING PROPERTIES. Tables 1 and 2 specify bearing property test requirements for each bearing type, as defined on the manufacturers drawing(s) and/or specification(s). The specific material and specific design property values, such as, hardness or dimensions, form the basis of the bearing design; the specific values for performance properties, such as, static radial load rating or ultimate static radial load limit form the basis of the bearing "minimum performance."

2. BEARING SERIES TEST SAMPLE. A bearing series (model) of a particular design and type, with a range defined in the bearing manufacturer's application for TSO authorization, may be qualified by submitting test data for a sample that is most representative of the design encompassed by the series.

APPENDIX 1, AIRCRAFT BEARING PROPERTY TEST REQUIREMENTS (continued)

Applicable Documents. The revision of the documents (or successor documents) listed below in effect on the date of TSO application must be acceptable to the administrator and used to establish the procedures for test and evaluation of aircraft bearings, as indicated in the part drawing and procurement or product specification(s). All additional specifications governing test and evaluation of a bearing covered by this TSO must be specified at the time of application for TSO authorization.

MIL-B-3990	Military Specification, Bearings, Roller, Needle, Airframe, Anti-friction, Inch
MIL-B-6039	Military Specification, Bearing, Double Row, Ball Sealed, Rod End, Anti-friction, Self-Aligning
MIL-B-7949	Military Specification, Bearings, Ball, Airframe, Anti-friction
MIL-B-8914	Military Specification, Bearing, Roller, Self-Aligning, Airframe, Anti-friction
MIL-B-8952	Military Specification, Bearing, Roller, Rod End, Anti-friction, Self-Aligning
MIL-B-8976	Military Specification, Bearing, Plain, Self-Aligning, All-Metal
MIL-B-81820	Military Specification, Bearings, Plain, Self-Aligning, Self-Lubricating, Low Speed Oscillation, General Specification For
MIL-B-81934	Military Specification, Bearings, Plain, Sleeve, Plain and Flanged, Self-Lubricated
MIL-B-81935	Military Specification, Bearings, Plain, Rod End, Self-Aligning, Self-Lubricating, Low Speed Oscillation, General Specification For
ANSI/ABMA	Standard 4, Tolerance Definitions and Gauging Practices for Ball and Roller Bearings
ANSI/ABMA	Standard 9, Load Ratings and Fatigue Life for Ball Bearings
ANSI/ABMA	Standard 11, Load Ratings and Fatigue Life for Roller Bearings
ANSI/ABMA	Standard 12.1, Instrument Ball Bearings, Metric Design
ANSI/ABMA	Standard 12.2, Instrument Ball Bearings, Inch Design
ASTM E 18	Standard Test Methods for Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Technical Standard Orders: Aircraft Seals

AGENCY: Federal Aviation Administration.

ACTION: Notice of availability for public comment.

SUMMARY: This notice announces the availability of and requests comments on a proposed Technical Standard Order (TSO) pertaining to aircraft seals. The proposed TSO prescribes the regulatory performance standards that manufacturer-specified parts and appliances must meet to be identified with the marking "TSO–C150."

DATES: Comments must identify the TSO file number and be received on or before January 5, 1998.

ADDRESSES: Send all comments on the proposed technical standard order to: Technical Programs and Continued Airworthiness Branch, AIR–120, Aircraft Engineering Division, Aircraft Certification Service—File No. TSO–C150, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591. Or deliver comments to: Federal Aviation Administration, Room 815, 800 Independence Avenue, SW., Washington, DC 20591.

FOR FURTHER INFORMATION CONTACT: Ms. Bobbie J. Smith, Technical Programs and Continued Airworthiness Branch, AIR–120, Aircraft Engineering Division, Aircraft Certification Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, FAX No. (202) 267–5340.

Comments Invited

Interested persons are invited to comment on the proposed TSO listed in this notice by submitting such written data, views, or arguments as they desire to the above specified address. Comments received on the proposed technical standard order may be examined, before and after the comment closing date, in Room 815, FAA Headquarters Building (FOB–10A), 800 Independence Avenue, SW., Washington, DC 20591, weekdays except Federal holidays, between 8:30 a.m. and 4:30 p.m. All communications received on or before the closing date for comments specified above will be considered by the Director of the Aircraft Certification Service before issuing the final TSO.

Background

The FAA established the Aviation Rulemaking Advisory Committee (ARAC) in January 1991 to provide an ongoing mechanism to accept recommendations from the aviation industry in the regulatory process (56 FR 2190; January 22, 1991; and 58 FR 9230; February 19, 1993). In March 1993, the FAA established the Parts Working Group as part of ARAC (58 FR 16572; March 29, 1993). The Parts Working Group was tasked with recommending to ARAC new regulations and guidance material, as appropriate, pertaining to the issuance and administration of approvals of replacement and modification parts for civil aircraft. The proposed TSO in this notice is based on a draft proposed TSO developed by the Parts Working Group and recommended to the FAA by the ARAC.

The standards of proposed TSO–C150 apply to aircraft seals intended for static and dynamic applications in the manufacture and maintenance of aircraft products. Proposed TSO–C150 provides alternative requirements for marking each individual seal. Each seal must be marked with at least the name or symbol of the manufacturer, the manufacturer's part number, and the TSO number. When this is not practical, marking may be accomplished in a manner approved by the Administrator. Also, in addition to the marking specified in 14 CFR 607(d), the seal type, the manufacturer's inspection lot number, and the expected shelf life shall be marked on each package and container.

How To Obtain Copies

A copy of the proposed TSO–C150 may be obtained via Internet (http:/www.faa.gov/avr/air/100home.htm) or on request from the office listed under **FOR FURTHER INFORMATION CONTACT.**

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

Brain A. Yanez,

Acting Manager, Aircraft Engineering Division, Aircraft Certification Service.

[FR Doc. 97–29352 Filed 11–5–97; 8:45 am]

BILLING CODE 4910–13–M

Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, DC

TSO-C150

Date: 4/24/98

Technical Standard Order

Subject: **TSO-C150, AIRCRAFT SEALS**

1. PURPOSE. This technical standard order (TSO) prescribes property test requirements to obtain the minimum performance of aircraft seals to be identified with the applicable TSO marking.

2. APPLICABILITY. The standards of this TSO apply to the types of seals described in appendix 1, Aircraft Seal Property Test Requirements, intended for static and dynamic applications in the manufacture and maintenance of aircraft products. The standards of this TSO are also adaptable to manufacturer's catalog seals and seals of proprietary designs. This TSO shall not be used for standard parts or parts known to be used in critical applications.

3. REQUIREMENTS. Aircraft seals that are to be identified with this TSO and that are manufactured on or after the date of this TSO must meet the minimum performance standards specified in the manufacturer's part drawing(s) and applicable part specification(s) submitted with the seal manufacturer's application for TSO authorization.

a. Test Requirements. The required performance shall be demonstrated by accomplishing the tests specified for each property in the part drawing and applicable part specification(s) in accordance with the test procedures specified in appendix 1.

b. Deviations. Alternative test procedures that produce an equivalent level of safety may be used if specified at the time of TSO application and approved in accordance with 14 CFR §21.609.

4. MARKING.

a. In addition to the marking specified in 14 CFR §21.607(d), the seal type, the manufacturer's inspection lot number, and the expected shelf life shall be permanently and legibly marked on each package or container.

b. Each individual seal that is manufactured under this TSO must be permanently and legibly marked with at least the name or symbol of the manufacturer, the manufacturer's part number, and TSO number. When this is not practical, marking may be accomplished in a manner approved by the Administrator.

5. DATA REQUIREMENTS.

a. In accordance with 14 CFR §21.605 (a) the following data must be furnished to the Aircraft Certification Office (ACO) manager having purview of the manufacturer's facility with each TSO application:

(1) Part drawing and applicable specifications necessary to define the design and minimum performance for each seal part number.

(2) Manufacturer's TSO Qualification test report in accordance with the test procedures specified in appendix 1.

(3) Seal limitations.

(4) Inspection lot number(s) of qualification parts.

(5) Batch traceability number(s) of the qualification parts material.

b. In addition to the data required by paragraph 5.a., the following data must be available for review by the ACO manager having purview of the manufacturer's facility:

(1) Copies of all standards/specifications used in the manufacturer's application for TSO authorization.

(2) Inspection lot number and quantity for each production lot of seals.

(3) Batch traceability number of the material for each lot of seals.

(4) Acceptance test results for each lot of seals.

c. Data and information that must accompany aircraft seals manufactured under this TSO:

(1) Inspection lot number(s) and quantity of parts shipped.

(2) A note with the following statement: "The parts contained in this shipment have been manufactured and inspected in accordance with TSO-C150. The conditions and tests required for TSO approval of this article are minimum performance standards. Aircraft seals approved under this TSO are not necessarily interchangeable with other aircraft seals approved under this TSO. Seals of similar dimensional properties may have widely varying performance and material properties. Substitution of seals may only be done if acceptable to or approved by the Administrator."

6. INSPECTION LOT OF SEALS. An inspection lot consists of a quantity of seals with one part number produced consecutively from a single batch of material and finished in one continuous process and subsequently submitted for final inspection at one time.

7. AVAILABILITY OF REFERENCE DOCUMENTS.

a. American Society for Testing and Materials (ASTM) documents may be purchased from: ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

b. Federal Aviation Regulations Part 21, Subpart O, may be purchased from: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325.

c. Advisory Circular 20-110 (current revision), "Index of Aviation Technical Standard Orders," may be obtained from: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

Abbas A. Rizvi
Acting Manager, Aircraft Engineering Division
Aircraft Certification Service

APPENDIX 1, AIRCRAFT SEAL PROPERTY TEST REQUIREMENTS

Table 1 - Aircraft Seal Property Test Requirements

Seal Type	Design Properties		Performance Properties		
Static, Dynamic Reciprocating, or Dynamic Rotating	Material	Dimensions/ Configuration	Fluid Compatibility	Heat Resistance	Abrasion Resistance
Pneumatic	X	X		X	X
Hydraulic	X	X	X	X	
Environmental	X	X		X	
Insulating	X	X		X	X
Dampening	X	X			
Anti-Extrusion	X	X	X		X
Applicable Documents	Table 2 (below)	Seal Drawing	ASTM D471	ASTM D395, D573	ASTM D2228

Table 2 - Aircraft Seal Property Test Requirements for Materials

Material Properties	ASTM Test Method	
	Plastic	**Rubber**
Hardness	D2240 ("D" Scale)	D2240 ("A" Scale)
Specific Gravity	D792	D297
Tensile Strength at Break	D4894	D412, D1414
Ultimate Elongation	D4894, D4745	D412, D1414
Optional Testing		
Compression Set	D695	D395
Heat Resistance	D3045, D5510	D573
Fluid Compatibility	D543	D471
Water Absorption	D570	N/A
Abrasion Resistance	Determined by Manufacturer (repeatability must be demonstrated)	D2228

AIRCRAFT SEAL PROPERTY TEST REQUIREMENTS

1. SEAL PROPERTIES. Table 1 specifies seal property test requirements for each seal type, as defined on the manufacturers drawing(s) and/or specification(s). The specific material, meeting the material test property requirements of Table 2, and specific design property values for dimensions/configuration form the basis of the seal's design. The specific values for fluid compatibility, heat resistance, and abrasion resistance form the basis of the seal's "minimum performance."

2. SEAL SERIES TEST SAMPLE. A seal series (model) of a particular design and type, with a range defined in the seal manufacturer's application for TSO authorization, may be qualified by submitting test data for a sample that is most representative of the design encompassed by the series.

APPENDIX 1, AIRCRAFT SEAL PROPERTY TEST REQUIREMENTS (continued)

Applicable ASTM Test Methods. The revision of the documents (or successor documents) listed below in effect on the date of TSO application must be acceptable to the Administrator and used to establish the procedures for test and evaluation of aircraft seals as indicated in the part drawing and procurement or product specification(s). All additional specifications governing test and evaluation of a seal covered by this TSO must be specified at the time of application for TSO authorization.

D297 Test Methods for Rubber Products - Chemical Analysis

D395 Test Method for Rubber Property - Compression Set

D412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension

D471 Test Method for Rubber Property - Effect of Liquids

D543 Test Methods for Resistance of Plastics to Chemical Reagents

D570 Test Method for Water Absorption of Plastics.

D573 Test Method for Rubber - Deterioration in an Air Oven

D695 Test Method for Compressive Properties of Rigid Plastics

D792 Test Method for Specific Gravity and Density of Plastics by Displacement

D1414 Test Methods for Rubber O-Rings

D2228 Test Method for Rubber Property - Abrasion Resistance (Pico Abrader)

D2240 Test Method for Rubber Property - Durometer Hardness

D3045 Practice for Heat Aging Plastics Without Load

D4745 Specification for Filled Compounds of Polytetrafluorethylene (PTFE) Molding and Extrusion Materials

D4894 Specification for Polytetrafluorethylene (PTFE) Granular Molding and Ram Extrusion Materials

D5510 Practice for Heat Aging of Oxidatively Degradable Plastics

Aircraft Mechanical Fasteners

AGENCY: Federal Aviation Administration.

ACTION: Notice of availability for public comment.

SUMMARY: This notice announces the availability of and requests comments on a proposed Technical Standard Order pertaining to aircraft mechanical fasteners. The proposed TSO prescribes the regulatory performance standards that manufacturer-specified parts and appliances must meet to be identified with the marking "TSO–C148."

DATES: Comments must identify the TSO file number and be received on or before May 23, 1997.

ADDRESSES: Send all comments on the proposed technical standard order to: Technical Programs and Continued Airworthiness Branch, AIR–120, Aircraft Engineering Division, Aircraft Certification Service—File No. TSO–C148, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591. Or deliver comments to: Federal Aviation Administration, Room 815, 800 Independence Avenue, SW., Washington, DC 20591.

FOR FURTHER INFORMATION CONTACT: Ms. Bobbie J. Smith, Technical Programs and Continued Airworthiness Branch, AIR–120, Aircraft Engineering Division, Aircraft Certification Service, Federal Aviation Administration, 800

Independence Avenue, SW., Washington, DC 20591, Telephone (202) 267–9546.

Comments Invited

Interested persons are invited to comment on the proposed TSO listed in this notice by submitting such written data, views, or arguments as they desire to the above specified address. Comments received on the proposed technical standard order may be examined, before and after the comment closing date, in Room 815, FAA Headquarters Building (FOB–10A), 800 Independence Avenue, SW., Washington, DC 20591, weekdays except Federal holidays, between 8:30 a.m. and 4:30 p.m. All communications received on or before the closing date for comments specified above will be considered by the Director of the Aircraft Certification Service before issuing the final TSO.

Background

The FAA established the Aviation Rulemaking Advisory Committee (ARAC) in January 1991 to provide an ongoing mechanism to accept recommendations from the aviation industry in the regulatory process (56 FR 2190; January 22, 1991; and 58 FR 9230; February 19, 1993). In March 1993, the FAA established the Parts Working Group as part of ARAC (58 FR 16572; March 29, 1993). The Parts Working Group was tasked with recommending to ARAC new regulations and guidance material, as appropriate, pertaining to the issuance and administration of approvals of replacement and modification parts for civil aircraft. The proposed TSO in this notice is based on a draft proposed TSO developed by the Parts Working Group and recommended to the FAA by the ARAC.

The standards of proposed TSO–C148 apply to types of mechanical fasteners intended for tension and/or shear applications in the manufacture and maintenance of aircraft products. The standards are also adaptable to fasteners of proprietary designs. Proposed TSO–C148 provides alternative requirements for marking each individual fastener in lieu of the marking specified by 14 CFR § 21.607(d).

How To Obtain Copies

A copy of the proposed TSO–C148 may be obtained by contacting **FOR FURTHER INFORMATION CONTACT.**

Issued in Washington, DC, on February 26, 1997.

Todd B. Thompson,

Acting Manager, Aircraft Engineering Division, Aircraft Certification Service.

[FR Doc. 97–5432 Filed 3–4–97; 8:45 am]

BILLING CODE 4910–13–M

Department of Transportation
Federal Aviation Administration
Aircraft Certification Service
Washington, DC

TSO-C148

Date: 9/26/97

Technical Standard Order

Subject: **TSO-C148, AIRCRAFT MECHANICAL FASTENERS**

1. PURPOSE. This technical standard order (TSO) prescribes the minimum performance standards that aircraft mechanical fasteners must meet to be identified with the applicable TSO marking.

2. APPLICABILITY. The standards of this TSO apply to specialized types of mechanical fasteners described in Appendix 1, Aircraft Mechanical Fastener Property Test Requirements, intended for tension and/or shear applications in the manufacture and maintenance of aircraft products. The standards are also adaptable to fasteners of proprietary designs. This TSO shall not be used for standard parts.

3. REQUIREMENTS. Aircraft mechanical fasteners that are to be identified with this TSO and that are manufactured on or after the date of this TSO must meet the minimum performance standards specified in the applicant's part drawing and applicable part specification(s) submitted with the fastener manufacturer's application for TSO authorization.

a. Test Requirements. The required performance shall be demonstrated by accomplishing the tests specified for each property in the part drawing and applicable part specification(s) in accordance with the test procedures specified in Appendix 1.

b. Deviations. Alternative test procedures that produce an equivalent level of safety may be used if specified at the time of TSO application and approved in accordance with 14 CFR §21.609.

4. MARKING.

a. In addition to the marking specified in 14 CFR §21.607(d), the fastener type and the manufacturer's inspection lot number shall be permanently and legibly marked on each package or container.

b. Each individual fastener that is manufactured under this TSO must be permanently and legibly marked with at least the name or symbol of the manufacturer and part identification. When this is not practical, marking may be accomplished in a manner acceptable to the Administrator.

DISTRIBUTION: ZVS-326;A-W(IR)-3;A-X(FS)-3;A-X(CD)-4;
A-FFS-1,2,7,8(LTD);A-FAC-0(MAX);AVN-1 (2 cys)

7. AVAILABILITY OF REFERENCE DOCUMENTS.

a. American Society for Testing and Materials (ASTM) documents may be purchased from: ASTM, 100 Barr Harbor Drive, West Conshohocken PA 19428-2959.

b. Military documents may be purchased from: DoDSSP, Customer Service Subscription Service Desk, 700 Robins Avenue, Building 4D, Philadelphia, PA 19111-5094.

c. American Society of Mechanical Engineers (ASME) documents may be purchased from: ASME, 345 East 47th Street, New York, NY 10017.

d. Federal Aviation Regulations Part 21, Subpart O, may be purchased from: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325.

e. Advisory Circular 20-110 (current revision), "Index of Aviation Technical Standard Orders," may be obtained from: U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

Abbas A. Rizvi
Acting Manager, Aircraft Engineering Division
Aircraft Certification Service

APPENDIX 1 - continued

3. APPLICABLE DOCUMENTS. The revision of the documents (or successor documents) listed below in effect on the date of TSO application must be acceptable to the administrator and used to establish the procedures for test and evaluation of aircraft fasteners as indicated in the part drawing and procurement or product specification. All additional specifications governing test and evaluation of a fastener covered by this TSO must be specified at the time of application for TSO authorization.

ASTM E 3	Preparation of Metallographic Specimens
ASTM E 140	Standard Hardness Conversion Tables for Metals
ASTM E 1417	Standard Practice for Liquid Penetrant Examination
ASTM E 1444	Standard Practice for Magnetic Particle Examination
ASME B1.3M	Screw Thread Gaging Systems For Dimensional Acceptability, System 22
MIL-H-6088	Heat Treatment, Aluminum Alloys
MIL-H-6875	Heat Treatment of Steel, Process for
MIL-H-81200	Heat Treatment of Titanium and Titanium Alloys, Process for
MIL-STD-1312	Fastener Test Methods

Federal Register

Friday,
October 16, 2009

Part III

Department of Transportation

Federal Aviation Administration

14 CFR Parts 1, 21, 43, et al.

Production and Airworthiness Approvals, Part Marking, and Miscellaneous Amendments; Final Rule

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 1, 21, 43, and 45

[Docket No. FAA–2006–25877; Amendment Nos. 1–64, 21–92, 43–43, and 45–26]

RIN 2120–AJ44

Production and Airworthiness Approvals, Part Marking, and Miscellaneous Amendments

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is amending its certification procedures and identification requirements for aeronautical products and articles. The amendments will update and standardize those requirements for production approval holders (PAHs), revise export airworthiness approval requirements to facilitate global manufacturing, move all part marking requirements from part 21 to part 45, and amend the identification requirements for products and articles. The intent of these changes is to continue to promote safety by ensuring that aircraft, and products and articles designed specifically for use in aircraft, wherever manufactured, meet appropriate minimum standards for design and construction. As a result of this action, the FAA's regulations now better reflect the current global aircraft and aircraft products and articles manufacturing environment.

DATES: This rule is effective April 14, 2010.

FOR FURTHER INFORMATION CONTACT: For technical questions concerning this rule, contact Barbara Capron and/or Robert Cook, Production Certification Branch, AIR–220, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 385–6360 or (202) 385–6358; e-mail: *barbara.capron@faa.gov* or *robert.cook@faa.gov*. For legal questions concerning this rule, contact Angela Washington, AGC–210, Office of the Chief Counsel, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267–7556; e-mail: *angela.washington@faa.gov*.

SUPPLEMENTARY INFORMATION:

Authority for this Rulemaking

Under the laws of the United States, the Department of Transportation has the responsibility to develop transportation policies and programs that contribute to providing fast, safe, efficient, and convenient transportation (49 United States Code, Subtitle 1, § 101). The Federal Aviation Administration (FAA or ''we/us/our'') is an agency of the Department. The FAA has general authority to issue rules regarding aviation safety, including minimum standards for articles and for the design, material, construction, quality of work, and performance of aircraft, aircraft engines, and propellers (49 U.S.C. 106(g) and 44701). We may also prescribe regulations in the interest of safety for registering and identifying an aircraft engine, propeller, or article (49 U.S.C. 44104).

The FAA is amending its regulations governing the certification procedures for products and articles and its requirements for identification and registration marking. These changes will improve the quality standards applicable to manufacturers, which help ensure that products and articles are produced as designed and are safe to operate. We are also relocating and standardizing our requirements for marking articles intended for use in aviation. These changes will make it easier to determine whether the correct articles are installed, which will contribute to a greater degree of safety. For these reasons, this rule will be a reasonable and necessary exercise of our rulemaking authority and obligations.

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I. Background

Over the last several decades, the aircraft manufacturing industry has evolved significantly. Years ago, most transport category aircraft were manufactured in the United States. A typical business model consisted of a production certificate (PC) holder with a relatively small number of suppliers. Today, the number of aircraft manufacturing suppliers has increased dramatically. Conversely, through the years, the aircraft industry has seen a steady decline in the number of U.S.-based transport category aircraft manufacturers. Those manufacturers, who once predominantly oversaw the production of replacement articles for their aircraft, now witness the ever increasing production of replacement and modification articles by independent parts manufacturers. Suppliers, including parts manufacturers, were located mainly in the United States decades ago; now, they are located all over the world. Suppliers are manufacturing greater percentages of aircraft products and articles. As a result, aircraft are now manufactured in an increasingly global environment.

The FAA did not envision such an expansion in aircraft manufacturing when the certification rules were first promulgated in 1964. The industry has been the subject of burgeoning internationalization in the last several decades. Evidence of this fact is that now, more than ever before, the United States has more bilateral agreements with foreign civil airworthiness authorities addressing the production, import, and export of aircraft. The old certification rules are too restrictive to accommodate today's manufacturing paradigm. Removing some of those restrictions will greatly improve our regulatory efficiency. This final rule is the FAA's response to the changing dynamics of the aircraft manufacturing industry, and this final rule contains requirements that reflect the current global environment.

The evolution of the manufacturing industry prompted the FAA to publish in the **Federal Register** a notice of proposed rulemaking (NPRM) on ''Production and Airworthiness Approvals, Parts Marking, and Miscellaneous Proposals'' (71 FR 58914, October 5, 2006). In that notice, we proposed comprehensive changes to certification procedures and identification requirements for aeronautical products and articles. In general, we proposed to: (1) Standardize quality system requirements for all Production Approval Holders (PAH); (2) require PAHs, including those producing under Type Certificate, to mark all articles, including sub-assemblies and components; (3) require PAHs to issue airworthiness approvals for aircraft engines, propellers, and other aviation articles; (4) require PAHs to create a certifying staff to issue those approvals; and (5) revise export airworthiness approval requirements to facilitate global manufacturing. The NPRM contains the background and rationale for this final rule, and except where we have made revisions to the proposal in this document, you should refer to the NPRM for that information.

Commenters to the NPRM represented aircraft and parts manufacturers; repair stations; the U.S. Small Business Administration, Office of Advocacy (SBA's Office of Advocacy); industry groups; and other civil aviation authorities and individuals. While there was much support for the general intent

of the proposed rule changes, the largest percentage of the commenters opposed the following four specific proposals:

1. Identification Requirements for Parts, Appliances, and Technical Standard Order Articles

The NPRM proposed to require manufacturers to mark each component of an aircraft engine or propeller, each part and component thereof, and each appliance and component thereof. Until now, the FAA has only required marking of the part; not the individual components of the part. Over forty commenters rejected the proposal, stating that the requirement to mark each component would be cost prohibitive. Also, the proposal would necessitate a change in all associated drawings and design data to reflect the marking requirement.

2. Mandatory Issuance of Airworthiness Approvals for Each Aircraft Engine, Propeller, and Article

The NPRM contained a proposal that would have required PAHs to issue an airworthiness approval for each aircraft engine, propeller, or article produced under the production approval that conforms to its approved design and is in a condition for safe operation. Currently, and under the old rules, an airworthiness approval is mandatory for products and articles only when those products and articles are being exported. The FAA has never required that airworthiness approvals be issued domestically. Commenters stated that because a disproportionately larger number of aircraft engines, propellers, and articles are shipped domestically than are exported, mandatory issuance of airworthiness approvals would impose a substantial cost burden on manufacturers.

3. Creation of Certifying Staff To Issue Airworthiness Approvals

We proposed in the NPRM to require PAHs to develop procedures for establishing and maintaining certifying staff that would be responsible for issuing airworthiness approvals for aircraft engines, propellers, and articles, including the issuance of export airworthiness approvals. Presently, only the FAA or its designees issue airworthiness approvals. Commenters opposed this requirement, arguing that it would necessitate additional staff training and implementation of new procedures for manufacturers, thus unnecessarily escalating the cost of manufacturing.

4. Standardized Quality System Requirements

In the NPRM, we proposed to standardize quality system requirements for PAHs so that all PAHs comply with the same set of quality system requirements, regardless of the product or article produced. We received over 65 comments (including those from the SBA's Office of Advocacy; industry groups representing manufacturers, airlines, and pilots; and aircraft, aircraft engine, and aircraft parts manufacturers). An overriding concern of the commenters was that the quality system requirements, if adopted, would be burdensome to implement, particularly for small businesses. Commenters asserted that the requirements would impose substantial additional costs on industry with no measurable increase in safety.

In addition to the commenters noted above, there were commenters on other proposals in the NPRM. We received over 100 comment letters (with over 500 comments) in response to the NPRM. After evaluating all comments received, we proceeded with this rulemaking action.

II. Discussion of Final Rule

A. Summary of Amendments

1. Identification Requirements

In response to the concerns and issues raised, the FAA has reconsidered some of its proposals and made several substantive changes to the proposed regulatory text. Our most significant change pertains to the proposal to require marking of all component parts and appliances. Fifty-two commenters (including SBA's Office of Advocacy; industry groups representing manufacturers, airlines, and pilots; and aircraft, aircraft engine, and aircraft parts manufacturers) asserted the proposed requirement to mark detail parts would be cost prohibitive and would provide no verifiable safety benefit. Commenters pointed out some products or articles consist of hundreds or sometimes thousands of detail parts, arguing that the costs associated with changing the drawings and design data could cost small businesses over one billion dollars to implement.

When we performed our initial regulatory flexibility assessment (IRFA) for the NPRM, we did not recognize the extent to which design data would have to be changed in order to accommodate the proposed marking of detail parts. Given that each product or article consists of hundreds or thousands of sub-tiered drawings, all of which would have to be changed, we agree with the commenters that we put forth a cost-prohibitive proposal. Accordingly, the final rule does not contain this requirement.

As a result of the many comments in opposition to our marking proposal, we revised the proposed rule to provide for methods of identification more flexible than marking. PAHs must mark the product or article that they have been granted a certificate or approval for in accordance with part 45. However, the sub-assemblies and component parts of that product or article do not have to be marked or identified unless they leave the PAH's facility as a separate article (*e.g.,* replacement or modification part). Sub-assemblies, component parts, or replacement articles that leave the PAH's facility as FAA-approved must include the manufacturer's part number and name, trademark, symbol, or other FAA-approved PAH identification (*e.g.,* the production approval number, cage code, or Federal supply code for manufacturers (FSCM)). A manufacturer or person producing under subparts F, G, K, or O may choose any method to meet this requirement. Methods include, but are not limited to, marking the article, attaching a tag to the article, placing the article in a container, or providing a document with the article with the information previously mentioned. This identification requirement codifies current industry practice and is less stringent than the proposed requirement.

This identification requirement is not driven by a history of aviation accidents where inadequate marking or identification was necessarily found to be a primary cause; rather, it is part of a systemic approach to safety. Accident investigations and safety management system analyses show that accidents are rarely caused by one event. Accidents are the result of a chain of events. If any of the events had not occurred, an accident may have been prevented. This requirement assists in the traceability of articles and helps reduce the installation of incorrect articles, thereby preventing accidents.

Because identification of articles is simply a byproduct of the marking proposal, the FAA has determined that it is within the scope of this rulemaking. The economic effects of this requirement have been evaluated and determined to be cost-neutral (*i.e.,* having no economic impact).

In the NPRM, we proposed to revise § 45.15 to specify particular marking requirements for parts manufacturer approval (PMA) and technical standard order (TSO) articles. In doing so, we removed the former requirements for producers of PMA articles to mark those

articles with the designation ''FAA–PMA'' and information stating the installation eligibility of the article. As proposed, the rule would have required PMA holders to mark articles with the PMA holder's name, trademark, symbol, or other FAA-approved identification.

Several commenters (including Airline Transport Association (ATA), Aerospace Industries Association (AIA), General Electric Company (GE), the Boeing Company, and Snecma) questioned the proposal. They stated the current requirement to mark PMA articles with the letters ''FAA–PMA'' increases traceability and allows installers and maintenance providers to easily identify the article being installed. The European Aviation Safety Agency (EASA) stated it had recently introduced a requirement for the marking of parts not produced under the control of a TC or supplementary type certificate (STC). The marking clearly distinguishes those parts from parts produced by a TC or STC holder. EASA suggested the FAA and EASA coordinate their efforts in developing a coherent, consistent, and comprehensive part marking policy.

The FAA does not espouse an opinion regarding the premise that marking PMA articles as ''FAA–PMA'' increases traceability. However, having a marking requirement consistent with the requirement of other aviation authorities is advantageous and enhances harmonization efforts. Furthermore, as we reviewed the proposal, we realized the removal of ''FAA–PMA'' would result in additional costs to the PMA holder. Much like the proposal to mark detail parts, the removal of ''FAA–PMA'' would require a manufacturer to revise all of its design drawings, making it a cost-prohibitive change. Accordingly, this final rule retains the current ''FAA–PMA'' marking requirements.

Unless otherwise specified in the applicable TSO, § 45.15 now requires manufacturers of TSO articles to permanently and legibly mark the article with the TSO number and letter of designation, all markings specifically required by the applicable TSO, and the serial number or the date of manufacture of the article, or both. Likewise, each person who manufactures a part or component for which a replacement time, inspection interval, or related procedure is specified in the Airworthiness Limitations section of a manufacturer's maintenance manual or Instructions for Continued Airworthiness must permanently and legibly mark that part or component with a serial number (or equivalent).

An individual commenter expressed concern that requiring a manufacturer to permanently mark an article may result in masking the age of a product. The commenter argued that a manufacturer could modify an existing appliance and issue it a new serial number and date of manufacture. The commenter recommended the proposal be revised to prohibit such activity. We understand the commenter's concern; however, the original serial number and date of manufacture must be maintained throughout the TSO article's life-cycle. We think the regulation is sufficiently clear that markings must be permanent. Additional markings must not obscure, remove, or obliterate the original markings.

GE and Pratt & Whitney stated that the phrase ''or equivalent,'' when used to refer to an alternative to marking a part or component with a serial number, is confusing and should not be in the final rule. We disagree. Use of the phrase ''or equivalent'' offers flexibility in compliance with the marking requirement and provides an assessable standard for FAA enforcement of the requirement. Therefore, we retained the phrase in the final rule.

Section 45.11 now provides relief to aircraft owners and operators for data plate location requirements for gliders and certain types of aircraft. This rule allows the data plate to be secured in an accessible location near the aircraft entrance. The former rule required the data plate be secured to the aircraft fuselage exterior, such that it was legible to a person on the ground. However, the old requirements were impractical. Over the last several years, the FAA has issued numerous exemptions from § 45.11 for relief from the requirements for data plate location. This rule relieves the burden on the public and the FAA in regards to processing these types of exemptions in the future.

AIA and GE stated that the proposed requirement to mark engine modules was unclear. They questioned whether the module marking should reflect the engine's information or the module's information. Also, GE stated that an additional identification plate should be added to a module when an STC has been incorporated. We have determined that the requirement to mark engine modules is unnecessary. The rule language has been changed to remove this requirement. We do not agree that additional marking is required when an STC is incorporated. While an STC is used for the approval of a major change in the type design, it does not approve the production of parts used in the modification. The data plate placed on a TC product is based on the manufacturer of the product, rather than the TC design approval holder (DAH). Requiring additional markings for STC incorporation would confuse the STC holder with the actual manufacturer of the STC modification part. It also would not provide any safety benefit. STC incorporation is marked in aircraft logbooks and flight manuals and has been shown effective.

A repair station expressed concern about changes to articles driven by service bulletins. Articles for which service bulletins have been issued often require a new or revised marking. Since many of these articles are in service, the maintenance provider, not the producer, makes the required changes. Therefore, the commenter requested that the FAA create a regulatory provision permitting maintenance providers to act as the manufacturer's agent for the purpose of remarking the article.

Changes to articles pursuant to service bulletins are governed by the provisions of part 43. Those changes, including the marking of the articles, are considered maintenance activity and are more appropriately accomplished pursuant to the maintenance provisions of part 43.

If the FAA finds a part or component is too small or otherwise impractical to mark with any of the information required by this part, the manufacturer is required to attach that information to the part or component, or its container. Aircraft Owners and Pilots Association (AOPA) commented that an enormous workload is imposed on the FAA because it must determine whether an article is too small or is otherwise impractical to mark. AOPA recommended that the manufacturer be allowed to make that determination.

The FAA is ultimately responsible for determining compliance with regulatory requirements, and we must ensure consistency in application of the standard. Therefore, we will not abdicate our responsibility for determining whether articles are too small or otherwise impractical to mark.

Marking requirements for all PAHs are now consolidated in part 45. These requirements apply to all PAHs, as well as to persons who produce the products or articles for export to the United States under the provisions of an agreement between the United States and another country or jurisdiction. The required markings constitute a representation that the product or article conforms to its approved design. Only the person authorized to produce the product or article may make this representation. However, this rule does not preclude an approved supplier to a PAH from applying markings in accordance with requirements imposed by the PAH;

neither does it preclude applying in-process markings throughout the manufacturing process.

AIA, ATA, GE, and Pratt & Whitney stated the FAA should permit marking by owner operators, certificated repair stations, or appropriately certificated mechanics performing maintenance under part 43. However, part 43 already allows owner/operators, certificated repair stations, and certificated mechanics performing maintenance to mark articles, and addressing it in this rulemaking would be duplicative and unnecessary.

A parts manufacturer and an individual questioned whether using barcodes would be an acceptable means of complying with the rule, particularly in the case of small articles. Barcode identification may be used in conjunction with, but not in lieu of, the marking requirements. Provisions for marking small or delicate articles are specified in § 45.15(d).

2. Mandatory Issuance of Airworthiness Approvals and Certifying Staff

Forty-six commenters (including SBA's Office of Advocacy, industry groups, aircraft manufacturers, engine manufacturers, parts manufacturers, and individuals) stated that FAA's proposal to require the issuance of airworthiness approvals for each aircraft engine, propeller, or article would be cost prohibitive. Commenters stated that because a disproportionately larger number of aircraft engines, propellers, and articles are shipped domestically than are exported, mandatory issuance of airworthiness approvals would impose a substantial cost burden on manufacturers.

We have further reviewed the potential impact of the proposal and have determined that the costs would disproportionately affect small manufacturers. Many small manufacturers do not ship their products or articles outside the United States, nor do they currently issue airworthiness approvals. In addition, airworthiness approvals are often separated from the product or article when it is received by the end user, nullifying the safety aspect of increased traceability. Because we have determined that the mandatory issuance of airworthiness approvals will not increase safety, and there is a high cost associated with its implementation, that proposal is not included in this final rule.

We also have determined that mandating PAHs to establish and maintain a certifying staff to issue airworthiness approvals would necessitate costly staff training, and implementation of new procedures would be too burdensome for manufacturers. Because we have not included the proposed requirement for mandatory issuance of airworthiness approvals for each aircraft engine, propeller, and article, the requirement for a PAH to establish and maintain a certifying staff to issue the approvals is therefore not included in this rule.

3. Quality System Requirements

This final rule prescribes a PAH's requirements for controlling the quality of the product or article it manufactures. The FAA has imposed in this final rule certain additional PAH quality system requirements designed to achieve overall improvement of the PAH's quality system. The quality system consists of fourteen specific quality system requirements. As described below, it is important to note that those fourteen quality system requirements are scalable, depending on the size and complexity of the PAH and of the product or article produced. Some of these requirements were already mandatory prior to this rulemaking and have been retained. The remaining requirements also have already been incorporated by industry for years and used voluntarily as ''best practices.''

Prior to this rulemaking, holders of different production approvals complied with, and were audited to, differing sets of requirements. For instance, if a manufacturer produced a PMA part and a TSO article, the manufacturer was subject to different quality and marking standards for each part it produced. Today's requirements are now applicable to PC and PMA holders and TSO authorizations alike. This final rule relieves PAHs from having to maintain, and the FAA from having to oversee, multiple PAH systems and procedures. Hence, this final rule will increase regulatory efficiency.

We received over 65 comments (including those from the SBA's Office of Advocacy; industry groups representing manufacturers, airlines, and pilots; and aircraft, aircraft engine, and parts manufacturers). A general consensus of the commenters was that the proposed quality system requirements would be too restrictive, burdensome, and costly, especially on small businesses.

SBA's Office of Advocacy believed the FAA's approach was more appropriate for large companies, rather than for smaller companies. That commenter suggested the FAA consider exempting small businesses from the quality system requirements or adopt a tiered approach based on the size and volume of the business. In addition, SBA's Office of Advocacy suggested that if the FAA does not intend to require an International Organization for Standardization (ISO)- or SAE-equivalent regime, then it should delete the references to those standards in the preamble. In the NPRM, we likened our quality system requirements to those international quality standards and suggested that there is a global trend toward implementing them. SBA's Office of Advocacy argued the FAA should not impose ISO- or AS-based requirements of advocacy, maintaining that such a requirement would be duplicative because many PAHs have already achieved ISO or AS certification.

The FAA derived its quality system requirements from a number of sources, including previous requirements in subparts G and K, as well as industry best practices, ISO standards, and other aviation authorities' requirements (*e.g.*, Joint Aviation Authorities (JAA), European Aviation Safety Agency (EASA), and Transport Canada). These requirements do not introduce significantly different standards for PAHs, small businesses included. Because many PAHs currently employ these standards as best practices, the FAA has determined that compliance will not be costly. We have determined that the quality system requirements, as proposed, are appropriate for all manufacturers.

In response to the SBA's Office of Advocacy's comment suggesting the FAA adopt a tiered approach for small businesses, the FAA maintains that even small businesses have many of these practices in place, just on a smaller scale than larger aircraft manufacturers. We are simply codifying those practices. Our requirements are consistent for all manufacturers, but they will be scalable and commensurate to the size of the company and the complexity of the product or article produced. For example, we would expect a large aircraft manufacturer to have a well-developed, complex quality system. In contrast, a small parts manufacturer producing a non-complex article could have a less complex quality system.

However, that system could still comply with FAA quality system regulations and reflect the needs of the PAH without imposing an undue burden. The FAA will provide additional information on the Internet site *http://www.faa.gov* on how a PAH may construct a scalable quality system, to include examples.

In addition to industry best practices, these amended quality system requirements are now consistent with

requirements of other aviation authorities. As a result, these quality system requirements will encourage greater international acceptance of products and articles and facilitate the import and export of those products and articles.

This rule also requires that a manufacturer's quality system include procedures for controlling the use of design data and subsequent changes to ensure that only current, correct, and approved data are used. Earlier, we had proposed that the system include procedures for controlling design data, rather than the use of the data. However, GE correctly commented that the TC holder, not the PAH, controls the design data. Accordingly, we revised the rule language to accommodate that fact. We now require PAHs to have access to design data necessary to determine conformity and airworthiness for each product and article produced under the PC. In the case of a PAH who obtained approval by test and computation, the PAH controls the data. However, a PAH who obtained approval by licensing agreement might only have access to the data through the type design holder.

This rule now requires manufacturers to establish procedures to control conformity of each supplier-furnished product or article to its approved design before release for installation. The PAH must establish a quality system that ensures the products or articles produced are conforming and in a condition for safe operation. In that regard, we have identified Supplier Control as one of the processes for which the PAH must establish procedures. The PAH is responsible for determining the type and scope of controls and the frequency of oversight necessary to ensure the conformity of the products or services provided by its supply chain, along with its compliance to contract requirements.

We further require that the quality system include procedures for inspections and tests to ensure that a product or article conforms to its approved design. This revision clarifies that the purpose of inspections and tests is to verify that each product and article conforms to its approved design and is in a condition for safe operation. In addition, the inspection and test procedures must include a flight test of each aircraft produced, unless that aircraft will be exported as an unassembled aircraft, and a functional test of each aircraft engine and each propeller must be performed. Embraer questioned the benefit of performing a functional test on a fixed pitch propeller because it has no control system. For that reason, Embraer proposed we create an exception to exclude fixed pitch propellers from functional testing; however, we disagree. Inspections and tests, including functional tests, must be performed on fixed pitch propellers. These tests are used to validate whether performance characteristics and the structural integrity meet the design requirements.

The quality system must include procedures to ensure that all inspection, measuring, and test equipment used to determine conformity of products and articles is calibrated and controlled. Each calibration standard must be traceable to a standard acceptable to the FAA. Boeing suggested we require calibration of inspection, measuring, and test equipment only when calibration is specified by the type design. However, calibration of inspection, measuring, and test equipment is a function of the quality system; it is not addressed in the type design. Proper calibration of all equipment helps ensure the integrity of the manufacturing process.

This rule now requires that a quality system include procedures to ensure that discarded articles are rendered unusable. This revision helps ensure that discarded articles are not erroneously placed into service on aircraft. AIA, GE, and Boeing proposed that the FAA allow PAHs to identify articles as ''scrap,'' rather than the PAH rendering discarded articles as ''unusable''. The commenters further recommended that we define the term ''scrap'' in the rule.

The term ''scrap'' is an acceptable industry term that may be used at the PAH's discretion, but many times, PAH's may use ''scrapped'' items in a new capacity. The term ''scrap'' does not clearly convey that the item may not be reused in a type-certificated product. For the purposes of this rule, we have decided that the term ''unusable'' clearly reflects our intent to ensure that an article that has been discarded cannot be used.

In addition, this rule requires that the quality system include procedures to prevent damage or deterioration of products and articles during handling, storage, preservation, packaging, and delivery. AIA, GE, and Pratt & Whitney argued that the PAH cannot ensure the condition of articles after they have left the PAH's facility, and they recommended that we remove the term ''delivery'' from the proposed rule language. We agree and have revised the regulatory text accordingly.

Pratt & Whitney also recommended revising the rule language to reflect that the quality system include procedures ''intended'' to prevent damage and deterioration of products and articles, as opposed to procedures that will prevent damage and deterioration. However, the FAA is responsible for imposing a standard that is measurable. We have determined that the standard imposed will better prevent damage or deterioration. Thus, we have retained the rule language as proposed.

The FAA now requires the quality system to include procedures for identifying, storing, protecting, retrieving, and retaining quality records. Quality system records include inspection and test records, material review board records, and work orders. Both production approval applicants and PAHs must retain these records for at least five years for the products and articles manufactured under the approval and at least ten years for those articles that are identified as critical components under § 45.15(c) of this chapter.

GE recommended we increase the record retention time to 40 years. An individual commenter stated that the former record retention requirements were adequate. However, the new record retention requirements are the result of a recommendation from the Aviation Rulemaking Advisory Committee (ARAC). The ARAC stated that it is possible for a product or article to remain in production in excess of two years before it is released from production. Furthermore, that product or article would spend some length of time in service before any airworthiness directives (ADs) were possibly issued against it. Therefore, by the time a nonconformance or unairworthy condition is identified, the 2-year record retention period could have passed, making it difficult to identify a root cause for the condition. We have determined that a 5-year record retention for products and articles and a 10-year record retention for critical parts are necessary to facilitate the tracking of nonconformances. However, a PAH may maintain records longer if it chooses.

Boeing suggested that we require record retention periods for products and articles only. We disagree. Records are objective evidence that a PAH has complied with all applicable regulatory requirements. Records are part of the quality system and are used to validate conformity to type design. Therefore, we have determined that these records are necessary, and the retention period is appropriate.

We now require that the quality system include procedures for planning, conducting, and documenting internal audits to ensure compliance with the approved quality. A parts manufacturer

suggested the meaning of the term ''internal'' is relative to a PAH's quality system; therefore, audits of suppliers would fall within the scope of internal audits because a supplier is under the PAH's quality system. The commenter requested a clarification of the definition of ''internal audits'' as it pertains to suppliers.

The concept of what constitutes ''internal'' for the purposes of an audit is relative to the PAH's quality system. We think the regulation is sufficiently clear. Suppliers are controlled through the PAH's quality system, and procedures for suppliers' audits are dictated in § 21.137(c), Supplier control. Conversely, § 21.137(l) denotes procedures for the conduct of internal audits of the effectiveness of the PAH's Supplier Control System.

4. Replacement and Modification Articles

Former §§ 21.303(a) and (b) addressed production requirements for replacement and modification parts to ensure that only articles that conform to their approved design and are in condition for safe operation are installed in type-certificated aircraft. With certain exceptions, the former rule prohibited the production of such parts for sale for installation on a type-certificated product, unless those parts were produced pursuant to a PMA. Exempted from this requirement were parts produced under a TC or PC, parts produced by an owner or operator for maintaining or altering his own product, parts produced under an FAA TSO, and standard parts. This final rule consolidates those former requirements in newly established § 21.9(a), with some revisions. Under today's rule, the FAA will now prohibit the production of a replacement or modification article if the producer knows, or should know, that the part is reasonably likely to be installed on a type-certificated product unless the article part is:

- Produced under a TC;
- Produced under an FAA production approval;
- A standard part;
- A commercial part, as defined in § 21.1;
- Produced by an owner or operator for maintaining or altering that owner or operator's product; or
- Fabricated by an appropriately rated certificate holder with a quality system and consumed in the repair or alteration of a product in accordance with part 43.

The provisions of § 21.9 apply to the producer of any part that may be used as a replacement or modification article, not just parts that were produced specifically as replacement or modification articles. In determining whether a violation has occurred, one factor the FAA will consider is whether the article was represented as suitable for installation on a type-certificated product. Producers of replacement or modification articles who represent those articles as suitable for installation on a type-certificated product may be in violation of § 21.9 unless the articles were produced under one of the above exceptions.

Representation may include, but is not limited to, a producer advertising its parts in aviation magazines; representing the part with statements such as ''aviation quality'' or ''as previously installed on''; issuing aviation parts catalogs; or marketing at aviation trade shows and conferences. Owners, operators, producers, and maintenance providers rely on these representations to determine the airworthiness of an aircraft, or the acceptability of products and articles for a given application. Therefore, these representations must be truthful. Assessing representation of a part is just one means of determining whether a violation of § 21.9(a) has occurred. Absent any such representation, the FAA may still find a violation has occurred if evidence can be established that the producer knows or should know that the part is reasonably likely to be installed on a type-certificated product.

Finally, newly established § 21.9(c) would allow a person to represent an article as suitable for installation on a type-certificated aircraft if the article was declared surplus by the U.S. Armed Forces and was intended for use on that model of U.S. Armed Forces aircraft.

We received thirty-seven comments on this section. SBA's Office of Advocacy requested additional clarification on how the provisions of this section of the rule would apply. In addition, two individuals stated the rule language ''if a person knows, or should know, that the part is reasonably likely to be installed on a type-certificated product'' is very subjective, and it will be difficult to properly and consistently enforce. It believed distributors, owner/operators, and manufacturers could be subject to legal action due to misunderstandings of the rule. The expected misunderstandings would arise from the likelihood of this final rule affecting parts manufacturers not subject to FAA regulation before its issuance. However, we believe the new rule is clearly stated, objective, and enforceable. As we apply the standard, we will examine all relevant facts and circumstances to determine whether a person knew or should have known that a part he produced was reasonably likely to be installed on a type-certificated product.

Numerous commenters (including Aircraft Electronics Association (AEA), Aviation Suppliers Association (ASA), and repair stations) stated our proposed rule no longer contained language prohibiting the production of parts ''for sale for installation on a type-certificated product.'' In addition, the SBA's Office of Advocacy asked the FAA to clarify and confirm that the existing ability of a repair shop to produce a part during maintenance activities remains in place. Since the NPRM proposed to remove that language, several repair stations asked us to clarify whether they will still be able to produce articles that will be consumed in the course of a repair without violating § 21.9(a).

It is not our intent to preclude that activity. To address that concern and clarify our intent, we established an exception in § 21.9(a)(6). This exception, which was not proposed in the NPRM, allows for the production of articles without benefit of a production approval when articles are fabricated by an appropriately rated certificate holder with a quality system and consumed in the repair or alteration of a product or article in accordance with part 43. Maintenance providers who do not have a quality system may continue to fabricate owner-produced articles for installation on type-certificated aircraft using the guidelines set forth in Policy Memorandum, Definition of ''Owner Produced Part,'' Section 21.303(b)(2), August 5, 1993.

SBA's Office of Advocacy asked the FAA to clarify how the rule would impact the distribution of parts and existing inventories based on small business concerns that the proposed rules will forbid anyone from selling civil aircraft parts unless they are the manufacturer of the part, essentially forcing current parts distributors out of business. This phrase was used in former § 21.303(a). We disagree. Section 21.9 governs the production, not the sale, of articles and does not prohibit distributors from selling articles.

SBA's Office of Advocacy was also concerned that the regulation does not contain express provisions concerning inventories of existing articles. That commenter recommended we clarify that any new production requirements on articles or products apply only to articles manufactured after a certain date and that the requirements do not render current articles or products in inventory unusable. Like the Office of Advocacy, ASA believed the rule would

prohibit the sale of existing inventories, and thus, they would lose value. The commenters' concerns are unfounded. The requirements of this rule apply to products or articles as they are manufactured. The provisions of this rule do not apply to existing inventories.

Lastly, an individual commenter stated modification articles should be exempted from a PMA if those articles could be installed: (1) As a minor alteration with a simple logbook entry without approved data, or (2) under a field approval with data approved by a Flight Standards District Office (FSDO) airworthiness inspector or Designated Engineering Representative (DER). We disagree. Both exceptions would serve to weaken our regulatory intent to ensure that only articles for which a suitability determination has been made are installed in type-certificated aircraft. An article is not approved unless the article is: Produced under a TC; produced under an FAA production approval; a standard part; a commercial part, administered in a manner acceptable to the FAA; or produced by an owner or operator for maintaining or altering that owner or operator's product.

5. Definition of ''Commercial Parts''

In the NPRM, we proposed to establish a definition of commercial parts and create a replacement parts classification that would facilitate the use of parts during maintenance. This rulemaking established that classification and allows for the production of commercial parts, as defined by this rulemaking, as replacement or modification articles without benefit of a production approval. Over ten commenters (including SBA's Office of Advocacy, the Regional Airline Association (RAA), ASA, and Snecma) stated the proposed definition of ''commercial parts'' was confusing. SBA's Office of Advocacy asked the FAA to further explain how the new provisions would impact current practices and the industry's ability to use parts that commonly have been referred to as commercial prior to this rulemaking. The commenters were concerned that only those parts designated by the DAH and approved by the FAA as commercial would be considered as such. They concluded the proposal would unduly restrict the use of commercial parts on in-service aircraft, which is common industry practice today.

In response to these comments, we modified the definition of ''commercial parts,'' as it was proposed in the NPRM, to better clarify the meaning of the term. A commercial part means an article that is listed on an FAA-approved Commercial Parts List included in the DAH's Instructions for Continued Airworthiness (ICAs). By creating a ''commercial parts'' classification, the FAA has constructed a new mechanism by which commercial parts may be approved for use on type-certificated products as replacement or modification articles. The FAA has not removed any of the processes used prior to this rule change for approving articles for installation on type-certificated products as replacement or modification articles. Those processes include purchasing the article from the PAH or manufacturer producing under a TC approved to produce the article; produced and installed under the provisions of an STC; or produced and installed in accordance with the provisions of part 43.

For the purposes of this rulemaking, in order for a part to be considered commercial, the DAH must submit to the FAA a list of parts it has designated as commercial pursuant to the provisions of § 21.50(c). A part is designated as commercial when the DAH: (1) Provides data to the FAA showing that the failure of the commercial part, as installed in the product, would not degrade the level of safety of the product; (2) shows the part is produced only under the commercial part manufacturer's specification and marked with only the commercial part manufacturer's markings, and (3) provides any other data the FAA requires to approve the Commercial Parts List.

As discussed in the NPRM preamble, the data requirement concerning the failure of the part is necessary to ensure that commercial parts, which are not subject to the rigorous quality control requirements for PAHs, cannot jeopardize flight safety if they fail. The part marking requirement is necessary to ensure that other similar parts, whose safety has not been demonstrated, cannot be substituted for the part identified as commercial. Because this is a new regulatory classification of parts, we cannot anticipate all the issues that may arise as applicants submit proposals. We therefore need the third ''catch-all'' provision to obtain information necessary to verify our intent in creating this new classification is fulfilled and to ensure there is no adverse effect on safety. The DAH must include the Commercial Parts List in the Instructions for Continued Airworthiness. The FAA approves the commercial parts list, and the parts on it are then eligible for use on a type certificated product as replacement or modification articles.

SBA's Office of Advocacy was equally concerned that as a result of this new commercial parts classification, non-PAH commercial parts manufacturers would be held liable for a violation of § 21.9 regarding production of parts if a part they manufacture is used on a type-certificated aircraft without being declared a commercial part. It stated the FAA should be aware that a strict reading of the proposed rule seems to suggest that once a manufacturer knows or has reason to know that a repair or maintenance facility is installing its product on an aircraft, that manufacturer would have a legal obligation to obtain the approval of either the design holder or the FAA (through a PMA or TSO) for that part. This would extend the reach of the FAA's rule to a vast universe of manufacturers, none of whom are included in the FAA's economic analysis.

SBA's Office of Advocacy is correct in its understanding of the proposed rule, in that if non-PAH producers know or should know that their articles are reasonably likely to be installed on a type-certificated product, they cannot produce those articles unless they meet one of the four exemptions noted in § 21.9. Non-PAH parts producers that know their parts are being installed on type-certificated products may apply for a production approval for the production of those parts, or the DAH of the product or article on which those commercial parts will be installed may designate them as commercial. Our intent is to create an enforceable standard that helps ensure that parts that are used on type-certificated products are produced under an approved quality system or otherwise approved for use on that product.

Several repair stations were unclear on whether repair or maintenance facilities would still be able to utilize the maintenance provisions in § 43.13 to install commercial parts on aircraft. Commercial parts as defined in this rulemaking do not require a production approval, and repair stations may continue to utilize the provisions of § 43.13 to install parts. Those parts that are generally recognized by industry as commercial, but have not been designated on a Commercial Parts List, must be approved for installation in accordance with part 43.

Two individuals stated that the use of commercial parts should be approved only in applications where their function or failure would not degrade safety. The FAA agrees with that statement, and as we do with other parts

approved as part of the type design, we will also evaluate commercial parts during the type design approval process to determine their affect on the safety of the product. In order for a DAH to designate a part as commercial, the DAH must show that failure of the commercial part would not degrade the safety of the product.

Snecma and an individual commenter recommended that advisory material would be helpful in determining when or how commercial parts can be used as part of a type design, including guidance on what a DAH must do to obtain approval of its commercial parts. A repair station also commented that we should provide advisory material on when and how commercial parts may be used by operators and maintenance personnel. The FAA will issue advisory material providing guidance on the above concerns and on substitution of commercial parts during maintenance.

Lastly, an individual commenter noted that the marking requirements for commercial parts are not consistent with the marking requirements in part 45. We agree. However, the marking requirements in part 45 pertain only to those articles manufactured under an approved type design or in accordance with the provisions of a bilateral agreement between the United States and another country or jurisdiction for the acceptance of products and articles. Accordingly, the part 45 marking requirements are not applicable.

6. Location of or Change to Manufacturing Facilities

The FAA is requiring all PAHs to obtain FAA approval before making any changes in location or physical changes to its manufacturing facilities. Additionally, PAHs must immediately notify us of any changes that may affect the inspection, conformity, or airworthiness of its products or articles. This requirement applies to all PAHs and persons producing under a TC only.

One commenter noted that § 21.122(a) appears to allow for production under a TC outside the United States. The commenter is correct. We considered amending subpart F to prohibit manufacturing under a TC in a foreign country. However, we decided to allow manufacturing under a TC in a foreign country, as long as it causes ''no undue burden'' for the FAA.

7. Issuance of Export Airworthiness Approvals for Aircraft Engines, Propellers, and Articles

Section 21.331 permits a person to obtain, from the FAA, an export airworthiness approval for a new or used aircraft engine, propeller, or article manufactured under this part if it conforms to its approved design and is in a condition for safe operation. Also, used aircraft, engines, and propellers are no longer required to be newly overhauled. Finally, prior to issuance of an export airworthiness approval for an aircraft engine, propeller, or article, the special requirements of importing countries or jurisdictions must be met.

AIA, GE, and Pratt & Whitney suggested the FAA amend the rule to reflect that some products require disassembly for shipping purposes after the product has been certificated that it is ''in a condition for safe operation.'' Airworthiness is determined at the time the product is submitted to the FAA in an assembled state. We allow for disassembly of a product for the purpose of shipping to the end-user, but the importing authority will require an airworthiness determination after reassembly and prior to installation on the aircraft.

AIA, Boeing, and GE also suggested we revise the rule language to allow a PAH to obtain letters of acceptance directly from the importing country when required for nonconforming products ready for export. A fundamental principle of our bilateral agreements is that letters of acceptance are transmitted between authorities, and we are not planning to institute a change to that policy. Because bilateral agreements supersede our regulatory requirements, the FAA will continue to receive and process letters of acceptance from importing authorities.

AIA, Boeing, and GE further stated it would be beneficial for us to define the term ''used'' as it appears in § 21.331. They also suggested that we revise § 21.331 to allow the issuance of export airworthiness approvals for used products that do not meet an approved type design, as service time and wear prevent conformity to new article dimensions. We agree that there should be a consistent application of the term ''used'' as it relates to aircraft products; however, a regulatory definition would not be appropriate at this time because the term has different meanings in its application in a certification context versus a maintenance context. As to the comment regarding nonconforming products, § 21.331 already allows for the issuance of an export airworthiness approval for used products that do not meet an approved type design.

An individual commenter thought it unnecessary to obtain letters of acceptance from an importing country when shipping nonconforming products or articles. We disagree. An importing authority has complete discretion on whether it will accept nonconforming products or articles, and this issue is addressed between authorities in bilateral agreements and is not dictated via domestic regulations. Another individual commenter suggested that an importing country, rather than the FAA, should authorize deviations from the regulatory requirements of subpart L for products exported. Importing countries have no regulatory jurisdiction in the United States, and therefore, they have no authority to grant a deviation from our requirements. We maintain sole authority to grant deviations from our regulations.

An individual commenter suggested that the rule accommodate the movement of articles whose airworthiness status is unknown. Again, we disagree. The rule is intended to accommodate only the export of products and articles determined to be airworthy. The issuance of an airworthiness approval for products and articles whose status is unknown would be contrary to the fundamental airworthiness principles and obligations of our bilateral airworthiness agreements with other countries and/or jurisdictions.

Section 21.335(a) requires exporters to forward to the importing country or jurisdiction all documents specified by that country or jurisdiction. Paragraph (b) requires the exporter to preserve and package products and articles as necessary to protect them against corrosion and damage during transit or storage and to state the duration of effectiveness of such preservation and packaging. AIA, GE, aircraft parts manufacturers, and individuals assert that because it is difficult, or sometimes impossible, to predict how long an article may need to be preserved, it may be equally difficult to comply with the packaging and preservation requirements.

This rule requires that products and articles be properly preserved and packaged as necessary at the time of export. Exporters must state the duration of effectiveness, but they are not required, as the commenters suggest, to exercise control over the end use or storage of the parts exported. If a product or article does not require any preservation or protective packaging in order to prevent damage, this rule does not apply.

AIA and GE were concerned that U.S. exporters may be required to obtain an export airworthiness approval as part of the documents specified for export. They believed that import and export requirements should be the same. The commenters are correct. Based on the content of our agreement with a country, additional documentation,

including an export airworthiness approval from the importing country or jurisdiction, may be required.

AIA mentioned that § 21.335(a), or the preamble, should clearly state the documentation requirements for export, as there is often a variation in requirements. The FAA has numerous bilateral agreements with countries addressing the type, format, and content of documentation required for imported and exported products and articles. It would be impractical to delineate all those requirements in our regulations, as they are subject to change by the importing country. The FAA does request the importing authorities to periodically update and review its special import requirements, and we maintain that information in AC 21–2, Appendix 2, which is available on our Web site.

8. Definition of ''Standard Parts''

We proposed in the NPRM to expand the definition of ''standard parts'' that appeared in former § 21.303(b)(4). The proposed definition of ''standard parts'' included a part that conforms to a specification established by a foreign government agency or a consensus standards organization. However, due to conflicts between our proposed definition with other authorities' definitions of ''standard parts,'' the FAA has decided against revising the definition of ''standard parts'' at this time. Instead, we are maintaining the original use of the term, which now appears in § 21.9(a)(3).

9. Definitions

FAA has expanded the part 1 definition of ''approved,'' as it relates to the approval of products and articles, to include approvals issued under the provisions of a bilateral agreement between the United States and a foreign country or jurisdiction. This amendment clarifies that data approved by a foreign civil aviation authority under a bilateral agreement does not require further FAA approval. Furthermore, the term ''jurisdiction,'' as it appears in the definition, applies to entities that are not countries (*e.g.*, the European Union (EU)).

Section 21.1(a)(1) prescribes procedural requirements for issuing and changing design approvals, production approvals, airworthiness certificates, and airworthiness approvals. Paragraphs (b)(1) through (b)(8) define the terms airworthiness approval, article, commercial part, design approval, product, production approval, State of Design, and State of Manufacture.

We received forty-eight comments on this section. National Civil Aviation Agency—Brazil (ANAC) asked that we define the term ''airworthiness certificates.'' An airworthiness certificate is a form issued by the FAA or its designee to document whether a product meets its type design and is in a condition for safe operation. The usage of this form in this manner has been commonly accepted, and we have determined that the term ''airworthiness certificate'' is widely understood and requires no further definition.

ANAC stated that the term ''jurisdiction,'' as it appeared in the proposed definition of ''State of Design,'' should be defined because an airworthiness jurisdiction is sometimes different than the company's legal location jurisdiction. We have revised the definition of ''State of Design'' to clarify that it means an entity that has regulatory authority over an organization responsible for the design and continued airworthiness of a civil aeronautical product or article. The concept of ''airworthiness jurisdiction'' is addressed by the reference to regulatory authority.

ANAC further stated that we should better clarify the term ''State of Manufacture'' because a product or article could have more than one State of Manufacture. Accordingly, we have revised the definition of ''State of Manufacture'' to clarify that it means the country or jurisdiction with regulatory authority over the organization responsible for the production and airworthiness of a civil aeronautical product or article.

An individual commenter mentioned the definition of ''airworthiness approval'' should include a reference to FAA Forms 8130–3 and 8130–4. The commenter also stated that an FAA Form 8130–3 should be required for standard and commercial parts when sold to an owner/operator for installation. We disagree with both comments. The FAA reserves discretion to change or use different FAA forms for various functions. Therefore, we rarely use form numbers in the regulations. The required form and manner of regulatory compliance is usually stated in policy and guidance material. Also, as stated, an airworthiness approval is used to document the airworthiness status of products and articles. Because standard and commercial parts are not produced pursuant to an approved type design, it would be inappropriate to issue an airworthiness certificate for those parts. While the FAA does not issue airworthiness approvals for these parts, they have been subjected to evaluation by both the type design holder and the FAA to ensure their suitability of use in the design.

Boeing and two individual commenters stated that the term ''article'' should be used throughout Title 14. We have determined that the part 21 definition of ''article'' may be inappropriate for use in applications of the term in other parts of the regulations. Universal application of the definition could likely result in unintended consequences. However, the definition of ''article'' is appropriate for use in this part.

GE and two individual commenters contended that the definition of ''article'' should not include ''processes'' because generally, there are no processes that can be considered stand-alone articles. Prior to this rulemaking, we have traditionally defined ''article'' to include processes, particularly in reference to TSO parts. We are retaining that usage in this rule. We have determined that this definition is appropriate because there are, in fact, instances when a stand-alone process, such as software, is considered an article. When making a determination of whether a process is an article, the FAA must consider whether that process is a deliverable, stand-alone end item.

AIA, Boeing, and GE stated that we should define the term ''supplier''. In general, the term ''supplier'' is understood to mean any person or organization contracted to furnish products, articles, or related services at any tier. However, the term ''supplier'' is well-understood, and there is no need to define the term in this rulemaking action.

We have removed from subpart L the definitions of Class I, Class II, and Class III products and the definition of ''newly overhauled''. We now use the terms product and article consistently throughout part 21. In addition, we no longer require a definition of ''newly overhauled'' since all occurrences of the term and any associated requirements related to it have been removed from the regulations.

B. Miscellaneous Requirements

The following discussion addresses miscellaneous amendments made to part 21, many of which are primarily procedural or administrative in nature and do not constitute major departures from the pre-existing part 21 rules. In addition, we have made administrative changes to the regulatory text to use terms consistently and for plain language purposes.

1. Application for Parts Manufacturer Approval

Section 21.303 requires an article to conform to its ''approved design,'' rather than conforming to ''drawings in the

design,'' as was required by its predecessor rule. We have replaced the term ''fabrication processes,'' appearing in the former rule, with ''manufacturing processes'' to reflect that PMA holders will no longer have a fabrication inspection system. PMA holders must now comply with the same quality system requirements as all other PAHs, consistent with the size of the PAH and the complexity of the product or article produced. PMA applicants must also provide a statement certifying that the applicant has complied with the airworthiness requirements of this subchapter.

We received eleven comments on this section. AIA and GE recommended that we clarify in the rule the meaning of ''approved design''. The commenters noted that design data, such as process specifications, are more than likely referenced on a drawing and may, along with the drawing, comprise the complete type design data package. Specifications and design documents may include material properties, inspection criteria, non-destructive inspection criteria, design practices, design parameters, or documents that include operational limits.

We do not agree that a detailed definition of ''approved design'' is appropriate in this regulation. In our experience, it is widely understood among applicants and approval holders that an ''approved design'' means a complete design data package containing substantiating data (*e.g.,* processes, material specification, design parameters, and limitations). Our intent is to clarify that the approved design may consist of more than referenced drawings.

2. Production under Type Certificate (TC)

This rule revises the introductory text of § 21.123 to clarify that a TC holder is authorized to manufacture articles, not just products, for its type-certificated products. Paragraph (b) requires the TC holder to make each product and article available to the FAA for inspection. Paragraph (c) requires each manufacturer of a product, or article thereof, under a TC to maintain completed inspection and test records for specified periods of time. This rule also increases the record retention requirements for all PAHs and for persons producing under a TC from 2 years to at least 5 years. For critical components identified under § 45.15(c) of this chapter, the record retention requirement is at least 10 years. Paragraph (d) requires each manufacturer of a product, or article thereof, manufactured under a TC to allow the FAA to make any inspection or test (including any inspection or test at a supplier facility) necessary to determine compliance with this subchapter.

Industry groups, aircraft, aircraft engine, and parts manufacturers expressed four main concerns. AIA, GE, and Pratt & Whitney were concerned with the applicability of this section to existing TC or PC holders. The commenters suggested that subpart F should only apply to first-time applicants. If a person holds a current TC and PC for various product models, then that person is producing articles for any new models under an existing quality system. Commenters assert that the TC or PC holder should not be required to obtain a PC six months after the issuance of the new model TC, as required by § 21.123, because the person already has a PC. We partially agree. If the PC holder chooses to manufacture a more complex product, the FAA must review the quality system to determine whether it is adequate to produce products or articles that conform to the type design and is in a condition for safe operation.

A part manufacturer asked whether a TSO article that is incorporated into a TC is considered to have been manufactured in accordance with the type design for the TC. While the TSO article is part of the type design, it has its own approval process. A TSO article is produced using minimum performance specifications; those specifications constitute the design for the TSO article. That design data is submitted to the FAA for approval with the manufacturer's quality manual. A joint design/production approval is then granted under subpart O.

3. Falsification of Applications, Reports, or Records

Section 21.2 prohibits persons from making misleading statements on applications for certificates or approvals or in any record or report that is kept, made, or used to show compliance with any requirement of this part. For the purposes of this rule, a misleading statement requires a material representation or omission that is likely to mislead a person when that person is acting with reasonable diligence under the circumstances. The scope of § 21.2 is now expanded to prohibit fraudulent, intentionally false, or misleading statements on any record that is kept, made, or used to show compliance with any requirement of part 21. Also, a violation of this rule may be used as the basis for denying an approval issued under part 21, in addition to suspending or revoking an approval.

We received eight comments on this proposed rule. AIA, Boeing, GE, Pratt & Whitney, Embraer, and an individual commenter were concerned that some persons might unknowingly make misleading statements and be subject to an FAA violation. They stated that we should recognize, and the rule should reflect, that honest mistakes happen and that those mistakes should be given due consideration.

The FAA recognizes that honest mistakes happen, and to that end, we will collect and evaluate any available evidence regarding incorrect representations and examine the overall impression created by that representation. We must reserve the right to take action, as appropriate, to address material inaccuracies in the related application or records, whether or not the inaccuracies are intentional.

Experimental Aircraft Association (EAA) requested that we revise the preamble language to reflect that phrases such as ''direct replacement'' and ''ready to use in your aircraft'' are acceptable, as they have been used for years in both certificated and experimental aircraft industries. However, the FAA will not endorse the use of the phrases ''direct replacement'' and ''ready to use in your aircraft'' to suggest that an article is approved for installation on a type-certificated aircraft unless the statements are supported by objective evidence of such an approval.

An individual commenter stated that we should clarify that § 21.2 applies to noncertificated persons, commercial parts producers, standard parts producers, and surplus suppliers. Part 21 governs the certification of products or articles, and persons seeking such certification would be subject to its provisions.

4. Design Changes

Section 21.319 governs the classification and approval of PMA design changes. Prior to this rulemaking, part 21 did not formally address PMA design changes. Changes were accomplished using the design change process used for TCs.

Seven commenters, representing industry groups, aircraft manufacturers, and engine manufacturers, expressed two main concerns. The first concern was with the proposed definition of ''minor change''. In general, AIA, Boeing, and GE believe that limiting the applicability of design changes to an isolated view of ''parts-only'' could impact safety. For example, under § 21.319(a)(1), a change to the design of an article may be classified as minor; however, if the change was evaluated

with consideration of the complete aircraft or engine, the classification of the change might not be minor.

We disagree with the commenters and have determined that safety will not be adversely affected by classifying changes to PMA parts as ''minor''. The classification of a change to a PMA article as minor under § 21.319 does not waive the installer of the requirements of compliance to part 21, subpart D for the TC holder. This is due to the installation of the changed PMA article, or the requirements of § 21.113 for any person altering a type product with a major change in type design. For example, if the installation of the changed PMA article causes a major change to the type product, § 21.113 requires an STC for installation approval.

To clarify that the PMA change classification is only to apply at the article level, we modified the definition of minor change. Section 21.319(a)(1) has been changed to read, ''A 'minor change' to the design of an article produced under a PMA is one that has no appreciable effect on the approval basis.''

Boeing recommended that we review the EASA regulation and associated guidance and provide a discussion in the rule language to differentiate how design changes are approved under differing methods of obtaining a PMA. The issue of design change classifications encompasses individuals other than just PMA holders who obtained their approvals with licensing agreement data. TC holders can license their design data to any third person, including to PAHs who have no intention of seeking a PMA. The PMA holder can only evaluate the change to its own design approval for its own article. If the PMA holder is making a design change that affects the product on which the article is installed, it requires an STC for the product.

Furthermore, a comparison of our proposed regulation regarding design changes with EASA regulations and guidance is beyond the scope of this rulemaking.

5. Changes in Quality System

Section 21.150 specifies requirements regarding changes in the quality system. Previously, we required the PC holder to notify the FAA of any change that might affect the inspection, conformity, or airworthiness of the product. This rule amends that requirement to now apply to ''articles,'' as well as products. Accordingly, we have incorporated this requirement in subparts K and O, which are applicable to PMA holders and TSO authorizations, respectively. Again, this rule standardizes requirements for all PAHs.

6. Transferability of a Type Certificate

Today's rule requires a TC holder to notify the FAA before the transfer, execution, or termination of a licensing agreement. Such notification allows us time to coordinate with our affected offices and to inform the prospective licensees of their responsibilities. We also now require a grantor to notify the FAA of TC transfer when the State of Design is changing before the transfer occurs. Transferring a TC when the State of Design is changing requires FAA coordination with the aviation authority of the prospective State of Design to identify requirements in support of the transfer and to reduce the FAA's burden in managing the certificate.

Embraer suggested the FAA place limits on how much advance notice is required before transferring a certificate. We have determined that it is more efficient to coordinate the transfer of a TC before the transfer, rather than after it has occurred. Depending on the scope of the transferred TC (complex aircraft or engine, *etc.*), the length of transfer time may vary. Therefore, predetermined time limits could restrict the process.

ANAC suggested we require an agreement between States for licensing agreements in which the licensee or the licensor is in another country. ANAC believes such an agreement would make the oversight process more efficient. We agree. However, bilateral agreements between authorities already address licensing agreements between States, and we need not make this a regulatory requirement. We exercise oversight responsibilities for licensors in the United States. We have no oversight responsibility over licensees located in other States.

An individual commenter stated that the rule language regarding the anticipated date of the agreement in § 21.47(d) requires further explanation. That commenter also questioned whether the licensing agreement should be sent to the Manufacturing Inspection District Office (MIDO), rather than the Aircraft Certification Office (ACO), as any manufacturing activity based on the licensing agreement must be approved by the MIDO. The ''anticipated date of the transfer'' is a projection and may be speculative at times on the part of the licensor. Furthermore, § 21.47(d) applies to TC holders. A production approval applicant must work with both the ACO and its cognizant MIDO.

7. Special Flight Permits

Section 21.197(c)(1) allows the issuance of special flight permits by part 119 certificate holders that have an approved program for continuing flight authorization. It also allows the issuance of special flight permits by management specification holders authorized to conduct operations under part 91 for aircraft they operate and maintain under a continuous maintenance program prescribed by § 91.1411.

The flight permits include conditions and limitations for flight and may be issued for aircraft that do not meet applicable airworthiness standards. Formerly, the FAA allowed the issuance of special flight permits only by operators that maintain their aircraft under a continuous airworthiness maintenance program (CAMP). This rule provides relief to operators who do not have a CAMP but periodically require the issuance of special flight permits. The operator must have the necessary quality system and infrastructure to support this authorization.

8. TC Applicant—Compliance with Applicable Requirements

We established § 21.20(a) to require an applicant for a TC, including an amended TC or STC, to show compliance with all applicable requirements and to provide the FAA the means by which such compliance has been shown. It also requires an applicant for a TC, including an amended TC or STC, to provide a statement certifying that the applicant has complied with the applicable requirements.

We received four comments on this section. Embraer, a repair station, and two individual commenters stated that it would be difficult for an applicant to determine if all of the requirements had been met prior to applying for a TC. Therefore, further guidance might be required. The type certification process requires the applicant and the ACO to work closely together through the entire certification process. The ACO will advise applicants of the requirements prior to receipt of the certifying statement. This rule is intended to expedite the type certification approval process by ensuring that an applicant's submission package is complete prior to the FAA making the compliance determination.

9. Issuance of Standard Airworthiness Certificates

We revised § 21.183(c) to allow a person to obtain a standard airworthiness certificate for an aircraft

that is imported to the U.S. via an export certificate of airworthiness, provided the aircraft is type certificated under § 21.21 or § 21.29, manufactured under the authority of another State of Manufacture, and there is no undue burden on the FAA. The State of Manufacture must certify (in accordance with the provisions of an agreement with the United States for import and export of that aircraft), and the FAA would have to determine that the aircraft conforms to its type design and is in a condition for safe operation.

An individual commenter stated that § 21.183(c) should be revised to apply the standards to new aircraft only. However, it would be inappropriate to apply the rule for new aircraft only because there are instances when used aircraft may be eligible for a standard airworthiness certificate, such as when a used aircraft is imported into the United States. If an airworthiness determination can also be made for these aircraft, we have determined that used aircraft should be eligible for a standard airworthiness certificate.

That commenter also asserted the 100-hour inspection requirements of § 21.183(d)(2) should not be relaxed. The commenter believed the only exception should be when: (1) An aircraft is imported from a country with which the United States has a bilateral agreement that addresses maintenance, and (2) the aircraft is currently certificated and operating under an acceptable inspection/maintenance program. Section 21.183(d)(2) does not relax the 100-hour inspection requirement. Section 21.183(d)(2) merely provides an alternative means of determining whether a product is acceptable.

The commenter further asserted that the U.S. should only accept a used aircraft from a country or jurisdiction that is not the State of Manufacture when we have a bilateral agreement for maintenance with that country or jurisdiction. Finally, the commenter stated that the U.S. should not accept an aircraft for an airworthiness certification in a category that requires a TC, unless the State of Manufacture for that aircraft provides a certification of its status at manufacture.

The intent of § 21.183(d)(2) is to provide the ability to accept equivalent inspection standards and the corresponding airworthiness determinations from those countries and jurisdictions with which the U.S. has a bilateral agreement. This rule incorporates current policy, is consistent with bilateral practices, and may reduce the cost of importing a used aircraft when duplicate inspection requirements are eliminated.

10. Approval of Major Changes in Type Design

The FAA now requires an applicant for approval of a major change in type design to show that the changed product complies with the applicable requirements. The applicant must provide the FAA the means by which such compliance has been shown and a statement certifying that the applicant has complied with the applicable requirements.

11. Quality Manual

Section 21.138 requires each PC applicant to provide a quality manual describing its quality system to the FAA for approval. This requirement also applies to PMA and TSO approval holders. The quality manual must address the quality system requirements of the subpart under which the applicant seeks production approval. The quality manual should also address changes to the quality system, revisions to the manual, and a means of tracking revisions to the manual. These changes must be acceptable to the FAA. In addition, this rule requires that the quality manual be in the English language and retrievable in a form acceptable to us so that regardless of the media used, the quality manual is easily available to the PAH and FAA personnel.

12. Production Limitation Record

Section 21.142 clarifies that the PC holder, not a PC applicant, is authorized to manufacture the products listed on the production limitation record (PLR). A PLR is issued once an applicant obtains a PC, allowing the PC holder to manufacture the products listed on the PLR.

13. Persons Authorized to Perform Maintenance, Preventive Maintenance, Rebuilding, and Alterations

The FAA has amended § 43.3(j)(3) by removing all references to an aircraft production inspection system (APIS). This change is consistent with the amendments to part 21, subpart F. This change also allows a manufacturer to perform any inspection required by parts 91 or 125 on aircraft it manufactured under a TC only or currently manufactures under a PC.

Transport Canada stated that § 43.3(j) should be revised to eliminate the special maintenance privileges afforded to manufacturers so that all persons or organizations are subject to the same requirements.

We recognize that this section needs clarification to address the performance of maintenance and oversight of those manufacturers who exercise the privileges of § 43.3(j). FAA is currently working to address this and other maintenance/manufacturing issues.

14. Statement of Conformity

The proposed rule requires a TC applicant to provide a statement of conformity for each aircraft engine or propeller presented for TC. This rule also removes the flight and operational check requirements that were previously in § 21.130. Those requirements were redundant with the requirements in §§ 21.127(a), 21.128, and 21.129. We have removed from the regulations prescriptive details related to particular FAA forms, form content, and form. This information is more appropriately located in policy documents that are more easily amended to reflect future changes in procedures.

Previously, § 21.130(c) exempted TC holders from providing a statement of conformity for products manufactured for the Armed Forces if they had accepted the product. We have removed that exception. Now, TC holders must issue an FAA Form 8130–2, Conformity Certificate—Military Aircraft, for products manufactured for the Armed Forces. This amendment facilitates a future applicant's ability to obtain a special airworthiness certificate under § 21.183(d) for surplus military aircraft.

A parts manufacturer questioned the additional benefit associated with obtaining an FAA Form 8130–2, in addition to Form 8130–3, that would have been required under our original proposal. Because we are no longer mandating the issuance of an airworthiness approval, the commenter's concern about issuance of a Form 8130–3 approval is no longer at issue. However, a Form 8130–2 is still required for military aircraft used in civil applications. The FAA (or the DAR) relies on the statement of conformity issued by the manufacturer as objective evidence that the product or article for which the TC was issued conforms to its approved type design and is in a condition for safe operation.

15. Privileges

We have revised § 21.119(c) to clarify that the STC holder may obtain a PC for the change in the type design approved by the STC if the STC holder meets the requirements of subpart G, pertaining to the issuance of PCs.

16. Issuance of Airworthiness Certificates for Restricted Category Aircraft

We have revised § 21.185(c) to allow, under certain conditions, the issuance of a special airworthiness certificate for restricted category aircraft that are imported into the U.S. with an export certificate of airworthiness. That aircraft must be type certificated under §§ 21.25 or 21.29 and be manufactured under the authority of another State of Manufacture. The State of Manufacture must certify that the aircraft conforms to its type design and is in condition for safe operation at the time of export. Again, the FAA must find that the aircraft conforms to its type design and is in condition for safe operation.

17. Acceptance of Articles

We have revised § 21.502 by replacing the word ''approval'' with ''acceptance'' to clarify that subpart N governs only the import or acceptance of articles into the U.S.; not the original design or production approvals of articles. This revision also requires that an article (including an article produced under a letter of TSO design approval) be marked in accordance with part 45 of this chapter to meet the requirements for FAA acceptance.

C. Compliance Dates

This rule is effective 180 days after publication in the **Federal Register**. The compliance date for part 1; part 21, subparts H, I, L, and N; and part 45, subpart B, §§ 45.11 and 45.13 is 180 days after publication in the **Federal Register**. The rule changes in these subparts are either cost relieving or have no economic impact on industry. The changes do not affect, and are not affected by, other changes to the rule. Therefore, the compliance date is the same as the effective date. All other portions of the final rule either promulgate new requirements or are tied to other requirements that have an extended compliance date. These rule provisions have a compliance date of 18 months after the rule's publication in the **Federal Register**.

Prior to the effective compliance dates of this final rule, compliance with any portion of this rule that conflicts with an existing rule is not allowed. However, it is possible to comply with the former part 21 requirements and the requirements of this rule concurrently.

III. Regulatory Notices and Analyses

Paperwork Reduction Act

This rule contains new information collection requirements. As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA submitted the information requirements associated with this rule to the Office of Management and Budget (OMB) for review and approval. An agency may not collect or sponsor the collection of information, nor impose an information collection requirement, unless it displays a currently valid OMB control number.

As required by the Act, we submitted a copy of the new information requirements to OMB for its review when we published the NPRM. Additionally, in the NPRM, we solicited comments from the public on the proposed new information collection requirements. Affected parties, however, do not have to comply with the information collection requirements of this rule until OMB approves the FAA's request for this information collection requirement. The FAA will publish a separate document notifying you of the OMB Control Number and the compliance date(s) for the information collection requirements of this rule.

The NPRM (71 FR 58914, October 5, 2006) summarized the FAA's analysis of the economic impacts of this rule. The FAA expected private entities would incur reporting and recordkeeping costs when applying for and operating under this rule and solicited comments on minimizing the cost and burden of the collection.

Based on comments to the docket that costs were prohibitive and benefits small, the FAA withdrew proposals that required airworthiness approvals for all (domestic and overseas) shipments of aircraft engines, propellers, and articles; certifying staff to issue the approvals; and marking requirements for all aircraft products and articles. These changes removed $327.1 million or 99.2 percent of the original undiscounted (gross) cost, and $187.6 million or 99.1 percent of the original present value total cost.

We also removed the provision in § 21.331 to allow PAHs to issue their own export airworthiness approvals. The issuance of an export airworthiness approval by the manufacturer would violate the terms of our bilateral agreements with other countries and jurisdictions. A fundamental premise of all bilaterals is that exported parts must be accompanied by an airworthiness approval issued by the relevant authority or its authorized designee. We estimated undiscounted cost savings of $95.5 million over 10 years, and present value cost savings of $54.8 million from this rule change in the NPRM. The net cost relief from changes to the NPRM to the rule amount to $231.6 million in undiscounted costs and $132.8 million in present value costs.

The average total annual cost burden and average total annual hour burden discussed in the NPRM do not take into consideration that section 3, Quality System manual and section 4, Organization, have costs that are front-loaded at a ratio of 80 percent in the first two years. Adjustments have been made to account for that front-loading.

Estimates of the Hour Burden of the Collection Information

The requirements for hour burden of the information collection associated with this rule fall into the following categories:

- Reporting of Failures, Malfunctions, and Defects;
- Commercial Parts;
- PC Quality System (internal audits);
- PC Quality System (in-service feedback);
- PMA Application (statement of compliance);
- PMA Quality System;
- PMA Quality Manual;
- TSO Organization.

The total annual hour burden for this rule is estimated to be approximately 2,589 hours.

Benefits of this Rulemaking

- The rule becomes effective in 2009. However, the FAA does not propose to make this information collection effective until approximately 12 months after the rule's effective date.
- The costs savings a private entity will attain under this rule will exceed the costs imposed by this rule.

International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has enhanced two ICAO definitions in these regulations.

Regulatory Evaluation, Regulatory Flexibility Determination, International Trade Impact Assessment, and Unfunded Mandates Assessment

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 (Pub. L. 96–354) requires agencies to analyze the economic impact of regulatory changes on small

entities. Third, the Trade Agreements Act (Pub. L. 96–39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S. standards. Fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of $100 million or more annually (adjusted for inflation with base year of 1995).

In conducting these analyses, the FAA has determined this final rule has benefits that justify its costs, and it is a ''significant regulatory action'' as defined in section 3(f) of Executive Order 12866 because it raises novel policy issues contemplated under that executive order. Accordingly, OMB has reviewed this rule. The rule is also ''significant'' as defined in DOT's Regulatory Policies and Procedures. The final rule, if adopted, will not have a significant economic impact on a substantial number of small entities, will not create unnecessary obstacles to international trade and will not impose an unfunded mandate on state, local, or tribal governments, or on the private sector. These analyses, available in the final regulatory evaluation supporting this rule, are summarized below.

Regulatory Evaluation Summary

For more information, we suggest readers go to the full regulatory evaluation. A copy is in the docket for this rulemaking.

This portion of the preamble summarizes the FAA's analysis of the economic impact of this rule. It also includes summaries of the final regulatory flexibility analysis, international trade impact assessment, and the unfunded mandate assessment. For more information, we suggest readers go to the full regulatory evaluation, a copy of which we have placed in the docket for this rulemaking.

Total Benefits and Costs of this Rule

We find the modest costs of this rule to be overwhelmed by very large cost savings and some safety benefits. We estimate the undiscounted 10-year costs of this rule to be about $2.1 million, the undiscounted 10-year cost savings to be about $126 million, and the undiscounted 10-year safety benefits to be about $10.1 million. We estimate the present value (2009 dollars) costs of this rule to be about $1.7 million, the present value cost savings to be about $88.4 million, and the present value safety benefits to be about $7.1 million. Consequently, we estimate this rule to be highly cost-beneficial with undiscounted 10-year net benefits of about $134 million and present value net benefits of about $93.8 million.

Persons Potentially Affected by this Rule

This rule primarily directly affects all type certificate (TC) and production approval holders (PAHs), including holders of PCs, TSOs, and PMAs. Regional air cargo carriers and exporters of used aircraft and used engines, propellers, and other articles (primarily distributors and individuals) are also directly affected by this rule.

Assumptions and Sources of Information

- As the rule mandates procedural changes with small front-loaded costs, we use a 10-year period of analysis, 2009 through 2018.
- This rule will become a final rule in 2009. The FAA intends to make cost-neutral or cost-relieving subparts and sections of this rule that are stand-alone changes effective 180 days after publication in the **Federal Register**. For purposes of our cost-benefit analysis, we assume safety benefits and benefits of cost-relieving changes will begin in 2009. The remaining portions of the rule (with positive costs) will be effective 12 months after the rule's effective date. We assume one-time costs will occur in 2010 and continuing costs will begin in 2010.
- The discount rate is 7 percent (Office of Management & Budget, Circular A–94, ''Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs'', October 29, 1992, p. 8).
- We obtained the number of PAHs by PAH type from the FAA's Certificate Management Information System (CMIS) database.
- PAHs are defined as ''small'' or ''large'' using U.S. Small Business Administration (SBA) size standards. (See table of Small Business Size Standards Matched to North American Industry Classification System Codes, July 21, 2006.)
- We estimated the number of small (and large) PAHs using a 45 percent sample of all PAH data from the FAA's Small Airplane and Rotorcraft Directorates.
- The fully burdened wage rate for engineers and quality system professionals is $80 an hour.
- The fully burdened wage rate for pilots in the regional air cargo industry is $55 an our (RACCA).
- We obtained data on aircraft and aircraft engine exports from the Trade Policy Information System (TPIS) database (International Trade Administration, Department of Commerce).
- Importing countries accept large transport category airplanes based on a bridge inspection document (Industry expert from the Aeronautical Repair Station Association (ARSA)).
- Exporters of used aircraft and used engines compete away 90 percent of the cost savings to overseas buyers.
- Forty percent of U.S. engine exports are used engines (based on the percentage of used aircraft exports shown by TPIS database).
- Aircraft engine overhauls occur every five years (FAA expert from the Office of Aviation Safety, Flight Standards Service (AFS)).
- Eighty percent of importing countries accept used large jet engines without a complete overhaul (ARSA industry expert).
- We obtained information on aircraft accidents caused by inadequate quality control from the National Transportation Safety Board (NTSB) accident reports and the FAA's Aviation Safety Information Analysis and Sharing (ASIAS) database for air claims.
- The value of a statistical fatality averted is $3 million *(Economic Values for FAA Investment and Regulator Decisions, a Guide,* p. 2–2, Aviation Specialist Group, Inc., for Office of Aviation Policy and Plans, FAA, Washington, DC, December 31, 2004).[1]
- The legal and medical costs for fatalities and injuries are obtained from *Economic Values for FAA Investment and Regulator Decisions,* pp. 2–2 to 2–4.
- This rule will prevent 50 percent of future accidents caused by inadequate quality control.
- Data on costs of compliance with this rule were obtained from FAA data and industry representatives.

Changes From the NPRM to the Final Rule

Based on comments to the docket that costs were prohibitive and benefits small, the FAA has withdrawn major proposals requiring airworthiness approvals for all (domestic and overseas) shipments of aircraft engines, propellers, and articles; certifying staff to issue these approvals; and marking

[1] The current value of the equivalent life saved is $5.8 million, and under that value, benefits would be even higher.

requirements for all aircraft products and articles. These changes remove $327.1 million or 99.2 percent of the original undiscounted (gross) cost, and $187.6 million or 99.1 percent of the original present value total cost.

We have also, however, removed the provision in § 21.331 that would have allowed PAHs to issue their own export airworthiness approvals. The issuance of an export airworthiness approval by the manufacturer would violate the terms of our bilateral agreements with other countries and jurisdictions. A fundamental premise of all bilaterals is that exported parts must be accompanied by an airworthiness approval issued by the relevant authority or its authorized designee. In the NPRM, we estimated undiscounted cost savings of $95.5 million and present value cost savings of $54.8 million from this rule change. Consequently, the net cost relief from changes to the NPRM amount to $231.6 million in undiscounted costs and $132.8 million in present value costs.

Benefits of this Rulemaking

The benefits of the rule include estimated cost savings from three rule changes that relieve regulatory burden and estimated safety benefits. As the table shows, we estimate the undiscounted 10-year cost savings from these rule changes to be about $126.0 million and the present value cost savings to be about $88.4 million. Safety benefits from this rule will arise to the extent that it prevents accidents caused by inadequate quality control. As the table shows, we estimate the undiscounted 10-year safety benefits of this to be about $10.1 million and the present value (2009 dollars) safety benefits to be about $7.1 million. As the table shows, summing the cost savings and the safety benefits yields undiscounted total 10-year benefits of about $95.5 million and total present value (2009$) benefits of about $95.5 million.

TABLE 1—SUMMARY TABLE OF BENEFITS BY RULE SECTION

Section No.	Section description	Present value cost savings/benefits	Undiscounted cost savings/benefits
§ 21.197	Special flight permits	$4,596,668	$6,661,500
§ 21.329(c) deleted	Annual type inspection no longer required for used A/C to receive export airworthiness certificate.	6,719,695	9,567,330
§ 21.331 (§ 21.329(e) deleted)	New overhaul no longer required for used engine to receive export airworthiness approval.	77,122,043	109,804,440
	Total Cost Savings	88,438,406	126,033,270
	Safety Benefits	7,067,034	10,061,867
	Total Benefits of the Rule	95,505,440	136,095,137

Costs of This Rulemaking

The Final Regulatory Evaluation for this rule examines the impact of an FAA final rule that will make extensive changes to its part 21 certification procedures and identification requirements for aeronautical products and articles. These changes will:

- Standardize several requirements for PAHs, including requirements for a quality system and quality manual to reflect industry best practices;
- Revise export airworthiness approval requirements to facilitate global manufacturing and trade;
- Move all part marking requirements from part 21, Certification Procedures for Products and Parts, to part 45, Identification and Registration Marking; and
- Add a new classification of parts called ''commercial parts.''

The intent of these changes is to promote safety by ensuring that, whether manufactured locally or abroad, aircraft products and articles meet applicable standards. These changes will update the regulations to reflect the current global environment for the manufacture and trade of aircraft products and articles and, more generally, to improve regulatory efficiency.

Most of these changes standardize, clarify, or simplify rule language, while other rule changes are already industry practice. Consequently, they impose no new costs and possibly have qualitative positive benefits by increasing the efficiency of the regulatory process. Of the dozens of rule changes, only eight have net positive costs, not including probable qualitative benefits. Our estimates are shown in the table. As the table shows, we estimate undiscounted 10-year costs to be about $2.1 million and present value (2009 dollars) costs to be about $1.7 million.

TABLE 2—SUMMARY TABLE OF COSTS BY RULE SECTION

Section No.	Section description	Present value costs	Undiscounted costs
§ 21.3(f)	Reporting of failures, malfunctions, and defects	$4,614	$6,942
§ 21.9(a)(4)	Commercial parts	499,890	790,596
§ 21.137(l)	PC Quality system (internal audits)	11,813	12,640
§ 21.137(m)	PC Quality system (in-service feedback)	39,626	42,400
§ 21.303(a)(5)	PMA Application (statement of compliance)	276,262	295,600
§ 21.307	PMA Quality system	415,551	444,640
§ 21.308	PMA Quality manual	424,374	454,080
§ 21.605	TSO Organization	22,430	24,000
Total Costs		1,694,560	2,070,898

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (Pub. L. 96–354) (RFA) establishes ''as a principle of regulatory issuance that agencies shall endeavor, consistent with the objectives of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the businesses, organizations, and governmental jurisdictions subject to regulation. To achieve this principle, agencies are required to solicit and consider flexible regulatory proposals and to explain the rationale for their actions to assure that such proposals are given serious consideration.'' The RFA covers a wide-range of small entities, including small businesses, not-for-profit organizations, and small governmental jurisdictions.

Agencies must perform a review to determine whether a rule will have a significant economic impact on a substantial number of small entities. If the agency determines that it will, the agency must prepare a regulatory flexibility analysis as described in the RFA. However, if an agency determines that a rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the RFA provides that the head of the agency may so certify and a regulatory flexibility analysis is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

The Initial Regulatory Flexibility Analysis of this rule, published in the **Federal Register** (72 FR 6968, February 14, 2007), found a significant economic impact on a substantial number of small entities. We received numerous comments to the docket that the costs of the rule were prohibitive, and particularly so for small firms. The greatest concern was with our requirements for (1) airworthiness approvals for all (domestic and overseas) shipments of aircraft engines, propellers, and articles and (2) marking requirements for all aircraft products and articles. In response to these comments, the FAA has withdrawn these major proposals. These changes remove $187.6 million, or 99.1 percent of the original present value (gross) cost. As a consequence, for all firms in our sample of small firms affected by the rule, the annualized cost of the rule relative to estimated average annual revenues is less than 0.1 percent.

Several comments to the docket argued that we have greatly underestimated the cost for PMA holders—especially small holders—to comply with the requirement for a quality system (§ 21.307) and quality manual (§ 21.308), particularly the internal audit provision. According to these comments, additional staff will be required at a cost, in the case of a one-person shop, of up to $60,000 a year. Our reference to ISO standards and other preamble language may have misled these commenters. We intend that the requirements be scalable relative to firm size and product complexity. The complexity of the quality system and the size of the quality manual depend on the size of the PAH and the complexity of the product or articles manufactured. A small PMA producing a simple article requires only a simple quality system—Some of the quality system requirements might even be ''not applicable.'' In the case of a one-person shop producing a simple article, the internal audit provision might be not applicable or, if deemed applicable, might be satisfied with an audit every four years. The corresponding quality manual might consist of only three or four pages.

Therefore, as the FAA Administrator, I certify that this rule will not have a significant economic impact on a substantial number of small entities.

International Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96–39), as amended by the Uruguay Round Agreements Act (Pub. L. 103–465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such the protection of safety, and does not operate in a manner that excludes imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this proposed rule and determined that it would have only a domestic impact and therefore would not create unnecessary obstacles to the foreign commerce of the United States. We have assessed the potential effect of this rule and determined it complies with the Trade Agreements Act, as it will promote international trade by:

- Revising export airworthiness certificate and approval requirements to no longer require used aircraft to undergo an annual type inspections and to no longer require used engines and propellers to be newly overhauled; and
- Changing language in order to harmonize with bilateral agreements and European Union (EU) regulations.

Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of $100 million or more (adjusted annually for inflation with the base year 1995) in any one year by State, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a ''significant regulatory action.'' The FAA currently uses an inflation-adjusted value of $136.1 million. This rule does not contain such a mandate. The requirements of Title II do not apply.

Executive Order 13132, Federalism

The FAA has analyzed this rule under the principles and criteria of Executive Order 13132, Federalism. We determined that this action will not have a substantial direct effect 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, and, therefore, does not have federalism implications.

Regulations Affecting Intrastate Aviation in Alaska

Section 1205 of the FAA Reauthorization Act of 1996 (110 Stat. 3213) requires the FAA, when modifying its regulations in a manner affecting intrastate aviation in Alaska, to consider the extent to which Alaska is not served by transportation modes other than aviation, and to establish appropriate regulatory distinctions. In the NPRM, we requested comments on whether the proposed rule should apply differently to intrastate operations in Alaska. We did not receive any comments, and we have determined, based on the administrative record of this rulemaking, that there is no need to make any regulatory distinctions applicable to intrastate aviation in Alaska.

Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this

rulemaking action qualifies for the categorical exclusion identified in paragraph 308(b) and involves no extraordinary circumstances.

Regulations that Significantly Affect Energy Supply, Distribution, or Use

The FAA has analyzed this NPRM under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). We have determined that it is not a ''significant energy action'' under the executive order because while it is a ''significant regulatory action,'' it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

Small Business Regulatory Enforcement Fairness Act

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires FAA to comply with small entity requests for information or advice about compliance with statutes and regulations within its jurisdiction. If you are a small entity and you have a question regarding this document, you may contact your local FAA official, or the person listed under the **FOR FURTHER INFORMATION CONTACT** heading at the beginning of the preamble. You can find out more about SBREFA on the Internet at *http://www.faa.gov/regulations_policies/rulemaking/sbre_act/*.

Availability of Rulemaking Documents

You can get an electronic copy of rulemaking documents using the Internet by—

1. Searching the Federal eRulemaking Portal (*http://www.regulations.gov*);
2. Visiting the FAA's Regulations and Policies Web page at *http://www.faa.gov/regulations_policies/;* or
3. Accessing the Government Printing Office's Web page at *http://www.gpoaccess.gov/fr/index.html*.

You can also get a copy by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267–9680. Make sure to identify the amendment number or docket number of this rulemaking.

You may access all documents the FAA considered in developing this final rule, including economic analyses and technical reports, from the Internet through the Federal eRulemaking Portal referenced in paragraph (1).

List of Subjects

14 CFR Part 1

Air transportation.

14 CFR Part 21

Aircraft, Aviation safety, Exports, Imports, Reporting and recordkeeping requirements.

14 CFR Part 43

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

14 CFR Part 45

Aircraft, Exports, Signs and symbols.

The Amendment

■ In consideration of the foregoing, the Federal Aviation Administration amends Chapter I of Title 14, Code of Federal Regulations parts 1, 21, 43, and 45 as follows:

PART 1—DEFINITIONS AND ABBREVIATIONS

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

Authority: 49 U.S.C. 106(g), 40113, 44701.

■ 2. Amend § 1.1 by revising the definition of ''Approved'' to read as follows:

§ 1.1 General definitions.

* * * * *

Approved, unless used with reference to another person, means approved by the FAA or any person to whom the FAA has delegated its authority in the matter concerned, or approved under the provisions of a bilateral agreement between the United States and a foreign country or jurisdiction.

* * * * *

■ 3. Amend § 1.2 by adding the abbreviations *PMA* and *TSO* in alphabetical order to read as follows:

§ 1.2 Abbreviations and symbols.

* * * * *

PMA means parts manufacturer approval.

* * * * *

TSO means technical standard order.

* * * * *

PART 21—CERTIFICATION PROCEDURES FOR PRODUCTS, ARTICLES, AND PARTS

■ 4. 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, 44704, 44707, 44709, 44711, 44713, 44715, 45303.

PART 21 [AMENDED]

■ 5. Amend part 21 by:

■ a. Removing the word ''Administrator'' and adding in its place the word ''FAA'' wherever it appears;

■ b. Removing the word ''shall'' and adding in its place the word ''must'' wherever it appears; and

■ c. Removing the phrase ''type certificate only'' and adding in its place the phrase ''type certificate'' wherever it appears.

■ 6. Revise § 21.1 to read as follows:

§ 21.1 Applicability and definitions.

(a) This part prescribes—

(1) Procedural requirements for issuing and changing—

(i) Design approvals;

(ii) Production approvals;

(iii) Airworthiness certificates; and

(iv) Airworthiness approvals;

(2) Rules governing applicants for, and holders of, any approval or certificate specified in paragraph (a)(1) of this section; and

(3) Procedural requirements for the approval of articles.

(b) For the purposes of this part—

(1) *Airworthiness approval* means a document issued by the FAA for an aircraft, aircraft engine, propeller, or article which certifies that the aircraft, aircraft engine, propeller, or article conforms to its approved design and is in a condition for safe operation;

(2) *Article* means a material, part, component, process, or appliance;

(3) *Commercial part* means an article that is listed on an FAA-approved Commercial Parts List included in a design approval holder's Instructions for Continued Airworthiness required by § 21.50;

(4) *Design approval* means a type certificate (including amended and supplemental type certificates) or the approved design under a PMA, TSO authorization, letter of TSO design approval, or other approved design;

(5) *Product* means an aircraft, aircraft engine, or propeller;

(6) *Production approval* means a document issued by the FAA to a person that allows the production of a product or article in accordance with its approved design and approved quality system, and can take the form of a production certificate, a PMA, or a TSO authorization;

(7) *State of Design* means the country or jurisdiction having regulatory authority over the organization responsible for the design and continued airworthiness of a civil aeronautical product or article;

(8) *State of Manufacture* means the country or jurisdiction having regulatory authority over the organization responsible for the production and airworthiness of a civil aeronautical product or article.

■ 7. Amend § 21.2 by revising paragraphs (a) introductory text, (a)(1), (a)(2), and (b) to read as follows:

§ 21.2 Falsification of applications, reports, or records.

(a) A person may not make or cause to be made—

(1) Any fraudulent, intentionally false, or misleading statement on any application for a certificate or approval under this part;

(2) Any fraudulent, intentionally false, or misleading statement in any record or report that is kept, made, or used to show compliance with any requirement of this part;

* * * * *

(b) The commission by any person of an act prohibited under paragraph (a) of this section is a basis for—

(1) Denying issuance of any certificate or approval under this part; and

(2) Suspending or revoking any certificate or approval issued under this part and held by that person.

■ 8. Amend § 21.3 by revising paragraphs (a), (b), (d)(1), (d)(2), (e)(3), and (f) to read as follows:

§ 21.3 Reporting of failures, malfunctions, and defects.

(a) The holder of a type certificate (including amended or supplemental type certificates), a PMA, or a TSO authorization, or the licensee of a type certificate must report any failure, malfunction, or defect in any product or article manufactured by it that it determines has resulted in any of the occurrences listed in paragraph (c) of this section.

(b) The holder of a type certificate (including amended or supplemental type certificates), a PMA, or a TSO authorization, or the licensee of a type certificate must report any defect in any product or article manufactured by it that has left its quality system and that it determines could result in any of the occurrences listed in paragraph (c) of this section.

* * * * *

(d) * * *

(1) Failures, malfunctions, or defects that the holder of a type certificate (including amended or supplemental type certificates), PMA, TSO authorization, or the licensee of a type certificate determines—

(i) Were caused by improper maintenance or use;

(ii) Were reported to the FAA by another person under this chapter; or

(iii) Were reported under the accident reporting provisions of 49 CFR part 830 of the regulations of the National Transportation Safety Board.

(2) Failures, malfunctions, or defects in products or articles—

(i) Manufactured by a foreign manufacturer under a U.S. type certificate issued under § 21.29 or under an approval issued under § 21.621; or

(ii) Exported to the United States under § 21.502.

(e) * * *

(3) Must include as much of the following information as is available and applicable:

(i) The applicable product and article identification information required by part 45 of this chapter;

(ii) Identification of the system involved; and

(iii) Nature of the failure, malfunction, or defect.

(f) If an accident investigation or service difficulty report shows that a product or article manufactured under this part is unsafe because of a manufacturing or design data defect, the holder of the production approval for that product or article must, upon request of the FAA, report to the FAA the results of its investigation and any action taken or proposed by the holder of that production approval to correct that defect. If action is required to correct the defect in an existing product or article, the holder of that production approval must send the data necessary for issuing an appropriate airworthiness directive to the appropriate aircraft certification office.

■ 9. Amend § 21.5 by revising paragraph (a) to read as follows:

§ 21.5 Airplane or Rotorcraft Flight Manual.

(a) With each airplane or rotorcraft not type certificated with an Airplane or Rotorcraft Flight Manual and having no flight time before March 1, 1979, the holder of a type certificate (including amended or supplemental type certificates) or the licensee of a type certificate must make available to the owner at the time of delivery of the aircraft a current approved Airplane or Rotorcraft Flight Manual.

* * * * *

■ 10. Amend subpart A by adding § 21.8 to read as follows:

§ 21.8 Approval of articles.

If an article is required to be approved under this chapter, it may be approved—

(a) Under a PMA;

(b) Under a TSO;

(c) In conjunction with type certification procedures for a product; or

(d) In any other manner approved by the FAA.

■ 11. Amend subpart A by adding § 21.9 to read as follows:

§ 21.9 Replacement and modification articles.

(a) If a person knows, or should know, that a replacement or modification article is reasonably likely to be installed on a type-certificated product, the person may not produce that article unless it is—

(1) Produced under a type certificate;

(2) Produced under an FAA production approval;

(3) A standard part (such as a nut or bolt) manufactured in compliance with a government or established industry specification;

(4) A commercial part as defined in § 21.1 of this part;

(5) Produced by an owner or operator for maintaining or altering that owner or operator's product; or

(6) Fabricated by an appropriately rated certificate holder with a quality system, and consumed in the repair or alteration of a product or article in accordance with part 43 of this chapter.

(b) Except as provided in paragraphs (a)(1) through (a)(4) of this section, a person who produces a replacement or modification article for sale may not represent that part as suitable for installation on a type-certificated product.

(c) Except as provided in paragraphs (a)(1) through (a)(4) of this section, a person may not sell or represent an article as suitable for installation on an aircraft type-certificated under §§ 21.25(a)(2) or 21.27 unless that article—

(1) Was declared surplus by the U.S. Armed Forces, and

(2) Was intended for use on that aircraft model by the U.S. Armed Forces.

§ 21.15 [Amended]

■ 12. Amend § 21.15 by removing the words ''Aircraft Certification Office'' in paragraph (a) and adding, in their place, the words ''aircraft certification office''.

■ 13. Amend subpart B by adding § 21.20 to read as follows:

§ 21.20 Compliance with applicable requirements.

The applicant for a type certificate, including an amended or supplemental type certificate, must—

(a) Show compliance with all applicable requirements and must provide the FAA the means by which such compliance has been shown; and

(b) Provide a statement certifying that the applicant has complied with the applicable requirements.

§ 21.21 [Amended]

■ 14. Amend § 21.21 by removing the words ''the Federal Aviation Regulations'' and add in their place the words ''this subchapter'' wherever they appear.

§ 21.27 [Amended]

■ 15. Amend § 21.27 as follows:

■ a. Remove the words ''the Federal Aviation Regulations'' in paragraph (c) and add, in their place, the words ''this subchapter''; and

■ b. Remove the word ''FAR'' from each place it appears in the table in paragraph (f) and add in its place the words ''14 CFR''.

■ 16. Revise § 21.29 to read as follows:

§ 21.29 Issue of type certificate: import products.

(a) The FAA may issue a type certificate for a product that is manufactured in a foreign country or jurisdiction with which the United States has an agreement for the acceptance of these products for export and import and that is to be imported into the United States if—

(1) The applicable State of Design certifies that the product has been examined, tested, and found to meet—

(i) The applicable aircraft noise, fuel venting, and exhaust emissions requirements of this subchapter as designated in § 21.17, or the applicable aircraft noise, fuel venting, and exhaust emissions requirements of the State of Design, and any other requirements the FAA may prescribe to provide noise, fuel venting, and exhaust emission levels no greater than those provided by the applicable aircraft noise, fuel venting, and exhaust emission requirements of this subchapter as designated in § 21.17; and

(ii) The applicable airworthiness requirements of this subchapter as designated in § 21.17, or the applicable airworthiness requirements of the State of Design and any other requirements the FAA may prescribe to provide a level of safety equivalent to that provided by the applicable airworthiness requirements of this subchapter as designated in § 21.17;

(2) The applicant has provided technical data to show the product meets the requirements of paragraph (a)(1) of this section; and

(3) The manuals, placards, listings, and instrument markings required by the applicable airworthiness (and noise, where applicable) requirements are presented in the English language.

(b) A product type certificated under this section is considered to be type certificated under the noise standards of part 36 of this subchapter and the fuel venting and exhaust emission standards of part 34 of this subchapter. Compliance with parts 36 and 34 of this subchapter is certified under paragraph (a)(1)(i) of this section, and the applicable airworthiness standards of this subchapter, or an equivalent level of safety, with which compliance is certified under paragraph (a)(1)(ii) of this section.

§ 21.33 [Amended]

■ 17. Amend § 21.33(a) introductory text by removing the words ''the Federal Aviation Regulations'' and adding, in their place, the words ''this subchapter''.

§ 21.45 [Amended]

■ 18. Amend § 21.45 as follows:

■ a. Remove the words ''or certified'' from paragraph (b) and add in their place the words ''on certificated''; and

■ b. Remove the reference ''§§ 21.133 through 21.163'' from paragraph (c) and add in its place the words ''subpart G of this part''.

■ 19. Revise § 21.47 to read as follows:

§ 21.47 Transferability.

(a) A holder of a type certificate may transfer it or make it available to other persons by licensing agreements.

(b) For a type certificate transfer in which the State of Design will remain the same, each transferor must, before such a transfer, notify in writing the appropriate aircraft certification office. This notification must include the applicable type certificate number, the name and address of the transferee, and the anticipated date of the transfer.

(c) For a type certificate transfer in which the State of Design is changing, a type certificate may only be transferred to or from a person subject to the authority of another State of Design if the United States has an agreement with that State of Design for the acceptance of the affected product for export and import. Each transferor must notify the appropriate aircraft certification office before such a transfer in a form and manner acceptable to the FAA. This notification must include the applicable type certificate number; the name, address, and country of residence of the transferee; and the anticipated date of the transfer.

(d) Before executing or terminating a licensing agreement that makes a type certificate available to another person, the type certificate holder must notify in writing the appropriate aircraft certification office. This notification must include the type certificate number addressed by the licensing agreement, the name and address of the licensee, the extent of authority granted the licensee, and the anticipated date of the agreement.

■ 20. Amend § 21.50 by revising paragraph (b) and adding paragraph (c) to read as follows:

§ 21.50 Instructions for continued airworthiness and manufacturer's maintenance manuals having airworthiness limitations sections.

* * * * *

(b) The holder of a design approval, including either the type certificate or supplemental type certificate for an aircraft, aircraft engine, or propeller for which application was made after January 28, 1981, must furnish at least one set of complete Instructions for Continued Airworthiness to the owner of each type aircraft, aircraft engine, or propeller upon its delivery, or upon issuance of the first standard airworthiness certificate for the affected aircraft, whichever occurs later. The Instructions must be prepared in accordance with §§ 23.1529, 25.1529, 25.1729, 27.1529, 29.1529, 31.82, 33.4, 35.4, or part 26 of this subchapter, or as specified in the applicable airworthiness criteria for special classes of aircraft defined in § 21.17(b), as applicable. If the holder of a design approval chooses to designate parts as commercial, it must include in the Instructions for Continued Airworthiness a list of commercial parts submitted in accordance with the provisions of paragraph (c) of this section. Thereafter, the holder of a design approval must make those instructions available to any other person required by this chapter to comply with any of the terms of those instructions. In addition, changes to the Instructions for Continued Airworthiness shall be made available to any person required by this chapter to comply with any of those instructions.

(c) To designate commercial parts, the holder of a design approval, in a manner acceptable to the FAA, must submit:

(1) A Commercial Parts List;

(2) Data for each part on the List showing that:

(i) The failure of the commercial part, as installed in the product, would not degrade the level of safety of the product; and

(ii) The part is produced only under the commercial part manufacturer's specification and marked only with the commercial part manufacturer's markings; and

(3) Any other data necessary for the FAA to approve the List.

■ 21. Revise § 21.53(a) to read as follows:

§ 21.53 Statement of conformity.

(a) Each applicant must provide, in a form and manner acceptable to the FAA, a statement that each aircraft engine or

propeller presented for type certification conforms to its type design.

* * * * *

§ 21.73 [Amended]

■ 22. Amend § 21.73(b) by removing the words ''Any manufacturer of aircraft manufactured in a foreign country with which the United States has an agreement'' and adding in their place the words ''Any manufacturer of aircraft in a State of Manufacture subject to the provisions of an agreement with the United States''.

■ 23. Revise § 21.75 to read as follows:

§ 21.75 Application.

Each applicant for a provisional type certificate, for an amendment thereto, or for a provisional amendment to a type certificate must apply to the appropriate aircraft certification office and provide the information required by this subpart.

■ 24. Revise § 21.97(a) to read as follows:

§ 21.97 Approval of major changes in type design.

(a) An applicant for approval of a major change in type design must—

(1) Provide substantiating data and necessary descriptive data for inclusion in the type design;

(2) Show that the changed product complies with the applicable requirements of this subchapter, and provide the FAA the means by which such compliance has been shown; and

(3) Provide a statement certifying that the applicant has complied with the applicable requirements.

* * * * *

■ 25. Revise § 21.113 to read as follows:

§ 21.113 Requirement for supplemental type certificate.

(a) If a person holds the TC for a product and alters that product by introducing a major change in type design that does not require an application for a new TC under § 21.19, that person must either apply to the appropriate aircraft certification office for an STC or apply to amend the original type certificate under subpart D of this part.

(b) If a person does not hold the TC for a product and alters that product by introducing a major change in type design that does not require an application for a new TC under § 21.19, that person must apply to the appropriate aircraft certification office for an STC.

(c) The application for an STC must be made in the form and manner prescribed by the FAA.

§ 21.117 [Amended]

■ 26. Amend § 21.117 by removing the words ''if he'' from paragraph (a) and adding in their place the words ''if the FAA finds that the applicant''.

■ 27. Revise § 21.119(c) to read as follows:

§ 21.119 Privileges.

* * * * *

(c) Obtain a production certificate in accordance with the requirements of subpart G of this part for the change in the type design approved by the supplemental type certificate.

■ 28. Amend subpart F by adding § 21.122 to read as follows:

§ 21.122 Location of or change to manufacturing facilities.

(a) An applicant may obtain a production certificate for manufacturing facilities located outside of the United States if the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter.

(b) The type certificate holder must obtain FAA approval before making any changes to the location of any of its manufacturing facilities.

(c) The type certificate holder must immediately notify the FAA, in writing, of any change to the manufacturing facilities that may affect the inspection, conformity, or airworthiness of its product or article.

■ 29. Revise § 21.123 to read as follows:

§ 21.123 Production under type certificate.

Each manufacturer of a product being manufactured under a type certificate must—

(a) Maintain at the place of manufacture all information and data specified in §§ 21.31 and 21.41;

(b) Make each product and article thereof available for inspection by the FAA;

(c) Maintain records of the completion of all inspections and tests required by §§ 21.127, 21.128, and 21.129 for at least 5 years for the products and articles thereof manufactured under the approval and at least 10 years for critical components identified under § 45.15(c) of this chapter;

(d) Allow the FAA to make any inspection or test, including any inspection or test at a supplier facility, necessary to determine compliance with this subchapter;

(e) Mark the product in accordance with part 45 of this chapter, including any critical parts;

(f) Identify any portion of that product (*e.g.,* sub-assemblies, component parts, or replacement articles) that leave the manufacturer's facility as FAA approved with the manufacturer's part number and name, trademark, symbol, or other FAA-approved manufacturer's identification; and

(g) Except as otherwise authorized by the FAA, obtain a production certificate for that product in accordance with subpart G of this part within 6 months after the date of issuance of the type certificate.

§ 21.125 [Removed and Reserved]

■ 30. Remove and reserve § 21.125.

■ 31. Revise § 21.130 to read as follows:

§ 21.130 Statement of Conformity.

Each holder or licensee of a type certificate who manufactures a product under this subpart must provide, in a form and manner acceptable to the FAA, a statement that the product for which the type certificate has been issued conforms to its type certificate and is in a condition for safe operation.

■ 32. Revise subpart G to read as follows:

Subpart G—Production Certificates

Sec.

Subpart G—Production Certificates

§ 21.131 Applicability.

This subpart prescribes—

(a) Procedural requirements for issuing production certificates; and

(b) Rules governing holders of those certificates.

§ 21.132 Eligibility.

Any person may apply for a production certificate if that person holds, for the product concerned—

(a) A current type certificate,

(b) A supplemental type certificate, or

(c) Rights to the benefits of that type certificate or supplemental type certificate under a licensing agreement.

§ 21.133 Application.

Each applicant must apply for a production certificate in a form and manner prescribed by the FAA.

§ 21.135 Organization.

Each applicant for or holder of a production certificate must provide the FAA with a document describing how its organization will ensure compliance with the provisions of this subpart. At a minimum, the document must describe assigned responsibilities and delegated authority, and the functional relationship of those responsible for quality to management and other organizational components.

§ 21.137 Quality system.

Each applicant for or holder of a production certificate must establish and describe in writing a quality system that ensures that each product and article conforms to its approved design and is in a condition for safe operation. This quality system must include:

(a) *Design data control.* Procedures for controlling design data and subsequent changes to ensure that only current, correct, and approved data is used.

(b) *Document control.* Procedures for controlling quality system documents and data and subsequent changes to ensure that only current, correct, and approved documents and data are used.

(c) *Supplier control.* Procedures that—

(1) Ensure that each supplier-furnished product or article conforms to its approved design; and

(2) Require each supplier to report to the production approval holder if a product or article has been released from that supplier and subsequently found not to conform to the applicable design data.

(d) *Manufacturing process control.* Procedures for controlling manufacturing processes to ensure that each product and article conforms to its approved design.

(e) *Inspecting and testing.* Procedures for inspections and tests used to ensure that each product and article conforms to its approved design. These procedures must include the following, as applicable:

(1) A flight test of each aircraft produced unless that aircraft will be exported as an unassembled aircraft.

(2) A functional test of each aircraft engine and each propeller produced.

(f) *Inspection, measuring, and test equipment control.* Procedures to ensure calibration and control of all inspection, measuring, and test equipment used in determining conformity of each product and article to its approved design. Each calibration standard must be traceable to a standard acceptable to the FAA.

(g) *Inspection and test status.* Procedures for documenting the inspection and test status of products and articles supplied or manufactured to the approved design.

(h) *Nonconforming product and article control.* (1) Procedures to ensure that only products or articles that conform to their approved design are installed on a type-certificated product. These procedures must provide for the identification, documentation, evaluation, segregation, and disposition of nonconforming products and articles. Only authorized individuals may make disposition determinations.

(2) Procedures to ensure that discarded articles are rendered unusable.

(i) *Corrective and preventive actions.* Procedures for implementing corrective and preventive actions to eliminate the causes of an actual or potential nonconformity to the approved design or noncompliance with the approved quality system.

(j) *Handling and storage.* Procedures to prevent damage and deterioration of each product and article during handling, storage, preservation, and packaging.

(k) *Control of quality records.* Procedures for identifying, storing, protecting, retrieving, and retaining quality records. A production approval holder must retain these records for at least 5 years for the products and articles manufactured under the approval and at least 10 years for critical components identified under § 45.15(c) of this chapter.

(l) *Internal audits.* Procedures for planning, conducting, and documenting internal audits to ensure compliance with the approved quality system. The procedures must include reporting results of internal audits to the manager responsible for implementing corrective and preventive actions.

(m) *In-service feedback.* Procedures for receiving and processing feedback on in-service failures, malfunctions, and defects. These procedures must include a process for assisting the design approval holder to—

(1) Address any in-service problem involving design changes; and

(2) Determine if any changes to the Instructions for Continued Airworthiness are necessary.

(n) *Quality escapes.* Procedures for identifying, analyzing, and initiating appropriate corrective action for products or articles that have been released from the quality system and that do not conform to the applicable design data or quality system requirements.

§ 21.138 Quality manual.

Each applicant for or holder of a production certificate must provide a manual describing its quality system to the FAA for approval. The manual must be in the English language and retrievable in a form acceptable to the FAA.

§ 21.139 Location of or change to manufacturing facilities.

(a) An applicant may obtain a production certificate for manufacturing facilities located outside of the United States if the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter.

(b) The production certificate holder must obtain FAA approval before making any changes to the location of any of its manufacturing facilities.

(c) The production certificate holder must immediately notify the FAA, in writing, of any change to the manufacturing facilities that may affect the inspection, conformity, or airworthiness of its product or article.

§ 21.140 Inspections and tests.

Each applicant for or holder of a production certificate must allow the FAA to inspect its quality system, facilities, technical data, and any manufactured products or articles and witness any tests, including any inspections or tests at a supplier facility, necessary to determine compliance with this subchapter.

§ 21.141 Issuance.

The FAA issues a production certificate after finding that the applicant complies with the requirements of this subpart.

§ 21.142 Production limitation record.

The FAA issues a production limitation record as part of a production certificate. The record lists the type certificate number and the model of every product that the production certificate holder is authorized to manufacture.

§ 21.143 Duration.

A production certificate is effective until surrendered, suspended, revoked, or the FAA otherwise establishes a termination date.

§ 21.144 Transferability.

The holder of a production certificate may not transfer the production certificate.

§ 21.145 Privileges.

(a) The holder of a production certificate may—

(1) Obtain an aircraft airworthiness certificate without further showing, except that the FAA may inspect the aircraft for conformity with the type design; or

(2) In the case of other products, obtain approval from the FAA for installation on type-certificated aircraft.

(b) Notwithstanding the provisions of § 147.3 of this chapter, the holder of a production certificate for a primary category aircraft, or for a normal, utility, or acrobatic category aircraft of a type design that is eligible for a special airworthiness certificate in the primary category under § 21.184(c), may—

(1) Conduct training for persons in the performance of a special inspection and preventive maintenance program approved as a part of the aircraft's type design under § 21.24(b), provided a person holding a mechanic certificate with appropriate airframe and powerplant ratings issued under part 65 of this chapter gives the training; and

(2) Issue a certificate of competency to persons successfully completing the approved training program, provided the certificate specifies the aircraft make and model to which the certificate applies.

§ 21.146 Responsibility of holder.

The holder of a production certificate must—

(a) Amend the document required by § 21.135 as necessary to reflect changes in the organization and provide these amendments to the FAA.

(b) Maintain the quality system in compliance with the data and procedures approved for the production certificate;

(c) Ensure that each completed product or article for which a production certificate has been issued, including primary category aircraft assembled under a production certificate by another person from a kit provided by the holder of the production certificate, presented for airworthiness certification or approval conforms to its approved design and is in a condition for safe operation;

(d) Mark the product or article for which a certificate or approval has been issued. Marking must be in accordance with part 45 of this chapter, including any critical parts;

(e) Identify any portion of the product or article (e.g., sub-assemblies, component parts, or replacement articles) that leave the manufacturer's facility as FAA approved with the manufacturer's part number and name, trademark, symbol, or other FAA approved manufacturer's identification;

(f) Have access to type design data necessary to determine conformity and airworthiness for each product and article produced under the production certificate;

(g) Retain its production certificate and make it available to the FAA upon request; and

(h) Make available to the FAA information regarding all delegation of authority to suppliers.

§ 21.147 Amendment of production certificates.

The holder of a production certificate must apply for an amendment to a production certificate in a form and manner prescribed by the FAA. The applicant for an amendment to a production certificate to add a type certificate or model, or both, must comply with the applicable requirements of §§ 21.137, 21.138, and 21.150.

§ 21.150 Changes in quality system.

After the issuance of a production certificate—

(a) Each change to the quality system is subject to review by the FAA; and

(b) The holder of a production certificate must immediately notify the FAA, in writing, of any change that may affect the inspection, conformity, or airworthiness of its product or article.

■ 33. Amend § 21.183 by revising paragraphs (c), (d)(1), (d)(2) introductory text, and (d)(3) to read as follows:

§ 21.183 Issue of standard airworthiness certificates for normal, utility, acrobatic, commuter, and transport category aircraft; manned free balloons; and special classes of aircraft.

* * * * *

(c) *Import aircraft.* An applicant for a standard airworthiness certificate for an import aircraft is entitled to that certificate if—

(1) The aircraft is type certificated in accordance with § 21.21 or § 21.29 and produced under the authority of another State of Manufacture;

(2) The State of Manufacture certifies, in accordance with the export provisions of an agreement with the United States for import of that aircraft, that the aircraft conforms to the type design and is in condition for safe operation; and

(3) The FAA finds that the aircraft conforms to the type design and is in condition for safe operation.

(d) * * *

(1) The applicant presents evidence to the FAA that the aircraft conforms to a type design approved under a type certificate or a supplemental type certificate and to applicable Airworthiness Directives;

(2) The aircraft (except an experimentally certificated aircraft that previously had been issued a different airworthiness certificate under this section) has been inspected in accordance with the performance rules for 100-hour inspections set forth in § 43.15 of this chapter, or an equivalent performance standard acceptable to the FAA, and found airworthy by—

* * * * *

(3) The FAA finds after inspection, that the aircraft conforms to the type design, and is in condition for safe operation.

* * * * *

■ 34. Revise § 21.185(c) to read as follows:

§ 21.185 Issue of airworthiness certificates for restricted category aircraft.

* * * * *

(c) *Import aircraft.* An applicant for the original issue of a special airworthiness certificate for a restricted category import aircraft is entitled to that certificate if—

(1) The aircraft is type-certificated in accordance with § 21.25 or § 21.29 and produced under the authority of another State of Manufacture;

(2) The State of Manufacture certifies, in accordance with the export provisions of an agreement with the United States for import of that aircraft that the aircraft conforms to the type design and is in condition for safe operation; and

(3) The FAA finds that the aircraft conforms to the type design and is in condition for safe operation.

* * * * *

■ 35. Revise § 21.195(d)(2) to read as follows:

§ 21.195 Experimental certificates: Aircraft to be used for market surveys, sales demonstrations, and customer crew training.

* * * * *

(d) * * *

(2) The applicant shows that the aircraft has been flown for at least 50 hours, or for at least 5 hours if it is a type certificated aircraft which has been modified. The FAA may reduce these operational requirements if the applicant provides adequate justification.

■ 36. Revise § 21.197(c) to read as follows:

§ 21.197 Special flight permits.

* * * * *

(c) Upon application, as prescribed in §§ 91.1017 or 119.51 of this chapter, a special flight permit with a continuing authorization may be issued for aircraft that may not meet applicable airworthiness requirements, but are capable of safe flight for the purpose of flying aircraft to a base where maintenance or alterations are to be

performed. The permit issued under this paragraph is an authorization, including conditions and limitations for flight, which is set forth in the certificate holder's operations specifications. The permit issued under this paragraph may be issued to—

(1) Certificate holders authorized to conduct operations under part 119 of this chapter, that have an approved program for continuing flight authorization; or

(2) Management specification holders authorized to conduct operations under part 91, subpart K of this chapter for those aircraft they operate and maintain under a continuous airworthiness maintenance program prescribed by § 91.1411 of this chapter.

§ 21.223 [Amended]

■ 37. Amend § 21.223 by removing the word ''control'' from paragraph (c).

§ 21.225 [Amended]

■ 38. Amend § 21.225 by removing the word ''control'' from paragraph (b).

§ 21.231 [Amended]

■ 39. Amend § 21.231(a)(6) by removing the words ''paragraph (a)(4)'' and adding in their place the words ''paragraph (a)(5)''.

§ 21.251 [Amended]

■ 40. Amend § 21.251(b)(4)(iii) and (b)(4)(iv) as follows:

a. Remove the words ''(FAA Form 8130–3)'' in both paragraphs; and

b. Remove the words ''Airworthiness approval tags'' and add in their place the words ''Airworthiness approvals'' in both paragraphs.

§ 21.253 [Amended]

■ 41. Amend § 21.253 by removing the words ''(FAA Form 312)'' from paragraph (a)(1).

■ 42. Revise § 21.267(d) to read as follows:

§ 21.267 Production certificates.

* * * * *

(d) After placing the manufacturing and quality system data required by § 21.137 with the data required by § 21.293(a)(1)(ii), a statement certifying that this has been done.

§ 21.271 [Amended]

■ 43. Amend § 21.271(a) by removing the words ''(FAA Form 8130–3)''.

■ 44. Revise § 21.293(a)(2) introductory text to read as follows:

§ 21.293 Current records.

(a) * * *

(2) For 5 years—

* * * * *

■ 45. Revise subpart K to read as follows:

Subpart K—Parts Manufacturer Approvals

Sec.

Subpart K—Parts Manufacturer Approvals

§ 21.301 Applicability.

This subpart prescribes—

(a) Procedural requirements for issuing PMAs; and

(b) Rules governing holders of PMAs.

§ 21.303 Application.

(a) The applicant for a PMA must apply in a form and manner prescribed by the FAA, and include the following:

(1) The identity of the product on which the article is to be installed.

(2) The name and address of the manufacturing facilities at which these articles are to be manufactured.

(3) The design of the article, which consists of—

(i) Drawings and specifications necessary to show the configuration of the article; and

(ii) Information on dimensions, materials, and processes necessary to define the structural strength of the article.

(4) Test reports and computations necessary to show that the design of the article meets the airworthiness requirements of this subchapter. The test reports and computations must be applicable to the product on which the article is to be installed, unless the applicant shows that the design of the article is identical to the design of a article that is covered under a type certificate. If the design of the article was obtained by a licensing agreement, the applicant must provide evidence of that agreement.

(5) An applicant for a PMA based on test reports and computations must provide a statement certifying that the applicant has complied with the airworthiness requirements of this subchapter.

(b) Each applicant for a PMA must make all inspections and tests necessary to determine—

(1) Compliance with the applicable airworthiness requirements;

(2) That materials conform to the specifications in the design;

(3) That the article conforms to its approved design; and

(4) That the manufacturing processes, construction, and assembly conform to those specified in the design.

§ 21.305 Organization.

Each applicant for or holder of a PMA must provide the FAA with a document describing how its organization will ensure compliance with the provisions of this subpart. At a minimum, the document must describe assigned responsibilities and delegated authority, and the functional relationship of those responsible for quality to management and other organizational components.

§ 21.307 Quality system.

Each applicant for or holder of a PMA must establish a quality system that meets the requirements of § 21.137.

§ 21.308 Quality manual.

Each applicant for or holder of a PMA must provide a manual describing its quality system to the FAA for approval. The manual must be in the English language and retrievable in a form acceptable to the FAA.

§ 21.309 Location of or change to manufacturing facilities.

(a) An applicant may obtain a PMA for manufacturing facilities located outside of the United States if the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter.

(b) The PMA holder must obtain FAA approval before making any changes to the location of any of its manufacturing facilities.

(c) The PMA holder must immediately notify the FAA, in writing, of any change to the manufacturing facilities that may affect the inspection, conformity, or airworthiness of its PMA article.

§ 21.310 Inspections and tests.

(a) Each applicant for or holder of a PMA must allow the FAA to inspect its quality system, facilities, technical data, and any manufactured articles and witness any tests, including any inspections or tests at a supplier facility, necessary to determine compliance with this subchapter.

(b) Unless otherwise authorized by the FAA, the applicant or holder—

(1) May not present any article to the FAA for an inspection or test unless compliance with § 21.303(b)(2) through (4) has been shown for that article; and

(2) May not make any change to an article between the time that compliance with § 21.303(b)(2) through

(4) is shown for that article and the time that the article is presented to the FAA for the inspection or test.

§ 21.311 Issuance.

The FAA issues a PMA after finding that the applicant complies with the requirements of this subpart and the design complies with the requirements of this chapter applicable to the product on which the article is to be installed.

§ 21.313 Duration.

A PMA is effective until surrendered, withdrawn, or the FAA otherwise terminates it.

§ 21.314 Transferability.

The holder of a PMA may not transfer the PMA.

§ 21.316 Responsibility of holder.

Each holder of a PMA must—

(a) Amend the document required by § 21.305 as necessary to reflect changes in the organization and provide these amendments to the FAA;

(b) Maintain the quality system in compliance with the data and procedures approved for the PMA;

(c) Ensure that each PMA article conforms to its approved design and is in a condition for safe operation;

(d) Mark the PMA article for which an approval has been issued. Marking must be in accordance with part 45 of this chapter, including any critical parts;

(e) Identify any portion of the PMA article (*e.g.,* sub-assemblies, component parts, or replacement articles) that leave the manufacturer's facility as FAA approved with the manufacturer's part number and name, trademark, symbol, or other FAA approved manufacturer's identification;

(f) Have access to design data necessary to determine conformity and airworthiness for each article produced under the PMA;

(g) Retain each document granting PMA and make it available to the FAA upon request; and

(h) Make available to the FAA information regarding all delegation of authority to suppliers.

§ 21.319 Design changes.

(a) *Classification of design changes.* (1) A ''minor change'' to the design of an article produced under a PMA is one that has no appreciable effect on the approval basis.

(2) A ''major change'' to the design of an article produced under a PMA is any change that is not minor.

(b) *Approval of design changes.* (1) Minor changes to the basic design of a PMA may be approved using a method acceptable to the FAA.

(2) The PMA holder must obtain FAA approval of any major change before including it in the design of an article produced under a PMA.

§ 21.320 Changes in quality system.

After the issuance of a PMA—

(a) Each change to the quality system is subject to review by the FAA; and

(b) The holder of the PMA must immediately notify the FAA, in writing, of any change that may affect the inspection, conformity, or airworthiness of its article.

■ 46. Revise subpart L to read as follows:

Subpart L—Export Airworthiness Approvals

Sec.

Subpart L—Export Airworthiness Approvals

§ 21.321 Applicability.

This subpart prescribes—

(a) Procedural requirements for issuing export airworthiness approvals; and

(b) Rules governing the holders of those approvals.

§ 21.325 Export airworthiness approvals.

(a) An export airworthiness approval for an aircraft is issued in the form of an export certificate of airworthiness. This certificate does not authorize operation of that aircraft.

(b) The FAA prescribes the form and manner in which an export airworthiness approval for an aircraft engine, propeller, or article is issued.

(c) If the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter, an export airworthiness approval may be issued for a product or article located outside of the United States.

§ 21.327 Application.

Any person may apply for an export airworthiness approval. Each applicant must apply in a form and manner prescribed by the FAA.

§ 21.329 Issuance of export certificates of airworthiness.

(a) A person may obtain from the FAA an export certificate of airworthiness for an aircraft if—

(1) A new or used aircraft manufactured under subpart F or G of this part meets the airworthiness requirements under subpart H of this part for a—

(i) Standard airworthiness certificate; or

(ii) Special airworthiness certificate in either the ''primary'' or the ''restricted'' category; or

(2) A new or used aircraft not manufactured under subpart F or G of this part has a valid—

(i) Standard airworthiness certificate; or

(ii) Special airworthiness certificate in either the ''primary'' or the ''restricted'' category.

(b) An aircraft need not meet a requirement specified in paragraph (a) of this section, as applicable, if—

(1) The importing country or jurisdiction accepts, in a form and manner acceptable to the FAA, a deviation from that requirement; and

(2) The export certificate of airworthiness lists as an exception any difference between the aircraft to be exported and its type design.

§ 21.331 Issuance of export airworthiness approvals for aircraft engines, propellers, and articles.

(a) A person may obtain from the FAA an export airworthiness approval to export a new aircraft engine, propeller, or article that is manufactured under this part if it conforms to its approved design and is in a condition for safe operation.

(b) A new aircraft engine, propeller, or article need not meet a requirement of paragraph (a) of this section if—

(1) The importing country or jurisdiction accepts, in a form and manner acceptable to the FAA, a deviation from that requirement; and

(2) The export airworthiness approval lists as an exception any difference between the aircraft engine, propeller, or article to be exported and its approved design.

(c) A person may obtain from the FAA an export airworthiness approval to export a used aircraft engine, propeller, or article if it conforms to its approved design and is in a condition for safe operation.

(d) A used aircraft engine or propeller need not meet a requirement of paragraph (c) of this section if—

(1) The importing country or jurisdiction accepts, in a form and manner acceptable to the FAA, a deviation from that requirement; and

(2) The export airworthiness approval lists as an exception any difference between the used aircraft engine or propeller to be exported and its approved design.

§ 21.335 Responsibilities of exporters.

Unless otherwise agreed to by the importing country or jurisdiction, each exporter must—

(a) Forward to the importing country or jurisdiction all documents specified by that country or jurisdiction;

(b) Preserve and package products and articles as necessary to protect them against corrosion and damage during transit or storage and state the duration of effectiveness of such preservation and packaging;

(c) Remove or cause to be removed any temporary installation incorporated on an aircraft for the purpose of export delivery and restore the aircraft to the approved configuration upon completion of the delivery flight;

(d) Secure all proper foreign entry clearances from all the countries or jurisdictions involved when conducting sales demonstrations or delivery flights; and

(e) When title to an aircraft passes or has passed to a foreign purchaser—

(1) Request cancellation of the U.S. registration and airworthiness certificates from the FAA, giving the date of transfer of title, and the name and address of the foreign owner;

(2) Return the Registration and Airworthiness Certificates to the FAA; and

(3) Provide a statement to the FAA certifying that the U.S. identification and registration numbers have been removed from the aircraft in compliance with § 45.33.

■ 47. Revise subpart N to read as follows:

Subpart N—Acceptance of Aircraft Engines, Propellers, and Articles for Import

Sec.

Subpart N—Acceptance of Aircraft Engines, Propellers, and Articles for Import

§ 21.500 Acceptance of aircraft engines and propellers.

An aircraft engine or propeller manufactured in a foreign country or jurisdiction meets the requirements for acceptance under this subchapter if—

(a) That country or jurisdiction is subject to the provisions of an agreement with the United States for the acceptance of that product;

(b) That product is marked in accordance with part 45 of this chapter; and

(c) The holder or licensee of a U.S. type certificate for that product furnishes with each such aircraft engine or propeller imported into the United States, an export airworthiness approval issued in accordance with the provisions of that agreement certifying that the individual aircraft engine or propeller—

(1) Conforms to its U.S. type certificate and is in condition for safe operation; and

(2) Has been subjected by the manufacturer to a final operational check.

§ 21.502 Acceptance of articles.

An article (including an article produced under a letter of TSO design approval) manufactured in a foreign country or jurisdiction meets the requirements for acceptance under this subchapter if—

(a) That country or jurisdiction is subject to the provisions of an agreement with the United States for the acceptance of that article;

(b) That article is marked in accordance with part 45 of this chapter; and

(c) An export airworthiness approval has been issued in accordance with the provisions of that agreement for that article for import into the United States.

■ 48. Revise subpart O to read as follows:

Subpart O—Technical Standard Order Approvals

Sec.

Subpart O—Technical Standard Order Approvals

§ 21.601 Applicability and definitions.

(a) This subpart prescribes—

(1) Procedural requirements for issuing TSO authorizations;

(2) Rules governing the holders of TSO authorizations; and

(3) Procedural requirements for issuing letters of TSO design approval.

(b) For the purposes of this subpart—

(1) A TSO issued by the FAA is a minimum performance standard for specified articles used on civil aircraft;

(2) A TSO authorization is an FAA design and production approval issued to the manufacturer of an article that has been found to meet a specific TSO;

(3) A letter of TSO design approval is an FAA design approval for an article that has been found to meet a specific TSO in accordance with the procedures of § 21.621;

(4) An article manufactured under a TSO authorization, an FAA letter of acceptance as described in § 21.613(b), or an article manufactured under a letter of TSO design approval described in § 21.621 is an approved article for the purpose of meeting the regulations of this chapter that require the article to be approved; and

(5) An article manufacturer is the person who controls the design and quality of the article produced (or to be produced, in the case of an application), including any related parts, processes, or services procured from an outside source.

§ 21.603 Application.

(a) An applicant for a TSO authorization must apply to the appropriate aircraft certification office in the form and manner prescribed by the FAA. The applicant must include the following documents in the application:

(1) A statement of conformance certifying that the applicant has met the requirements of this subpart and that the article concerned meets the applicable TSO that is effective on the date of application for that article.

(2) One copy of the technical data required in the applicable TSO.

(b) If the applicant anticipates a series of minor changes in accordance with § 21.619, the applicant may set forth in its application the basic model number of the article and the part number of the components with open brackets after it to denote that suffix change letters or numbers (or combinations of them) will be added from time to time.

(c) If the application is deficient, the applicant must, when requested by the FAA, provide any additional information necessary to show compliance with this part. If the applicant fails to provide the additional information within 30 days after the FAA's request, the FAA denies the application and notifies the applicant.

§ 21.605 Organization.

Each applicant for or holder of a TSO authorization must provide the FAA with a document describing how the applicant's organization will ensure compliance with the provisions of this subpart. At a minimum, the document must describe assigned responsibilities and delegated authority, and the functional relationship of those responsible for quality to management and other organizational components.

§ 21.607 Quality system.

Each applicant for or holder of a TSO authorization must establish a quality system that meets the requirements of § 21.137.

§ 21.608 Quality manual.

Each applicant for or holder of a TSO authorization must provide a manual describing its quality system to the FAA for approval. The manual must be in the English language and retrievable in a form acceptable to the FAA.

§ 21.609 Location of or change to manufacturing facilities.

(a) An applicant may obtain a TSO authorization for manufacturing facilities located outside of the United States if the FAA finds no undue burden in administering the applicable requirements of Title 49 U.S.C. and this subchapter.

(b) The TSO authorization holder must obtain FAA approval before making any changes to the location of any of its manufacturing facilities.

(c) The TSO authorization holder must immediately notify the FAA, in writing, of any change to the manufacturing facilities that may affect the inspection, conformity, or airworthiness of its product or article.

§ 21.610 Inspections and tests.

Each applicant for or holder of a TSO authorization must allow the FAA to inspect its quality system, facilities, technical data, and any manufactured articles and witness any tests, including any inspections or tests at a supplier facility, necessary to determine compliance with this subchapter.

§ 21.611 Issuance.

If the FAA finds that the applicant complies with the requirements of this subchapter, the FAA issues a TSO authorization to the applicant (including all TSO deviations granted to the applicant).

§ 21.613 Duration.

(a) A TSO authorization or letter of TSO design approval is effective until surrendered, withdrawn, or otherwise terminated by the FAA.

(b) If a TSO is revised or canceled, the holder of an affected FAA letter of acceptance of a statement of conformance, TSO authorization, or letter of TSO design approval may continue to manufacture articles that meet the original TSO without obtaining a new acceptance, authorization, or approval but must comply with the requirements of this chapter.

§ 21.614 Transferability.

The holder of a TSO authorization or letter of TSO design approval may not transfer the TSO authorization or letter of TSO design approval.

§ 21.616 Responsibility of holder.

Each holder of a TSO authorization must—

(a) Amend the document required by § 21.605 as necessary to reflect changes in the organization and provide these amendments to the FAA.

(b) Maintain a quality system in compliance with the data and procedures approved for the TSO authorization;

(c) Ensure that each manufactured article conforms to its approved design, is in a condition for safe operation, and meets the applicable TSO;

(d) Mark the TSO article for which an approval has been issued. Marking must be in accordance with part 45 of this chapter, including any critical parts;

(e) Identify any portion of the TSO article (e.g., sub-assemblies, component parts, or replacement articles) that leave the manufacturer's facility as FAA approved with the manufacturer's part number and name, trademark, symbol, or other FAA approved manufacturer's identification;

(f) Have access to design data necessary to determine conformity and airworthiness for each article produced under the TSO authorization. The manufacturer must retain this data until it no longer manufactures the article. At that time, copies of the data must be sent to the FAA;

(g) Retain its TSO authorization and make it available to the FAA upon request; and

(h) Make available to the FAA information regarding all delegation of authority to suppliers.

§ 21.618 Approval for deviation.

(a) Each manufacturer who requests approval to deviate from any performance standard of a TSO must show that factors or design features providing an equivalent level of safety compensate for the standards from which a deviation is requested.

(b) The manufacturer must send requests for approval to deviate, together with all pertinent data, to the appropriate aircraft certification office. If the article is manufactured under the authority of a foreign country or jurisdiction, the manufacturer must send requests for approval to deviate, together with all pertinent data, through the civil aviation authority of that country or jurisdiction to the FAA.

§ 21.619 Design changes.

(a) *Minor changes by the manufacturer holding a TSO authorization.* The manufacturer of an article under an authorization issued under this part may make minor design changes (any change other than a major change) without further approval by the FAA. In this case, the changed article keeps the original model number (part numbers may be used to identify minor changes) and the manufacturer must forward to the appropriate aircraft certification office, any revised data that are necessary for compliance with § 21.603(b).

(b) *Major changes by the manufacturer holding a TSO authorization.* Any design change by the manufacturer extensive enough to require a substantially complete investigation to determine compliance with a TSO is a major change. Before making a major change, the manufacturer must assign a new type or model designation to the article and apply for an authorization under § 21.603.

(c) *Changes by persons other than the manufacturer.* No design change by any person (other than the manufacturer who provided the statement of conformance for the article) is eligible for approval under this part unless the person seeking the approval is a manufacturer and applies under § 21.603(a) for a separate TSO authorization. Persons other than a manufacturer may obtain approval for design changes under part 43 or under the applicable airworthiness regulations of this chapter.

§ 21.620 Changes in quality system.

After the issuance of a TSO authorization—

(a) Each change to the quality system is subject to review by the FAA; and

(b) The holder of the TSO authorization must immediately notify the FAA, in writing, of any change that may affect the inspection, conformity, or airworthiness of its article.

§ 21.621 Issuance of letters of TSO design approval: import articles.

(a) The FAA may issue a letter of TSO design approval for an article—

(1) Designed and manufactured in a foreign country or jurisdiction subject to the export provisions of an agreement with the United States for the acceptance of these articles for import; and

(2) For import into the United States if—

(i) The State of Design certifies that the article has been examined, tested, and found to meet the applicable TSO

or the applicable performance standards of the State of Design and any other performance standards the FAA may prescribe to provide a level of safety equivalent to that provided by the TSO; and

(ii) The manufacturer has provided to the FAA one copy of the technical data required in the applicable performance standard through its State of Design.

(b) The FAA issues the letter of TSO design approval that lists any deviation granted under § 21.618.

PART 43—MAINTENANCE, PREVENTIVE MAINTENANCE, REBUILDING, AND ALTERATION

■ 49. The authority citation for part 43 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44703, 44705, 44707, 44711, 44713, 44717, 44725.

§ 43.2 [Amended]

■ 50. Amend § 43.2(a)(2) by removing the reference to ''§ 21.305 of this chapter'' and adding in its place ''part 21 of this chapter''.

■ 51. Revise § 43.3(j)(3) to read as follows:

§ 43.3 Persons authorized to perform maintenance, preventive maintenance, rebuilding, and alterations.

* * * * *

(j) * * *

(3) Perform any inspection required by part 91 or part 125 of this chapter on aircraft it manufactured under a type certificate, or currently manufactures under a production certificate.

PART 45—IDENTIFICATION AND REGISTRATION MARKING

■ 52. Revise the authority citation for part 45 to read as follows:

Authority: 49 U.S.C. 106(g), 40103, 40113–40114, 44101–44105, 44107–44111, 44504, 44701, 44708–44709, 44711–44713, 44725, 45302–45303, 46104, 46304, 46306, 47122.

PART 45—[AMENDED]

■ 53. Amend part 45 by:

■ a. Removing the word ''Administrator'' and the words ''Administrator of the FAA'' and adding in their place the word ''FAA'' wherever they appear; and

■ b. Removing the word ''shall'' and adding in its place the word ''must'' wherever it appears.

■ 54. Amend § 45.1 by revising paragraphs (a) and (b) and removing paragraph (c) to read as follows:

§ 45.1 Applicability.

* * * * *

(a) Marking products and articles manufactured under—

(1) A type certificate;

(2) A production approval as defined under part 21 of this chapter; and

(3) The provisions of an agreement between the United States and another country or jurisdiction for the acceptance of products and articles; and

(b) Nationality and registration marking of U.S. registered aircraft.

Subpart B—Marking of Products and Articles

■ 55. Revise the heading of subpart B to read as set forth above.

■ 56. Amend subpart B by adding § 45.10 to read as follows:

§ 45.10 Marking.

No person may mark a product or article in accordance with this subpart unless—

(a) That person produced the product or article —

(1) Under part 21, subpart F, G, K, or O of this chapter; or

(2) For export to the United States under the provisions of an agreement between the United States and another country or jurisdiction for the acceptance of products and articles; and

(b) That product or article conforms to its approved design, and is in a condition for safe operation; and, for a TSO article; that TSO article meets the applicable performance standards.

■ 57. Revise § 45.11 to read as follows:

§ 45.11 Marking of products.

(a) *Aircraft.* A manufacturer of aircraft covered under § 21.182 of this chapter must mark each aircraft by attaching a fireproof identification plate that—

(1) Includes the information specified in § 45.13 using an approved method of fireproof marking;

(2) Must be secured in such a manner that it will not likely be defaced or removed during normal service, or lost or destroyed in an accident; and

(3) Except as provided in paragraphs (d) through (h) of this section, must be secured to the aircraft fuselage exterior so that it is legible to a person on the ground, and must be either adjacent to and aft of the rear-most entrance door or on the fuselage surface near the tail surfaces.

(b) *Aircraft engines.* A manufacturer of an aircraft engine produced under a type certificate or production certificate must mark each engine by attaching a fireproof identification plate. Such plate—

(1) Must include the information specified in § 45.13 using an approved method of fireproof marking;

(2) Must be affixed to the engine at an accessible location; and

(3) Must be secured in such a manner that it will not likely be defaced or removed during normal service, or lost or destroyed in an accident.

(c) *Propellers and propeller blades and hubs.* Each person who produces a propeller, propeller blade, or propeller hub under a type certificate or production certificate must mark each product or part using an approved fireproof method. The marking must—

(1) Be placed on a non-critical surface;

(2) Contain the information specified in § 45.13;

(3) Not likely be defaced or removed during normal service; and

(4) Not likely be lost or destroyed in an accident.

(d) *Manned free balloons.* A manufacturer of manned free balloons must mark each balloon by attaching the identification plate described in paragraph (a) of this section. The plate must be secured to the balloon envelope and must be located, if practicable, where it is legible to the operator when the balloon is inflated. In addition, the basket and heater assembly must be permanently and legibly marked with the manufacturer's name, part number (or equivalent), and serial number (or equivalent).

(e) *Aircraft manufactured before March 7, 1988.* The owner or operator of an aircraft manufactured before March 7, 1988 must mark the aircraft by attaching the identification plate required by paragraph (a) of this section. The plate must be secured at an accessible exterior or interior location near an entrance, if the model designation and builder's serial number are also displayed on the exterior of the aircraft fuselage. The model designation and builder's serial number must be—

(1) Legible to a person on the ground,

(2) Located either adjacent to and aft of the rear-most entrance door or on the fuselage near the tail surfaces, and

(3) Displayed in such a manner that they are not likely to be defaced or removed during normal service.

(f) For powered parachutes and weight-shift-control aircraft, the identification plate required by paragraph (a) of this section must be secured to the exterior of the aircraft fuselage so that it is legible to a person on the ground.

(g) The identification plate described in paragraph (a) of this section may be secured to the aircraft at an accessible location near an entrance for—

(1) Aircraft produced for—

(i) Operations under part 121 of this chapter,

(ii) Commuter operations (as defined in § 119.3 of this chapter), or

(iii) Export.

(2) Aircraft operating under part 121 of this chapter and under an FAA-approved continuous airworthiness maintenance program; or

(3) Aircraft operating in commuter air carrier operations (as defined in § 119.3 of this chapter) under an FAA-approved continuous airworthiness maintenance program.

(h) *Gliders.* Paragraphs (a)(3) and (e) of this section do not apply to gliders.

§ 45.13 [Amended]

■ 58. Amend § 45.13 by removing the text ''and (b)'' from paragraph (a) introductory text and adding in their place the text ''through (c)'' and by removing the words ''of this part'' from paragraph (c).

§ 45.14 [Removed]

■ 59. Remove § 45.14.

■ 60. Revise § 45.15 to read as follows:

§ 45.15 Marking requirements for PMA articles, TSO articles, and Critical parts.

(a) *PMA articles.* The manufacturer of a PMA article must permanently and legibly mark—

(1) Each PMA article, with the PMA holder's name, trademark, symbol, or other FAA approved identification and part number; and

(2) The letters ''FAA–PMA''.

(b) *TSO articles.* The manufacturer of a TSO article must permanently and legibly mark —

(1) Each TSO article with the TSO holder's name, trademark, symbol, or other FAA approved identification and part number; and

(2) Each TSO article, unless otherwise specified in the applicable TSO, with the TSO number and letter of designation, all markings specifically required by the applicable TSO, and the serial number or the date of manufacture of the article or both.

(c) *Critical parts.* Each person who manufactures a part for which a replacement time, inspection interval, or related procedure is specified in the Airworthiness Limitations section of a manufacturer's maintenance manual or Instructions for Continued Airworthiness must permanently and legibly mark that part with a serial number (or equivalent) unique to that part in addition to the other applicable requirements of this section.

(d) If the FAA finds a part or article is too small or otherwise impractical to mark with any of the information required by this part, the manufacturer must attach that information to the part or its container.

§ 45.16 [Amended]

■ 61. Amend § 45.16 by removing the last sentence of the section.

Issued in Washington, DC, on October 6, 2009.

J. Randolph Babbitt,

Administrator.

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