

ORDER

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PARTS MANUFACTURER APPROVAL PROCEDURES



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**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

FOREWORD

In this order, we describe the procedures for evaluating and issuing a parts manufacturer approval (PMA) for replacement and modification parts on type-certificated products. These procedures apply to all engineering and manufacturing personnel in the Federal Aviation Administration.

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CHAPTER 1. PURPOSE AND ADMINISTRATIVE INFORMATION

1-1. PURPOSE. This order prescribes the responsibilities and procedures for approving replacement and modification parts for installation on type-certificated products. It applies to Federal Aviation Administration (FAA) aircraft certification personnel who oversee the approval process required by Title 14 of the Code of Federal Regulations (14 CFR). We define the procedures that FAA personnel follow when issuing a parts manufacturer approval (PMA) under 14 CFR § 21.303. We also provide insight to individuals applying for a PMA and explain the role of a designated engineering representative (DER) in the PMA process.

1-2. DISTRIBUTION. Distribute this order to the branch level in Washington headquarters, branch levels of the Aircraft Certification Service; the branch levels of the regional aircraft certification directorates; the Brussels Aircraft Certification Staff; all aircraft certification offices (ACO); all manufacturing inspection district offices (MIDO); and all manufacturing inspection satellite offices (MISO).

1-3. CANCELLATION. FAA Order 8110.42A, Parts Manufacturer Approval Procedures, dated March 31, 1999, is canceled.

1-4. WHO NEEDS A PMA?

a. General Requirements. Title 14 CFR § 21.303(a) requires any person producing replacement or modification parts for sale for installation on a type-certificated product to get a PMA. Also PMA may approve the production of parts from a supplemental type certificate (STC). PMA applies to most replacement and modification parts. Only use an STC for the approval of parts that constitute a major change to the product. See FAA Order 8110.4, Type Certification, for STC procedures.

b. Getting a PMA for Technical Standard Order (TSO) Articles. We at the FAA may issue a PMA for replacement parts for articles produced under a TSO authorization when these articles are in the **product's** type design. Then the replacement part is for the eligible product not the article. The installation of a PMA part may result in a minor design change in a TSO article yet meet the product's airworthiness requirements. We may require the installer of this part to place a modifier's nameplate on the article. See FAA Order 8150.1, Technical Standard Order Program, for more details. Replacement parts approved under the basis of identity do not change the article's design and do not require a modifier's nameplate.

1-5. WHAT ARE THE EXCEPTIONS TO PMA?

a. Ineligible Procedures and Materials. Specific manufacturing inspection procedures, materials, or special processes (such as hardening, plating, or shot peening) are not eligible for a PMA. If a person controls the design, manufacture, or quality of a part through any of these procedures or processes **and** intends to sell the part for installation on a type-certificated product, then that person must use another's production approval for the completed part.

b. 'One-Time Only' STCs. Parts produced under a "one-time only" status STC or an FAA Form 337, Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance),

approval are ineligible for a PMA. If the applicant reapplies for a new STC, then the new STC is a “multiple approval.” In this case, we require the applicant to get a PMA for associated parts.

c. Other Production Approval Holders (PAH). Holders of a production certificate, approved production inspection system, or TSO authorization do not need a PMA. They produce replacement parts for their products or articles under their existing design and production approvals. Also, suppliers may produce parts for sale without a PMA if a PAH grants them direct ship authority and notifies the appropriate MIDO. If a supplier intends to sell a part without direct ship authority, then that supplier needs a PMA.

d. Aircraft Owners or Operators. Owners and operators may produce parts for installation on their own product without a PMA. The installation of these parts must comply with applicable airworthiness standards. If an owner or operator intends to sell a part for installation on another owner’s aircraft, then that owner or operator requires a PMA.

e. Air Carriers Operating Under 14 CFR part 121 or 135. Carriers may produce parts for installation on their own products without a PMA. We don’t require a PMA if the air carrier gets installation approval under 14 CFR part 43 and complies with their accepted maintenance procedures manual and instructions. If air carriers intend to sell a part to other owners or operators, then they need a PMA.

f. Repair Stations. An FAA-certificated repair station may produce a part for installation on a type-certificated product for current and anticipated in-house repairs. We authorize this under FAA Order 8000.50, Repair Station Production of Replacement or Modification Parts. We don’t authorize separate sales of these parts.

g. Producing and Selling Standard Parts. Production and sale of standard parts for type-certificated products do not require a PMA. These parts conform to established industry or U.S. specifications (standard parts). However, a PAH may buy standard parts and subject them to more restrictive inspection criteria before approval. If questions arise, contact the certificating ACO, MIDO, or both to determine if the part design meets the criteria for standard parts.

h. Importing Modification and Replacement Parts. Under 14 CFR § 21.502, we allow foreign manufacturers to export modification and replacements parts to the United States if a bilateral agreement exists. This agreement sets the scope and manner we at the FAA use to accept these parts. We expect the PMA holder to include an FAA airworthiness export tag with these parts. Acceptable replacement parts include:

(1) Parts produced in a foreign country under the provisions of a bilateral agreement by the original FAA type certificate (TC), STC, or TSO authorization holder; or

(2) Parts from foreign manufacturers or suppliers to TC holders that are approved by their country’s civil aviation authority as specified under a bilateral agreement. The bilateral agreement may extend to foreign design of replacement parts for U.S. state of design products.

i. Fabrication Inspection System (FIS). We only issue and expand PMAs with a FIS in the United States. However, PMA holders may have suppliers with manufacturing facilities

outside the United States. The FIS prescribes the holders' controls for these supplier parts. See the description of a FIS in appendix 1, Fabrication Inspection System.

1-6. PMA AND OLDER PRODUCTS. We will consider potential problems when evaluating applications for approval to produce parts for sale for installation on older TC products. These potential problems include difficulty getting type design data, out-of-production products, and cases when a TC holder no longer exists. For these problems, we still expect applicants to send us enough information to support their claim that the prospective PMA design meets applicable airworthiness standards. Also, we still require the applicant to show the ability to produce parts conforming to an approved design. FAA engineering personnel must use sound judgment when considering the means of compliance. Some allowable changes include later industry-adopted standard practices and specifications that are directly applicable.

1-7. THE ROLES OF FAA AND APPLICANT. Figure 1-1 summarizes the roles of the FAA and an applicant. Coordination (for example, requests for conformity inspections to determine reproducibility) between the ACO and MIDO ensures that the applicant's processes produce replacement and modification parts following the approved design. When appropriate, the MIDO verifies the applicant's critical manufacturing processes needed to achieve approved design characteristics. Approval of a PMA application requires the ACO to approve the design, and the MIDO to approve the production system. See appendix 2, PMA Process Flowchart.

1-8. PROJECT SPECIFIC CERTIFICATION PLAN (PSCP). A PSCP is the preferred project management tool that aids in the design approval of complex and critical parts. It provides milestones, performance measures, and information unique to a certification project. The adaptive use of a PSCP in PMA applications will define and document the approval plan between an ACO and the applicant. The plan should help us issue a PMA quicker by defining the design approval criteria and process. The ACO and applicant should tailor the plan based on the complexity and criticality of the proposed part. See appendix 3, Project Specific Certification Plan, for a PSCP template.

1-9. DEVIATIONS. Engineering and manufacturing personnel in the FAA must follow the procedures in this order to ensure a standard process for PMA. We also must ensure applicants are aware of these procedures. The Aircraft Engineering Division (AIR-100) coordinates and dispositions any deviations from this guidance material. If a deviation becomes necessary, the involved FAA employee substantiates and documents the need, gets concurrence from the appropriate supervisor, then sends a deviation request for review with recommendations to AIR-100.

1-10. ACRONYMS. See appendix 18, List of Acronyms.

1-11. DEFINITIONS. See appendix 19, Definitions and Terms.

1-12. RELATED PUBLICATIONS (LATEST REVISIONS). See appendix 20, Related Publications and How to Get Them.

1-13. SUGGESTIONS FOR IMPROVEMENT. If you find any deficiencies, need clarification, or want to suggest improvements on this order, send a copy of FAA Form 1320-19, Directive Feedback Information (written or electronically), to the Aircraft Certification Service,

Planning and Financial Resources Management Branch, AIR-530, Attention: Directives Management Officer. Form 1320-19 is on the last page of this order. You may also send a copy to the Aircraft Engineering Division, AIR-100, Attention: Comments to Order 8110.42B. If you urgently need an interpretation, contact AIR-110 at (202) 267-9588. Always use Form 1320-19 to follow up each verbal conversation.

1-14. RECORDS MANAGEMENT. For guidance on keeping or disposing of records, refer to FAA Orders 0000.1, FAA Standard Subject Classification System; 1350.14, Records Management; and 1350.15, Records, Organization, Transfer, and Destruction Standards. Or, see your office Records Management Officer or Directives Management Officer.

FIGURE 1-1. ROLES OF FAA AND APPLICANT IN PMA PROCESS

Applicants:	ACOs:	MIDOs:
<ul style="list-style-type: none"> • Show that the design meets the applicable airworthiness standards by either of the following two ways: <ul style="list-style-type: none"> (1) Showing that the PMA part's design is identical to the design of a part that is covered under a TC, or (2) Using test and computation that shows the PMA part's design meets the airworthiness requirements that apply to the affected product. • Set installation eligibility. • Ensure the part performs its intended function. • Assess the consequences of PMA part failure on the next higher assembly and associated product. • Provide instructions for continued airworthiness (ICA) for the PMA part or product as necessary. • Set up and maintain a FIS to meet the requirements of 14 CFR § 21.303(h). • Report service difficulties. • Draft a PSCP. <p>See chapter 2 for more details.</p>	<ul style="list-style-type: none"> • Ensure compliance with agency regulations, programs, standards, and procedures on issuing design approval for replacement and modification parts. • Coordinate and participate in developing a PSCP as needed. • Investigate service difficulties. • Witness or delegate various functions. • Coordinate with aircraft evaluation group (AEG) for ICA review as needed. • Notify applicant of design approval. <p>See chapter 3 for more details.</p>	<ul style="list-style-type: none"> • Process PMA applications based on license agreements and STCs. • Ensure conformity to the approved design. • Cosign and issue PMA supplements after design approval. • Accept FIS. • Issue the FAA-PMA production approval letter. • Conduct surveillance at the PMA holder's and supplier's facilities, both foreign and domestic. • Investigate and submit enforcement reports when PMA holders and non-PMA holders do not comply with 14 CFR. <p>See chapter 4 for more details.</p>

CHAPTER 2. WHAT TO EXPECT FROM APPLICANTS

2-1. WHO GETS AN APPLICATION LETTER? Expect the applicant to send a letter of application to one of the following:

- **The MIDO** in the geographic area of the applicant's FIS, if the applicant is applying for a PMA based on an STC or identity by a licensing agreement. See a sample letter to the MIDO in appendix 4, Sample FAA-PMA Letters of Application to MIDO. We list contact information for all MIDOs in appendix 5, List of FAA Manufacturing Inspection District/Satellite Offices.
- **The geographic ACO**, if the design approval basis is identity without a license agreement or test and computation. Find a sample letter to the ACO in appendix 6, Sample FAA-PMA Letters of Application to ACO. We list contact information for all geographic ACOs in appendix 7, List of FAA Aircraft Certification/Field Offices.

2-2. CONTENT OF APPLICATION LETTER. Each letter will include the manufacturing facility's name and physical address. Also, the letter will identify the part under consideration for PMA. Other necessary information in the letter includes:

- Identity of the type-certificated product for installation of the PMA part. Note the make, model, series, and (if appropriate) serial number of this product as recorded on the upper right-hand corner of the product's type certificate data sheet (TCDS).
- Identity of the TC holder's part, including the part's name and number. Also, applicant identifies the drawing number and revision level that the PMA part replaces or modifies.
- Optional request for a PSCP if the application is for the design approval of a complex, life-limited, or critical part. Inform applicants they can submit a draft PSCP using appendix 3 as a guide. Use of the PSCP is at the reviewing ACO's discretion.
- Statement that certifies the applicant has an established FIS that meets requirements of 14 CFR § 21.303(h).
- Brief description of the basis for a design approval.
- Draft PMA supplement.

2-3. BASIS FOR DESIGN APPROVAL. These methods are:**a. Identity by Showing Evidence of a Licensing Agreement.**

(1) The applicant sends the appropriate MIDO a document from the TC, STC, or TSO authorization holder authorizing use of their data package. In the document, the applicant attests that the licensed components have service histories with no known problems causing unsafe conditions. Evidence of a licensing agreement is not a separate approval method, but is a way to show identity. The applicant uses this evidence to show that the data submitted are FAA-approved and identical to the original part. For FAA purposes, the licensing agreement (in any form) only needs to authorize the applicant to use the specified type design data.

(2) Following the current industry practice, TC holders prepare “assist letters” for applicants to send to the MIDO. This practice meets the requirements of showing evidence of a licensing agreement under 14 CFR § 21.303(c)(4). Find a sample assist letter in appendix 8, Example of a Complete TC or TSO Authorization Holder’s PMA Assist Letter.

(3) **PMA ASSIST LETTER.** In the assist letter, the licensor (usually a TC holder or a PAH) may identify critical parts to aid MIDO processing of the PMA application.

b. Identity Without a Licensing Agreement. The applicant sends the appropriate ACO a statement certifying that the design is identical in all respects to an approved design (for example, TC, STC or TSO authorization). The applicant also provides the data supporting the identity claim for review and approval. These data verify the identity in dimensional and material characteristics, special processes and coatings, and test and acceptance criteria. Identity to another PMA is unacceptable because 14 CFR § 21.303(c)(4) restricts identity to only parts covered under type certificates.

c. Test and Computation. The applicant sends the ACO a data package for review and approval. This data package describes the part design, which includes materials, processes, test specifications, system compatibility, maintenance instructions, and part interchangeability. The package also includes a test and substantiation plan to show compliance with applicable airworthiness standards. See paragraph 2-5 for more details about the data package.

d. Supplemental Type Certificate (STC). The applicant stipulates use of the approved data from the STC and refers to the STC number.

2-4. DRAFT PMA SUPPLEMENTS. After approving the PMA, we will assign a PMA and supplement number. Use the following samples as guides for preparing FAA-PMA supplements:

- Appendix 9, Sample FAA-PMA Supplement for Identity (Non-Licensing Agreement) or Test and Computation, is a supplement based on either identity without a license agreement or test and computation.
- Appendix 10, Sample FAA-PMA Supplement for Licensing Agreement and STC, is a supplement based on either an STC or licensing agreement.

2-5. APPLICANT'S DATA PACKAGE. Expect the applicant to provide enough information and substantiation to meet the requirements of 14 CFR §§ 21.303(c), 21.303(d)(2), and 21.303(f). This substantiation shows the part meets the airworthiness requirements in the 14 CFR part (or their predecessor regulations) for the product affected by installation of the part. The data package necessary to meet these requirements will vary in complexity depending on the critical nature of the part, PMA basis, and its relationship to the mating part, the next higher assembly, and the product. This information must include manufacturing controls, fabrication processes, and assembly techniques as applicable. Additional information can include performance, endurance, and test requirements to show the part meets the appropriate airworthiness requirements. The data package can include, but is not limited to, the following:

a. Drawings and Specifications. Instruct applicants to provide one copy of their drawings and specifications that show part configuration. These drawings and specifications should address dimensions and tolerances, materials, and processes that define the part's structural strength and design characteristics. The required information for some parts (for example, critical or life-limited) may include routing sheets, tooling requirements, process sheets, material handling and storage, and inspection requirements deemed necessary by the FAA.

b. Inspection and Test Procedures. Design approval of critical or life-limited parts may require demonstration of the manufacturing process, and inspection and test procedures. These processes and procedures include process controls, finished product performance, and incoming material controls. The data usually include elements of the manufacturing cycle: raw material purchase, material chemistry and grain, structure evaluation, fabrication, melt forging, machining, surface treatments, other material properties, required inspections, and so on. If the application basis is identity, then the applicant includes the necessary manufacturing test procedures to demonstrate these processes and procedures. If the application basis is test and computation, then the applicant includes the design and manufacturing test procedures.

c. Test Results. Design approval of critical or life-limited parts may require the applicant to perform additional inspections and tests. If an applicant uses an FAA-approved test plan, we review and approve the results. The applicant sends the ACO the resultant inspection and test reports to substantiate the airworthiness of the parts produced in conformity with the proposed design. If the application basis is identity, applicants send the MIDO test results that show their manufacturing methods and processes do not affect airworthiness (as originally approved). If the application basis is test and computation, the applicant sends the ACO the design and manufacturing test results.

d. Safety Assessment. Expect the applicant to submit a failure mode and effects assessment to support classification of the proposed part as either critical or non-critical. This assessment provides at a minimum:

(1) A qualitative assessment of failure modes and effects, which notes the part criticality and considers:

- Effect of characteristics, processes, maintenance procedures, or inspections when there's a failure, omission, or non-conformance; and
 - Effect of operating outside the part application or intended environment.
- (2) Effect of part failure on the next higher assembly and its performance.
- (3) Effect on the product and its performance if the next higher assembly fails.

NOTE: We evaluate this assessment against the applicable criteria in 14 CFR §§ 33.75, 29.602, 27.602, 25.1309, 23.1309 and Policy for Propeller Safety Analysis, Policy No. ANE-2002-35.15-RO of 30 October 2003. Go to the Regulatory and Guidance Library at http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgPolicy.nsf to see this policy memorandum. If the assessment shows an unsafe condition by the criteria in paragraphs 2-5d(1) through 2-5d(3), then the part is critical.

e. Design Change Control. Applicants describe the methods and controls for changes to the part design. They also describe how to integrate design changes into the manufacturing process.

f. Airworthiness Limitations. Life-limited parts identified in the TCDS or airworthiness limitations section require a method for accurately assessing their fatigue life. This method will include, at least, appropriate aspects of material property distributions, loads, frequency of loads, mission profiles, stress and temperature distributions, and fatigue testing. We expect the applicant to assess the impact of PMA parts on mating life-limited assemblies.

g. Life Assessment. PAHs often assess the life of parts that operate in cyclic load environments. This assessment occurs during certification through test, analysis, or both. If a PAH assessed the life of a part, a PMA applicant evaluates the life of the proposed replacement part. The evaluation may entail fatigue life analysis and testing. The results verify part life and support ICA and a continued operational safety (COS) plan.

h. Other Data per 14 CFR parts 34 and 36.

i. Continued Operational Safety (COS) Plan. PMA holders are responsible for the continued operational safety of their designs. Applicants who propose complex or critical parts should develop a COS plan. The critical nature of a part sets the scope of this COS plan. The plan embodies the basic requirements for tracking and reporting failures and defects per 14 CFR § 21.3. These requirements also include at least:

- Detailed records of all aspects of the manufacturing cycle;
- A record-keeping plan for the entire part life;

- Methods to isolate possible discrepant part populations, continually monitor the service use of parts, and review design assumptions based on service experience;
- Means for identifying possible failure modes and effects that account for the part's operating environment and interfaces to the next higher assembly and product; and
- Methods and resources used to identify causes of failures and to develop corrective actions, and means to carry out these actions quickly based on an assessment of the associated risks.

j. Part Marking. The applicant provides detailed part marking information that complies with 14 CFR §§ 45.15. Life-limited parts require marking that complies with 14 CFR § 45.14. Ensure these part markings do not compromise airworthiness.

k. Installation Eligibility. Expect the applicant to identify where the part goes. If the PMA is for parts from an STC, the installation eligibility follows eligibility requirements in the STC. The PMA supplement will note the models affected by the STC. A copy of the STC is enough to show eligibility. If the part is simple, non-critical, and not based on an STC, then an illustrated parts catalog (IPC) alone may suffice to show eligibility. Otherwise, the applicant demonstrates an understanding of the part by doing the following:

- Identifying at least one product for possible installation of the part. Identify the product by make and model, series, and serial numbers if necessary. The applicant uses the model information found in the title box on the product's TCDS.
- Showing where the part goes through a combination of an IPC, other supplements, service bulletins, and PAH repair manual data.
- Assessing the effects of part failure on that next higher assembly and the associated product when applicable.

l. Airworthiness Directives (AD). The applicant identifies all ADs or unresolved service difficulties involving the original part.

m. Maintenance Instructions and Instructions for Continued Airworthiness (ICA). Applicants furnish instructions for continued airworthiness per 14 CFR § 21.50. This regulation requires a design approval holder to provide ICA prepared in accordance with the airworthiness requirements applicable to the effected product. If the effected product had a TC application date after January 28, 1981, the applicant shows and states that the product's ICA is still valid with the PMA part installed. Otherwise the applicant provides supplemental ICA. We at the FAA also require supplementary maintenance and related instructions when:

- The PMA part invalidates the product's ICA,

- The parts are only eligible for installation on a product where the application date for TC was on or before January 28, 1981, or
- The design approval holder's instructions are inadequate.

n. ICA for Life-limited parts. If the PMA part is life-limited, the applicant must submit a supplement to the limitations section of the ICA per 14 CFR § 21.50. The supplement identifies the part numbers and associated life limits.

2-6. SPECIAL REQUIREMENTS FOR TEST AND COMPUTATION

APPLICATIONS. Applications submitted on the basis of test and computation should specifically address:

a. Compliance with Airworthiness Standards. Applications based on test and computation, either comparative or general test and analysis, must demonstrate compliance with applicable airworthiness standards. The certification basis for the PMA part is the same as the basis for products affected by part installation (see the TCDS). Find airworthiness requirements in applicable TSOs and the following 14 CFR parts:

- 14 CFR part 23, Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Airplanes.
- 14 CFR part 25, Airworthiness Standards: Transport Category Airplanes.
- 14 CFR part 27, Airworthiness Standards: Normal Category Rotorcraft.
- 14 CFR part 29, Airworthiness Standards: Transport Category Rotorcraft.
- 14 CFR part 31, Airworthiness Standards: Manned Free Balloons.
- 14 CFR part 33, Airworthiness Standards: Aircraft Engines.
- 14 CFR part 34, Fuel Venting and Exhaust Emission Requirements for Turbine Engine Powered Airplanes.
- 14 CFR part 35, Airworthiness Standards: Propellers.
- 14 CFR part 36, Noise Standards: Aircraft Type and Airworthiness Certification.

b. Substantiation. The applicant can prove compliance with applicable airworthiness standards by either comparative or general test and analysis. Comparative test and analysis substantiates that the PMA part is equal to or better than the approved original part. Thus, the PMA part meets the same airworthiness standards as the original part. General test and analysis shows the part complies directly with all airworthiness regulations applicable to the product affected by part installation. Tests support each type of analysis and confirm significant assumptions, findings or conclusions.

(1) Comparative Test and Analysis. Expect the applicant to demonstrate the functional design of the proposed part is equal to or better than that of the original TC, STC, or TSO part. This method entails analyses and tests of the original and proposed parts. The criticality of the part and the complexity of its design will dictate the rigor of the comparative analysis and the extent of testing. Side-by-side testing of proposed and original parts with zero service time under the same procedures and conditions provide the standard to evaluate the adequacy of the replacement part. The results of the analyses and tests will note any differences and provide sound technical justifications for these differences. Reverse engineering of the original part supports a comparative analysis. However, comparison of the respective PMA and product designs may suffice for simple, non-critical parts.

(2) General Test and Analysis. The applicant shows the part complies directly with the product's airworthiness requirements and applicable TSO requirements. For example, certification of a proposed replacement part for an engine by this method would require compliance with all regulations of 14 CFR part 33 applicable to the affected product.

(3) Test Scope and Plan.

(a) Part criticality and complexity determines the need, type, and scope of testing to support either a comparative or general analysis. Testing ranges from functional to component to flight. This verifies the performance and durability of the original part or compliance with applicable airworthiness standards. Simple, non-critical parts may need little or no testing. Functional testing has many purposes including:

- Verifying design characteristics (for example, vibratory, coating effectiveness, and so on),
- Verifying part interactions with the next higher assembly (for example, gears, bearings, seals, blades, and so on), and
- Evaluating complex parts made of intricate components.

(b) If the design warrants testing, applicants include a proposed test plan and a draft request for conformity in their application to the ACO. The test plan identifies at least:

- | | |
|--|---|
| • Test purpose, | • Test conditions and duration, |
| • Physical and functional description of the test article and setup, | • Test success and failure criteria, |
| • Number of test units, | • Test instrumentation and data collection, |
| • Unit identification, | • Test safety control, and |
| | • Control of test procedures. |

(c) When appropriate, the ACO issues the MIDO the request for conformity of the test article and test setup. The applicant conducts the tests after receiving FAA approval of the test plan and MIDO approval of the conformity. Either the ACO or MIDO may delegate to authorized designees their respective witnessing of testing, teardown inspections, and conformity

inspections. Then, the applicant sends a test report to the ACO that includes an analysis of the test results, the post-test teardown inspection results, and a determination of adequacy to the applicable airworthiness or test standards.

(4) Flight Testing. Any flight tests that require an FAA test pilot or designee will need a prior approved type inspection authorization.

(5) Test Standards. Expect applicants to use one of the following test standards to measure the adequacy of the PMA part:

- **Comparative Testing.** They use a part from the TC or STC holder that has zero service time. They also test the PAH part under the same procedures and conditions as the applicant's part.
- **General Testing.** They verify the part meets the applicable airworthiness requirements of 14 CFR and the applicable TSO performance requirement.
- **Other tests** deemed acceptable by the FAA.

c. Reverse Engineering. The reverse engineering process uses techniques that vary widely and produce diverse results. The process alone is inadequate to characterize and compare a new original part to a proposed replacement. An applicant's challenge entails selecting the processes and techniques that are appropriate to the part's complexity. Reverse engineering alone is enough to duplicate simple parts. However, complex parts may need other substantiating information to show equivalency between original and PMA parts. The applicant usually considers the following when using reverse engineering:

(1) Sample Size. Typically these samples are new, unused parts from approved and traceable sources (for example, purchase orders, FAA airworthiness tag, and so on). The sample size varies with design complexity and key attributes that define a part. Use enough samples to correctly represent the essential characteristics of a design. These essential characteristics include nominal dimensions, tolerances, material properties, fabrication processes, and so on. Sampling used parts may provide some characteristics that do not deteriorate during use, such as material composition, grain size, grain flow and depth of case hardening. Ensure applicants substantiate the validity of this approach and get concurrence from the appropriate ACO. Testing may include more samples to show equivalency between a new original and the PMA part.

(2) Dimensional Tolerances. Variations in the sample measurements and accepted engineering practices determine the tolerances in part dimensions. The resulting tolerances for the PMA part should not exceed the minimum and maximum dimensions measured on the sampled approved parts. Exceeding these limits requires substantiation.

(3) Materials. Various tests and documentation from the PAH holder or supplier define the material composition of a part. Usually the PMA part materials are equivalent to the materials for the original part including the base part, any subparts, added welds, and coatings.

However, an applicant may propose and substantiate alternate materials and processes that are at least equivalent. A qualified laboratory can provide thorough destructive testing for at least the following information:

- Composition of each material in the part,
- Material properties (that is, strength and fatigue characteristics, hardness, grain structure, and so on),
- Form of material (that is, casting, forging, bar stock, sheet, and so on), and
- Use of special processes (that is, nitriding, heat treat, shot peening, and so on) and resulting effect on material properties.

(4) Weight and Mass Properties. The mass properties of a part are often significant to its function and impact on the associated product. To assess the effects on the next higher assembly and product, the reverse engineering process compares these properties. This assessment accounts for weight differences between the proposed part and the original part to ensure the absence of detrimental effects. For example, a small weight increase in compressor blades can affect disc life.

2-7. IDENTICALITY BY OTHER THAN LICENSING AGREEMENT. If the PMA basis is identity without a license agreement, expect the applicant to show every aspect of the submitted design is identical to a TC, STC, or TSO part. Common areas of identity include materials, dimensions, assembly, and special processes. However, allowable changes may include standard industry practices, processes, and specifications that were updated universally. Also, the applicant submits a criticality assessment per paragraph 2-5d with the substantiation data package.

2-8. PART MARKING REQUIREMENTS. Title 14 CFR § 45.15 sets the marking requirements for PMA parts installed on TC and STC products and TSO articles. These markings are permanent and legible. They identify the part as FAA-PMA. They also identify the manufacturer, part number, and the affected type-certificated products. If the part basis is an STC, then the shipping document refers to this STC when identifying installation-eligible TC products.

a. Marking Critical Parts. Critical parts also follow the marking requirements in 14 CFR § 45.14. This requirement adds a serial number or equivalent to the part markings. The method for marking a critical part is essential design data that the FAA reviews. The applicant ensures and the ACO confirms the marking location and that the process does not degrade airworthiness. To do this, we require applicants to define the marking location and method on their drawings.

b. Marking an Assembly. Applicants apply PMA part markings required by 14 CFR § 45.15 to the top-level assembly of the approved replacement or modification part. We do not require applicants to mark subassemblies or individual detail parts. For example, if the top-level

assembly is a hydraulic pump, mark this assembly accordingly. Marking the detail parts of the pump is optional unless production of these parts occurs under separate PMAs. When PMA holders separately sell detail parts for installation in their approved assembly, they note the information required by 14 CFR § 45.15 on the accompanying shipping documentation. Also, they identify the eligible PMA assembly. The PMA holder's design data usually contain the marking information for detail parts of the assembly. This provides a means of tracing the individual detail parts to their related PMA assemblies.

c. Part Numbering. If the PMA part replaces an original part, the applicant assigns a part number that distinguishes the PMA part number from the corresponding TC holder part number. Adding a prefix or suffix to the TC holder's part number is enough as long as the prefix or suffix does not compromise the TC holder's part marking practices. The applicant may use a prefix or suffix to satisfy 14 CFR § 45.15(a)(2) requirements for marking the part with a name, trademark, or symbol. This only applies if the prefix or suffix is consistent across the applicant's product line. Also, each part bears "FAA-PMA" to meet another 14 CFR § 45.15 requirement.

(1) Supplier Numbers. Some applicants are suppliers to PAHs. Often these PAHs use the supplier part numbers in their approved designs. When these suppliers later apply for a PMA, they may continue to use their original part numbers with the added marking requirements of 14 CFR §§ 45.15(a)(1) and (2). These added requirements entail permanently marking the part with "FAA-PMA," and the name, trademark, or PMA holder's symbol.

(2) Parts Manufactured Under License. When the PMA basis is by showing evidence of a licensing agreement, the PMA part may have the same number as the type-certificated part. However, we require the applicant to meet the requirements of 14 CFR §§ 45.15(a)(1) and (2) by permanently marking the part with "FAA-PMA" and the PMA holder's name, trademark, or symbol.

d. Parts Impractical to Mark. If we find the part too small or impractical to mark all the information on it, an attaching tag or container label must have the missing information. Often the number of eligible type-certificated products is too long to include with the part. Since the list is likely to change, a tag or label on a container may refer to the applicant's publicly available part eligibility information. Title 14 CFR § 45.15(b) requires making the installation-eligibility information contained in a manual or catalog readily available. Providing a manual or catalog via the Internet meets the intent of "readily available." However, access to the Internet is not universal. The PAH must have an alternative means of providing the manual or catalog.

e. Marking a PMA Part on a TSO Article. Markings for a PMA part that goes on a TSO article follows the same protocols. Title 14 CFR § 45.15 requires the holder to mark parts as prescribed per the approved design. The installation eligibility in these markings notes the name and model of each applicable type-certificated product. To meet the requirements of 14 CFR § 45.15, record the PMA installation-eligibility information (that is, A310-200 series, B737-300 series, and so on) on the part. Do not list the TSO identification information (that is, TSO-C149, TSO-C63C, TSO-C85A, and so on).

2-9. USE OF DESIGNEES. Use of designees within their authorized limitations can help the PMA process. Give the names and contact information of participating DERs in the application

letter and PSCP, as applicable. See chapter 5 of this order for more information on the use of DERs.

2-10. ESTABLISHMENT OF THE FABRICATION INSPECTION SYSTEM (FIS). Title 14 CFR § 21.303(h) requires the applicant to set up and maintain a FIS. See appendix 1 for more details.

2-11. RESPONSIBILITIES OF PMA HOLDERS AFTER APPROVAL.

a. Report Failures, Malfunctions, and Defects. PMA holders must comply with 14 CFR § 21.3. The PMA holder creates a procedure to report to the FAA any failure, malfunction, or defect of a PMA part that left its quality control system. At a minimum, this reporting requirement applies to failures, malfunctions, or defects that may result in one of the occurrences listed in 14 CFR § 21.3(c). The data package includes this procedure in the plan for the continued operational safety. We review this procedure during the design approval portion of PMA. See paragraph 4-2f for enforcement information.

b. Maintain FIS. We require PMA holders to maintain an accepted FIS to comply with 14 CFR § 21.303. Before implementing changes, they report to the MIDO any changes to the FIS that may affect the inspection, conformity, or airworthiness of their parts. Evidence of a FIS is a production approval number issued by the MIDO.

c. Designees. After we issue a PMA, the holder can apply for appointment of qualified individuals as DMIRs or ODARs per 14 CFR part 183. See Order 8100.8, Designee Handbook, for more details.

d. Additional Part or Installation Approvals. A PMA holder can apply for additional approvals for other parts or installations on other products. These applications follow the applicable requirements of this order. The holder still complies with design approval requirements in 14 CFR § 21.303 and marking requirements in 14 CFR § 45.15(a)(4).

(1) When the holder uses an already approved production system, the ACO still approves the design of the additional part and the MIDO conducts an optional review of the holder's FIS. The MIDO reviews the holder's FIS if production of new parts causes a significant change in the PMA holder's operation or abilities.

(2) Holders can apply for additional installation eligibility for an approved part on other products. They still show the part meets the airworthiness requirements of these products and demonstrate an understanding where the part goes. See the applicable procedures in paragraph 2-5. Also expect the holder to submit the information about any associated ICA per paragraph 2-5m. After design approval and FIS review, the ACO will sign and the MIDO will issue a PMA supplement that adds the new parts or installations to the original approval.

(3) PAHs often use existing parts in newer/later models of their products. PMA holders of corresponding replacements for these parts usually cite an IPC that notes these common parts in the newer models. For simple, non-critical parts, an unaltered IPC from a PAH may be enough to show eligibility. However, for critical or complex parts, additional installation eligibility for an approved part should follow the procedures in paragraph 2-5k.

e. Design Changes.

(1) PMA holders may introduce changes to their designs. Minor changes are those having no appreciable effect on the approval basis or conformity. All other changes are major. The certifying ACO and the holder agree on the manner and timeframe for sending and reviewing these minor changes. They also agree on how often these reviews occur. One manner may entail the holder provide sufficient information to affirm the change is minor. This information includes a list of parts by name and number, their latest FAA-approved drawing revision with date of approval, and a brief description of each change. The applicant and ACO often record the agreement in writing for clarity.

(2) Any changes to critical or life-limited parts and major changes to all other parts require prior approval by the appropriate ACO. This approval occurs before implementing any change and in the same manner as original PMA. Also, we expect the PMA holder to show the effects of this change on the next higher assembly and associated product in a revised safety assessment.

(3) If the basis for the PMA was identity by showing evidence of a licensing agreement, the holder may implement the same minor changes accepted by the FAA on an original TC or STC part. PMA holders have the responsibility to keep a document trail linking their change to the revised design of the original design approval holder. When the licensing agreement ends, the PMA holder submits design changes to the FAA for approval. The ACO having jurisdiction over the PMA holder approves those later changes.

NOTE: Part manufacturers must get their own TSO authorization if the installation of a replacement part results in a major design change to a TSO article. A new TSO authorization is unnecessary if you install a PMA part under 14 CFR part 43 or other applicable airworthiness regulations. See Order 8150.1 for more details.

f. Relationship Change in a License Agreement. The PMA holder may not produce parts when a change in its relationship to the design approval holder prevents them from meeting their PMA responsibilities.

CHAPTER 3. AIRCRAFT CERTIFICATION OFFICE (ACO) RESPONSIBILITIES

3-1. GENERAL RESPONSIBILITIES. The geographic ACO as specified in FAA Order 8100.5, Aircraft Certification Service Mission, Responsibilities, Relationships, and Programs, has several responsibilities for PMA applications. The project engineer at the ACO:

a. Accepts Application. The ACO in the applicant's geographical area accepts the application for a PMA based on identity without a licensing agreement or test and computation. See appendix 6 for a sample of this FAA-PMA letter of application. If the PMA basis is identity with evidence of a licensing agreement or STC, applicants send a letter directly to the MIDO in the geographic area of their FIS. Consult ACO or MIDO policy on how to acknowledge receipt of the applicant's letter.

b. Confirms Location of Manufacturer. If the FIS is outside the United States, we at the FAA will not issue or expand a PMA unless regulatory oversight places no undue burden on us. Work with headquarters (AIR-200) to determine if the oversight poses an undue burden. See Order 8100.11, Developing Undue Burden and No Undue Burden Decision Papers Under 14 CFR Part 21, for more details.

c. Manages Design Review and Approval. The rigor and scope of the design data depend on the part's complexity and criticality. A PMA project involving complex, critical, or life-limited parts may involve a PSCP. The PSCP is an agreement between the PMA applicant and the FAA on applicable documents, project schedule, certification basis, testing, conformity inspections, communication/coordination, and delegation involved in the project. See appendix 3 for an example of a PSCP. A PSCP is usually not necessary for simple, non-critical parts when the supporting data are substantially complete with the application for PMA. Use of the PSCP is at the reviewing ACO's discretion.

d. Reviews Engineering and Test Data. Review the applicant's engineering design to determine if the design meets the applicable airworthiness standards. Seek FAA expertise from other ACOs, directorates, and CSTAs as needed. During this review:

- Verify safety assessment.
- Verify acceptable service history of the original part.
- Verify the eligibility for installation on type-certificated products.
- Verify the PMA application uses airworthiness requirements applicable to the type-certificated product subject to part installation.
- Verify the design data are adequate to produce the part.
- Review all differences between the proposed and original parts. Assess the technical justification for these differences and associated impacts on the next higher assembly and product. For example, weight and other mass properties significantly influence rotating components. Also, assess

the applicant's analysis of part weights and associated effects from any weight differences on an assembly and associated product.

- Initial the applicant's request for conformity. This indicates the ACO concurs with the request. Then, forward this request to the MIDO.
- Review and approve test plans and reports.
- Find the applicant's substantiating data show compliance with applicable airworthiness standards.
- Verify suitability of applicant's COS plan.

3-2. APPLICANT APPROACHES. Applicants may combine methods of showing compliance. The substantiating basis varies from identity, to test and computation, to a mixture of these bases. Applicants may compare some aspects of the originally approved and proposed parts to show identity. They use test and computation to show compliance with airworthiness standards for other aspects. The identity portion need not show compliance with airworthiness standards, but any differences require substantiation of compliance by test and computation.

3-3. REVIEW OF APPLICANT'S ABILITIES. Review each application with the MIDO as needed (that is, issue requests for conformity inspections). Confirm the applicant's ability to do the following:

- Conform materials to specifications in the design;
- Conform the part to the design drawings;
- Apply the manufacturing, construction, and assembly processes specified in the part's design (see 14 CFR § 21.303(f)(1) through (4));
- Process approval of major and minor design changes; and
- Track and report failures, malfunctions, and defects per the requirements in 14 CFR § 21.3.

3-4. COORDINATION WITH CERTIFICATE MANAGEMENT ACO (CMACO).

Coordinate with the CMACO and the accountable directorate on all critical and life-limited parts. Send the CMACO copy of the certification project notification (CPN) upon notifying the accountable directorate. See Order 8110.4. Set the appropriate level of CMACO involvement based on the part's criticality; at a minimum, coordinate service history and safety assessment. If the part basis is identity, confirm with the CMACO (and MIDO when appropriate) if the applicant's manufacturing processes are identical to the part produced under the TC or STC.

3-5. VERIFICATION OF INSTALLATION ELIGIBILITY.

a. A manufacturer's IPC offers information about installation eligibility, but the IPC is usually not FAA-approved. Consider using the IPC with other data like purchase orders from the PAH, service bulletins, maintenance manuals, a technical publications index, or a master drawing list. We cannot use the IPC to make any engineering finding leading to approval of the applicant's design data. Also we also cannot use the IPC to determine part conformity. Other acceptable documentation is a combination of the following:

- FAA airworthiness approval tag (FAA Form 8130-3),
- Other PMA supplements, and
- "Weight of evidence" evaluations using enough information from various sources to show eligibility.

b. Accept use of the IPC alone as a means for verifying installation eligibility on non-critical parts. When the IPC is the sole means of verifying installation eligibility, confirm the authenticity of that IPC.

c. If the application lacks documentation from the TC or TSO authorization holder (or other FAA-approved data), then the ACO may consider other evidence from the applicant. To verify installation eligibility, check other documents including the type design's master drawing list.

3-6. SERVICE HISTORY CONSIDERATIONS. Review of the service history is essential when a part is critical. However, verify that any part regardless of criticality is neither subject to an AD nor a causal factor in an accident. Also, verify the part is free of continued airworthiness problems. Follow the guidelines below if a PAH part has a potential unsafe condition and the proposed PMA part has a similar design:

a. Reject the PMA application if an existing AD removes the associated TC holder's part from service immediately or in the future.

b. Consider delaying the processing or rejecting the PMA application if we are discussing or developing an AD to remove the TC holder's part from service.

c. If the TC holder's part is under investigation for an incident or accident, delay processing the PMA application until the part is cleared.

d. Reject the PMA application if an AD calls for repetitive inspections without setting a terminating corrective action (for example, modification or replacement of the part). Also, reject the PMA application if the intent of repetitive inspections is to detect potential failures before reaching a published service life. We want and prefer a terminating corrective action. Issuing a PMA to produce and distribute parts of a substantially identical design only complicates and prolongs the unsafe condition.

- e. If a part is not identical or substantially identical to the TC holder's part, determine whether installing the applicant's part creates an unsafe condition.
- f. If the original part has a service bulletin to remove it from service, we may still issue a PMA. A service bulletin alone is not enough to disapprove a PMA.
- g. If the part is having service difficulties and the FAA is **ACTIVELY** pursuing corrective action (that is, a design change per 14 CFR § 21.99) with the TC holder, reject the application for PMA.
- h. Consult the FAA Service Difficulty Reporting System and the TC product support database for service difficulties of a critical part.

3-7. LIFE-LIMITED PARTS. Substantiate any life-limited parts per applicable paragraphs in section 2-5. The required substantiating data must include tests on components produced by the applicant. Ensure the applicant notes the means for adding PMA life limits to an operator's maintenance program.

3-8. SPECIAL CONSIDERATIONS—IDENTICALITY. Design approval based on identity entails the applicant showing that the PMA part design is identical to the TC part design in dimensions, tolerances, materials, processes, and specifications. See paragraphs 2-3a and 2-3b for more details. Design approval occurs after we make a finding of identity. However, some part designs contain features that have no influence on airworthiness or the next higher assembly. These features may include color, tighter tolerances, and so on. The PMA may deviate in these features without affecting identity. Also, the applicant's design need not conform to the latest revision level of the TC, STC or TSO authorization holder's drawing if we determine that the previously approved parts are still eligible for installation on the listed product models.

a. Limitations of Reverse Engineering. Take special care in evaluating identity based on reverse engineering. Reverse engineering is one way to develop the part's design. However, reverse engineering a part will not normally produce a design that is identical to a type-certificated part. The applicant is unlikely to show that tolerances, processes, and manufacturing specifications are identical. The rigor and scope of the substantiating data should reflect the degree that the design is identical. The test and computation method is the alternative to identity. The applicant shows that the proposed design complies with the applicable regulations.

b. Identity Not Found. If the design data (including the manufacturing processes) do not show that the part is identical to a part covered under a TC, reject and return the application to the applicant. Notify the applicant of the failure to find identity. See appendix 11, Sample Design Rejection Letter. However, PMA is still possible if the applicant shows through tests and computations that the part meets all applicable airworthiness requirements per 14 CFR § 21.303(f)(1) through (4).

c. Minor Design Changes. Limit minor design changes on PMA parts based on identity. Limit these changes to part marking, updated specifications, and so on.

3-9. SPECIAL CONSIDERATIONS—TEST AND COMPUTATION. Evaluate all aspects of the part design. Most applicants will use a comparative approach (see paragraph 2-6b(1)). One valid approach under test and computation compares a PMA part to a TC holder's part to show equivalency or compliance to regulations. Consult with other FAA organizations such as directorates, chief scientific and technical advisors, and designees as needed to promote timely reviews.

a. Safety Assessment. Review the applicant's assessment of the part criticality. Confirm the criticality determination as necessary with the CMACO. Use available FAA expertise to aid in evaluating these assessments (see paragraph 2-5d).

b. Reverse Engineering. Applicants typically use this process to duplicate parts without original design data. The process entails disassembly, measurement of features, and material and functional analyses. Subsequent testing confirms the intended function. Review the applicant's data to confirm equivalency to the original design. Ensure the design of the duplicate part defines dimensions, material properties (for example, microstructure, chemical composition), special processes (for example, welds, heat treat, coatings), and continued airworthiness requirements.

c. Test Plans and Reports. Review any test plans and results that show the part is equivalent to the original or complies with applicable airworthiness standards. Also, verify that the results confirm the functionality of complex parts in their assemblies. Request additional testing as needed to confirm equivalency to the original part and impact on the original's ICA.

d. Conformity Inspections. Conformity inspections ensure that a modification or replacement part complies with an approved design. These inspections are a prerequisite for FAA certification tests. Coordinate with the responsible MIDO to schedule timely inspections. The MIDO or appropriate designees determine that the part conforms to drawings, specifications, and special processes. To request an inspection, use FAA Form 8120-10, Request for Conformity; a memorandum; or FAA Form 8110-1, Type Inspection Authorization.

e. ICA or Maintenance Instructions. Review the applicant's proposed ICA or maintenance instructions and coordinate with the appropriate aircraft evaluation group (AEG) of the Flight Standards Service. If the applicant proposes that no new ICA or maintenance instructions are necessary, then review the applicant's substantiation for that position. If the ACO agrees that the TC or TSO authorization holders' instructions are applicable, note such on the design approval letter. See appendix 12, Sample Notification of Design Approval.

f. Minor Design Changes. The certifying ACO sets the manner and interval for approving minor changes to the design of a PMA part. One manner is through a written agreement with the PMA holder to periodically provide a list of minor changes to the ACO. The holder provides sufficient information to affirm the change is minor. This information lists the parts by name and number, their latest FAA-approved drawing revision with date of approval, and a brief description of each change. The ACO keeps a record of these approvals and sends a letter notifying such to the holder. As noted in their handbook, we may authorize designees to approve these changes.

3-10. EVALUATING THE DRAWING PACKAGE. Ensure all applications include enough detailed design data. These data include drawings, technical data that confirms structural strength, part marking information, process specifications that define the configuration, and other data that define the pertinent characteristics of the part. The applicant presents their own detailed drawings unless they submit evidence of a license agreement. Consider the following areas when evaluating any data package:

a. Manufacturing and Process Specifications. Manufacturing procedures and process specifications may affect the part's airworthiness. If the applicant's detail drawings refer to a TC holder's process specifications, then the applicant must submit these specifications. Coordinate with the CMACO as necessary to determine how these specifications affect the design's airworthiness.

b. Source Control Drawings. Carefully review source control drawings to determine if the applicant has proper control over the part's configuration and manufacture. Ensure the applicant submitted all applicable detail drawings and specifications. We need these drawings and specifications to evaluate the sources listed on source control drawings. Before sending the application to the MIDO, confirm the applicant has satisfactory and verifiable control procedures in the FIS for vendor-supplied items. Coordinate with the responsible MIDO, using a request for conformity.

c. Drawing Notes. Establish that the applicant's data are enough to produce conforming parts before issuing engineering approval. Evaluate each applicant's ability to produce the part on a case-by-case basis. If the applicant cannot provide this information, use the test and computation method. Pay particular attention when the design approval holder's drawings or specifications used to make a finding of identity have notes stating:

- Parts supplied to this drawing shall be in strict accordance with samples (first articles) approved by (*name of applicant*) engineering department unless prior written approval is given to subsequent change.
- Source approval is required for raw stock through total fabrication.
- This drawing represents a critical item and must successfully complete substantiation tests and be approved by engineering.
- Other similar statements implying special source selection criteria.

3-11. DESIGN APPROVAL. Perform the following steps after finding that the applicant showed compliance with the applicable airworthiness requirements:

a. Keep the submitted data package for ACO project files or get a written agreement with the applicant for on-demand access except as noted in paragraph 3-11c.

b. Send the applicant a letter that confirms you sent the application to the MIDO for more processing. See appendix 12 for a sample of a design approval letter. Adjust this sample to comply with office guidelines on format as needed, but ensure the revised format contains the same information as the sample.

c. Return previously FAA-approved design data that the applicant voluntarily submitted. We used that data to make a finding of identity by comparing the applicant's drawing to the previously approved data. In the official ACO files, identify in detail what data supported the finding of identity.

d. Send copies of the FAA notification of design approval, the unnumbered and signed PMA supplement, and the applicant's application to the MIDO for more processing. Also, send electronic copies of these documents in advance to the MIDO for faster processing.

3-12. REVISING THE PMA SUPPLEMENT. Often an existing supplement needs correcting or updating for typographical errors or changed contacts. Each ACO or MIDO usually sets an appropriate method to correct or update the supplement. Some offices issue a revised supplement with corrections. Then, they send the revised supplement to the PAH and request return of the original incorrect supplement. Usually we need an amendment when an applicant adds eligibility to the supplement.

3-13. NON-COMPLIANCE. If you cannot find compliance, send the applicant a rejection letter and return the applicant's data package in its entirety. See appendix 11 for a sample of an FAA design rejection letter. Adjust the format of the letter as needed, but keep the information from the sample.

CHAPTER 4. MANUFACTURING INSPECTION DISTRICT OFFICE (MIDO) RESPONSIBILITIES

4-1. PMA ACTIVITIES. As an inspector at the MIDO, you confirm the applicant can produce the proposed part per the approved design. Conduct the production approval process after receiving a design approval, evidence of a license agreement, or an STC. This production approval process includes:

a. Conformity Inspections. Perform or delegate conformity inspections at the request of an ACO, MIDO, or certificate management office. An applicant may also request a conformity inspection via FAA Form 8120-10 through the ACO. The need for this inspection depends on part criticality, history of the applicant, complexity, supplier control issues, and so on.

b. FIS Statement. Ensure the applicant submits a statement per the requirements of 14 CFR § 21.303(d)(2). This statement certifies the applicant set up a FIS, as required by 14 CFR § 21.303(h). Evaluate the data submitted as evidence of compliance with 14 CFR part 21 subpart K, per the criteria in FAA Order 8120.2, Production Approval and Certificate Management Procedures, and FAA Order 8100.7, Aircraft Certification Systems Evaluation Program. Request help from the ACO when evaluating technical data such as design data control, software control, material review board (MRB) dispositions, and so on. After finding the data acceptable, include the following statement in the initial PMA letter:

(Applicant name) must produce all parts per *(Applicant name)*, Quality Manual, Revision X, dated Month XX, 20XX or later FAA-acceptable revision.

c. Facility Evaluation. Before the first issuance of a PMA, evaluate the applicant's and any supplier's facilities as needed to determine if they comply with 14 CFR part 21 subpart K. Consider performing a conformity inspection within 30 days after receiving the PMA supplement from the ACO.

d. Principal Inspector (PI). The PI can conduct a part conformity inspection or evaluate the facility when we approve additional parts on amended or revised supplements to the original PMA approval letter. This may also occur when the manufacturer expands or moves its facility.

e. Assign PMA Project Number. Use the Certificate Management Information System (CMIS) to assign PMA project numbers. CMIS is a computer application that automates and consolidates many certificate management activities in the production certification process. After validating the FIS, sign the PMA supplements to affirm production approval. Use the PMA project number on subsequent approved supplements for that PMA.

f. PMA Letter. Prepare a PMA letter for all initial issuance of PMAs. See appendix 13, Sample FAA-PMA Letter. Use a transmittal letter for all subsequent issuance of PMAs and supplements. See appendix 14, Sample Transmittal Letter of Subsequent PMA Supplement. Give the original to the manufacturer, keep a copy at the issuing office, and send a copy

electronically to the ACO. Also, electronically send a copy of the PMA supplement to the Aircraft Certification Service, Aircraft Engineering Division, Delegation and Airworthiness Branch (AIR-140). AIR-140 adds the supplement to the PMA database.

g. Design Change Issues. Ensure the applicant has either proper authority or processes for design changes and MRB dispositions. Confirm the FIS has these processes. Coordinate with the ACO as needed to approve the FIS controls that detail the design change and MRB disposition processes.

h. PMA Assist Letter. The evidence of a licensing agreement must include written permission from the TC, STC, or TSO authorization holder to use their design data to apply for FAA-PMA. A “PMA assist letter” or similar evidence authorized by the TC, STC, or TSO authorization holder is enough to show evidence of a licensing agreement. See appendix 8 for a sample of a PMA assist letter. Applicants must meet all the requirements of 14 CFR § 21.303. A licensing agreement alone is not enough to issue a PMA. Ensure the “PMA assist letter” includes the following information (as appropriate):

- Product model, name, and TC/STC number.
- A statement that the design approval holder authorized the PMA applicant to use the design data as identified by part name, drawing number, and revision level.
- Information on the authority the PMA applicant has to use the TC holder’s part number and other part marking information
- Information that sets the part’s life limits or airworthiness limitations.
- Information on the part’s eligibility for installation (product make, series, model, and if appropriate the serial number per the TCDS).
- A statement confirming the use of the TC, STC or TSO holder’s quality assurance processes to control design changes and disposition of nonconforming parts. Also, the statement must describe how information about design changes will flow to the applicant and the FAA.

i. Identity Finding. Make a finding of identity by showing evidence of a licensing agreement. Do this by reviewing the PMA assist letter that contains the information in paragraph 4-1h. Also, review the PMA supplement that the applicant prepares. See appendix 10 for a sample of a FAA-PMA supplement with licensing agreement.

j. Life-Limited Parts. Send applications for life-limited parts to the CMACO to verify if design data are complete. Ensure this application includes a COS plan.

4-2. POST-PMA ACTIVITIES.

a. Change in Location of the Manufacturing Facility. When a manufacturer moves or expands, consider reevaluating the FIS at the new or expanded facilities. Include suppliers with

delegated major inspection functions that expand their operations to facilities at other locations. Title 14 CFR § 21.303(j) requires the PAH to notify the FAA within 10 working days from the date such action takes place. This notification requirement also applies to supplier facilities where the safety and conformance to the approved design is not made at the receiving facility. The PMA holder should take special care to keep the inspection status of parts that are moving to the new location.

b. Transferability. A PMA is not transferable to another person, company, or location. Thus, a PMA holder may not license a supplier or another PAH. The regulations do not prevent revising approval letters to show a holder's name change. Revise these letters if the FIS, management, ownership, and location of the principal facility do not change. However, a PAH can sell, license, or transfer the design portion of an STC-based PMA. The new holder or licensee of the STC must apply for a new PMA.

c. Reuse of PMA Design Data. Although a PMA itself is not transferable, another person can use the design and substantiating data approved under a PMA to apply for a new PMA. The applicant must comply with the regulations and can submit previously approved substantiating data to meet (partially or fully) this requirement. Critical parts can require testing. See paragraphs 2-5b and c for more information on testing requirements.

d. Changes to FIS. A PI must approve any later changes to the FIS after initial PMA. A holder cannot implement the changes until a PI approves them. Coordinate revisions that affect the design (that is, MRB process, design data control, service difficulty reporting, and so on) with the ACO. Notify the PMA holder as to whether the data are acceptable.

e. Certificate Management. Assign a PI to each PMA holder to manage all aspects of the PMA. The assigned PI conducts ongoing certificate management as appropriate to ensure compliance with 14 CFR part 21 subpart K. See FAA Order 8120.2 for the PI's responsibilities.

f. Enforcement. Follow FAA Order 2150.3, Compliance and Enforcement Program, for any violation against 14 CFR § 21.303. Non-compliance with 14 CFR § 21.3, 14 CFR part 21 subpart K, and 14 CFR § 45.15 is the basis for enforcement actions.

g. Export Considerations. Many countries have additional requirements for their acceptance of PMA parts. For example, European Union Member States want a specific statement about the criticality or non-criticality of the part on the FAA airworthiness approval tag, FAA Form 8130-3. See the various Implementing Procedures for Airworthiness on the AVS website at <http://www.faa.gov/certification/aircraft/> for other specific export requirements.

CHAPTER 5. DESIGNATED ENGINEERING REPRESENTATIVES (DER)

5-1. DER ROLES IN THE PMA PROCESS. We at the FAA have sole authority to approve PMAs. DERs support the approval process with findings within their limitations. We define DER limitations in Order 8110.37, Designated Engineering Representative (DER) Guidance Handbook. The PMA process entails findings of design acceptability through identity or test and computation.

5-2. TEST AND COMPUTATION. Findings under test and computation are within the normal scope of DER delegation. DERs find compliance with the appropriate airworthiness regulations and record these findings and their approval on FAA Form 8110-3. See the following appendixes in this order for examples of DER findings and associated bases:

- Appendix 15, Form 8110-3, Test and Computation (General Analysis). It shows DER approval of data from tests and computations using a general analysis approach.
- Appendix 16, Form 8110-3, Test and Computation (Comparative Analysis). It shows DER approval of data from tests and computations using a comparative analysis approach.

5-3. IDENTITY PROVISIONS. Identity is unique to PMA. A DER requires a special FAA authorization to make this finding. The DER adheres to the following provisions when conducting PMA activities for findings of identity. See appendix 17, Example of FAA Form 8110-3 for Identity.

a. Critical and Life-Limited Parts Require ACO Approval. A DER may only recommend approval on Form 8110-3.

b. Non-Critical Parts. The DER marks the “approve” block and signs FAA Form 8110-3. The DER’s approval means that the design data of the stipulated part is identical to a TC, STC, or TSO authorization holder’s design data. On the form, the DER lists data from the TC or TSO authorization holder that are the bases of this finding. Then, the DER sends these data, the PMA data, and Form 8110-3 to the project ACO.

c. Identity. The DER records a finding of identity by checking the approved block on FAA Form 8110-3, Statement of Compliance with the Federal Aviation Regulations. This check in the box does not mean FAA approval of the PMA. A note in the “List of Data” section on the form must state, “FAA will approve the design after FAA engineering verifies the authenticity of the type design or TSO authorization data listed.” See paragraph 3-8 for special considerations for identity.

d. Regulatory Basis. The DER notes the regulatory basis for the identity finding. They note this by writing “Identity only approval under 14 CFR § 21.303” in the “Purpose of Data” block. The DER also records “14 CFR § 21.303(c)(4)” in the “Applicable Requirements” block on FAA Form 8110-3.

5-4. FINDINGS OF IDENTICALITY. We verify the following for findings of identity:

- The TC, STC or TSO authorization data listed on Form 8110-3 is approved type design data for the indicated product models.
- The stated eligibility of the PMA is appropriate.
- No mandatory corrective actions are necessary in the part.
- No serious unresolved service difficulties make the part ineligible for installation.

APPENDIX 1. FABRICATION INSPECTION SYSTEM

1. Establishing a Fabrication Inspection System (FIS).

a. Title 14 of the Code of Federal Regulations (14 CFR) § 21.303(h) states that the applicant must establish and maintain a FIS. The FIS description may be in any form acceptable to the FAA. However, the suggested form for this FIS is a manual with indices for durability and ease of reference. This manual should describe the methods, procedures, inspections and tests that the applicant and associated suppliers use to meet the requirements of 14 CFR § 21.303(h)(1) through (9). This also applies to provisions for reporting under 14 CFR § 21.3 and provisions for identifying the product according to 14 CFR § 45.15.

b. The description may result in a lengthy document. The document might contain only a few pages, depending upon the size of the applicant's facilities and the number and complexity of parts being manufactured. In describing the FIS, you can use references to other documents or data maintained by the applicant instead of a detailed description of a particular procedure. This may occur if you include a brief description in the manual, and the referenced documents provide a complete description of the system. All referenced documents must be submitted for approval as part of the FIS description.

c. If procedures or data are kept or controlled by the original design/production approval holder under a contractual arrangement with the applicant, the applicant must demonstrate contractual provisions or provide other appropriate written assurance of the procedure for communicating design and manufacturing changes to the applicant. The applicant should also demonstrate that termination of the contractual relationship would not affect the applicant's ability to comply with the established FIS. For record purposes, the description should also include a facsimile of the applicant's symbol, trademark or prefix/suffix.

d. The following paragraphs (headed by the section of 14 CFR part 21 that applies) provide an example of the material usually found in an acceptable description.

2. TITLE 14 CFR § 21.303(h)(1). The portion of the FIS established to comply with this section would usually include the procedures that ensure conformity to approved design data of all supplier-furnished materials and services. Generally, this part of the FIS description describes how the applicant ensures that:

a. All incoming materials conform to approved design data before their acceptance and release to production.

b. The applicant makes provisions for the evaluation and surveillance of suppliers when it relies to any degree on a supplier's inspection system. The surveillance of suppliers of proprietary parts must enable the applicant to determine that incoming materials conform and that supplier services are performed correctly.

c. Formally advise the suppliers that their inspection system and supplied materials are subject to inspection by the FAA. This applies also to suppliers of proprietary parts (upon whom an applicant relies for controlling conformity and quality). When a supplier from a foreign

APPENDIX 1. FABRICATION INSPECTION SYSTEM (CONTINUED)

country is involved, the FAA determines whether the performance of any FAA duties at the supplier's facilities would result in an undue burden being placed on the FAA. If such FAA duties would be required, a means acceptable to the FAA of relieving any undue burden must be found. If the undue burden is not found, the applicant must perform all required functions in the United States. Note that the FIS is in the United States. See Order 8120.2 for more details.

d. The suppliers exercise positive control over the design configuration and condition of all obtained parts. The fact that the supplier does not hold a production approval for the part re-emphasizes the PMA holder's responsibilities for the part's design configuration.

e. The applicant evaluates all material review actions and design changes made by suppliers. This includes suppliers of proprietary over which the applicant does not exercise direct design control. The material review actions and design changes are approved as applicable according to 14 CFR § 21.303(d) and 14 CFR part 21 subpart D.

f. Records are maintained of all inspections and tests performed by or for the applicant in controlling the conformity of all supplier-furnished materials.

g. All incoming materials and services, including related inspection and test records are identified with appropriate acceptance, rejection, or rework stamps as applicable.

3. TITLE 14 CFR § 21.303(h)(2). The FIS description will include the system the applicant uses, with respect to compliance with this section. This ensures that the physical and chemical properties of incoming material are as specified in the approved design data.

4. TITLE 14 CFR § 21.303(h)(3). An acceptable description of the storage and issuance system established by the applicant would include the procedures that ensure:

a. Identification, segregation, and protection of materials and in storage.

b. Periodic re-inspection and disposition of materials subject to deterioration from prolonged storage.

c. Protection from damage of materials, and of components being delivered to fabrication or shipping areas, and while stored in fabrication areas, before use.

d. Incorporation of all applicable design changes before release of stored components for installation in the part.

e. That only those materials and components identified as having passed receipt inspection criteria are received into, and issued from, storage.

5. TITLE 14 CFR § 21.303(h)(4). The integrity of processes and services used in the manufacture of parts is dependent upon the skill with which the work is performed, the capabilities of the equipment used, and close control of critical factors such as temperatures, solutions, curing time, special tools, and so on. A system to control processes and services, such

APPENDIX 1. FABRICATION INSPECTION SYSTEM (CONTINUED)

as welding, brazing, heat treatment, plating, and radiographic, ultrasonic, or magnetic particle inspection, and so on, requires that trained and qualified personnel perform each process according to approved specifications containing definitive standards of quality, and that periodic inspection of gauges, solutions, or any critical equipment is controlled and documented. The description with respect to this section in the FIS manual should explain the procedure on how the applicant will qualify personnel, and control processes performed at the approved facilities. This includes suppliers, and should generally include a listing of manufacturing processes that are relied upon to ensure quality, conformity, and safety of the completed parts.

6. TITLE 14 CFR § 21.303(h)(5). Compliance with this section requires that the applicant establish procedures to control all phases of inspection of the part. The FIS description should, therefore, provide descriptions of all procedures established by the applicant to ensure that all inspections and tests will be conducted in the proper sequence, when components and processes are in an inspectable condition” for example, prior to painting or closures.” This is achieved through use of inspection instructions, shop travelers, checklists, or similar media. Following are examples of inspection functions that would be described to the extent applicable to the complexity of the parts or size of the manufacturer’s facilities:

a. Planning Procedures. These procedures ensure that each component used in the part is adequately inspected for conformity with the approved design. This function of the planning system would be facilitated if it provided for:

(1) Classifying design characteristics and related manufacturing defects to determine their critical nature so that the most effective fabrication inspection methods and process controls will be used with respect to critical and major characteristics and detecting defects. See the following documents:

- 14 CFR § 21.93;
- MIL-STD-1916, DOD Preferred Methods for Acceptance of Product, dated April 1, 1996; and
- ANSI/ASQC Z1.9-2003, Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming, dated December 18, 2003.

(2) Selection of appropriate inspection methods and plans for each classification. This ensures that all safety characteristics are inspected and re-inspected, as appropriate, to ensure conformity to approved design data and to eliminate discrepancies from in-process and completed parts.

b. Inspection Status. This system ensures that appropriate stamps or marks are placed on components. The system also ensures that other means are used to indicate their inspection status. It would be helpful if this portion of the description also contains copies of all inspection forms, checklists, and imprints of the various inspection and process stamps and their meanings.

APPENDIX 1. FABRICATION INSPECTION SYSTEM (CONTINUED)

Procedures should call for the applicant to use suitable acceptance, rework, or rejection stamps, particularly on life-limited, critical or non-conforming parts (that is, MRB), as follows:

(1) Materials and components subjected to heat treatment, welding, bonding, and so on, or testing and inspection. This may include hardness tests, laboratory analysis, magnetic particle inspection, or similar functions.

(2) Materials and components inspected at the specified point in production and in conformity with the approved design.

(3) Materials and components that are rejected as being unusable or scrap, so as to preclude their installation.

c. Tool and Gauge Control. This system should control periodic inspection and calibration of inspection tools, gauges, testing equipment, production jigs, fixtures, templates, and so on, which are depended upon as media for inspection product acceptance.

(1) The description of the means used for tool and gauge control should include a schedule of periodic or usage inspection and calibration intervals. This ensures that tools, gauges, and so on, are inspected, adjusted, repaired, or replaced before their becoming inaccurate. The inspection system description should also describe the procedures for implementing the tool and gauge control schedules. Such procedures would basically ensure that each piece of equipment is:

(2) Checked before its first usage, at the proper periodic interval, and marked to indicate that it is under calibration control and the date that the next inspection is due. Also, remove the equipment from inspection and shop areas, with conspicuously identified, to prohibit use after the inspection due date's expiration.

d. Final Inspection. This function of the inspection system ensures that each completed part is subjected to a final inspection to determine conformity with approved design data. The system also ensures compliance with applicable FAA airworthiness directives and, whether the part is safe for installation on type-certificated products. Such a system would usually incorporate procedures to ensure that:

(1) Each part is inspected for completeness, adjustments, safety, calibration, markings, placards, and so on, that apply to the part's complexity.

(2) If applicable, each completed part or appropriate sample is subjected to a functional test to ensure that the operating characteristics meet the approved design provisions.

7. TITLE 14 CFR § 21.303(h)(6). The description of the system established for compliance with this rule includes:

a. The procedures that ensure that current design drawings are readily available to manufacturing and inspection personnel, and use when necessary, and

APPENDIX 1. FABRICATION INSPECTION SYSTEM (CONTINUED)

b. The procedures utilized to ensure that obsolete drawings and data, those affected by superseding data, or FAA airworthiness directives are controlled or promptly removed from production and inspection areas to prevent their improper use.

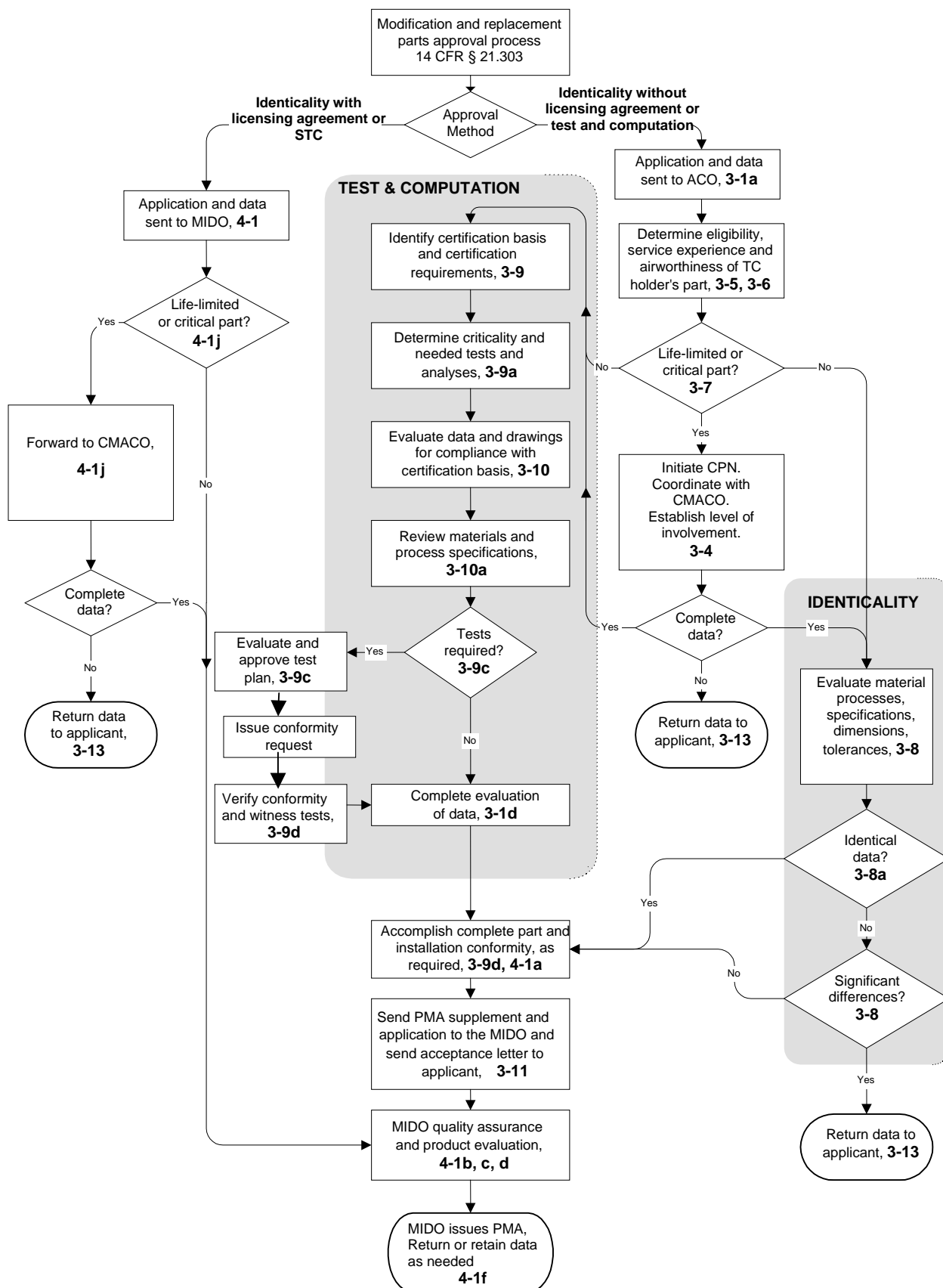
8. TITLE 14 CFR § 21.303(h)(7). The description of the drawing change controls required by this regulation should include procedures to ensure that, before the final acceptance of articles and completed parts, all changes required to be FAA-approved have been approved and are incorporated in the applicable drawings or covered by change notices attached to such drawings. The inspection system manual would include a section describing or referring to the drawing change control system. If the drawing change control system refers to or relies upon the original design approval holder's system through a contractual relationship, the applicant should demonstrate contractual provisions. The applicant may also provide other appropriate written assurance that ensures that all changes will be incorporated into the finished parts the applicant manufactures. In such cases, the applicant should also indicate how it establishes a new system to maintain the FIS, in the event the contractual relationship with the original design or production approval holder changes or terminates.

9. TITLE 14 CFR § 21.303(h)(8). The description of the procedures established for compliance with this regulation includes provisions for the evaluation of rejected materials and articles to determine whether they can be reworked, repaired, or accepted "as is" without the part's airworthiness being affected. This MRB procedure should describe engineering, quality, and production involvement in MRB activities. Approval for the PMA applicant to use this provision shall consider the ability of the applicant to substantiate the effects of non-conformance or repair to the safe performance of the part and its parent systems. If the procedures proposed by the applicant to demonstrate compliance with the FAR rely upon a contractual relationship with the original design approval holder, the applicant must demonstrate contractual provisions or provide other appropriate written assurance indicating how compliance by the applicant with applicable requirements will be ensured. In such a case, the applicant should also indicate whether to establish a new system to maintain the FIS if the contractual relationship with the original design or production approval holder is changed or terminated.

10. TITLE 14 CFR § 21.303(h)(9). Compliance with this section requires that procedures be established for maintaining inspection records. This includes all inspections accomplished on the parts from raw materials to finished parts. There should be a procedure established for identifying inspection records where practicable with parts, such as serial numbers, dates, codes, and so on. The applicant must file and retain the inspection records for at least 2 years after the part's completion.

APPENDIX 2. PMA PROCESS FLOWCHART

(NOTE: Numbers in **bold** refer to paragraph numbers in this order.)



APPENDIX 3. PROJECT SPECIFIC CERTIFICATION PLAN

Note: This document is a template and an aid to help define content and format when drafting a PSCP. All text in italics is instructional for editing or deletion as necessary. Retain all text not in italics in the PSCP, but edit as necessary for each project.

Project Specific Certification Plan

Between

[Insert the Name of the Applicant/Company]

and the

[Insert the FAA Certification Office]

Project Number (leave blank until number assigned)

List of Revisions			
Revision Number	Revision Description	Approved by:	Release Date

APPENDIX 3. PROJECT SPECIFIC CERTIFICATION PLAN (CONTINUED)

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<u>Section</u>	<u>Title/Subject</u>	<u>Page</u>
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2.0	Applicable Documents	
3.0	Project Schedule	
4.0	Certification Basis	
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6.0	Conformity Inspections	
7.0	Communication and Coordination	
8.0	Delegations	
9.0	Signatures	

APPENDIX 3. PROJECT SPECIFIC CERTIFICATION PLAN (CONTINUED)**1.0 Introduction****1.1 Scope**

The purpose of this Project Specific Certification Plan (PSCP) is to define and document the requirements and tasks required for FAA evaluation and PMA approval of replacement parts. The *[Insert the applicable FAA Certification Office]* of the Federal Aviation Administration and the applicant will jointly manage and maintain this PSCP.

1.2 Project Description

This section should contain a brief description of the aircraft, engine, propeller, or TSO part requested for PMA approval including the part name, part number, and make/model eligibility.

1.3 Background (include service history)**1.4 Component Description****1.5 Instructions for Continued Airworthiness Plan****2.0 Applicable Documents**

The following documents are required as part of this PSCP to substantiate the manufacture of the parts and to show compliance to the regulations:

<u>Item</u>	<u>Document/Drawing</u>	<u>Revision</u>	<u>Description</u>
<i>1</i>	<i>12121212</i>	<i>A</i>	<i>ABC Aircraft Top Drawing</i>
<i>2</i>	<i>IPC</i>	<i>IR</i>	<i>Illustrated Parts Catalog or other proof of installation eligibility</i>

3.0 Project Schedule

Milestones as Applicable	Proposed Completion Date
---------------------------------	---------------------------------

Submittal of PSCP
 First Article Conformity
 Test Plan submittal to FAA
 Test Plan approval
 Testing completed
 Test Report submittal to FAA
 DER approved 8110-3 reports/drawings
 Final data submittal for PMA completion
 Issuance of engineering design approval
 Addition milestones as appropriate

APPENDIX 3. PROJECT SPECIFIC CERTIFICATION PLAN (CONTINUED)

4.0 Certification Basis

The certification basis and compliance with the applicable regulations is required, if the substantiation is accomplished by test and computations through general analysis.

5.0 Tests

The applicant will propose any tests necessary to show compliance with the applicable regulations. These tests support the associated general or comparative analysis.

6.0 Conformity Inspections

Please list any expected conformity inspections necessary for this project.

7.0 Communication and Coordination

The focal points for official communication between the FAA and the applicant are as follows:

FAA Office Branch	Project Manager	<i>[Insert Name and phone number]</i>
<i>[Insert Company Name]</i>	Project Manager	<i>[Insert Name and phone number]</i>

This does not prevent team members from engaging or communicating with any other team member, however team members must inform the project focal point. Both the FAA and the applicant will provide to each other a listing of their project team members.

The project focal points will manage the project by conducting regularly scheduled status briefings.

8.0 Delegation

Both the FAA and the applicant agree to foster an environment where the designees, the FAA, and the applicant maintain open communications. The FAA supports using designees to the fullest extent possible to help in the successful completion of the project in the identified time frame.

The applicant will propose the use of any suitable designee in specific test plans for FAA concurrence of the test plan, and the designees will complete the task. It is important the applicant keep the designees and the FAA focal point informed of any potential shift in the project schedule.

APPENDIX 3. PROJECT SPECIFIC CERTIFICATION PLAN (CONTINUED)**9.0 Signatures:**

The FAA and the applicant agree to the provisions of this PSCP as indicated by the signature of their authorized representatives.

FAA Concurrence:

_____ Date: _____
Project Manager

_____ Date: _____
MIDO
[if applicable]

Applicant Concurrence:

_____ Date: _____
Project Manager

APPENDIX 4. SAMPLE FAA-PMA LETTERS OF APPLICATION TO MIDO

The ABC Tool Company
3000 Hill St.
Randolph, MA 02368
(781) 555-1212

FAA - New England Region
12 New England Executive Park
Burlington, MA 01803
(781) 238-7199

Attention: Mr. Mark Steale
Manager, Manufacturing Inspection
Satellite Office, NE-MIDO-42

Subject: Request for New FAA-PMA Approval

Mr. Steale:

We tender this application for parts manufacturer approval for our part number (P/N) ABC 13579. Please review the enclosed data in support of this application. ABC 13579 is a bushing assembly eligible on PS PT9D-1, -7, -9 series engines. Request approval based on **(STC # or Licensing Agreement #, dated)**, per 14 CFR § 21.303(c). ABC 13579 replaces PS bushing assembly P/N 13579, drawing no. 13579, revision level C.

We certify we set up a fabrication inspection system at 3000 Hill Street, Randolph, MA 02368 per 14 CFR § 21.303(h). However, we will manufacture the part at 200 Main Street, New York, NY using this system.

Our point of contact for this matter is Ms. Janice Blank, head of quality assurance.

We appreciate your due consideration of this application.

Very truly yours,

PMA Administrator,
ABC Tool Company

Enclosures:
1 copy STC or PMA Assist Letter
1 copy unnumbered PMA Supplement

APPENDIX 5. LIST OF FAA MANUFACTURING INSPECTION DISTRICT/SATELLITE OFFICES

Go to <http://www.faa.gov/certification/aircraft/map.htm> to locate the appropriate certificate management office, MIDO, or MISO or consult the following:

1. Manufacturing Inspection District Office (NE-MIDO-41)
Bradley International Airport
Corporate Air Building 85-214, 2nd Floor
Windsor Locks, Connecticut 06096
2. Manufacturing Inspection Satellite Office (NE-MIDO-42)
12 New England Executive Park
Burlington, Massachusetts 01803
3. Manufacturing Inspection District Office (NE-MIDO-44)
400 Airport Drive
Building 201, Room 102
New Cumberland, Pennsylvania 17070-3419
4. Manufacturing Inspection District Office (NE-MIDO-45)
Park 80 West – Plaza One
Concourse Level
Saddle Brook, New Jersey 07663
5. Manufacturing Inspection District Office (NE-MIDO-46)
7150 Republic Airport, Suite 236
Farmingdale, New York 11735-1585
6. Atlanta Manufacturing Inspection District Office (CE-42)
One Crown Center, Suite 475
1895 Phoenix Boulevard
Atlanta, Georgia 39348
7. Savannah Manufacturing Inspection Satellite Office (CE-52)
404 Airways Avenue
Savannah, Georgia 31408
8. Mobile Manufacturing Inspection Satellite Office (CE-51)
88 5th Street
Mobile, Alabama 36615
9. Orlando Manufacturing Inspection District Office (CE-44)
Citadel International III Building
5950 Hazeltine National Drive, Suite 405
Orlando, Florida 32822

**APPENDIX 5. LIST OF FAA MANUFACTURING INSPECTION
DISTRICT/SATELLITE OFFICES (CONTINUED)**

10. Minneapolis Manufacturing Inspection District Office (CE-46)
Minneapolis/St. Paul International Airport
6020 28th Avenue South, Room 103
Minneapolis, Minnesota 55450-2700
11. Cleveland Manufacturing Inspection District Office (CE-47)
Cleveland Hopkins International Airport
Federal Facilities Building, Room 127
Cleveland, Ohio 44135
12. Detroit Manufacturing Inspection Satellite Office (CE-53)
Willow Run Airport - East Side
8800 Beck Road
Bellevue, Michigan 48111
13. Vandalia Manufacturing Inspection District Office (CE-48)
3800 Wright Drive
Vandalia, Ohio 45377
14. Chicago Manufacturing Inspection Satellite Office (CE-55)
2300 East Devon Avenue, Room 105
Des Plaines, Illinois 60018
15. Wichita Manufacturing Inspection District Office (CE-43)
Mid-Continent Airport
1801 Airport Road, Room 101
Wichita, Kansas 67209
16. Kansas City Manufacturing Inspection District Office (CE-45)
901 Locust, Room 376
Kansas City, Missouri 64106
17. Seattle Manufacturing Inspection District Office (ANM-108S)
2500 East Valley Road, Suite C-2
Renton, Washington 98055-4071
18. Everett Manufacturing Inspection Satellite Office (ANM-108S)
Boeing Commercial Airplane Group - M/S OF-04
P. O. Box 3707
Seattle, Washington 98108
19. Seattle Manufacturing Inspection Satellite Office (ANM-108S)
Boeing Commercial Airplane Group - M/S 94-08
P. O. Box 3707
Seattle, Washington 98108

**APPENDIX 5. LIST OF FAA MANUFACTURING INSPECTION
DISTRICT/SATELLITE OFFICES (CONTINUED)**

20. Auburn Manufacturing Inspection Satellite Office (ANM-108S)
Boeing Commercial Airplane Group – M/S 5H-44
P. O. Box 3707
Seattle, Washington 98109
21. Los Angeles Manufacturing Inspect. District Office (ANM-108L)
3960 Paramount Boulevard
Lakewood, California 90712-4137
22. Long Beach Certificate Management Office
Boeing Long Beach Division, Mail Stop MC36-35
3855 Lakewood Boulevard
Long Beach, California 90806-2425
23. Van Nuys Manufacturing Inspection District Office (ANM-108V)
7120 Hayvenhurst Avenue, Suite 100
Van Nuys, California 91406
24. Phoenix Manufacturing Inspection District Office (ANM-108P)
13951 North Scottsdale Road, Suite 123
Scottsdale, Arizona 85254-3454
25. Fort Worth Manufacturing Inspection District Office (SW-MIDO-42)
2601 Meacham Boulevard
Fort Worth, Texas 76137-4298
26. Oklahoma City Manufacturing Inspection District Office (SW-MIDO-41)
5909 Philip J. Rhoads Avenue
Suite 206
Bethany, Oklahoma 73008
27. San Antonio Manufacturing Inspection District Office (SW-MIDO-43)
10100 Reunion Place, Suite 650
San Antonio, Texas 78216

APPENDIX 6. SAMPLE FAA-PMA LETTERS OF APPLICATION TO ACO

The ABC Tool Company
3000 Hill St.
Randolph, MA 02368
(781) 555-1212

FAA - New England Region
12 New England Executive Park
Burlington, MA 01803
(781) 238-7199

Attention: Mr. Mark Jones
Manager, Engine Certification Office, ANE-140

Subject: Request for New FAA-PMA Approval

Mr. Jones:

We are applying for parts manufacturer approval for our part number (P/N) ABC 13579. We request your review of the enclosed data in support of this application. ABC 13579 is a bushing assembly eligible for installation on PS PT9D-1, -7, -9 series engines. We base this requested approval on **(showing identity without license agreement or submitting test reports and computations)** per 14 CFR § 21.303(c). ABC 13579 replaces PS bushing assembly P/N ABC 13579, drawing no. 13579, revision level C.

We will manufacture this bushing assembly in our facility at 3000 Hill Street, Randolph, MA 02368. We certify that we set up a fabrication inspection system per 14 CFR § 21.303(h) for manufacture of this part.

We appreciate your efforts in support of this request.

Very truly yours,

PMA Administrator,
ABC Tool Company

Enclosures:
1 copy ABC drawings, specifications, and processes
1 copy unnumbered PMA supplement

APPENDIX 7. LIST OF FAA AIRCRAFT CERTIFICATION/FIELD OFFICES

Go to <http://www.faa.gov/certification/aircraft/acomap.htm> to find the appropriate ACO or refer to the following:

1. Engine Certification Office (ANE-140)
12 New England Executive Park
Burlington, Massachusetts 01803-12
2. Boston Aircraft Certification Office (ANE-150)
12 New England Executive Park
Burlington, Massachusetts 01803
3. New York Aircraft Certification Office (ANE-170)
1600 Stewart Avenue, Suite 410
Westbury, New York 11590
4. Anchorage Aircraft Certification Office (ACE-115N)
222 West 7th Avenue, #14
Room 128
Anchorage, Alaska 99513-7587
5. Atlanta Aircraft Certification Office (ACE-115A)
One Crown Center
1895 Phoenix Boulevard, Suite 450
Atlanta, Georgia 30349
6. Chicago Aircraft Certification Office (ACE-115C)
2300 East Devon Avenue, Room 107
Des Plaines, Illinois 60018
7. Wichita Aircraft Certification Office (ACE-115W)
Mid-Continent Airport
1801 Airport Road, Room 100
Wichita, Kansas 67209
8. Seattle Aircraft Certification Office (ANM-100S)
1601 Lind Avenue, S.W.
Renton, Washington 98055-4056
9. Denver Aircraft Certification Office (ANM-100D)
Technical Operations Center
26805 East 68th Avenue, Room 214
Denver, Colorado 80249

**APPENDIX 7. LIST OF FAA AIRCRAFT CERTIFICATION/FIELD OFFICES
(CONTINUED)**

10. Los Angeles Aircraft Certification Office (ANM-100L)
3960 Paramount Boulevard
Lakewood, California 90712-4137
11. Airplane Certification Office (ASW-150)
2601 Meacham Boulevard
Fort Worth, Texas 76193
12. Rotorcraft Certification Office (ASW-170)
2601 Meacham Boulevard
Fort Worth, Texas 76193
13. Special Certification Office (ASW-190)
2601 Meacham Boulevard
Fort Worth, Texas 76193

APPENDIX 8. EXAMPLE OF A TC, STC OR TSO AUTHORIZATION HOLDER'S PMA ASSIST LETTER

SUPPORTING DATA PARTS MANUFACTURER APPROVAL

Smith Engineering Corporation
10 Main Street
Los Angeles, CA 90012

FILE NO. _____

(1) Supplier Part Name and Part No. _____	(2) Approved Replacement for _____	(3) TC/STC/TSO Approval and Design Data _____	(4) Model Eligibility _____
<u>Part Name:</u> Spring <u>P/N:</u> SE24689	General Air <u>P/N:</u> 24689	<u>TC:</u> E9NM <u>DWG. No:</u> SE25206 <u>Rev:</u> None <u>Date:</u> 3/31/88	General Air CP6-6, -30
<u>Part Name:</u> Pin <u>P/N:</u> SE24695	General Air <u>P/N:</u> 24695	<u>TC:</u> E9NM <u>DWG. No:</u> SE25207 <u>Rev:</u> None <u>Date:</u> 3/31/88	General Air CP6-6, -30

We certify that the components listed above are in the type design/approved design data for General Air models as specified in the fourth column. These components are free of service problems that cause an unsafe condition.

Approved:
General Air Corp.

We authorize the supplier named above to use the approved (type design) data noted in the third column to manufacture replacement components noted in column 1. The supplier will use our quality processes to control design changes and disposition nonconforming parts. We approve use of this assist letter to support application for FAA-PMA. (14 CFR § 21.303)

J. Doe, Manager
(Engineering Manager,
Q. A. Manager,
Corporate Officer, DER, or
FAA Liaison)

Date

PAGE 1 OF 1

APPENDIX 9. SAMPLE FAA-PMA SUPPLEMENT FOR IDENTICALITY (NON-LICENSING AGREEMENT) OR TEST AND COMPUTATION

FEDERAL AVIATION ADMINISTRATION - PARTS MANUFACTURER APPROVAL

Smith Engineering Corporation
10 Main Street
Los Angeles, CA 90012

PMA NO. _____
SUPPLEMENT NO. _____
DATE _____

Part Name	Part Number	Approved Replacement for Part Number	Approval Basis and Approved Design Data	Make Eligibility	Model Eligibility
Spring	SE24689	24689	Identicality per 14 CFR § 21.303 <u>DWG No:</u> SE 25206 <u>Rev:</u> None <u>Date:</u> 3/31/88 or later FAA-approved revisions	General Air	CP6-6, -30
Pin	SE24695	24695	Test and Computations per 14 CFR § 21.303 <u>DWG No:</u> SE 25207 <u>Rev:</u> None <u>Date:</u> 3/31/88 or later FAA-approved revisions	General Air	CP6-6, -30

-----End of Listing-----

NOTE: Provide minor design changes in a manner as determined by the ACO. Handle major design changes to drawings and specifications in the same manner as that for an original FAA-PMA. If TC holder's ICA applies to these replacement parts, provide a statement noting such. If not, provide supplementary ICA per 14 CFR § 21.50.

Manager, Aircraft
Certification Office

Manager, Manufacturing
Inspection District Office

APPENDIX 10. SAMPLE FAA-PMA SUPPLEMENT FOR LICENSING AGREEMENT AND STC

FEDERAL AVIATION ADMINISTRATION - PARTS MANUFACTURER APPROVAL

Smith Engineering Corporation
10 Main Street
Los Angeles, CA 90012

PMA NO. _____
SUPPLEMENT NO. _____
DATE _____

Part Name	Part Number	Approved Replacement for Part Number	Approval Basis and Approved Design Data	Make Eligibility	Model Eligibility
Galley	SE101001-101	101001-101	Identity per 14 CFR § 21.303, licensing agreement between Smith Engineering Corp. and Ace Aircraft, File No. 5- 1034-89-RMS 769, dated 9/12/89 <u>DWG No:</u> SE 25207 <u>Rev:</u> None <u>Date:</u> 3/31/88 or later FAA-approved revisions	Ace Aircraft	A-700, -710
Wing Kit	MDL 660	Modification Part	STC SA1234NM <u>DWG No:</u> Smith MDL 660 <u>Rev:</u> None <u>Date:</u> 3/31/88 or later FAA-approved revisions	General Air	CP6-6, -30

-----End of Listing-----

NOTE: The procedures that are acceptable to the type certificate or TSO authorization holder and their cognizant FAA Aircraft Certification Office, for minor changes to original parts used on type-certificated products, are also acceptable for incorporating the same minor changes on identical FAA-PMA replacement parts. The FAA-PMA holder must show traceability to the TC, STC, or TSO authorization holder on all minor changes incorporated by this procedure. When these procedures are no longer applicable because of completion of the production contract, or termination of the licensing agreement or business relationship, submit all subsequent minor design changes to the PMA parts in a manner determined by the ACO. TC, STC, or TSO authorization holder controls all major design changes to drawings and specifications.

Manager, Manufacturing
Inspection District Office

APPENDIX 11. SAMPLE DESIGN REJECTION LETTER

Expert Aviation Co.
1000 West Street
Tempe, AZ 85281

To Whom It May Concern:

This is in response to your request for design approval based on identity. We reviewed your data and did not find it identical to the corresponding approved data. Enclosed are the data you sent to us.

Sincerely,

Manager, Rotorcraft Certification Office

Enclosure

APPENDIX 12. SAMPLE NOTIFICATION OF DESIGN APPROVAL

XYZ Aviation Co.
1000 West Street
Burlington, MA 01803

To Whom It May Concern:

This is in response to your letter, dated April 5, 1995, requesting parts manufacturer approval (PMA) on XYZ Aviation bushing assembly Part Number XYZ13579 that is eligible on the ABC JT9D-3A series engine.

We reviewed the drawings and data submitted and find they meet the requirements of 14 CFR § 21.303(d)(1). We noted design approval on the PMA supplement. We sent it with your application to (*name and address of MIDO*). We will grant production approval after validating your fabrication inspection system. The FAA-PMA letter and PMA supplement from the MIDO documents your approval. We may require the recipient of FAA-PMA supplement, as a design approval holder, to provide instructions for continued airworthiness prepared per 14 CFR § 21.50(b).

Sincerely,

Manager, Engine Certification Office

cc: Van Nuys MIDO

APPENDIX 13. SAMPLE FAA-PMA LETTER

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Kansas City Manufacturing Inspection District Office
250 Richards Road
Kansas City, Missouri 64116

May 1, 1995

Aero-Parts, Incorporated
3212 Newton Street
St. Louis, Missouri

FEDERAL AVIATION ADMINISTRATION - PARTS MANUFACTURER APPROVAL

We found the design of your part meets the regulatory requirements for airworthiness applicable to the eligible products listed in the attached supplement. Also, per Title 14 CFR 21.303(h), we found you have the required fabrication inspection system (FIS) at your Newton Street address in St. Louis, Missouri. Accordingly, we grant you parts manufacturer approval (PMA) to produce the replacement parts listed in the enclosed supplement. These parts must conform to the approved designs. Report any future minor changes in the part designs to us in an agreed upon manner and timeframe. However, we must approve any changes to critical or life-limited parts or any major design changes before you can implement them.

The following terms and conditions apply to this approval:

1. The manufacturer's Fabrication Inspection System, methods, procedures and manufacturing facilities, including suppliers, are subject to FAA surveillance or investigations. Accordingly, the manufacturer must advise their suppliers that their facilities are also subject to FAA surveillance and investigation.
2. The manufacturer must notify our district office (address) in writing within 10 days from the date the manufacturing facilities at which parts are manufactured are relocated or expanded to include additional facilities at other locations. This requirement also applies to manufacturer's suppliers with major inspection authorization, and those who furnish parts or related services where a safety and conformance determination to the approved design cannot or will not be made upon receipt at the approved receiving facility.

APPENDIX 13. SAMPLE FAA-PMA LETTER (CONTINUED)

3. Upon request, the manufacturer must make available to FAA any pertinent information concerning their suppliers who furnish parts/services. This includes:

- A description of the part or service;
- Where and by whom the part or service will undergo inspection;
- Any delegation of inspection duties;
- Any delegation of materials review authority;
- Name and title of FAA contact at the supplier facility;
- Any direct shipment authority;
- The inspection procedures required to be implemented;
- Results of the manufacturer's evaluation, audit, and/or surveillance of their suppliers;
- The purchase/work order number (or equivalent); and
- Any feedback relative to service difficulties originating at the manufacturer's suppliers.

4. Parts, appliances, or manufacturing services furnished by any suppliers located in a foreign country may not be used in the production of any part or appliance listed in the enclosed supplement unless:

- a. That part or service can and will be completely inspected for conformity at the manufacturer's U.S. facility; or
- b. The FAA has determined that the location of the foreign supplier facility places no undue burden on the FAA in administering applicable airworthiness requirements. The manufacturer must advise the FAA at least 10 days in advance when the use of such foreign suppliers is contemplated. This allows the FAA to make this determination; or
- c. The parts/services furnished by the foreign supplier are produced under the "components" provisions of U.S. bilateral airworthiness agreements. They are also approved for import to the U.S. according to 14 CFR § 21.502.

5. Permanently mark parts produced under the terms of this approval with the identification information as required by 14 CFR § 45.15. Use the letters "FAA-PMA," the name, trademark, or symbol of the company, the part number, and the name and model designation of each type-certificated product on which the part is eligible for installation. If the part is too small or impractical to mark, the FAA must approve alternate means of identification. For a part based on an STC, the identification of installation-eligible type-certificated products must refer to the STC on the shipping document. Reference the assembly PMA part number on the shipping document.

6. This approval is not transferable and it may be withdrawn for any reason that precludes its issuance or whenever the FAA finds that the Fabrication Inspection System is not being maintained. A withdrawal may occur if unsafe or nonconforming parts are accepted under the fabrication inspection system.

APPENDIX 13. SAMPLE FAA-PMA LETTER (CONTINUED)

7. Our district office must be notified within 10 days from the date of the address change in this approval.
8. The manufacturer must maintain their fabrication inspection system in continuous compliance with the requirements of 14 CFR § 21.303(h). The manufacturer must also ensure that each part conforms to the approved design data and is safe for installation on type-certificated products.
9. The manufacturer is eligible for the appointment of qualified individuals in their employ to represent the FAA as Designated Manufacturing Inspection Representatives (DMIRs) or Organization Designated Airworthiness Representatives (ODARs). The DMIRs and ODARs issue Export Airworthiness Approvals for Class II and Class III products.
10. The manufacturer shall report information concerning service difficulties on any part produced under this approval to our district office in a timely manner. The manufacturer should also report any failures, malfunctions, and defects that require reporting under 14 CFR § 21.3.
11. All technical data required by 14 CFR § 21.303(c)(3) (for the parts to be produced under this approval) must be readily available to the FAA at the facility where parts are being produced.
12. The manufacturer shall notify our district office immediately, in writing, of any changes to the Fabrication Inspection System that may affect the inspection, conformity, or airworthiness of the parts approved in this letter.
13. The manufacturer shall produce all parts in accordance with Aero-Parts, Inc., Quality Assurance Manual, Revision B, dated August 7, 1977, which has been accepted as evidence of compliance with 14 CFR § 21.303(h). Accordingly, any revisions to these data must be submitted for approval by this office before implementation. (**NOTE:** Prescribe the above condition only when the applicant voluntarily submits inspection system data/procedures as evidence of compliance with 14 CFR § 21.303(h).)

G. Jones
Manager, Kansas City Manufacturing Inspection District Office

Enclosure:
Parts Manufacturer Approval Listing
Supplement No. 1

**APPENDIX 14. SAMPLE TRANSMITTAL LETTER
OF SUBSEQUENT PMA SUPPLEMENT**



U.S. Department
of Transportation

**Federal Aviation
Administration**

**Transport Airplane Directorate
Aircraft Certification Service**

**Kansas City Manufacturing
Inspection District Office**
250 Richards Road
Kansas City, Missouri 64116

May 1, 2005

Aero-Parts, Inc.
3212 Newton Street
St. Louis, Missouri

FEDERAL AVIATION ADMINISTRATION - PARTS MANUFACTURER APPROVAL

Per 14 CFR part 21 subpart K, we found design data submitted with your letter dated _____ to meet the airworthiness requirements of the regulations for the products on which the parts are to be installed. We based our finding on **(identity, test and computation, or STC)**. Also, we determined that your company set up the fabrication inspection system at 3212 Newton Street, St. Louis, Missouri as required by 14 CFR § 21.303(h). Therefore, we grant parts manufacturing approval (PMA), which authorizes you to produce the replacement parts in the enclosed Supplement No. #.

We remind you that the provisions of 14 CFR, noted in our PMA letter of approval dated _____, also apply to the enclosed PMA Listing-Supplement No. #. Please keep the enclosed supplement with the original PMA letter as evidence of approval to produce the parts concerned.

Sincerely,

Manager, MIDO Kansas City, Manufacturing
Inspection District Office

APPENDIX 15. FORM 8110-3, TEST AND COMPUTATION (GENERAL ANALYSIS)

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION STATEMENT OF COMPLIANCE WITH THE FEDERAL AVIATION REGULATIONS			DATE October 20, 2001
AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION			
MAKE General Electric	MODEL NO. CF6-50, CF6-80, CF6-80C2	TYPE (Airplane, Radio, Helicopter, etc.) Engine	NAME OF APPLICANT Sam's Engine Parts
LIST OF DATA			
IDENTIFICATION		TITLE	
A12345X Rev. D 04/01/2001		Oil Pump Shaft Drawing	
RPT-2468 Rev. B 04/12/2001		Certification and Compliance Report	
- - -END- - -			
PURPOSE OF DATA In Support of PMA Design Approval for the listed part; Test & Computation by General Analysis			
APPLICABLE REQUIREMENTS (List specific sections) 14 CFR § 33.xx and/or compliance checklist			
CERTIFICATION – Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered <u>N/A</u> have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations. I (We) Therefore <input type="checkbox"/> Recommend approval of these data <input checked="" type="checkbox"/> Approve these data			
SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)		DESIGNATION NUMBER(S)	CLASSIFICATION(S)
<i>Joe Smith</i>		DERT-999999-NM	<i>Engine/Part 33</i>
Joe Smith			

FAA Form 8110-3 (11-70) SUPERCEDES PREVIOUS EDITION (REPRESENTATION)

APPENDIX 16. FORM 8110-3, TEST AND COMPUTATION (COMPARATIVE ANALYSIS)

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION STATEMENT OF COMPLIANCE WITH THE FEDERAL AVIATION REGULATIONS			DATE October 20, 2002
AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION			
MAKE MCDONNELL DOUGLAS	MODEL NO. DC-9-83, -87 and MD-88	TYPE (Airplane, Radio, Helicopter, etc.) AIRPLANE	NAME OF APPLICANT SAM'S AIRPLANE PARTS
LIST OF DATA			
IDENTIFICATION		TITLE	
A12346X Rev. A 04/01/2002 RPT-2469 Rev. A 04/12/2002 - - -END- - -		Tray Table Drawing Certification and Compliance Report	
PURPOSE OF DATA In Support of PMA Design Approval for the listed part; Test & Computation by Comparative Analysis			
APPLICABLE REQUIREMENTS (List specific sections) 14 CFR § 21.303(c)(4) and applicable 14 CFR part 25 requirements.			
CERTIFICATION – Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered _____ have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations. I (We) Therefore <input type="checkbox"/> Recommend approval of these data <input checked="" type="checkbox"/> Approve these data			
SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)		DESIGNATION NUMBER(S)	CLASSIFICATION(S)
<i>Joe Smith</i>		DERT-999999-NM	<i>Systems & Equipment</i>
Joe Smith			

FAA Form 8110-3 (11-70) SUPERSEDES PREVIOUS EDITION (REPRESENTATION)

APPENDIX 17. EXAMPLE OF FAA FORM 8110-3 FOR IDENTICALITY

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION STATEMENT OF COMPLIANCE WITH THE FEDERAL AVIATION REGULATIONS		DATE October 20, 2001
AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION		
MAKE General Electric	MODEL NO. CF6-50, CF6-80, CF6-80C2	TYPE (Airplane, Radio, Helicopter, etc.) Engine
		NAME OF APPLICANT Sam's Engine Parts
LIST OF DATA		
IDENTIFICATION	TITLE	
A12345X Rev. D 04/01/2001	Oil Pump Shaft Drawing	
RPT-2468 Rev. B 04/12/2001 - - -END- - -	Certification and Compliance Report	
FAA approval of the design is contingent upon FAA Engineering verification of the type design data listed.		
PURPOSE OF DATA Identity only under 14 CFR § 21.303		
APPLICABLE REQUIREMENTS (List specific sections) 14 CFR § 21.303(c)(4)		
CERTIFICATION – Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under Part 183 of the Federal Aviation Regulations, data listed above and on attached sheets numbered <u> N/A </u> have been examined in accordance with established procedures and found to comply with applicable requirements of the Federal Aviation Regulations. I (We) Therefore <input type="checkbox"/> Recommend approval of these data <input checked="" type="checkbox"/> Approve these data		
SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	DESIGNATION NUMBER(S)	CLASSIFICATION(S)
<i>Joe Smith</i>	DERT-999999-NM	PMA Identity Findings
Joe Smith		

APPENDIX 18. LIST OF ACRONYMS

14 CFR	Title 14 of the Code of Federal Regulations
14 CFR part 21	Certification Procedures for Products and Parts
14 CFR part 43	Maintenance, Preventive Maintenance, Rebuilding, and Alteration
14 CFR part 45	Identification and Registration Marking
ACO	Aircraft Certification Office
AD	Airworthiness Directive
AEG	Aircraft Evaluation Group
ANSI	American National Standards Institute
CPN	Certification Project Notification
CMACO	Certificate Management ACO
COS	Continued Operational Safety
DER	Designated Engineering Representative
FAA	Federal Aviation Administration
FIS	Fabrication Inspection System
ICA	Instructions for Continued Airworthiness
IPC	Illustrated Parts Catalog
MIDO	Manufacturing Inspection District Office
MISO	Manufacturing Inspection Satellite Office
MRB	Material Review Board
PAH	Production Approval Holder
PC	Production Certificate
PSCP	Project Specific Certification Plan
PI	Principal Inspector
PMA	Parts Manufacturer Approval
P/N	Part Number
SAE	Society of Automotive Engineers
STC	Supplemental Type Certificate
TC	Type Certificate
TCDS	Type Certificate Data Sheet
TSO	Technical Standard Order

APPENDIX 19. DEFINITIONS AND TERMS

When following procedures in this order, the following definitions and terms apply:

- 1. Aircraft Certification Office (ACO)** is the field branch of the FAA Aircraft Certification Service. The **project ACO** has geographic responsibility for finding the design complies with applicable airworthiness standards. It administers and secures compliance with agency regulations, programs, standards, and procedures governing the design approval of replacement and modification parts. The individual ACO's location, addresses, and geographic areas of responsibility are in appendix 7, List of FAA Aircraft Certification/Field Offices.
- 2. Certificate Management ACO (CMACO)** is the ACO that issues and has oversight over the original design approval for the product/appliance for which the PMA applicant's part is eligible for installation.
- 3. Critical** is a class of parts, appliances, characteristics, processes, maintenance procedures, or inspections where a failure, omission, or non-conformance may cause a significant degradation of the airworthiness of a product during all phases of operation.
- 4. Design** is all drawings and specifications that show the part's configuration and all information on dimensions, tolerances, materials, processes, and procedures necessary to define all part characteristics. A master drawing list is the summary of these drawing and specifications. The design can also include the airworthiness limitations section of the instructions for continued airworthiness.
- 5. Distributor** is a supplier who buys and sells aviation products, parts, appliances, components, or materials. Distributors do not manufacture these items.
- 6. Eligibility** relates to the type-certificated products that are approved as candidates for installation of a PMA part.
- 7. FAA-PMA Letter** is the initial production approval document issued to the PMA applicant by the appropriate manufacturing inspection district office (MIDO). This letter accompanies a PMA supplement. The supplement is the ACO's record of design approval and the MIDO's production authorization. A transmittal letter that references the initial PMA letter conveys later PMA supplement approvals.
- 8. Life-limited Part** is a part with an established replacement time, inspection interval, or related procedure in the airworthiness limitations section as required by 14 CFR §§ 21.50, 23.1529, 25.1529, 27.1529, 29.1529, 31.82, 33.4, and 35.4. Early type certificate data sheet (TCDS) has the mandatory replacements or inspections for some products. These products were certified before 14 CFR had the above airworthiness requirements. Also, a letter for a technical standard order (TSO) authorization may note or reference mandatory replacement or inspection for an affected part.
- 9. Manufacturing Facility** is the location of the fabrication inspection system.

APPENDIX 19. DEFINITIONS AND TERMS (CONTINUED)

10. Manufacturing Inspection District Office (MIDO) is the field branch of the FAA Aircraft Certification Service responsible for certificate management in the geographic area in which the PMA applicant's FIS is located. In some areas, a **manufacturing inspection satellite office (MISO)** will perform these functions. The location, addresses, and geographic areas of responsibility of the individual MIDO/MISO are in appendix 5, List of FAA Manufacturing Inspection District/Satellite Offices. The **certificating MIDO** is the MIDO that issued the initial production approval or has certificate management responsibility for producing the product/appliance on which the PMA applicant's part is eligible for installation.

11. Producer of a part is a person who participates in controlling the part's design, manufacture, or quality. Significant participation in one or more of the following actions distinguishes an individual as a producer of a part:

- Fabricating or treating the part, or performing a value-added part inspection.
- Developing the design or performance data to manufacture the part.
- Selecting materials to manufacture the part.
- Developing fabrication processes or assembly methods to manufacture the part.
- Developing quality control procedures to manufacture the part.
- Controlling or supervising the manufacture of the part.

12. Product is an aircraft, aircraft engine, or propeller. See 14 CFR § 21.1(b).

13. Production Approval Holder (PAH) is the holder of a production certificate, approved production inspection system, PMA, or TSO authorization. This person controls the design and quality of a product or part.

14. Quality System is an organizational structure with responsibilities, procedures, processes, and resources that implements a management function to determine and enforce quality principles. A quality system encompasses quality assurance and quality control.

15. Revision is a correction of typographical errors or an update of administrative data on existing PMA supplements.

16. Standard Part is a part manufactured in complete compliance with an established industry or U.S. government specification. This includes design, manufacturing, test and acceptance criteria, and uniform identification requirements.

a. The specification must include all information necessary to produce and conform the part, and be published so that any person or organization can manufacture the part. The Administrator may also believe a type of part shows conformity solely because it:

- Meets performance criteria, and
- Is in complete compliance with an established industry or U.S. government specification that contains performance criteria, test and acceptance criteria, and uniform identification requirements.

APPENDIX 19. DEFINITIONS AND TERMS (CONTINUED)

b. Examples of specifications include, but are not limited to, national aerospace standards, Army-Navy aeronautical standard, SAE International aerospace standards, military standards, and so on. They also include technical documents by SAE Sematec, Joint Electron Device Engineering Council, Joint Electron Tube Engineering Council, and American National Standards Institute (ANSI). Discreet electrical and electronic components that conform to their applicable performance criteria are also standard parts (see 62 *Federal Register* 9923, March 5, 1997).

17. Supplier is any person or organization contracted to provide aviation products, parts, appliances, materials, or services to the manufacturer of a product or associated components.

18. Technical Standard Order (TSO) Authorization is an FAA design and production authorization issued to a specific manufacturer of an article that we found to meet or exceed a specific TSO's minimum performance standard. The Aircraft Engineering Division (AIR-100) is responsible for TSOs. The geographic ACO is responsible for issuing the TSO authorization to the applicant. The TSO authorization is not an installation approval. We approve the installation of the article as part of the type design of a type-certificated product.

APPENDIX 20. RELATED PUBLICATIONS AND HOW TO GET THEM

1. Code of Federal Regulations (CFR). You can get copies of 14 CFR sections from the Superintendent of Documents, Government Printing Office, P.O. Box 37154, Pittsburgh, PA 15250-7954. Telephone (202) 512-1800; fax (202) 512-2250. You can also get copies on-line at www.gpoaccess.gov/cfr/.

2. FAA Orders. You can get copies of the following orders from the FAA's Regulatory and Guidance Library (RGL) at www.airweb.faa.gov/rgl:

- Order 8000.50, Repair Station Production of Replacement or Modification Parts,
- Order 8100.5, Aircraft Certification Service Mission, Responsibilities, Relationships, and Programs,
- Order 8100.7, Aircraft Certification Systems Evaluation Program,
- Order 8100.8, Designee Handbook,
- Order 8100.11, Developing Undue Burden and No Undue Burden Decision Papers Under 14 CFR Part 21,
- Order 8110.4, Type Certification,
- Order 8110.37, Designated Engineering Representative (DER) Guidance Handbook,
- Order 8120.2, Production Approval and Certificate Management Procedures, and
- Order 8150.1, Technical Standard Order Program.

3. U.S. Military Documents. Order copies of MIL-STD-1916, DOD Preferred Methods for Acceptance of Product, dated April 1, 1996, from the Department of Defense Single Stock Point, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5098. Telephone (215) 697-2179, fax (215) 697-1462. You can also order copies online at <http://dodssp.daps.dla.mil/>.

4. American National Standards Institute (ANSI) and American Society for Quality (ASQ). Order copies of ANSI/ASQC Z1.9-2003, Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming, dated December 18, 2003, from the American Society for Quality, 600 North Plankinton Avenue, Milwaukee, WI 53203. Telephone (414) 272-8575, fax (414) 272-1734. You can also order copies online at www.asq.org.



U.S. Department
of Transportation

**Federal Aviation
Administration**

Directive Feedback Information

Please submit any written comments or recommendations for improving this directive, or suggest new items or subjects to be added to it. Also, if you find an error, please tell us about it.

Subject: Order 8110.42B

To: Directive Management Officer, AIR-530

(Please check all appropriate line items)

☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.

☐ Recommend paragraph _____ on page _____ be changed as follows:
(attach separate sheet if necessary)

☐ In a future change to this directive, please include coverage on the following subject:
(briefly describe what you want added)

☐ Other comments:

☐ I would like to discuss the above. Please contact me.

Submitted by: _____ Date: _____

FTS Telephone Number: _____ Routing Symbol: _____