



**U.S. DEPARTMENT OF TRANSPORTATION**  
**FEDERAL AVIATION ADMINISTRATION**  
National Policy

**ORDER**  
**8300.14**

Effective Date:  
12/7/07

**SUBJ:** Repair Specification Approval Procedures

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**FOREWORD**

This order describes the procedures for evaluating and issuing approval for repair specifications for aircraft and aircraft parts. These procedures apply to all engineering and Flight Standards personnel in the Federal Aviation Administration (FAA).

This order defines the responsibilities of FAA personnel and designees in approving repair specifications for major repairs of aircraft and aircraft parts. It also defines the procedures that must be followed when reviewing repair specifications and what to expect from applicants seeking approval.

for

A handwritten signature in black ink, appearing to read "James J. Ballough".

James J. Ballough  
Director, Flight Standards Service

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## Chapter 1. General Information

- 1. Purpose of This Order.** This order defines the responsibilities of Federal Aviation Administration (FAA) personnel and designees in approving repair specifications for major repairs of aircraft and aircraft parts. It also defines the procedures that must be followed when reviewing repair specifications and what to expect from applicants seeking authorization.
- 2. Audience.** FAA Flight Standards Service and Aircraft Certification Service personnel, FAA designees authorized to approve data as required by Title 14 of the Code of Federal Regulations (14 CFR) parts 121, 135 and 145, §§ 121.379(b), 135.437(b), and 145.201(c)(2), and all industry personnel applying for repair specification authorization.
- 3. Where You Can Find This Order.** This order may be accessed through Flight Standards Information Management System (FSIMS) at <http://fsims.avs.faa.gov>. Operators and the public can find this order at <http://fsims.faa.gov>.
- 4. Effective Date.** This order is effective on April 1, 2008.
- 5. How This Order is Organized.** In general, this order is organized by the responsibilities for repair specifications held by the Flight Standards District Office/certificate management office/International Field Office (FSDO/CMO/IFO), the Aircraft Certificate Office (ACO), and Designated Engineering Representatives (DER). The overall flow for how repair specifications are created is separated into three areas:
  - a. Assessing the need for a repair specification (see Appendix A).
  - b. Developing a repair specification (see Appendix B).
  - c. Approving repair specification data (see Appendix C).
- 6. Repair Specifications, When Followed:**
  - a. Explains:
    - (1) What a specific repair does,
    - (2) When the repair is appropriate,
    - (3) How the repair will be done,
    - (4) How the repair is substantiated,
    - (5) How the repair will be inspected,
    - (6) How the repair must be maintained, and
    - (7) How the repair specification will be kept up to date.

**b.** Results in an end state that can be evaluated to show compliance to the applicable airworthiness standards.

**c.** Provides the substantiating data for use in approving the aircraft or product for return to service.

**d.** Is a procedure not listed in the current manufacturer's maintenance manual, Instructions for Continued Airworthiness (ICA) or an air carrier's Continuous Airworthiness Maintenance Program (CAMP).

**e.** Is intended to be used repeatedly.

**f.** Requires FAA data approval.

**g.** Is authorized for use by the FAA for a specific maintenance entity.

## **7. Repair Specification Users.**

**a.** The FAA authorizes repair specifications only for use by maintenance facilities that hold a part 145 certificate or have a maintenance program authorized by operations specifications (OpSpecs) under a part 121 or 135 air carrier certificate. The FAA does not authorize repair specifications for use by 14 CFR part 65 mechanics or holders of inspection authorizations.

**b.** A repair specification is not mandatory, however maintenance facilities listed in paragraph 6a that perform or intend to perform the same major repair repetitively should be advised to consider developing a repair specification. Each major repair must be performed in accordance with FAA-approved technical data. Major repairs done repetitively may require the data to be evaluated and approved for use each time the repair is performed. An approved specification will eliminate the need for repetitive approvals.

**c.** The advantage of a repair specification is that it lets the repairer do work without having to obtain FAA-approved data for every identical repair. It also helps the repairer plan for and operate under a consistent method authorized by the FAA. This helps to ensure the repair facility has consistent quality in its repairs, reduces demand on FAA resources, and improves efficiency for industry.

**d.** A repair specification is appropriate when the maintenance provider does not use FAA-approved technical data for the major repair of an article because:

(1) The instructions don't exist.

(2) The instructions are not available.

(3) The applicant wants to deviate from the established instructions.

(4) The instructions are not appropriate for the article. For example the article was previously repaired or altered and the instructions assume the article was not previously repaired or altered.

**8. The Difference Between a Repair Specification and a Process Specification.** For the purposes of this order, the two terms are distinguished as follows (see paragraph 5):

**a. A Repair Specification:**

(1) Describes how a repair will be managed from the point the article is received by the facility authorized to use the repair specification to the point the article is approved for return to service.

(2) Includes step-by-step instructions for performing the repair. This type of specification is referred to by many names including “repair specifications,” “repair procedures,” and “maintenance specifications.”

(3) May incorporate by reference one or more process specifications.

**b. A Process Specification:**

(1) A document or standard that describes a procedure for completing a specific step of the step-by-step instructions contained in a repair specification.

(2) Generally more detailed than a repair specification, but has broader application than a repair specification.

(3) By itself is not adequate to meet the requirements of this order, because it is not evaluated and limited to a particular article. Repair specifications may reference or incorporate process specifications. Examples include:

- American Society for Testing and Materials (ASTM) B 0244, Eddy Current Inspection of Coatings
- American Welding Society (AWS) D1.1, Welding
- Society of Automotive Engineers (SAE) AMSP81728, Plating, Tin-Lead (Electrodeposited)
- MIL-S-13165A, Shot Peening of Ferrous Metal Parts
- AWS C2.23M/C2.23:2003, Specification for the Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel

(4) Typically *not* approved by the FAA separately because of its general applicability and recognition as a consensus industry standard. Process specifications are evaluated and approved as an integral part of the repair when referenced within the repair specification.

## 9. How a Repair Specification is Approved.

a. A repair specification is authorized for use by the FAA only. The approval process should include a joint evaluation of the repair specification by the FSDO/CMO/IFO and the ACO Repair Specification-DER (or RS-DER). Typically, data approval of the repair specification is completed by the ACO (or RS-DER) and authorization for use is determined by the FSDO/CMO/IFO only when both groups have signed the repair specification and authorized by the OpSpecs.

b. The FSDO/CMO/IFO can choose to approve the repair specification without engineering review for simple repairs (see chapter 2, paragraphs 6 and 7).

c. In no case is the repair specification considered authorized when only the ACO or RS-DER has signed it. All repair specifications must be signed by the responsible FSDO/CMO/IFO and applied to the certificate holder's OpSpecs to be considered authorized.

d. See chapter 2, paragraphs 9 and 10; chapter 3, paragraph 4; and chapter 4, paragraph 6 for more information on authorizing the repair specification.

**10. The Roles of the FAA and Applicant in Repair Specifications.** See the items below and Figure 1-1 that follows.

### a. The Applicant is Responsible for:

(1) Contacting the geographically responsible FSDO/CMO/IFO to plan the repair specification when desired by the applicant or recommended by the FAA,

(2) Developing the repair specification and ensuring all elements identified in chapter 2, paragraph 4 are adequately addressed.

(3) Determining if the proposed repair affects compliance with any existing Airworthiness Directives (AD).

(4) Substantiating the repair specification,

(5) Submitting the repair specification for data approval,

(6) Correcting any deficiencies in the repair specification prior to FAA authorization, and

(7) Using the repair specification within the limitations of its authorization.

(8) Providing a list of articles fabricated for use in the repair and method of identification of those articles.

**Note:** Appendices A and B of this document contain applicant responsibility flowcharts. Appendix A provides guidance to assess the need for a repair specification. Appendix B will assist the applicant in developing a repair specification.

**b. The FAA is Responsible for:**

- (1) Working with the applicant during the planning phase,
- (2) Coordinating between offices within the FAA during planning and evaluation of the repair specification,
- (3) Evaluating the applicant's capability to use the repair specification, and
- (4) Evaluating and authorizing (or rejecting with explanation) the applicant's repair specification.

**Figure 1-1. Roles of FAA and Applicant in Repair Specifications**

<b>Applicants:</b>	<b>FSDO/CMO/IFOs:</b>	<b>ACOs:</b>	<b>DERs:</b>
<ul style="list-style-type: none"> <li>• Determine if a repair specification is appropriate.</li> <li>• Contact the FSDO/CMO/IFO for planning repair specifications.</li> <li>• Develop repair specification. Include all applicable elements identified in chapter 2, par. 4.</li> <li>• Develop data to substantiate repair specification.</li> <li>• Utilize DERs as needed to support repair specification substantiation.</li> <li>• Submit proposed repair specification to the geographically responsible FSDO/CMO/IFO</li> <li>• Maintain capabilities in order to use authorized repair specification.</li> <li>• Perform periodic review of repair specification and revise as needed. <b>See App. A and B for more details.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Ensure compliance with regulations, programs, standards, and procedures on issuing authorization for repair specifications.</li> <li>• Help applicant in planning repair specification.</li> <li>• Evaluate applicant's capability to use repair specification.</li> <li>• Coordinate as needed with ACO for technical review and approval of data used to substantiate repair specification.</li> <li>• Issue or deny the repair specification authorization.</li> <li>• <b>See Ch. 2 and Appendix C flowchart for more details.</b></li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate and approve (or delegate) test plans and witness (or delegate) tests at their discretion.</li> <li>• When requested by FSDO/CMO/IFO evaluate and approve data used to substantiate repair specifications.</li> <li>• Approve the engineering aspects of repair specifications, when adequate.</li> <li>• Evaluate and approve, when adequate, all repair specs affecting life-limited or critical parts.</li> <li>• Evaluate and approve qualified candidates as Special Authorization Repair Specification DERs.</li> <li>• <b>See Chapter 3 for more details.</b></li> </ul>	<ul style="list-style-type: none"> <li>• When appropriately rated and delegated by ACO:</li> <li>• Evaluate and approve test plans and witness tests.</li> <li>• Evaluate and approve data used to substantiate repair specifications.</li> <li>• Approve the engineering aspects of repair specifications, when adequate.</li> <li>• <b>See Chapter 4 for more details.</b></li> </ul>

**11. Acronyms.** See Appendix D, List of Acronyms.

**12. Definitions.** See Appendix E, Definitions and Terms.

**13. Related Publications.** See Appendix G, Related Publications.

**14. 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 (in writing or electronically), to the Flight Standards Service, Technical Information and Communications Programs Branch, AFS-140, Attention: Directives Management Officer. Form 1320-19 is on the last page of this order. You also may send a copy to the Aircraft Maintenance Division, AFS-300, Attention: Comments to Order 8300.14. Always use Form 1320-19 to follow up each conversation.

**15. 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's Records Management Officer or Directives Management Officer.

**16. Distribution.** Distribute this order to the branch level in Washington headquarters, branch levels of the Flight Standards Service and Aircraft Certification Service; the branch levels of the regional Aircraft Certification Directorates; the Brussels Aircraft Certification Staff; all Aircraft Certification Offices (ACO) and all FSDO/CMO/IFO.

## **Chapter 2. Flight Standards Certificate-Holding District Office (FSDO/CMO/IFO) Responsibilities**

**1. General Responsibilities.** The FSDO/CMO/IFO has several responsibilities for repair specifications. In general the responsible aviation safety inspector (ASI) at the FSDO/CMO/IFO:

- a. Coordinates all activity concerning the repair specification authorization within the FAA.
- b. Provides guidance to the applicant during planning.
- c. Reviews the applicant's proposed repair specification.
- d. Coordinates with the ACO as needed.
- e. Evaluates the applicant's capabilities.
- f. Authorizes or disapproves the repair specification.

**2. Coordinate All Activity Within The FAA.** The responsible ASI should plan and coordinate all aspects for the evaluation of the proposed repair specification within the FAA. Instruct the applicant to direct all project correspondence to the ASI at the FSDO/CMO/IFO where the application was submitted. Likewise, the assigned ASI should be the only person within the FAA communicating directly with the applicant unless the assigned ASI determines otherwise. By communicating with one point of contact only, the applicant avoids getting conflicting guidance from multiple FAA representatives.

### **3. Provide Guidance to Applicant When Applicant Requests to Use a Repair Specification.**

a. A formal planning phase is recommended to coordinate and evaluate the applicant's proposal with the FAA. This process can be beneficial in obtaining FAA data approval and authorization to use the specification in an efficient and timely manner. A planning phase is recommended when:

(1) It's the first time the applicant is applying for approval of a proposed repair specification.

(2) The applicant expects to submit repair specifications frequently.

(3) The proposed repair specification will involve a complex repair.

(4) The proposed repair specification will involve a critical part.

(5) The applicant will be using complex techniques or equipment for the first time.

b. The planning phase can be done in a manner that works best for the FSDO/CMO/IFO and the applicant, but it's recommended that they meet to ensure all issues are adequately addressed and understood. Typically when planning the development and approval of a repair specification with the applicant:

(1) Establish primary point of contacts for applicant and FSDO/CMO/IFO.

(2) Briefly explain this order and what the applicant can expect to happen.

(3) Discuss proposed repair specification (use paragraph 4 for topics).

(4) Discuss applicant's capabilities to use the repair specification after it is authorized. This is an informal discussion of whether the applicant is qualified to undertake the proposed repair and what capability issues the applicant may need to address.

(5) Assess the need for ACO involvement versus using an RS-DER. The FSDO/CMO/IFO may want to get support from the ACO for the meeting.

(6) Determine if testing will be necessary to substantiate repair specification. If testing is required, discuss:

- Who will approve test plan(s)?
- Who will conform test article(s)?
- Who will witness test(s)?
- What are the pass/fail criteria?

(7) Establish schedule for all activities necessary to develop approved data and authorize repair specification.

(8) Schedule a follow-up planning meeting if necessary. Request the applicant to develop a summary of the meeting and submit it to the FSDO/CMO/IFO for review, comment, and concurrence. This is not required but should help to eliminate any misunderstandings of expectations, roles, and responsibilities.

**4. Review the Applicant's Proposed Repair Specification.** The ASI must review the applicant's proposed repair specification to:

**a.** Make sure it meets the definition for a repair specification as outlined in chapter 1, paragraph 5.

**b.** Determine if a repair specification is warranted and the applicant is eligible according to chapter 1, paragraph 6.

**c.** Make sure the repair specification includes and appropriately addresses the following areas:

**d. Applicant Information.** The repair specification must list the applicant's name, address, and relevant operating certificates and ratings for maintenance activities. It's recommended that this information be placed prominently on the title (cover) page. This information should be placed on the same page that the FAA will sign to authorize the repair specification. See

chapter 2, paragraphs 9, and 10 for more information. A sample title page is provided in Appendix F of this document.

**e. Purpose.** The applicant should provide a general description of the repair that will result from following the repair specification. The description can include the anticipated condition of the part or aircraft before it's repaired, a simple explanation of the procedure to be followed in the repair specification, and the outcome of the part or aircraft following the procedures. It's recommended that the applicant briefly explain general limitations or applicability.

**f. Scope.** Expect applicants to describe in detail how, when and where the repair described in the "Purpose" is appropriate and applicable to the product or article. Define the specific application, product eligibility, and limitations of the repair specification. For example, list:

(1) All Original Equipment Manufacturer (OEM) part numbers covered by the repair specification.

(2) The part numbers of the higher assembly when the repair specification covers the repair of articles that will be integrated into a higher assembly.

(3) The eligibility of the repair by article make and model.

(4) Any limitations resulting from the article repaired in accordance with the repair specification. As an example, a repair specification developed for the repair of safety belts might stipulate that the repaired belts are for use only on 9g static seats and is not adequate for repairing belts to be used on 16g dynamic seats.

(5) The applicable sections of 14 CFR (e.g., specific airworthiness regulations) that will be met when the repair specification is followed. DERs, when involved, are required to make a compliance finding to certification rules.

(6) Critical parts, as determined by the design approval holder. Typically, such components include parts for which a replacement time, inspection interval, or related procedure is specified in the Airworthiness Limitations Section (ALS) of the manufacturer's maintenance manual or ICA.

(7) A list of any existing applicable AD that may be affected by the repair.

(8) A list of any parts that will be fabricated to complete the repair.

**g. Capabilities.** Applicants should describe their ability to successfully perform the necessary components of the repair specification. This should typically include the expertise, skills, personnel, tools, facility requirements, material handling and storage requirements, and other factors necessary to follow the proposed repair specification. Applicants should not describe their *current* capabilities, but rather what is *necessary* to successfully implement the repair specification.

**h. Procedure.** The applicant must list the detailed step-by-step instructions that will be followed to perform the repair. The instructions should include all necessary steps; from

receiving and inspecting the article or product, to final test and/or inspection before return to service.

(1) The instructions should be sufficient in detail and clarity to get the expected result when qualified personnel follow them. For example, when it's necessary to eliminate sharp edges from a part, an instruction like "break all edges" is subjective and may not be adequate. An instruction like "all exposed edges must have a minimum 0.2 in. radius" would provide a standard, measurable result.

(2) The repair specification can reference documents not included in the instructions, but those documents must be available to the person(s) performing the repair per the repair specification. The applicant must submit the referenced documents with the application for repair specification for review by the FAA, unless the FAA determines they're not needed. These documents are typically industry process specifications or standards (see chapter 1 paragraph 7) or documents previously accepted or approved by FAA (e.g., quality control procedures for material receiving, inspection, and storage).

(3) The procedures should include all metrics testing and inspection done in the course of each repair (see paragraph 4f). The repair specification must also provide instructions for the proper disposition of repairs that fail any test or inspection and how to manage failed articles to ensure they are not installed in a product or next higher assembly for return to service.

(4) Include in the repair specification procedures on how to mark the article, so that the repair can be traced. Refer applicants to AC 43-18, Fabrication of Aircraft Parts by Maintenance Personnel, for guidance on marking articles fabricated for use within the repair.

**i. Metrics.** The repair specification should include instructions for inspecting and/or measuring the repair on the article to ensure the expected result is achieved when the repair specification is followed. Metrics can include physical measurements, visual inspection, nondestructive testing, functional tests, procedural controls, and other methods to ensure the desired result is achieved.

**j. Substantiation.**

(1) Data. Include in the repair specification a *list* of the data that is used to substantiate the repair specification. The data may consist of drawings, test plans, test reports, analysis, and other documents that validate the methodology of the repair specification. The actual data is not required to be included in the repair specification, although it must be submitted as part of the repair specification application (see chapter 3, paragraph 2 for expectations of the applicant on substantiating the repair specification). If the applicant *chooses* to include the actual substantiating data in the repair specification, it should be attached as an appendix.

(2) Inspections. In some cases, the FAA may not be able to find compliance with the regulations by a review of drawings, tests, and/or analysis alone. The ASI may have to inspect the repaired article to validate that the repair specification meets the requirements of a specific airworthiness regulation. For example, a repair specification that repaired safety belts might require a physical test and inspection to ensure the repaired belt, including the shackle and retention clip, can be easily attached to the seat's safety belt anchor point to minimize

inadvertent false-attachments (i.e., shackle hooks anchor point but retention clip fails to properly close).

**k. ICA.** The developer of the repair specification must determine if the repair affects the ICA or existing maintenance requirements of the affected article. Major repairs may require a change in existing maintenance requirements or inspection intervals. For example, a major structural repair such as a repair to a static engine component could influence the life limits on critical rotating parts and need more frequent inspection. It would be rare that a repair that restores an article to its original or properly altered condition would have an affect on the ICA. However, this determination should be performed with special consideration of the repair falling into an alteration category.

(1) The repair specification must address whether or not the existing ICA are adequate and clearly state that finding.

(2) If it's determined that the existing ICA are inadequate because of the proposed repair, the repair specification must contain the appropriately revised ICA.

**l. Periodic Review of Repair Specification.** Expect the applicant to provide a process to review the repair specification on a periodic basis to determine that they will:

(1) Review any new applicable FAA guidance material, revise the repair specification and submit it for approval if changes are necessary.

(2) Seek service experience of the repairs to ensure the original repair specification is adequate for meeting all applicable sections of 14 CFR. If service experience shows that the repair specification needs to be revised, the revision must be authorized before implementing those changes.

(3) Monitor future ADs to ensure AD compliance requirements do not supersede or conflict with the approved repair specification. The review process can either be defined in the repair specification or defined in a separate document. When a separate document is used, reference the document in the repair specification.

**m. Incomplete Application.** When information or data is incomplete or inadequate for the ASI (or other FAA representatives evaluating the application) to make a determination, notify the applicant. Ask the applicant to supply the missing information or supplement the inadequate information. When the applicant doesn't comply with your request in a reasonable amount of time (30 days is suggested), return the repair specification unapproved with all data supplied by the applicant.

**n. Alteration and not a Repair.** If it is determined that the proposal is actually an alteration, the repair specification must not be approved. Inform the applicant that the proposal is beyond the scope of a repair specification, provide the rationale, and return the application package.

**5. Service History Considerations.** Review of the service history is essential when developing a repair for an aircraft article. The ASI should:

**a.** Verify that any article addressed in the proposed repair specification is neither subject to an AD or a causal factor in an accident. The Certificate Management Aircraft Certification Office (CMACO) should be consulted for determinations that can not be made by the ASI.

**b.** Verify the article is free of continued airworthiness problems.

**c.** Follow the guidelines below if a article has a potential unsafe condition and the proposed repaired article has a similar design (coordinate with the ACO as needed):

(1) Reject the repair specification application if an existing AD removes the associated type certificate (TC) holder's article from service immediately or in the future.

(2) Consider a delay in processing or rejecting the repair specification application if an AD is being discussed or developed to remove the TC holder's article from service.

(3) If the TC holder's article is under investigation for an incident or accident, delay processing the repair specification application until the article is cleared.

(4) Reject the repair specification application if an AD calls for repetitive inspections without setting a terminating corrective action (for example, modification or replacement of the article). Also, reject the repair specification application if the intent of repetitive inspections is to detect potential failures before reaching a published service life.

(5) If the article is having service difficulties and the FAA is *actively* pursuing corrective action (that is, a design change per 14 CFR part 21, § 21.99) with the TC holder, reject the application for the repair specification. If a service history review reveals problems, the CMACO should be consulted for a status of corrective action, if any, of the article.

(6) Consult the FAA Service Difficulty Reporting System and the TC product support database for service difficulties of aircraft parts.

## **6. Coordinate With the ACO for Engineering Support.**

**a.** When the FSDO/CMO/IFO receives a proposed repair specification that hasn't been signed by a RS-DER, the FSDO/CMO/IFO should ask the ACO to evaluate the repair specification. Before sending it to the ACO:

(1) Verify that the proposed repair specification adequately addresses each of the areas identified in paragraph 4.

(2) Verify that the article or aircraft repair area has no service history issues as explained in paragraph 5.

**b.** When the FSDO/CMO/IFO receives a proposed repair specification that has been signed by a RS-DER, the FSDO/CMO/IFO should verify the RS-DER rating with the ACO. After receiving confirmation from the ACO of the RS-DER's rating, the FSDO/CMO/IFO can then assess the applicant's capabilities per paragraph 8.

c. The FSDO/CMO/IFO can choose to authorize simple repair specifications without an engineering review for approval from a RS-DER or ACO. When this happens the ASI is accepting responsibility for the data and all engineering review normally done by the RS-DER or the ACO. See paragraph 7 for more details on FSDO/CMO/IFO data approvals.

d. The FSDO/CMO/IFO can expect the RS-DER or the ACO to make a comprehensive engineering evaluation of the repair specification to ensure compliance with all applicable CFRs. This includes evaluating any interaction between different engineering disciplines that may have been overlooked by the applicant. For example, if the applicant relied on DERs with individual categorized authorizations only, there may not have been an evaluation of the integration of the repair as a whole. See chapter 3, paragraphs 2 and 3 for more information on engineering reviews.

e. FSDO/CMO/IFOs must forward all repair specifications affecting critical parts to the ACO for evaluation.

**7. Data Approvals Made by the FSDO/CMO/IFO.** A primary objective of this order is to ensure that proper engineering evaluation occurs for all repair designs. It's expected that most data approvals supporting compliance with airworthiness standards will be completed by RS-DERs or an ACO. In cases where the applicant is asking for a simple repair, the ASI may be willing to accept data within his/her authority and expertise to expedite the approval of the repair specification. This authority is determined by the current Order 8900.1 guidance. The ASI:

a. Authorizes data by signing the repair specification FSDO/CMO/IFO acceptance statement.

**Note:** ASI'S should be aware that by authorizing the repair specification without ACO signature, they are accepting responsibility for its content. The ASI should enter N/A (Not Applicable) on the ACO signature line.

b. Must review chapter 3, paragraph 2 for guidance on evaluating the data for approval.

c. Must ensure that all applicable CFRs have been met and the data used to substantiate compliance to those CFRs is applicable and adequate.

d. Should be aware that by signing the repair specification to authorize data, assumes responsibility that a RS-DER or the ACO would otherwise have for the repair design.

e. Should not authorize data if uncertain of applicable CFRs or has questions about the adequacy or applicability of the substantiating data.

f. Accepts the repair specification provided he/she has completed FAA Academy Course 21811, Major Repairs and Alterations.

g. Must only authorize data within the ASI's authority provided in Order 8900.1.

**8. Evaluate the Capabilities of the Applicant to Make the Repair.** After the FSDO/CMO/IFO, the ACO, or the RS-DER has made a determination that the proposed repair

specification is adequately substantiated and will result in a proper repair, the ASI must evaluate the applicant to determine if they have the capability to make repairs in accordance with the repair specification. This evaluation includes assessing the applicant's housing and facilities, equipment, personnel, and part and material control used to make repairs in accordance with the repair specification. The ASI's confirmation of the applicant's capabilities is a critical step in the repair specification approval process. It must be done before the ASI authorizes the repair specification for use by the applicant. Applicants may be either a part 145 certificated repair station or an operator with a maintenance program authorized by OpSpecs under part 121 or 135 (see chapter 1, paragraph 6).

**a. Certificated Repair Station.** When evaluating a repair specification submitted by a part 145 certificated repair station, the ASI should prepare to inspect the applicant by reviewing:

- (1) The proposed repair specification.
- (2) Parts 43 and 145 of 14 CFR.
- (3) Repair station manual/Quality Control Manual (RSM/QCM).
- (4) Safety Performance Analysis System (SPAS).
- (5) FSDO/CMO/IFO file.

**b. Operators.** When evaluating a repair specification submitted by an operator with an authorized maintenance program under part 121 or 135 the ASI should prepare to inspect the applicant by reviewing:

- (1) The proposed repair specification.
- (2) Parts 43 and the part the operator holds a certificate under (e.g., parts 121, 135).
- (3) Applicant's operations or quality manual.
- (4) SPAS.
- (5) FSDO/CMO/IFO file.

**c.** When evaluating the applicant's ability to perform the repair, the ASI should consider the following:

(1) The applicant must be properly rated or authorized to perform the repair. Repair Stations may need to apply for an additional rating, or authorization and/or require a change to their existing ops specs before performing the repair.

(2) The applicant must have sufficient housing and facilities to accommodate the work associated with the repair specification.

(3) The applicant must have the tools, equipment, and materials identified in the repair specification when performing the repair. Tools and equipment requiring calibration should be calibrated in accordance with the repair station's or operator's calibration procedures.

(4) The applicant must have the documents and data required to complete the repair. This includes any documents or data referenced in the repair specification. Documents such as travelers or inspection records created by the applicant to track and record the repair should clearly identify the article and any required inspections.

(5) The applicant should have a sufficient number of employees with the training or knowledge and experience necessary to supervise, inspect, and perform the repair.

**d.** The ASI may ask the applicant to demonstrate the repair process particularly for complex repairs, repairs affecting life-limited or critical parts, or first time repair specification authorizations.

## **9. Authorize or Disapprove the Repair Specification.**

**a.** After the ASI has determined that the repair specification is acceptable and the applicant can make repairs as prescribed in the repair specification, the ASI should authorize the repair specification. The ASI indicates his/her acceptance by signing the repair specification. See paragraph 10 for details. The ASI also will need to add the repair specification to the dedicated OpSpec paragraph for authorization for use by the applicant.

**b.** If the repair specification does not meet all the applicable requirements, notify the applicant and return the applicant's data package. This notification must include the reason(s) for denial. The applicant should be given the opportunity to make corrections as necessary. Do not authorize the OpSpec until the deficiencies are corrected by the applicant.

**10. Signatures and Notes Required in the Repair Specification.** The information listed below must be included in the repair specification. This information should be included on the title page (see Appendix F).

### **a. Required Signatures.**

(1) Include the name and title of the maintenance facility representative and the date the document is signed. This signature signifies the applicant:

(a) Verified the repair will return the article to an airworthy condition.

(b) Will not deviate from the repair specification once it is authorized without seeking authorization from the FAA unless the deviation is considered minor as described in paragraph b(1).

(2) Include the name and title of the RS-DER or the ACO representative and the date the document is signed. This signature means the data are adequate to substantiate the repair design and the repair is compliant with applicable airworthiness CFRs. When RS-DERs sign the repair specification include the RS-DER's identification number.

(3) Include the name and title of the FSDO/CMO/IFO representative and the date the document is signed. This signature signifies the repair meets applicable maintenance CFRs and authorizes the repair specification for use only by the applicant identified on the title page.

(4) All signatures should be on the same page (See Appendix F).

**b. Required Statements.** List the two statements below prominently on or in the repair specification. They should be listed on the same page as the signatures above.

(1) The FAA must authorize any change to the repair specification before the applicant implements the change. The repair specification holder must submit all substantiating data to support the proposed change. Minor changes that do not differ from the previously approved engineering data and having no bearing on safety are permitted provided the FSDO/CMO/IFO is notified of the change and such changes are recorded in the repair specification documents.

(2) Persons who want to fabricate parts under a repair specification need to establish a quality control system for making those parts. Parts fabricated under a repair specification are to be consumed within the repair and can not be sold independent of the repair. Parts sold independent of the repair must be approved and manufactured in accordance with § 21.303.

**Note:** See AC 43-18, Fabrication of Aircraft Parts by Maintenance Personnel for more information on fabricating parts for use in a repair.

**Note:** Appendix F contains a sample title page showing all required statements and signatures.

## Chapter 3. Aircraft Certification Office (ACO) Responsibilities

### 1. Support the FSDO/CMO/IFO.

**a. Review Data.** At the request of the FSDO/CMO/IFO, an ACO reviews the applicant's repair specification to determine if the proposed repair meets the applicable airworthiness standards and the data submitted adequately substantiates the repair design. Seek FAA expertise from other ACOs, directorates, and Chief Scientific Technical Advisors (CSTA) as needed. During this review:

(1) Verify acceptable service history of the original article and if any corrective actions involving design change are being pursued.

(2) Verify the eligibility for installation on type-certificated products.

(3) Verify the repair specification meets airworthiness requirements applicable to the type-certificated product subject to repair.

(4) Verify the repair data is adequate to fabricate part(s) to be consumed in the repair, if needed.

(5) Review all differences between the original part and the repaired part. Assess the technical justification for these differences and associated impacts on the next higher assembly and product.

(6) Review and approve test plans and reports at your discretion.

(7) Ensure the applicant's substantiating data show compliance with applicable airworthiness standards.

### **b. Critical Parts.**

(1) Determine whether or not the repair specification affects critical parts. If the applicant did not identify the repair specification as affecting critical parts, inform the FSDO/CMO/IFO. The FSDO/CMO/IFO must then notify the applicant and arrange for further discussion if necessary between the applicant and the FAA to resolve the issue.

(2) The ACO must evaluate all repair specifications affecting critical parts. RS-DERs may be used to support the substantiation of the repair specification, however, the ACO must evaluate any repair specification affecting critical parts (see paragraph 4).

(3) Coordinate proposed repair specifications for critical parts with the Certificate Management ACO (CMACO) to verify if repair data is complete before approving the engineering aspects of the repair specification.

**2. Evaluate the Data Package.** Review chapter 2, paragraph 4 to see what should be in an applicant's repair specification and data package. Ensure all applications include detailed repair

design data adequate to show compliance to the applicable CFRs. The data package can include, but is not limited to, the following:

**a. Drawings and Specifications.** Applicants should provide copies of their drawings and specifications that shows the configuration of the repaired part or product. These drawings and specifications should address dimensions and tolerances, materials, and processes that define the structural strength and design characteristics of the repaired article. The required information for some repaired articles may include routing sheets, tooling requirements, process sheets, material handling and storage, and inspection requirements the FAA deems necessary.

(1) When parts are fabricated for use in the repair, carefully review source control drawings to determine if the applicant has proper control over a fabricated article's configuration and fabrication. Ensure the applicant submitted all applicable detail drawings and specifications. These drawings and specifications are needed when evaluating the sources listed on source control drawings.

(2) Establish that the applicant has submitted sufficient data to fabricate conforming articles before issuing approval of the engineering aspects.

**b. Test Plans and Test Results.** The applicant may need to perform tests to demonstrate that a repair done in accordance with the repair specification will result in the repaired article complying with the applicable airworthiness standards. Testing ranges from functional to component to flight. Simple, non-critical parts may need little or no testing. When testing is required that the FAA chooses to witness, the applicant must develop a test plan approved by the FAA or an RS-DER.

(1) The test plan:

(a) Describes the purpose of the test,

(b) Lists the specific airworthiness standards and a description of how the applicant expects to show compliance,

(c) Is used to ensure orderly and complete testing is accomplished, and typically includes sections on:

1. Test safety control,
2. Control of test procedures, and
3. Test conditions and duration.

(d) Describes the items to be tested and lists all equipment necessary to conduct the test, and typically includes sections on:

1. Physical and functional description of the test article and setup,
2. Number of test units, and

### 3. Test unit identification.

(e) Describes how the equipment is to be calibrated (when calibration is required) and approved before the test,

(f) Describes the instrumentation and equipment necessary to measure and record the results of the test,

(g) Lists required conformities of the test article and test setup,

(h) Includes a test procedure written in a step-by-step format,

(i) Defines the pass/fail criteria, and

(j) Describes who will witness the test.

#### (2) The test results report describes:

(a) Any deviations from the test plan for the test setup and their effect on the test,

(b) How and when the test equipment was last calibrated,

(c) Any nonconformities found with the test article(s) and their effect on the test,

(d) Any deviations from the test plan for the step-by-step test procedure and their effect on the test,

(e) The performance of the test article using observation, post-test inspection, physical measurement, electronically recorded data, photos, video, etc.,

(f) Whether or not the test article(s) passed or failed each criterion defined in the test plan,

(g) Any anomalies that might have an effect on the outcome of the test, and

(h) Who witnessed the test and made the pass/fail evaluation.

**3. Considerations for Reverse Engineering.** If a repair specification includes substantiating data based on reverse engineering, the applicant should determine the performance and durability of the original undamaged article. This can be done using comparative test and analysis as follows:

**a. Comparative Test and Analysis.** This method entails analyses and tests of the original undamaged article and the article repaired in accordance with the proposed repair specification.

(1) Expect the applicant to demonstrate that the functional design of the proposed repair returns the article to its airworthy condition as established by the original TC, STC, PMA or TSO-approved part.

(2) The criticality of the article and the complexity of its design will dictate the rigor of the comparative analysis and the extent of testing.

(3) Side-by-side testing of proposed repaired article and the original article with zero service time under the same procedures and conditions provides the standard to evaluate the adequacy of the repaired article.

(4) The results of the analyses and tests will note any differences and provide sound technical justifications for these differences.

(5) Simple, non-critical parts might not require the same level of evaluation by test and analysis to determine performance and durability as other articles.

**b. Reverse Engineering for Fabricated Parts.** Some repairs may rely on fabricating replacement parts for the original parts using 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 article to a proposed fabricated repair article. The applicant must select the processes and techniques that are appropriate to the articles complexity. Reverse engineering alone may be enough to duplicate simple parts. However, complex articles may need other substantiating information to show equivalency between original and fabricated repair parts or articles. The applicant should consider the following when using reverse engineering:

(1) Typically these samples are new, unused articles 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 the article. Use a sufficiently large sample 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 don't 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 or RS-DER. Testing may include more samples to show equivalency between a new original and the fabricated repair article.

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

(3) Various tests and documentation from the PAH or supplier define the material composition of a part. The fabricated repair part materials must be equivalent to the materials for the original part including the base part, any subparts, added welds, and coatings. A qualified laboratory can provide thorough destructive testing for at least the following information:

(a) Composition of each material in the part,

(b) Material properties (for example, strength and fatigue characteristics, hardness, grain structure),

(c) Form of material (for example, casting, forging, bar stock, sheet), and

(d) Use of special processes (for example, nitriding, heat treat, shot peening) and resulting effect on material properties.

(4) 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 fabricated repair 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.

**4. Approve or Disapprove Substantiating Data and Notify the FSDO/CMO/IFO.** After you find that the data is adequate to substantiate the repair specification and the repair is compliant with applicable airworthiness CFRs, notify the FSDO/CMO/IFO and return the data package to them. You must indicate your approval of the data by signing the repair specification (see chapter 2, paragraph 10). If the data is not adequate do not sign the repair specification. If the applicant does not provide or resolve the inadequacies, return the repair specification with a cover memorandum describing the inadequacies to the FSDO/CMO/IFO for resolution by the applicant.

**5. Management DERs (RS-DER) Involved in the Repair Specifications.** The ACO evaluates, appoints when qualified, and provides oversight of RS-DERs.

**a.** ACOs should review chapter 4, paragraphs 2 and 3 when evaluating persons who wish to be RS-DERs.

**b.** ACOs should remind appointed RS-DERs of any specific limitations of their designation.

**c.** ACOs should instruct every appointed RS-DER that repair specifications affecting critical parts must be coordinated with and signed by the ACO. The RS-DER can not sign the repair specification in lieu of the ACO.

**Note:** See FAA Order 8100.15, Organization Delegation Authorization Procedures, for information to allow this order to be used by those organizations and personnel that are properly authorized and qualified under the Organization Designation Authorization (ODA) Program.

## Chapter 4. Designated Engineering Representatives

**1. DER's Role in the Repair Specification Process.** The FAA has authority to approve repair specifications. DERs support the approval process with findings within their limitations. The FAA defines DER limitations in Order 8110.37, Designated Engineering Representative (DER) Guidance Handbook. A DER can be used in the following ways to support the development and approval of a repair specification:

a. Make findings to specific CFRs and approve data to support a repair specification.

b. When authorized as an RS-DER, evaluate compliance findings and data approval for all engineering aspects normally reserved for the ACO.

**2. Responsibilities of Special Authorization RS-DER.** When acting under official capacity for the FAA, the RS-DER is responsible for:

a. Evaluating repair specification to ensure the proposed repair returns the article to an airworthy condition.

b. Ensuring all CFRs applicable to the repair design have been listed and adequately substantiated including findings made by other DERs.

c. Ensuring other DERs are appropriately rated and have adequate experience.

d. Reviewing for adequacy FAA Form 8110-3, Statement of Compliance with the Federal Aviation Regulations, signed by other DERs as described in Order 8110.37.

e. Coordinating with the ACO to determine any tests the ACO chooses to witness or delegate to the RS-DER.

f. For those tests delegated by the ACO to the RS-DER to witness:

(1) Evaluating and approving test plans *except* when the proposed repair specification affects:

(a) Critical parts, or

(b) Any other repair the ACO determines they will evaluate.

(2) Coordinating and ensuring test article conformity is accomplished.

(3) Witnessing tests.

(4) Evaluating test results and making findings.

g. Signing the applicant's proposed repair specification prior to submittal to FSDO/CMO/IFO. The signature declares the engineering review is adequate and complete. It signifies that the repair specification meets all applicable CFRs and has been adequately substantiated. Signature by the RS-DER is not approval to use the repair specification but an

approval of the engineering aspects of the specification. Authorization to use the repair specification comes from the FSDO/CMO/IFO only.

**h.** Acting as an advisor for repair specification technical issues between FAA and applicant. However the FSDO/CMO/IFO remains the focal point of contact and all communications are thru them.

**3. Qualifications of an RS-DERs.** In addition to the responsibilities in paragraph 2, the RS-DER must be qualified to perform the following duties and have the appropriate experience.

**a. Manage Substantiation Data.** The RS-DER has two basic functions. The first is to make sure the applicant identifies all CFRs applicable to the engineering aspects described in the repair specification. The second is to ensure the data used by the applicant to substantiate compliance to the applicable CFRs is adequate. The RS-DER takes on a role for the FAA similar to an FAA certification project manager. The RS-DER may use other DERs to approve data and make findings to the applicable CFRs. The RS-DER must determine that all DERs the applicant used to find compliance for the repair specification are properly authorized, competent, and reliable.

**b. Oversight Testing.** In general, RS-DERs will act for the ACO to review and approve test plans, coordinate test article conformity, witness tests, and evaluate and make findings on test results. For repair specifications that affect life-limited parts or critical parts the RS-DER can recommend for approval only test plans and test results.

**c. Coordination.** The RS-DER may prepare the minutes of FAA and applicant meetings, coordinate the minutes with the appropriately rated DE's and specialists and submit them to the FAA for concurrence. When appropriate, the RS-DER should draft conformity requests for test articles, coordinate them with the appropriately rated DERs and specialists and submit them to the FAA for review and conformity inspection.

**d. Specific Experience.** The RS-DER must have experience in repair design approvals and managing projects. Managing projects means the responsibility for ensuring all applicable CFRs for the repair have been identified, providing oversight of others developing substantiating data to show compliance to the CFRs, ensuring compliance issues resulting from overlap of engineering disciplines are successfully resolved, and being the primary contact with the FAA for all discussions/decisions on compliance issues for substantiating data. The ACO should consider the following experience levels when appointing a RS-DER:

(1) At least three years experience as a Special—Major Repair, or Special—Major Repair and Alteration DER.

(2) At least five years experience in at least one of the DER disciplines. Depending on experience, a DER may be limited to working on repair specifications for certain types of work (e.g., structures DER could do airframe repair specifications but not engine repair specifications).

**4. Responsibilities of Special Authorization Major Repair DERs.**

**a.** The applicant can use DERs other than RS-DERs to support development of a repair specification if they are authorized as Special—Major Repair, or Special—Major Repair and

Alteration. Unlike RS-DERs, these DERs are not responsible for managing all the data developed to substantiate the repair specification.

**b.** A Major Repair DER or Major Repair and Alteration DER is responsible only for the work they do for the particular aspect of the repair. For example, a DER contracted by the applicant to evaluate compliance to CFRs affecting structure would not have responsibility for electrical aspects of the repair.

**c.** If an RS-DER is involved in the development of the repair specification, the Special—Major Repair or Special—Major Repair and Alteration DER should coordinate and resolve all issues with the FAA through the RS-DER.

**d.** In general, the Special—Major Repair DER or Special—Major Repair and Alteration DER has the following responsibilities:

(1) Evaluating the repair specification to ensure the repair design results in a repair that returns the part or product to its airworthy condition prior to the damage for the aspect (e.g., structural, electrical, material, etc.) of the repair for which they are authorized.

(2) Ensuring all applicable CFRs for their rated discipline (e.g., structural, electrical, material, etc.) of the repair design have been listed and adequately substantiated.

(3) Witnessing tests when delegated by the ACO.

(4) Evaluating test results and make findings for the aspect (e.g., structural, electrical, material, etc.) of the repair design for which they are authorized.

(5) Completing Form 8110-3 for repairs in accordance with Order 8110.37.

**e.** Special—Major Repair or Special—Major Repair and Alteration DERs can not approve the repair specification and must not sign the title page (see chapter 2, paragraph 10). Only an RS-DER, a representative from the ACO, or a representative from the FSDO/CMO/IFO can sign the repair specification.

**5. DER's Role in Repairs Affecting Critical Parts.** An ACO must review all repair specifications affecting critical parts including repair specifications using the services of an RS-DER.

**a.** It's the applicant's responsibility to identify when the repair affects critical parts. If the applicant indicates critical parts are *not* affected, and the DER believes otherwise, the DER must notify the ACO. The ACO must then decide and notify the DER and the FSDO/CMO/IFO. If the ACO agrees with the DER's determination that the repair affects a critical part, the FSDO/CMO/IFO notifies the applicant. If the ACO determines the part isn't a critical part, the repair specification approval process continues.

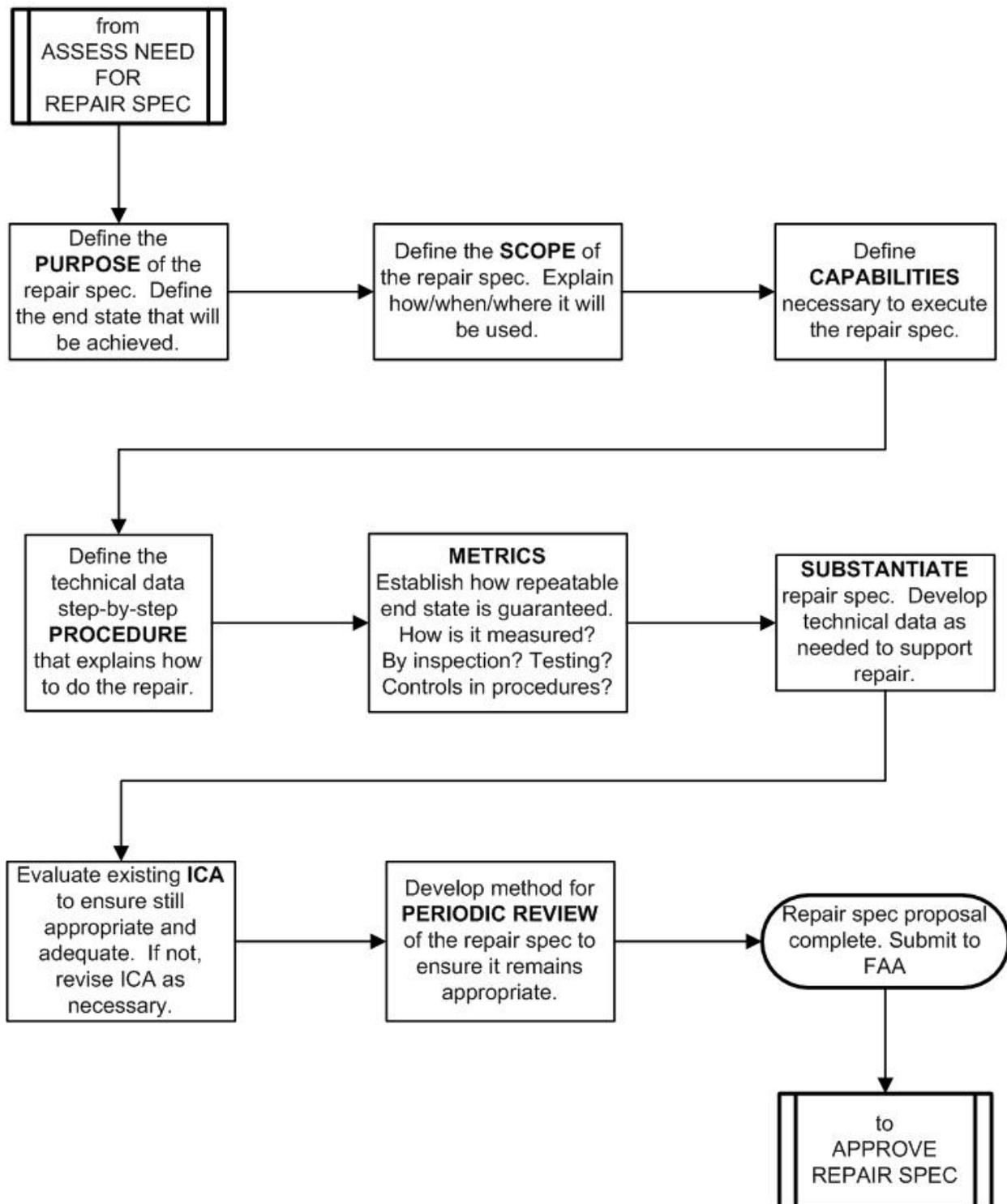
**b.** A DER must not sign FAA Form 8110-3 in support of repair specifications that affect critical parts until the ACO has authorized the DER's participation.

## **6. Approve or Disapprove Substantiating Data.**

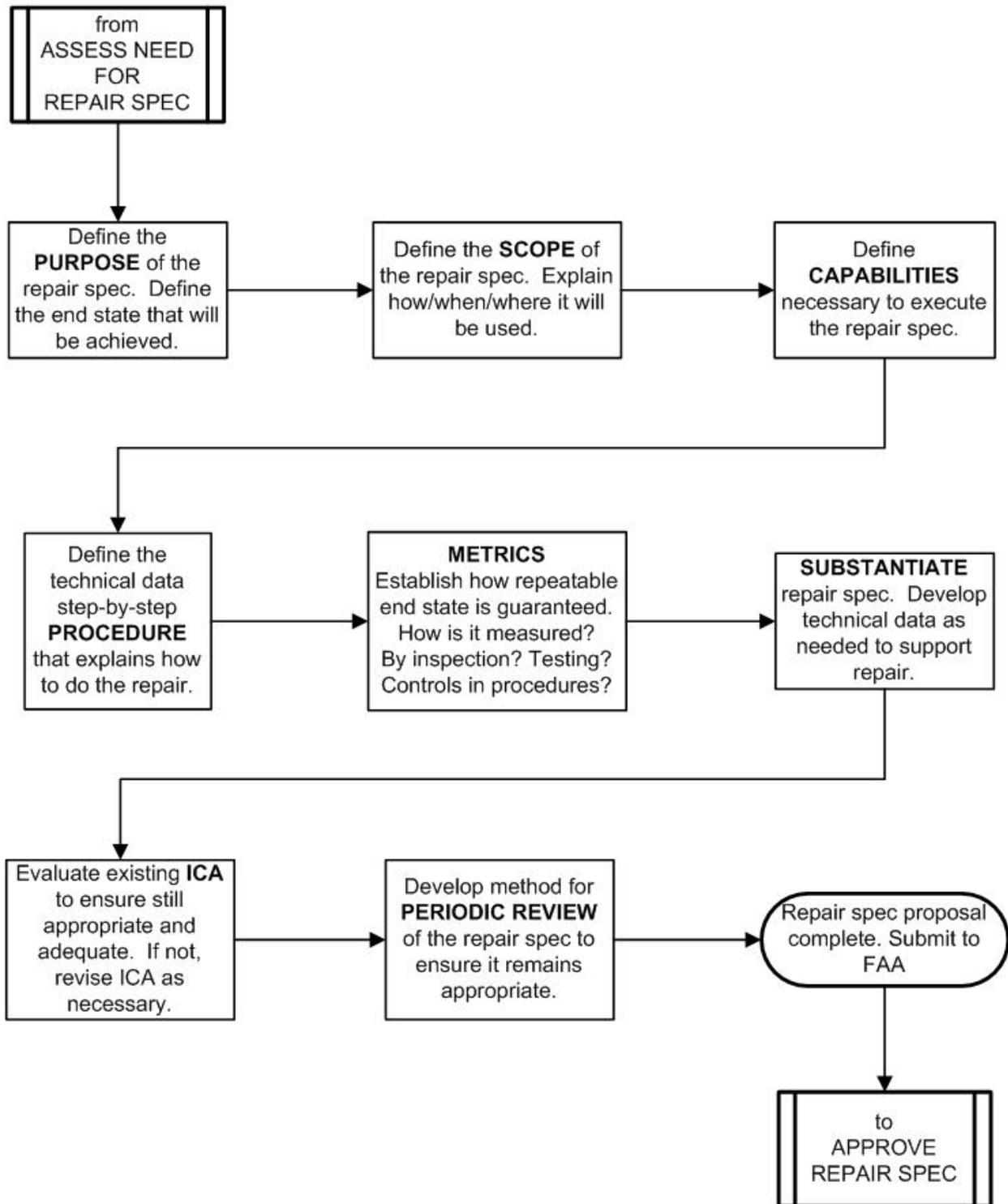
**a. Review Approved Data.** The RS-DER must review all Form 8110-3s submitted by other DERs to determine that all necessary findings of compliance with applicable regulations have been made and that the data is adequate to meet the applicable regulations. The RS-DER can also submit Form 8110-3s to make findings to applicable regulations if appropriately rated for the particular discipline and authorized as a Special Major Repair, or Special—Major Repair and Alteration as explained in paragraph 4.

**b. Approving the Repair Specification.** After the RS-DER, finds the data is adequate to substantiate the repair design and the repair complies with applicable airworthiness CFRs, indicate this by signing the repair specification (see chapter 2, paragraph 10). The RS-DER does not sign Form 8110-3 to approve the repair specification as a whole. The RS-DER signs the title or signature page of the repair specification. If the data is not adequate do not sign the repair specification. The RS-DER can sign the repair specification only after the applicant has resolved all deficiencies.

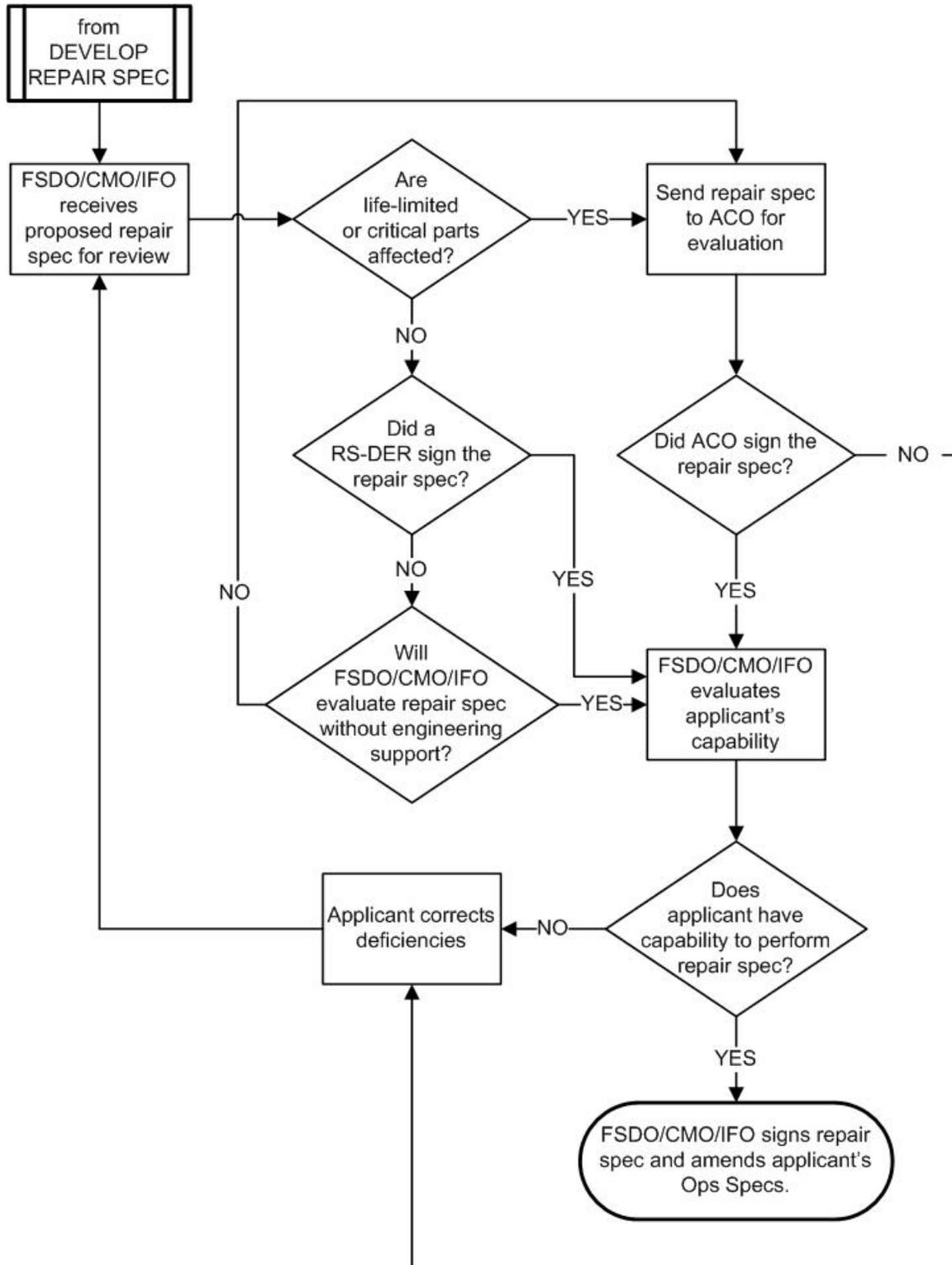
### Appendix A. Flowchart: Assess the Need for a Repair Specification Applicant Responsibility



### Appendix B. Flowchart: Develop a Repair Specification Applicant Responsibility



### Appendix C. Flowchart: Approve a Repair Specification FAA Responsibility



**Appendix D. Acronyms**

<b>14 CFR</b>	Title 14 of the Code of Federal Regulations
<b>ACO</b>	Aircraft Certification Office
<b>AD</b>	Airworthiness Directive
<b>ASI</b>	Aviation Safety Inspector
<b>CFR</b>	Code of Federal Regulations
<b>CMACO</b>	Certificate Management ACO
<b>COS</b>	Continued Operational Safety
<b>CMO</b>	Certificate Management Office
<b>CSTA</b>	Chief Scientific Technical Advisor
<b>DER</b>	Designated Engineering Representative
<b>FAA</b>	Federal Aviation Administration
<b>FSDO</b>	Flight Standards District Office
<b>ICA</b>	Instructions for Continued Airworthiness
<b>IFO</b>	International Field Office (Flight Standards Service)
<b>IPC</b>	Illustrated Parts Catalog
<b>MRB</b>	Material Review Board
<b>ODA</b>	Organization Designation Authorization
<b>PAH</b>	Production Approval Holder
<b>PC</b>	Production Certificate
<b>PMA</b>	Parts Manufacturer Approval
<b>P/N</b>	Part Number
<b>RS-DER</b>	Repair Specification—Designated Engineering Representative
<b>SPAS</b>	Safety Performance Analysis System
<b>STC</b>	Supplemental Type Certificate
<b>TC</b>	Type Certificate
<b>TCDS</b>	Type Certificate Data Sheet
<b>TSO</b>	Technical Standard Order

## Appendix E. Definitions and Terms

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

**Article**, means an aircraft, airframe, aircraft engine, propeller, appliance, or component part. See 14 CFR § 145.3.

**Approved Data**, technical and/or substantiating data that is approved by the FAA. See AC 120-77 or AC 43-210 for examples of approved data.

**Critical**, is a class of parts, appliances, characteristics, processes, maintenance procedures, or inspections where a failure, omission, or non-conformance may cause significant degradation of the airworthiness of a product during all phases of operation.

**Critical Part**, for the purpose of this document, means a part identified as life limited or critical by the design approval holder. Typically, such components include parts for which a replacement time, inspection interval, or related procedure is specified in the Airworthiness Limitations Section (ALS) of the manufacturer's maintenance manual or Instructions for Continued Airworthiness (ICA).

**Design Data**, 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 ALS of the ICA.

**Life-limited Part**, is a part with an established replacement time, inspection interval, or related procedure in the ALS as required by 14 CFR parts 23, 25, 27, and §§ 21.50, 29.1529, 31.82, 33.4, and 35.4.

**Metrics**, are a system of parameters or ways of quantitative and periodic assessment of a process that is to be measured, along with the procedures to carry out such measurement and the procedures for interpretation of the assessment. Metrics are usually specialized by the subject area, in which case they are valid only within a certain domain and cannot be directly interpreted outside it.

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

**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.

**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.

**Source Control Drawing**, is a drawing used to purchase controlled standard parts and/or materials. The purchase of materials from manufacturers other than those listed on the drawing is prohibited.

**Safety Performance Analysis System (SPAS)**, is the FAA's primary source of comprehensive, integrated safety information used by inspectors, analysts, and managers in developing and adjusting field surveillance, investigation, and other oversight programs.

**Substantiating Data**, technical data used to show that an article complies with the applicable airworthiness standards (e.g., part 25 or 33).

**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.

**Technical Data**, drawings and specifications needed to define the configuration and design features of a particular article, repair, or alteration. Typically, this includes information on materials, dimensions, and processes necessary to define structural strength, any required airworthiness limitations, and any data necessary to determine the airworthiness, noise characteristics, fuel venting, and exhaust emissions (as applicable) of the altered or repaired aircraft. Technical data, includes test data and engineering analyses and other engineering information, such as engineering handbooks or approved military or industry specifications. It also includes the step-by-step procedures or work instructions associated with the repair and may include operational and service experience, maintenance and alteration experience, reliability data, and other documented factual information that can be shown to be directly applicable to the airworthiness of the article.

### Appendix F. Sample Title/Signature Page

Specification Name and/or Control Number (Assigned by Applicant)  
[Revision Number and Revision Date]

This repair specification is approved for use only by the organization identified below when acceptance is indicated by appropriately authorized signatures and when authorized by Operations Specifications.

[Company Name]  
[Address]

[FAA Certificate Number and Ratings]

I certify that the repair described in this document will restore the aircraft or aircraft component, as applicable, to an airworthy condition.

\_\_\_\_\_ Date: \_\_\_\_\_

Signature—Certificate Holder’s Authorized Representative

\_\_\_\_\_

Printed Name and Title—Certificate Holder’s Authorized Representative

I find the data are adequate to substantiate the repair design and the repair is compliant with applicable airworthiness CFRs.

\_\_\_\_\_ Date: \_\_\_\_\_

ACO/RS-DER Signature

Office ID/RS-DER ID Number: \_\_\_\_\_

The repair described in this document was found to comply with the applicable airworthiness requirements and is acceptable for use by the organization identified above when authorized by Operations Specifications.

\_\_\_\_\_ Date: \_\_\_\_\_

FSDO/CMO/IFO ASI Signature

Office ID: \_\_\_\_\_

**Changes to the Repair Specification.** The FAA must authorize any change to the repair specification before the applicant implements the change. The repair specification holder must submit all substantiating data to support the proposed change.” Minor changes that do not differ appreciably from the previously authorized data and having no bearing on safety are permitted provided the FSDO/CMO/IFO is notified of the change.

**Fabricating Parts for Use in a Repair.** Persons who want to fabricate parts under a repair specification need to establish a quality control system for making those parts. Parts fabricated under a repair specification are to be consumed within the repair and can not be sold independent of the repair. Parts sold independent of the repair must be approved and manufactured in accordance with 14 CFR § 21.303.

## Appendix G. Related Publications

- 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 online at [www.gpoaccess.gov/cfr/](http://www.gpoaccess.gov/cfr/).
- 2. FAA Orders.** You can get copies of the following orders from the FAA's Flight Standards Information Management System (FSIMS) <http://fsims.gov>.
  - a. Order 8100.5, Aircraft Certification Service Mission, Responsibilities, Relationships, and Programs.
  - b. Order 8100.8, Designee Management Handbook.
  - c. Order 8110.4, Type Certification.
  - d. Order 8110.37, Designated Engineering Representative (DER) handbook.
  - e. Order 8120.2, Production Approval and Certificate Management Procedures.
- 3. FAA Advisory Circulars (AC).** You can get copies of the following orders from the FAA's Regulatory and Guidance Library (RGL) at [www.airweb.faa.gov/rgl](http://www.airweb.faa.gov/rgl).
  - a. AC 43-18, Fabricating Aircraft Parts by Maintenance Personnel.
  - b. AC 43-210, Standardized Procedures for Requesting Field Approval of Data, Major Alterations, and Repairs.
  - c. AC 120-77, Maintenance and Alteration Data.
- 4. 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/>.
- 5. 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](http://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 8300.14

To: Directive Management Officer, AFS-140

*(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: \_\_\_\_\_