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FEDERAL AVIATION ADMINISTRATION

National Policy

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SUBJ: Designated Engineering Representative (DER) Handbook

This order is a handbook of procedures, technical guidelines, limitations of authority, and tools and resources for designated engineering representatives (DERs). We wrote it for all DERs and the ACO staffs that manage them. We designed this handbook to give ACOs and DERs a better understanding of their individual and mutual responsibilities.

All users of this order will familiarize themselves with its contents and comply with the instructions and guidance contained herein.

A handwritten signature in blue ink, appearing to read "Richard E. Jennings".

Richard E. Jennings

Acting Manager, Aircraft Engineering Division
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Chapter 1. General Information

1-1. Purpose. This order prescribes the working procedures to be used by aircraft certification office (ACO) staffs and the designated engineering representatives (DERs) they appoint to represent the Federal Aviation Administration (FAA) Administrator. You will find guidance on selecting, appointing, training, and managing DERs in Order 8100.8, *Designee Management Handbook*.

1-2. Audience. This order is written for Washington headquarters branch levels of the Aircraft Certification Service, Flight Standards Service, and for the branch level of the regional aircraft certification directorates and regional flight standards divisions. It is also written for aircraft certification field offices (ACOs), all manufacturing field offices, the International Policy Office (AIR-40), and to the FAA Academy Regulatory Support Division.

1-3. Where to Find This Order. For a copy of this order, look on the FAA website at http://www.faa.gov/regulations_policies/orders_notices/. You can also get copies from our Regulatory and Guidance Library (RGL) at www.airweb.faa.gov/rgl. On the RGL website, select "Orders/Notices," then select "By Number."

1-4. Cancellation. This order cancels Order 8110.37D, *Designated Engineering Representatives (DER) Handbook*, dated August 10, 2006.

1-5. Explanation of Major Changes. The following is a list of changes made in this revision, along with the applicable section references:

- a. Corrected minor errors and made minor format changes. (all)
- b. Clarified DER responsibilities to have knowledge of Orders and guidance necessary to function as FAA representatives. (2-2)
- c. Added reference to Order 8110.54 for Instructions for Continued Airworthiness (ICA) and added an explanation of the Flight Standards Information Management System (FSIMS). (2-2)
- d. Clarified DER authority as listed on charts. (2-3)
- e. Clarified wording concerning dual DER appointments. (2-4)
- f. Clarified the responsibilities of acoustical DERs with respect to test witnessing and approving test plans. (2-5)
- g. Clarified the use of special authorizations for test witnessing and temporary expansion of authority. (2-6)
- h. Added authority and functions for vintage DERs and Repair Specification DER (RS-DER). (2-6, 3-6)

i. Removed FAA approval delegation of software for DERs for approvals done under the technical standard order authorization (TSOA) process. (2-6, 2-7, samples in appendix C)

j. Removed sample special authorization request form from appendix 3 and added the required request information to text in section 2-6. This allows flexibility on how special authorizations are requested. (2-6, appendix C)

k. Clarified wording for Alternative Method of Compliance (AMOC) delegation when Airworthiness Directives (AD) involve disciplines other than structures, but structural aspects may be involved. Added reference to Order 8110.103 for DERs approving AMOCs and coordinating with the Aircraft Evaluation Group (AEG). (2-6, 2-7, 4-8, appendix C)

l. Added a paragraph outlining DER limitations for restricted category aircraft. (2-7)

m. Clarified DER limitations for predecessor regulations and other airworthiness requirements, and clarified the meaning of DER limitations when finding compliance to non-CFR requirements. (2-7)

n. Added authorization for DERs to approve alternate inspection methods, thresholds, or intervals for AMOC. (2-7)

o. Clarified when it is appropriate to use a DER number with the DER signature. (3-1)

p. Clarified separation of duties between DERs and organization designation authorization (ODA) unit members. Added clarification for when a DER may submit 8110-3 for an ODA project. (3-1)

q. Added a note specifying that ODA unit member activities cannot be used to substantiate work as a DER during DER renewal. (3-1)

r. Removed candidate form from appendix C and added text to section 3-2 to explain how DER candidates may use Form 8110-3, *Statement of Compliance with Airworthiness Standards*. (3-2, appendix C)

s. Added a paragraph about the use of electronic versions of Form 8110-3, and electronic signatures on Form 8110-3. (3-2)

t. Added paragraph for submittal of form 8110-3 for AMOC. (3-2)

u. Clarified DER's role in the request for conformity. Added a reference to Order 8110.44 to the request for conformity process, and added a note to introduce the use of the National Automated Conformity Inspection Process (NACIP) for conformity requests. (4-1)

v. Clarified the authority of a DER to use Form 8110-3 when witnessing tests. (4-4)

w. Clarified DER responsibility to not delegate responsibility for test witnessing. (4-4)

x. Clarified the DER requirement to recommend only when approving PMA for critical parts by identity. (4-11)

y. Clarified DER's authority for major and minor repairs and alterations. Added description of multiple use repair and repair specification (RS) authority. (4-12)

z. Clarified DER's responsibility to record when they have knowledge that additional approvals are necessary beyond their authority for major repairs and alterations. (4-1, 4-12)

aa. Removed DER's responsibility to coordinate with Flight Standards Service for major repairs and alterations. (4-12)

bb. Added requirement for DERs working repairs or alterations for other than standard category aircraft to contact the ACO to properly define the certification requirements. (4-12)

cc. Defined "original" and "properly altered" conditions as it applies to repairs and alterations. (4-12)

dd. Added a paragraph detailing DER authority for approving "future use" repairs and/or alterations. (4-12)

ee. Added wording to specify that an approved repair may not invalidate the approved certification basis of the aircraft. (4-12)

ff. Refined the description of a process specification to better distinguish it from a Repair Specification. (4-12)

gg. Clarified the DER's prohibition against findings of compliance to a TSO for repairs. Repairs to TSO articles must still be approved to the applicable airworthiness requirements. (4-12)

hh. Clarified expectation of DER's role when approving data for major alterations requiring supplemental type certificates (STCs). (4-12)

ii. Added text to clarify DER's role in instructions for continued airworthiness (ICA) acceptance for major repairs and alterations. (4-12)

jj. Added new paragraph 4-13 and revised paragraph numbers to insert the definition of an RS and add responsibilities, functions, and limitations of RS-DER. (4-13)

kk. Added new section 4-16 describing DER's responsibility when approving data with human factors implications. (4-16)

ll. Added new section 4-17 for data approval in support of 14 CFR 21.8(d). (4-17)

mm. Added new section 4-18 for Commercial Parts. (4-18)

nn. Added airborne electronic hardware references and revised wording on the list of functions reserved for the FAA. (appendix A)

oo. Modified Form 8110-3 to add block numbers and revised wording in certification section. Revised form title to “Statement of Compliance with Airworthiness Standards.” (appendix C)

pp. Rearranged figures, deleted DER candidate form, and deleted request for special authorization form. (appendix C)

qq. Added example of purpose of data on Form 8110-3 when supporting a global AMOC. (appendix C)

rr. Added a note and examples in appendix C for guidance on how to list approved data when more than one DER signs a form 8110-3. (appendix C)

ss. Inserted a new example in appendix C, Sample of Repair Specification Title/Signature Page. (appendix C)

tt. Updated acronym list. (appendix D)

1-6. Deviations. Adherence to procedures in this order is necessary for uniform administration of the DER program. Any deviations from this guidance material must be coordinated and approved by AIR-100. If a deviation becomes necessary, the FAA employee involved should ensure the deviations are substantiated, documented, and concurred with by the appropriate supervisor. A copy of the deviation must be submitted to AIR-100 for review and concurrence.

1-7. Acronyms and Definitions. Appendix D contains definitions for certain key terms, and a list of all acronyms and their meanings as used in this order.

1-8. Administrative Information and Feedback. Appendix E provides information on distribution of this order, authority to change it, record keeping, and suggesting improvements. Form 1320-19, Directive Feedback Form, is used to suggest improvements to an order. A copy of this form can be found in appendix F at the back of this order.

1-9. Effective Date. This order is effective when signed. Compliance date of this order is 60 days after the order is signed.

Chapter 2. DER Authority and Limitations

2-1. DER Establishment.

a. Title 49, United States Code, Section 44704 (49 U.S.C. § 44704) empowers the Administrator to issue type certificates (TC) for aircraft, aircraft engines, and propellers, and to specify regulations as applicable to the type certification function. Section 44702(d) authorizes the Administrator to delegate to a qualified private person, or to an employee under the supervision of that person, a matter related to the examination, testing, and inspection necessary to the issuance of such certificates. Delegations are limited in scope: all requirements, policy, direction, and interpretations remain with the Administrator.

b. Title 14 of the Code of Federal Regulations (14 CFR) part 183, *Representatives of the Administrator*, prescribes the requirements for designating private persons to act as representatives of the Administrator in the examining, inspecting, and testing of persons and aircraft for the purpose of issuing airman and aircraft certificates. 14 CFR part 183, subpart B empowers the manager of an ACO, or the manager's designee, to select DERs from qualified persons who apply. Designation of a private person as a DER is a privilege granted by the Administrator. It is not the right of every qualified applicant to receive a DER designation. 14 CFR § 183.29 defines the privilege for appointments in the following technical fields:

- (1) Structural engineering,
- (2) Powerplant engineering,
- (3) Systems and equipment engineering,
- (4) Radio engineering,
- (5) Engine engineering,
- (6) Propeller engineering,
- (7) Flight analyst,
- (8) Flight test pilot, and
- (9) Acoustical engineering.

2-2. DER System. The DER system enables the FAA to use qualified technical people to perform certain exams, tests, and inspections necessary to comply with applicable airworthiness standards. A DER must follow the same procedures that an FAA engineer must follow when performing compliance finding functions, such as those appearing in Order 8110.4, *Type Certification*, Order 8110.42, *Parts Manufacturer Approval Procedures*, and Order 8110.54, *Instructions for Continued Airworthiness Responsibilities, Requirements, and Contents*. It is also important that a DER be familiar with certain sections of Order 8900.1, *Flight Standards Information Management System (FSIMS)*. The FSIMS order contains guidelines for determining which proposed alteration projects

require engineering approvals that necessitate certification by way of a Supplemental Type Certificate (STC). A DER offers technical expertise with state-of-the-art knowledge. An FAA specialist understands the framework of critical regulations that allow technology to be applied safely. The DER and the FAA are both responsible to assure that the DER system is properly administered. The FAA will decide when to get directly involved in a project and the nature of that involvement. The DER will accept increased involvement as necessary for conducting business and obtaining certifications. Our interaction with DERs is highly interdependent, building on the mutual interests that we have in achieving the highest level of safety.

2-3. DER Authorities. DERs may approve or recommend approval of engineering technical data within the limits of their authority by means of Form 8110-3. A recommendation for approval of technical data for a finding of compliance to airworthiness standards can only be made by an authorized DER. An ACO may also authorize a DER to witness FAA compliance tests and perform compliance inspections. Specific roles, authorized areas, and responsibilities of a DER are established by an agreement between the ACO and the DER at the initial appointment of a DER, and, may be further limited for specific FAA projects. The DER's authorized areas within specific delegated functions are listed in the form of the charts in appendix B, or in an on-line system that defines DER authority by rule.

Note: Management and administrative DERs have no authority to approve or recommend approval of data. Their functions are administrative only.

2-4. DER Categories.

a. Company DER. An ACO may appoint an individual to act as a company DER for the employer. A company DER may only approve, or recommend approval of technical data for the company. If a company DER is assigned to work in a consortium, business arrangement (such as using another company's DERs), partnership or licensing agreement, the DER's managing office will define the limits of the DER's authority.

b. Consultant DER. An ACO may appoint an individual to act as an independent (self-employed) consultant DER to approve, or recommend approval of technical data for a client.

c. Dual Appointments. An ACO may appoint an individual to act both as a company DER and consultant DER. In such a case, an ACO makes two separate appointments and issues separate certificates of designation. The ACO will advise the DER that the employer should be informed of the dual appointment. An ACO may authorize the consultant DER delegation for areas different from the company DER delegation, depending on the individual's experience and the limitations the ACO places on the DER. There are benefits to having both of these appointments managed by the same ACO. If the company DER delegation and the consulting DER delegation are in the geographic area of responsibility of two different ACOs, the two ACOs will work together to determine the best method of managing the dual delegation.

d. DER Candidate. If an applicant meets all the requirements for a DER designation, but lacks significant experience in a direct working relationship with the FAA, the ACO may identify the applicant as a DER candidate. Candidates don't have the authority to approve or recommend

approval of data on Form 8110-3, but must review and submit data to the FAA to prove their ability to function as a DER. After demonstrating this capability, a DER candidate will be delegated authority as a DER providing the ACO has a need for the DER and the ACO has the ability to manage the DER.

2-5. DER Designations.

a. Structural DERs may approve, within the limits of their appointment, the following items that comply with pertinent regulation(s):

- (1) Engineering reports,
- (2) Drawings,
- (3) Material and process specifications used in structural applications, and
- (4) Other data relating to structural considerations.

b. Powerplant DERs may approve, within the limits of their appointment, the following items that comply with pertinent regulation(s):

- (1) Engineering reports,
- (2) Drawings, and
- (3) Other data relating to powerplant installations, including all systems, parts, and equipment necessary for the proper operation of a powerplant.

c. Systems and Equipment DERs may approve, within the limits of their appointment, the following items that comply with pertinent regulation(s):

- (1) Engineering reports,
- (2) Drawings, and
- (3) Other data relating to aircraft systems, parts, and equipment design not covered by structural or powerplant representatives.

d. Radio DERs may approve, within the limits of their appointment, the following items that comply with pertinent regulation(s):

- (1) Engineering reports,
- (2) Drawings,
- (3) Tests, and

(4) Other data relating to the design and operating characteristics of radio equipment being manufactured and/or modified.

e. Engine DERs may approve, within the limits of their appointment, the following items that comply with pertinent regulation(s):

(1) Engineering reports,

(2) Drawings, and

(3) Other data relating to durability, materials, and processes employed in engine design, operation, and maintenance.

f. Propeller DERs may approve, within the limits of their appointment, the following items that comply with pertinent regulation(s):

(1) Engineering reports,

(2) Drawings, and

(3) Other data relating to propeller blade and hub design, pitch control, propeller governing, and maintenance, provided these items comply with the applicable regulation(s).

g. Flight Analyst DERs may approve, within the limits of their appointment, the following items that comply with pertinent regulation(s):

(1) Aircraft performance flight test data,

(2) Aircraft quantitative operating data, and

(3) Flight characteristics data.

h. Flight Test Pilot DERs may conduct flight tests and prepare and approve flight test information, within the limits of their appointment.

i. Acoustical DERs may witness and approve within the limits of their appointment:

(1) Noise certification tests conducted in accordance with an FAA approved test plan,

(2) Noise data,

(3) Noise analyses, and

(4) Test results that were measured and evaluated as prescribed in 14 CFR part 36, subparts A through J, or by an equivalent procedure previously approved by the FAA Office of Environment and Energy (AEE).

Note: Although acoustical DERs may witness and approve the items in (1) through (4) above, DERs may only recommend approval of test plans and final noise certification compliance reports. Approval of the test plans and compliance reports is reserved for the FAA.

2-6. DER Special Delegations/Authorizations.

a. A DER may be appointed to approve technical data not specifically listed in the charts of appendix B. Each chart has an authorized area called "Special," with delegated functions to address this contingency. When we authorize a special delegation, we list the "special" authorized area and specifically define the function. A DER must have significant experience in the appropriate area in order to be given a special delegation. The following "Special" delegations may be authorized:

(1) **Administrative/Management DERs** are qualified persons appointed as administrative coordinators or managers of an applicant's certification program. We assign these persons the designation of administrative DER or management DER. These special designations are not associated with a particular chart for DER authority. It must be recognized that the management DER and administrative DER are not actually DER types with authority prescribed by 14 CFR part 183, but rather special authorizations that were introduced by FAA policy. These authorizations were established to recognize certain individual's capability to provide assistance to the ACO in administrative and project management aspects of certification. In performing this role, an administrative/management DER does not use Form 8110-3.

(a) **Administrative DERs** act as focal points for FAA coordination activity, including organizing technical DER activity, correspondence, schedules, meetings, conformity inspections, and FAA participation in official tests. Administrative DERs perform administrative tasks only and therefore are not required to be appointed under one of the delegations listed in 14 CFR § 183.29.

(b) **Management DERs** perform FAA certification project management duties for the Agency, acting like an FAA project manager. They organize the applicant's certification program, directing, overseeing, and managing the task of technical assessments and findings of compliance. Management DERs ensure that all technical data required to show compliance is reviewed and approved by the appropriate technical DER, except those items reserved by the FAA for approval. In order to establish their capability as FAA project managers, we must first appoint a management DER under one of the delegations listed in 14 CFR § 183.29.

(2) **Major Repairs and Major Alterations.** A DER requires specific authorization to examine and approve data for major alterations and/or major repairs. We may assign a DER the authorized area of “Special - Major Repairs” and/or “Special - Major Alterations,” which will be related to the DER’s basic delegations. A DER only needs this delegation if Form 8110-3 will be referenced as the approved data for a specific major repair or major alteration. The specific authorizations are:

- (a) Special - Major Repairs.
- (b) Special - Major Alterations.
- (c) Special - Major Repairs and Major Alterations.
- (d) Special – Manage and Approve Repair Specifications.

Note 1: An authorization for major repairs and/or major alterations limited to vintage airplanes and/or engines may be given to those individuals who do not meet the conventional appointment criteria, but meet alternate criteria for vintage airplane and/or engine data approvals. Requirements for appointment of DERs with this authority are found in Order 8100.8.

Note 2: DERs granted a special delegation for major repairs may be specifically authorized for multiple-use, non-serial number specific repairs.

Note 3: Service documents and overhaul manuals produced by the original design/production approval holder are not considered major repair or major alteration data that require this specific authorization.

Note 4: DERs exercising their authority for major alterations may only approve data consistent with the category of alterations listed in Order 8900.1, Volume 4, Chapter 9, Section 1. The DER does not require the special delegation for alterations in order to approve data in support of an STC or TC amendment that will result in an alteration.

(3) **Parts Manufacturer Approval (PMA) Identity.** A DER requires specific authorization to examine and make findings of identity to obtain a PMA. This is only appropriate where DERs have access to the original Design Approval Holder’s (DAH) data, allowing them to make a direct comparison of design data.

Note: We authorize test and computation findings within the scope of the DER’s basic delegation.

(4) **Alternative Methods of Compliance (AMOC) with ADs.** We may give a DAH's company structural DER the authority to approve AMOCs for specific ADs with structural aspects (i.e., structural ADs, or ADs involving other disciplines in which structure may be affected by repair, modification, or alteration) where the intent of the AD is to restore the airplane to its type certification basis or other known, defined, and published standards (see paragraph 4-8 in this order for details of this process). DERs with a special delegation for AMOC must follow the same procedures as an ACO engineer when approving the AMOC and coordinating with the Aircraft Evaluation Group (AEG). AMOC procedures are found in Order 8110.103, *Alternative Methods of Compliance (AMOC)*.

b. Special Authorizations. Depending on the complexity of the project, we may vary the level of data approval and/or the delegation we grant a DER within the DER's scope of authorization. A project ACO manager or manager's representative may issue a special authorization, in writing, permitting a DER to approve data normally reserved for us (i.e., witness tests, approve test plans) within the DER's scope of authorization. The special authorization must be specific in delegation, time-limited, and valid only at the ACO which issued the authorization. DERs may be authorized to witness tests outside their area of authority provided that the DER (1) is authorized to do so by the ACO, and (2) does not make the final compliance finding. Verbal authorization from the ACO is permitted in some cases, such as witnessing tests, if the DER documents it on the subsequent Form 8110-3 or other acceptable method. When requesting a special authorization, the DER must provide the ACO with the following information:

(1) FAA project number.

(2) Aircraft, engine, or propeller model.

(3) Requested delegation. Describe what you seek the authority to accomplish. For test witnessing, provide the title and number of the test plan. For data approval, provide the type of data, certification plan number and title, applicable regulations, guidance material, etc.

(4) Additional information, such as location, duration schedule, etc.

Notes: 1) ACOs may have their own specific requirements for submitting a request for special authorization.

2) A special authorization must not be used to grant a time-limited expansion of authority. Expansions of authority must be processed in accordance with Order 8100.8.

2-7. DER Limitations. DERs can only find compliance in the delegated functions and authorized areas for which they were appointed. A delegated function applies to the technical areas involved in determining compliance with applicable airworthiness regulations. An authorized area applies to the specific portion or system of an aircraft or the type of engine or propeller or specialized area to which a delegated function is applicable.

a. Predecessor Regulations and Other Acceptable Airworthiness Requirements.

(1) **Predecessor Regulations.** Authority for a 14 CFR part includes authority for the associated predecessor regulations for that part. For example, authority for 14 CFR part 25 includes Civil Air Regulation (CAR) part 4b; authority for 14 CFR part 23 includes CAR part 3, and so forth.

(2) **Restricted Category Regulatory Basis.** DERs approving data in support of restricted category aircraft should check with their advisor for the best course of action regarding the certification basis.

(3) **Other Acceptable Airworthiness Requirements.** Non-CFR certification requirements that we have adopted or accepted for special classes of aircraft must be specifically identified in a DER's authority in order for a DER to approve data that meets those requirements. Non-CFR requirements that we recognize include the airworthiness standards accepted for primary category airplanes, airship design criteria, and the Joint Aviation Requirements (JAR) and European Aviation Safety Agency (EASA) Requirements for Very Light Airplanes (VLA).

b. Items Requiring FAA Approval. The FAA retains authority and responsibility for establishing the certification basis and issuing any special conditions, exemptions, equivalent level of safety findings, TCs, PMAs, and TSOAs. This limits the data that a DER can approve. Appendix A, Limitations on DER Functions, paragraph 1, lists items that must be approved or issued by FAA employees. In addition, some interpretations and decisions may only be made by FAA employees as described below:

(1) **Interpreting 14 CFR.** When DERs have questions about the interpretation of a 14 CFR part, including the use of new or unconventional materials and processes, they must consult with the ACO staff. A DER is not authorized to interpret regulations. A DER must be guided by existing polices, procedures, specifications, processes, and standards. A DER must consult with the ACO before departing from existing procedures in making findings of compliance.

(2) **Determining if Type Design Changes are Major or Minor Changes.** The applicant decides whether a type design change is major or minor, as defined in 14 CFR § 21.93. The FAA retains final approval of that decision, and it cannot be delegated.

(3) **Determining if Type Design Changes are Acoustic or Emission Changes.** The FAA has the final responsibility to determine whether a design change is or is not an acoustic or emission change.

(4) **Impact of Major Changes on Certification Programs.** A DER must consult with the ACO regarding the extent and effect of a major change to determine if:

(a) Ooriginal design requirements (airworthiness regulations, basic load criteria, and test results) still apply;

(b) Tthe original application for TC will be affected; and

(c) Additional analyses, flight tests, ground tests, or ground inspections are necessary.

c. Items Likely to be Reserved for FAA Approval. Our decision to delegate is influenced by the extent of our own knowledge and expertise, and that of the proposed DER. We must also consider the impact of the delegated task on safety, and the political sensitivity of the task. With this in mind, we generally reserve for ourselves the approval of items listed in appendix A, paragraph 2. If we do delegate, we should do it carefully and consistently as follows:

(1) **Test Plans.** A DER may approve test plans only when specifically delegated by the ACO. This delegation can be documented in the DER's certificate of authorization or granted on a case-by-case basis. If not delegated this function, a DER may only recommend approval in the submittal to the ACO. Acoustical DERs are only authorized to recommend approval of test plans and final noise certification compliance reports.

(2) **Airplane Flight Manual (AFM) and Rotorcraft Flight Manual (RFM) Data.** A DER requires specific authorization to examine and approve data on loading schedules or devices, weight and balance reports, equipment lists, flight manual revisions, and related reports.

(3) **Service Documents Related to ADs.** A properly authorized DER can approve engineering aspects of service documents (e.g., the associated design change) and revisions. However, if the FAA has issued, or intends to issue, an AD that addresses an unsafe condition that is the subject of a service document, then a DER must coordinate with the project ACO and obtain concurrence prior to approving the engineering aspects of the service document. The FAA may reserve the approval of AD-related service documents and revisions.

(4) **PMA Design Approvals.** A DER may make findings of identity or findings of compliance to the airworthiness requirements by test and computation that contribute to PMA design approvals, within the scope of delegation from the project ACO. The DER must be specifically authorized to make a finding of identity by the managing ACO.

(5) **TSO Authorizations.** The TSO process, described in 14 CFR part 21, Subpart O, is significantly different than the TC processes. For the TSO process, persons who are DERs may not use their DER authority, but may contribute to TSO authorizations in these two ways:

(a) Based on their knowledge and experience, they may be the most appropriate persons to review and submit data or witness tests on behalf of a TSO applicant. They may not use Form 8110-3 to approve data.

(b) When authorized, approve type design data for equipment that may eventually get a TSOA. This is common when the equipment is used on prototype aircraft in a TC project concurrent with a TSOA project.

Note: DERs are not authorized to find compliance to any TSO requirement in support of an application for TSOA. DERs can only make a finding to a regulation. TSO is not a

regulation; therefore finding of compliance to a TSO requirement is not appropriate.

(6) **Approval of Alternative Methods of Compliance (AMOC) to an AD.** An ACO that initiates an AD may either approve an AMOC related to that AD or, in certain cases, delegate AMOC approval to a DER (see paragraph 4-8 in this order for details of this process). This delegation is given only to some structural company DERs who work for the affected Design Approval Holder. The delegation must be only for the defined deviations to ADs for repairs, modifications, or alterations to a *single* aircraft, except as follows: The same AMOC may be approved repeatedly on separate 8110-3s for multiple aircraft that are determined eligible. In circumstances, when the DER has documented a pattern of identical approvals and it has been demonstrated that the AMOC is applicable to a defined fleet of aircraft, the DER may be authorized to approve a global AMOC if coordinated with the responsible ACO.

(a) An AMOC related to the following items may *not* be delegated:

- 1 Adjustments to compliance times;
- 2 Changes to operating limitations;
- 3 Continued operation with unrepaired damage; and
- 4 Discretionary judgments of acceptability.

(b) For an AMOC that involves a temporary repair, the temporary repair must:

- 1 Meet the certification basis of the aircraft;
- 2 Be designed so that the durability of the most critical detail of the temporary repair is greater than 18 months (based on projected aircraft use); and
- 3 Be replaced by a permanent repair or terminating action within 24 months.

Further, we require the temporary repair to be designed so its inspection threshold is greater than its replacement period. In other words, there should not be a need to inspect the temporary repair while it remains installed.

(c) An authorized DER may approve an alternate inspection method, threshold, or interval where a new repair or modification results in the inability to accomplish the existing AD mandated inspection, or necessitates a change in the existing AD inspection threshold. The standard for these approvals is the appropriate damage tolerance regulation (e.g. 14 CFR 25.571, Amendment 45 or later).

Chapter 3. DER Administration

3-1. FAA Expectations for DERs.

a. Training. Training requirements for DERs are listed in Order 8100.8 and may be supplemented by a managing ACO. Many different types of training are available. We offer initial and recurrent DER seminars. A DER can also attend FAA training courses, workshops, and interactive video teletraining (IVT) programs, based on availability. There are links to these training programs on the FAA website at www.FAA.gov.

b. DER Independence. A DER must have the ability to maintain the highest degree of objectivity, adequate time to perform all assigned duties, and adequately represent the FAA. For a company DER, the company must afford the DER that independence.

c. DER Indemnification Status. A DER, when acting under a DER appointment, represents the FAA. A DER is not an employee of the FAA, or of the United States government, and is not federally protected for the work done or the decisions made as a DER. As a private individual, a DER is subject to general tort law. Company DERs should consult their employer for company policy regarding indemnification. We cannot shelter or protect DERs from the consequences of their findings.

d. Good Practices. DERs need general knowledge of the overall DER system and FAA certification procedures so that they and the ACO can work together as a team. We expect a DER, while acting for us, to be guided by "good practice" principles. "Good practice" is developed through experience and know-how over the years, and carries with it a high degree of confidence. Good practice exemplifies what has shown to be reliable and satisfactory. A DER must not sign an 8110-3 form before all substantiating data is available and has been identified on the form. An ACO detecting DER methods or procedures inconsistent with, or departing from, good practice must bring this to the DER's attention. The ACO will then monitor the DER for compliance with good practice, and can consider further deviations as misconduct, and grounds for termination of the DER authorization.

e. Changes. A DER must notify the managing ACO of any change of status, such as a change in base of operation or leaving the employer who requested the DER appointment. It is a DER's responsibility to ensure that ACO records (contact information including address and phone) are current. A company DER's authorization is terminated when they leave the company that requested the DER appointment. If, however, a DER also holds a separate appointment as a consultant DER, that authorization is not terminated when the DER leaves the company.

f. Operating Outside ACO Area.

(1) **A company DER** may function in any geographic area in which the company conducts business.

(2) **A consultant DER** may function in any geographic area.

(3) **When a DER works on a project managed by an ACO other than the managing ACO**, the DER must follow the project ACO's plans for submittal of an original Form 8110-3 with related technical data. The DER must also submit copies of completed Form 8110-3 to the managing ACO in order to document all activities. Failure to submit the form(s) may result in termination of an appointment.

g. DER Responsibility When Using Other Engineers. We allow DERs to use as many experienced engineers as needed to completely evaluate engineering technical data; however, the DER accepts the responsibility for approving the technical data when signing a Form 8110-3. A DER may decline to approve any or all portions of the technical data, and may send such data to us for approval. When this happens, we expect the DER to specify reasons for not approving the data.

h. Using Department of Transportation (DOT)/FAA Logos. No DER is authorized to use the DOT or FAA logo on business cards, letterheads, facsimile covers, document covers, or any other business forms. A DER is not a government employee. Use of a logo may result in termination of a DER appointment.

i. Using DER Numbers. We do not permit DERs to use their DER identification number when signing company or personal reports, drawings, service documents, or letters. A DER's signature does not constitute FAA approval. However, we encourage DERs to review and coordinate on certification documents submitted to us, such as certification plans or conformity inspection records. In this case, DERs may use their DER number and title to indicate that they reviewed the documents as an FAA representative. In addition, DERs with the special authority of Repair Specification (RS) may use their DER number when signing the RS.

j. Separation of Duties. An ODA may identify individuals who are DERs as unit members (UM). DERs should be aware that the functions they perform as UMs in one of these organizations are separate and distinct from the delegated functions performed as a DER. A DER does not issue Form 8110-3 in support of ODA projects, except when a TC holder's DER is supporting an MRA ODA.

Note: DERs should be aware that the work they perform as an ODA unit member should not be considered for DER renewal. In order to show currency for their DER certificate, they should perform the functions of a DER. In some circumstances, when it is advantageous to the FAA, the DER's managing ACO may choose to consider UM technical activity as acceptable for DER renewal.

k. Coercion. No one should force DERs to approve technical data that they have not had enough time to review, or data that they do not find complies with the applicable airworthiness requirements. A DER must report any coercion to the project ACO.

3-2. Form 8110-3, Statement of Compliance with Airworthiness Standards.

a. Using Form 8110-3. A completed Form 8110-3 is the DER's only means of approving technical data. We permit Form 8110-3 to be computer-generated, but a computer-generated form must be so identical to the stock FAA-printed form such that there is no doubt about what the form is and how it is being used. A computer-generated form must be the same size; have the same

general layout and configuration; use the same sequencing, numbering, and arrangement of information; and use the identical wording of the stock form. Computer-generated and stock FAA printed forms may be used interchangeably. A DER must ensure the accuracy of the information on the form. Sample Forms 8110-3 are shown in appendix C, figures 1 - 3. Appendix C, figure 1 prescribes specific requirements and instructions for correctly preparing Form 8110-3.

b. Distribution of Form 8110-3.

(1) **Certification Activities.** A DER must send all original Form(s) 8110-3 to the project ACO except for data approvals supporting a major repair/alteration. The DER sends copies of all forms to the managing ACO, if the managing ACO is not also the project ACO.

Note: A project ACO may have more specific requirements for submitting Form 8110-3.

(2) **Major Repair and Major Alterations.** A DER must submit the original Form 8110-3 to the managing ACO. A DER submits a copy of Form 8110-3 supporting a major repair or a major alteration to the owner/operator or repair station who requested the approval.

(3) **In Support of Foreign Civil Aviation Authority (CAA) Requirements.** A DER must provide the original Form 8110-3 and substantiating data to the project ACO for review and concurrence. The project ACO will transmit FAA approval to the foreign CAA.

(4) **Alternative Methods of Compliance.** For a Form 8110-3 used to support an AMOC issued by the responsible ACO, the DER must submit the original to the ACO responsible for the AD, with a copy to the managing ACO. DERs must distribute delegated AMOCs in accordance with FAA Order 8110.103.

c. Maintaining File. A consultant DER is responsible for maintaining a file with copies of each Form 8110-3 signed and any associated data. For a company DER, the company is responsible for maintaining this file. A DER must provide copies of Form 8110-3 and associated data when we request it.

d. Omissions and Errors. Careful preparation and use of Form 8110-3 is important. DERs should be aware that omissions and errors in approvals can delay certification programs and could ultimately result in a reduction or termination of their authority. Some common mistakes are failing to:

- (1) Sign the form;
- (2) Include full titles, revision levels, or dates for listed documents, reports, etc.;
- (3) Include each complete drawing number or a drawing list, with revision levels or dates and titles;
- (4) Specify those portions of the data that are approved, and those portions of the data that the FAA must evaluate;

- (5) Check the "recommend" or "approve" box;
- (6) Submit the original Form 8110-3 to the project ACO;
- (7) Reference specific section(s) in the regulations in the "Applicable Requirements" block, including amendment levels;
- (8) State the project number in the "Purpose of Data" space;
- (9) Approve data only within the DER's delegated functions and authorized areas; or
- (10) Properly identify the aircraft make as it relates to the existing TC; this includes restricted category aircraft, where the DER should identify the information from the 'Restricted category' TC and not from the 'Normal category' TC.

e. A DER candidate may use Form 8110-3. One of the following procedures may be used to document a DER candidate's review of engineering design data and participation in a certification project:

(1) A DER candidate prepares the Form 8110-3 and enters the following note in the title box of the form: "The above data has been reviewed by DER candidate" followed by the printed name and written signature of the candidate (see sample shown in appendix C, figure 2). The form and data are submitted to an authorized DER who, when satisfied with the data submittal, approves or recommends approval of the submittal by checking the "Approve (or Recommend Approve) these data" block, signing in the signature block of Form 8110-3, and submitting the form and accompanying data to the ACO.

(2) A DER candidate partially completes Form 8110-3 with the statement listed in item (1) above. The DER candidate then submits Form 8110-3 and the accompanying data directly to the ACO for review and approval. No DER signature appears on the Form 8110-3 using this method.

f. Electronic Form 8110-3 and electronic signatures.

(1) An electronic version of Form 8110-3 is available on the FAA website for DER use. Locally generated forms are allowed as long as they retain the same dimensions and format.

(2) Electronic signatures on the Form 8110-3 can be authorized for use by the DER's managing office and can be used for submitting data only to that office under an agreement as specified in Order 8000.79, *Use of Electronic Technology and Storage of Data*, and FAA-IR-01-01A, *Aircraft Certification Guide for the Use of Electronic Technology and Alternative Methods of Storing Information*.

3-3. Administrative DER Functions. An administrative DER performs the following functions:

- a. Acts as focal point of contact and coordination for FAA certification activities.
- b. Ensures that all data submitted are properly organized, identified, coordinated, and if appropriate, approved by an appropriately rated technical DER.
- c. Ensures that all data are forwarded to us as agreed in the certification plan.
- d. Ensures that each Form 8110-3 is correctly completed (including the list of applicable regulations and appropriate signatures). If discrepancies are found, the DER must return the data to the originator for evaluation and correction.
- e. Gives us regular status reports on all open projects, including schedules, conformity requirements, upcoming tests (Company or FAA), technical problems/issues, etc. A DER must inform us as soon as possible of any project or priority changes that may affect the certification effort.
- f. Establishes a certification plan/compliance checklist early in the program, coordinates it with the technical DERs, updates it periodically, and submits it to us for acceptance.
- g. Supports and coordinates FAA requests for information on accidents and service difficulties with the appropriate disciplines, and provides follow-up information.

3-4. Management DER Functions. A management DER performs the following functions:

- a. FAA certification project management duties, including those identified in paragraph 3-3. A management DER will use other DERs to accomplish the design compliance reviews and make the specific technical findings. A management DER must ensure that the other DERs are properly authorized, competent, and reliable when they accomplish the certification compliance review work.
- b. Ensures that the applicant creates a certification plan (if appropriate) early in the program. This plan will show all necessary steps and milestones for the certification project arranged in their proper and logical order. The DER coordinates the plan with the applicant and FAA program manager.
- c. Advises us of any design features that might require special conditions, exemptions, equivalent safety findings, or any unsafe features or characteristics.
- d. Determines that the technical DERs accomplished all necessary findings of compliance with applicable regulations.
- e. When requested, prepares the minutes of FAA and applicant meetings, coordinates them with the appropriate DERs and specialists, and submits them to us for concurrence. When appropriate, prepares conformity requests and type inspection authorizations (TIAs), coordinates with the authorized DERs and specialists, and submits them to us for review and issuance.

3-5. Management/Administrative DER Submittals to the FAA. Neither administrative nor management DERs are authorized to sign a Form 8110-3. The role of these DERs is non-technical. The only use of Form 8110-3 is for an authorized DER to make a technical finding of compliance to airworthiness regulations and other requirements as described in paragraphs 2-6 a(3) and (4) of this order. Documents such as certification plans, compliance checklists, conformity plans, project schedules, and a proposed certification basis are all valued by the FAA for their contribution to effective project management. However, none of them is appropriate for approval by a DER via Form 8110-3 indicating they are compliant with 14 CFR regulations. It is acceptable and often desirable for an appropriately authorized DER, such as an administrative or management DER, to submit these documents via letter, signed cover page, or a locally created form. These documents indicate that a DER has reviewed the submittal and has found it to be acceptable for the FAA project. The letter, cover page, or other form may not indicate approval of the referenced data or findings of compliance to 14 CFR. DERs can be authorized to use their DER number and title to indicate that their review was performed as an FAA representative.

3-6 RS-DER Functions. DERs granted the specific authority to manage and approve technical data in the RSs are called Repair Specification – Designated Engineering Representative (RS-DERs). An RS-DER has the responsibility to manage the data approval portion of an RS and either approve the specific technical data via form 8110-3 or ensure that other DERs with specific authority approve the data. RS-DER authority requires project management skills as well as technical skills appropriate to the RSs they are authorized to approve.

3-7. Releasability of Data. Under the Freedom of Information Act (FOIA), we will determine public availability of DER information in accordance with Title 5, United States Code, Section 552.

Chapter 4. Certification Activities of a DER

4-1. Type Certification Projects. We require a DER to obtain authorization from us before exercising authority on any certification project, including a new or amended TC, a major type design change, a new or amended STC, or a PMA for complex, critical, or life-limited parts based on test and computation. Typically, our documented concurrence with an applicant's certification plan is evidence of authorization. A DER must follow FAA policy in determining compliance with pertinent regulations. Approval of the engineering technical data on Form 8110-3 means that, within the limits of the DER's authority, the DER has determined that the data complies with FAA airworthiness requirements. These requirements include, but are not limited to, 14 CFR, Special Federal Aviation Regulations (SFAR), special conditions, exemptions, other requirements that have been adopted or accepted by the FAA such as the EASA Requirements, and specific foreign requirements that have been delegated on a project-by-project basis. The project ACO must establish the specific role, authorized area, and responsibility a DER has in performing these functions. The project ACO must be aware of a DER's limitations. More than one DER may be needed to cover the entire project. The ACO determines the extent of our involvement after the applicant proposes how each aspect of the project is to be approved.

a. Certification Application. After receiving an application for a TC, STC, major change to an approved type design, or PMA design approval, project ACO representatives will discuss necessary procedures, requirements for compliance inspections, and conformity requirements with the applicant and DER. The DER or the ACO subsequently arrange, as necessary, periodic meetings to discuss problems, project status, and methods for reporting progress. These meetings also permit the ACO to advise the DER on particular policies, standards, and procedures that apply to the project.

b. Certification Plan. Applicants should submit a certification plan early in the project. Certification plans are required for TC and STC projects per Order 8110.4. As a minimum, the certification plan should contain the following:

- (1) Identity of the applicant, application date, and model designation.
- (2) A general description of the concept or system, including sketches and schematics.
- (3) The certification basis, including: applicable 14 CFR sections and subsections including amendment levels, exemptions, and special conditions.
- (4) How compliance will be shown (by ground test, flight test, analysis, similarity, or equivalent means of compliance), and what will be submitted to show compliance.
- (5) Project schedule, including major milestones, preliminary hazard analysis submittal, detail submittals, when conformity and testing are required, and when final certification is expected.
- (6) Identification of all proposed DERs, their specialties, the functions they will perform, and if a DER will approve the data or recommend approval.

Note: Documents such as certification plans, compliance checklists, conformity plans, project schedules, and a proposed certification basis are all valued by the FAA for their contribution to effective project management. However, none of these documents is appropriate for approval by a DER via Form 8110-3 indicating they are compliant with the 14 CFR regulations.

c. Data Approval. We limit DERs to engineering data approval. Data approvals support an eventual design approval we issue after compliance with all applicable airworthiness regulations is determined. Approval of the engineering technical data on Form 8110-3 means that, within the limits of the DER's authority, the DER has determined that the data complies with FAA airworthiness requirements. DERs must advise the project ACO of relevant data of which they are aware, but did not approve in order to ensure a complete investigation of compliance with all pertinent requirements. A DER sends the original Form 8110-3, together with referenced approved reports and drawings, to the project ACO as agreed to in the certification plan to meet agreed upon certification schedules.

d. Flight Tests. When a DER is authorized to conduct an FAA flight test, the DER must coordinate the flight test with the appropriate FAA flight test representatives. Flight test pilot and flight analyst DERs must use the flight test risk management process described in Order 4040.26A, *Aircraft Certification Service Flight Safety Program*.

e. Flight Manuals. Generally, an ACO or ACO authorized representative approves AFMs, AFM supplements (AFMS), RFMs, and RFM supplements (RFMS), or major revisions to AFMs and RFMs. A DER should *recommend* approval, unless specifically authorized in writing to approve AFM or RFM revisions or supplements.

f. Type Certification Boards. We encourage DERs to participate as our advisors in type certification board meetings on projects in which they are involved.

g. Data Retention. The applicant is responsible for maintaining a file of all copies of Form 8110-3 submitted to the FAA and any associated data.

h. Request for FAA Conformity Inspection. The FAA may allow a DER to request FAA conformity inspections via Form 8120-10, *Request for Conformity (RFC)*. This form should not be "approved" using a Form 8110-3. The DER should identify any features, attributes, and components critical to the test results and provide special instructions as necessary in the RFC. Order 8110.44, *Conformity Inspection Notification Process*, has procedures for type certification conformity inspection notifications between the applicant's DER and their designated inspection representative when the inspections are to take place in the United States.

Note: DERs involved in the conformity process should use the National Automated Conformity Inspection Process (NACIP), or other FAA approved automated conformity inspection system. For more information and training on NACIP, go to <https://av-apps.faa.gov/nacip/naciphelp.nsf>.

i. DER Disposition of Unsatisfactory Items. The project ACO may authorize a DER to disposition unsatisfactory items identified during an FAA conformity inspection or to approve a

later revision of design data that eliminates or prevents a discrepancy. We must identify this authority on Form 8120-10, or as part of a conformity plan or other agreement between the ACO and applicant. When so authorized, a DER should:

(1) Document the disposition of an unsatisfactory condition on Form 8100-1, *Conformity Inspection Record* or as agreed to with the project ACO. Form 8110-3 must not be used to disposition unsatisfactory conditions since there is no finding of compliance by the DER.

(2) Use Form 8110-3 to document approval of later revisions to design data within the authorized area. This may eliminate the need for a DER to disposition a discrepancy on Form 8100-1, as the later approved data should correct the unsatisfactory items.

4-2. Acoustical DER. We authorize acoustical DERs to review and recommend approval for AFM/AFM Supplement/Supplemental Flight Manual (SFM) pages or other media related to compliance with 14 CFR § 36.1581 and § 36.1583. Acoustical DERs should review pertinent aircraft noise level data included in all new flight manuals, revisions to existing flight manuals, and placards and markings, before submitting them for our approval. An acoustical DER may execute Form 8110-3 with the specific paragraphs of 14 CFR part 36, subpart O, listed in the requirements section.

4-3. Test Plans. An ACO may delegate test plan approval for tests that do not involve novel or unique methods or technology. Project ACOs must identify who will be responsible for approval of test plans as early as possible in the program. When an ACO will approve a test plan, the DER may be requested to recommend approval first.

4-4. Test Witnessing.

a. DERs must receive specific authorization from the project ACOs before witnessing a test or approving any test data on our behalf. The DER must coordinate with the project ACO to determine if we wish to participate in witnessing all or part of a test. Before witnessing the test, the DER must verify that the necessary FAA conformity inspections have been accomplished, that the test article is in conformity, or that all unsatisfactory conditions have been dispositioned. A DER is not required to witness an entire test to approve the test data. However, the DER must coordinate with the ACO to determine which conditions are critical and must be witnessed in order to ensure that all the data are valid. When DERs approve test data, they indicate that they witnessed those portions of the test dealing with critical conditions, the test was conducted in accordance with the FAA approved test plan, and the data are official test results that satisfy the test criteria for compliance.

b. Although a DER can rely on other engineers to review data, the actual witnessing of the test must be done by the DER. The DER authorized to witness the test cannot delegate witnessing to anyone else.

c. If the DER is authorized to witness tests outside their area of authority provided as directed by Section 2-6, it is inappropriate for the DER to complete an 8110-3 form. However they may sign, or otherwise notate on the test results, that they were the official test witness.

4-5. Flight Test Pilot DER. We require flight test pilot DERs to perform all tests on which they intend to approve or recommend approval of the data. The extent and conduct of the overall flight test plan must be coordinated with the project ACO. When flight test pilot DERs approve test data, they are indicating that they performed the tests, the tests were conducted in accordance with the approved test plan, and the data are official test results that comply with the applicable requirements. A TIA is required for conducting official FAA tests.

4-6. Changes in Type Design.

a. 14 CFR § 21.93 classifies changes in type design as minor or major. Major changes require an FAA project that will include specific DER authorization for the project. We may approve minor changes in type design under a method acceptable to the Administrator, per 14 CFR § 21.95. This method may include approval by a DER without prior authorization by the ACO. The decision as to whether a change and/or modification is major or minor should be reviewed with the ACO if the decision is controversial or if the DER needs guidance.

b. Acoustic and Emission Changes. 14 CFR § 21.93(b) and (c) requires any voluntary change in type design (in addition to being a “major” or “minor” change) be evaluated to determine whether it is an acoustic or emission change. Acoustical DERs are prohibited from making these determinations (either as “approve” or “recommend approval”) as specified in 14 CFR § 183.29(i). However, acoustical DER involvement is beneficial to both us and the applicant in providing appropriate substantiation data in support of a determination.

4-7. Material Review Board (MRB) Actions.

a. Engineering Representative. Members of the MRB are manufacturer's personnel acting for the manufacturer. The manufacturer's engineering representative may also be a DER, but cannot act as a DER for the FAA during any MRB action.

b. Approval of Revised Data. When an MRB action results in a major change in type design, a manufacturer must follow the major design change process in paragraph 4-6 in this order.

4-8. Approval of an AMOC to an AD.

a. Approval Process. A structural company DER with a special delegation to approve an AMOC must execute the AMOC approval on Form 8110-3. The approval must at least specify:

(1) The affected aircraft model, serial number, and owner/operator. For a global AMOC, identify the applicable aircraft for which the AMOC is approved. This can be accomplished through a listing of applicable operators, serial numbers, or other limiting criteria; or if the global AMOC applies to all serial numbers, so state;

(2) The AD number and paragraph(s) to which the AMOC applies;

(3) A complete and detailed description of the AMOC proposal, including part names, numbers, and serial numbers (if applicable). A description of damage, modifications, alterations,

repairs; and any inspections, inspection thresholds/intervals, and other necessary descriptive information;

- (4) Any restrictions on the AMOC, such as special processes or time limitations;
- (5) A statement as to whether or not the AMOC is transferrable;
- (6) Reference(s) to substantiating data;
- (7) A reference to the FAA letter (and date) granting AMOC approval authority to that particular DER (see appendix C, figure 1);
- (8) A statement that the approval meets the applicable sections of the aircraft type certification basis or other defined airworthiness standards. For example, an alternate inspection method requires an approved damage tolerance assessment. Specific 14 CFR paragraphs must be listed;
- (9) The following statement: “Before using this AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local Flight Standards District Office/Certificate Holding District Office;” and
- (10) DER signature and date.

b. Temporary Repairs. If a DER is approving data for a temporary repair as part of an AMOC, then the following additional actions are required by the DAH:

- (1) Notify the owner/operator of the terms of the DER-approved temporary repair for the relevant AD. Include a copy of Form 8110-3 indicating DER approval and a statement that the approval is time-limited and will have to be removed on or before a specific date (or cycle limit, or flight time limit).
- (2) Keep all records (telexes, stress and life analyses, and letters) for the same time as normal, continuing airworthiness record keeping requirements, but not less than one year after the removal of said temporary repair from the aircraft.
- (3) Have available the necessary paper work to support any audits that the ACO or directorate deems necessary to oversee the system.

4-9. Approval of Service Documents.

a. Engineering Aspects. DAHs may identify changes to type design incorporated after original manufacture in service documents. The engineering aspects of service documents require our approval. The ACO may delegate these approvals to a qualified DER. Service documents developed to transmit information on items such as maintenance tips do not need FAA approval. FAA approval of engineering data in service documents must clearly indicate those aspects of the document that we approved. Form 8110-3 submittals should list (in the “applicable requirements” block) the airworthiness requirements with which the DER found compliance. AC 20-114,

Manufacturers' Service Documents, suggests acceptable methods by which DAHs may indicate our approval of recommended actions prescribed in them.

b. Service Documents and Revisions in an AD. Project ACOs and DERs must coordinate on service documents and revisions that are made a part of an AD, or referenced in it.

4-10. DER International Operating Procedures. In Order 8100.8 you will find guidance for DERs working on original certification projects (TC, ATC, STC) involving compliance findings outside the United States, foreign registered aircraft, and findings of compliance to FAA-accepted foreign requirements. For DERs working on repair and alterations, see paragraph 4-12. For guidance when working with EASA, refer to Order 8100.14, *Interim Procedures for Working with the European Community on Airworthiness Certification and Continued Airworthiness*.

4-11. PMA Identity Procedures. We require a DER to follow the provisions of Order 8110.42, *Parts Manufacturer Approval Procedures*, when conducting PMA activities. See an example of Form 8110-3 with identity notations in appendix C, figure 1 of this order. A DER with special authority for PMA identity may sign and submit Form 8110-3 to the project ACO without a certification plan or specific prior consent from us. The project ACO must issue a letter of design approval even in the case when a DER is involved in making a finding of identity.

a. Authority. A DER must be specifically authorized by the managing ACO to make PMA identity findings. The DER and the PMA applicant should verify the DER's authority and limitations before proceeding with the finding of identity. The DER must have access to the original DAH's data that allows for a direct comparison of design data.

b. Critical Parts. For critical or life-limited parts, a DER is limited to signing FAA Form 8110-3 as "recommend approval". In addition, for engine life-limited parts the DER must contact the FAA prior to "recommending approval."

c. Other Parts. For other parts, authorized DERs may sign Form 8110-3 as "approved," indicating identity to the DAH's data listed for the TC, STC, TSOA or letter of TSO design approval, i.e., the data that define the part covered under a TC, STC or TSO-approved article, eligible for installation on a type certified product. The requested eligibility for the applicable product model(s) must be indicated. The DER sends the DAH's data for the TC, STC, TSOA or Letter of Design Approval (LODA) to the project ACO with Form 8110-3 and the PMA data.

d. Findings of Identity. If a DER checks the approved block on Form 8110-3, it does not mean that the PMA or any engineering aspects of the data are approved. It means the DER is indicating the finding that the PMA applicant's design is identical to the TC, STC, TSOA, or LODA of the DAH's design. The DER must append a note on the "List of Data" section, stating, "FAA approval of the design is contingent upon FAA engineering verification of the type design data (or STC or TSOA data) listed."

Note: In the "Purpose of Data" block on Form 8110-3, the DER states "Identity only approval under 14 CFR § 21.303." In the "Applicable Requirements" block,

the DER states “14 CFR § 21.303(a)(4).” A DER making the finding must hold delegated authority in the authorized area.

e. FAA Actions. We will verify that the listed DAH’s data for the TC, STC, TSOA, or LODA is approved type design data for the product models indicated and the stated eligibility is valid. We also verify that there are no mandatory corrective actions to be implemented and no serious unresolved service difficulties that make the part ineligible. The applicant’s design need not conform to the latest revision level of the DAH’s drawing for the TC, STC, TSOA, or LODA if we determine that the previously approved parts are still eligible for installation on the listed product models. After verifying that all requirements are met, the ACO will continue processing the application in accordance with Order 8110.42.

4-12. Repairs and Alterations. A *repair* is the restoration of a damaged product or article accomplished in such a manner and using material of such quality that its restored condition will be at least equal to its original or properly altered condition (with regard to aerodynamic function, structural strength, resistance to vibration and deterioration, and other qualities affecting airworthiness). The original condition can be new or used and airworthy. A properly altered condition reflects a product or part that has undergone a repair or alteration and been deemed airworthy. A properly altered condition is a pre-existing condition, and not one that is normally realized through a restoration. The damage can be due to deterioration or to external causes. An *alteration* is the modification of an aircraft from one sound state to another sound state; the aircraft meets the applicable airworthiness standards both before and after the modification. RSs and DER approval is discussed in paragraph 4-13 of this order.

a. Major Repairs and Major Alterations. Major alterations and major repairs must be accomplished in accordance with technical data approved by the Administrator. A DER may approve design and substantiation data, if specifically authorized, to support a major repair or major alteration. However, this DER-approved data may not be adequate to cover every aspect of the repair or alteration. Repairs or alterations involving flight manual supplements, airworthiness limitations, ground and flight test plans, ground and flight tests, compliance inspections, modifications to critical structure or life-limited parts, ICA, special conditions, noise findings, and equivalent level of safety findings may require data that a DER is not normally authorized to approve. If the repair or alteration requires approval of data beyond the DER’s authority, then additional approval, such as an FAA field approval or ACO approval, is required.

b. Minor Repairs and Minor Alterations. Minor repairs and minor alterations do not require FAA engineering approval. As such, DERs cannot approve minor repairs or alterations.

c. Authorization. A DER must have authorization from the managing ACO in order to approve data for major repairs or major alterations. The ACO’s authorization may be verbal and confirmed in writing or by an authorization letter. This authorization may be granted on a one time basis or as a part of the DER’s delegated authority. See a sample authorization letter in appendix C, figure 4. A DER who is granted this authority by letter may approve technical data for major repairs and major alterations without first notifying the ACO, except when the part is critical or life-limited, or if the work will be done outside the country. For guidance concerning operating

outside the United States, see Order 8100.8. For critical or life-limited parts, the DER must contact the ACO for guidance.

(1) **Repairs and Alterations for Specific Aircraft and Components.** The authorization for major repairs or major alterations limits the DER to approving data for the specific serial numbered aircraft, engines, propellers, parts, or components identified on the Form 8110-3. Parts or components that are not serialized must be identified by a specific work order on Form 8110-3.

(2) **Multiple Repair Authority.** The authorization for multiple use repairs allows a DER to approve data via Form 8110-3 in support of an RS approval. RS authority is discussed in paragraph 4-13 of this order.

(3) The repair/alteration authority listed in 4-12(c)(1) is for aircraft/components currently in a condition requiring repair or alteration. The DER may only list multiple aircraft/components when they are specifically identified to receive an alteration. Data in support of alterations for “future use” (not specifically identified to receive an alteration) may only be approved via STC or ATC. Data in support of repairs for “future use” (not currently requiring repair) may only be approved as an RS. Service Bulletins, or service documents, from Design Approval Holders, or their suppliers, that provide optional modifications/repair should be approved as part of “Service Document” DER authority and not as “repair/alteration” authority.

d. Compliance Inspections. Approval of a major alteration may require a compliance inspection. Information regarding compliance inspections is contained in Order 8110.4. If DERs are not delegated this function, they must add the following note to the body of the Form 8110-3: “_____compliance inspection is not included in this approval and requires ACO approval.”

e. Repair and Alteration Design Data. We presume that basic design information will be available to DERs working in a design/production approval holder’s organization. A DER outside the organization must make every effort to obtain the necessary information. A DER must determine that the technical data covering the repair or alteration contains clear reference and appropriate consideration of all fundamental design information pertinent to the repair or alteration. When the DER determines that additional approvals are necessary to constitute complete approval of a repair or alteration, the necessity for the additional approvals should be noted on Form 8110-3. A DER must develop or obtain the technical data necessary to substantiate the repair or alteration according to the following guidance:

(1) **Compliance Data.** The applicant is responsible for showing compliance with applicable airworthiness requirements established by 14 CFR §§ 21.101 or 21.115. Normally, these rules and amendment levels are listed on the TC data sheet for the product.

(2) **Standards.** The technical data developed and used for a major repair or major alteration must show that the condition of the repaired or altered product will be at least equal to its original or properly altered condition. To accomplish this, the data for a major alteration must show that the applicable airworthiness standards from the certification basis of the product have been complied with. For a major repair, the data must show that the repaired part is still compliant

via a showing that the applicable airworthiness standards of the certification basis of the product, to which the part is installed, have not been invalidated by the repair. For repair or alteration data approvals for aircraft in other than the standard category (e.g. restricted, experimental, limited), DERs should contact their managing ACO in order to determine if approval is appropriate and to establish the appropriate standards for their approvals.

(3) **Performance.** The applicant must develop both the design data and substantiating data to show how the repaired or altered product meets all the requirements of the applicable regulations. When operated within the approved flight envelope of the certified aircraft and maintained in accordance with FAA-approved or accepted manuals or an FAA-approved continuous airworthiness maintenance program, the applicant must show that the product will function reliably throughout its established inspection interval.

f. Data Submittal. The DER must submit a copy of Form 8110-3 and the approved data to the owner/operator or repair station that requested the approval. The DER must send the original Form 8110-3 to their managing ACO and, if specifically requested by the ACO, a copy of the approved data. These submittals are used by the ACO to perform DER oversight. The transmittal of Form 8110-3 to the ACO should contain a reference to the owner/operator or repair station involved and where the aircraft is located, if available. The DER must include the following notations in the “Purpose of Data” block on the Form 8110-3, as applicable (see example in appendix C, figure 1):

(1) The purpose is to support a major repair or major alteration.

(2) The approval is engineering data approval only.

(3) The serial number of the aircraft for a major repair or major alteration of an aircraft, an engine, propeller, or component installed on an aircraft. For major repair or major alteration of an engine, propeller or component not installed on an aircraft, the DER must either reference the serial number of the item, or the work order for the repair or alteration.

g. Reserved.

h. Major Repairs and Major Alterations May Need Additional Approval or STC.

(1) Some major repairs or major alterations may be so complex that they require approval via STC. FSIMS, Volume 4, Chapter 9, Figure 4-68, includes a major alterations job aid that must be used to determine if a particular alteration requires approval by STC, or can be supported with DER approved data and/or a field approval by an FAA Flight Standards District Office (FSDO) inspector. If a particular alteration requires an STC, a DER cannot approve any data for the alteration under the special delegation for major alterations, unless that data is in support of the installation of the STC. DERs unsure of the extent of their approval authority or authorization to approve data required to support a major repair or major alteration should contact their managing ACO.

(2) In order to help the repair or alteration installer, DERs will provide a statement on their approval to indicate whether the data being approved does (or does not) constitute all the data necessary to substantiate compliance of the repair or alteration with all applicable airworthiness

regulations. In order to help the installer and FSDO involved, the DER must add the following note to the Form 8110-3:

“This approval is for engineering design data only. It indicates the data listed above demonstrates compliance only with the regulations specified by paragraph and subparagraph listed below as “Applicable Requirements.” (Also, indicate if compliance with additional regulations not listed here may be required). “This form does (or does not) constitute FAA approval of all the engineering data necessary for substantiation of compliance to necessary requirements for the entire alteration/repair.”

i. Process Specifications. A DER cannot approve generic process specifications (e.g., process specifications that are not applicable to a specific repair or alteration for an aircraft, engine, propeller or component). Many generic processes may have been accepted by industry, or listed as an acceptable method, technique, or practice in AC 43.13-1, *Acceptable Methods, Techniques, and Practices Aircraft Inspection and Repair*, or AC 43.13-2, *Acceptable Methods, Techniques, and Practices Aircraft Alterations*. The DER should not approve parts inventory, receiving, handling, inspecting or cleaning, since these shop practices do not require our engineering review/approval.

j. Interim Repairs. A DER must contact the managing ACO for appropriate policy and guidance for anything other than a complete repair such as an "interim/time limited" structural repair. Without prior coordination with the ACO, a DER is not authorized to approve extensions of established limits.

k. DER Data Approvals for Repair and Alteration of Foreign Registered Aircraft. The DER system supports data approval for aircraft major repairs and major alterations. For U.S.-registered aircraft, these repairs and alterations may be accomplished under 14 CFR part 43 using DER-approved data as FAA approved data. However, for foreign-registered aircraft, the CAA of the State of Registry is responsible for approving repair or alteration data. We permit a DER to approve data for foreign-registered aircraft in accordance with the following criteria:

(1) The DER must have the authority to approve data for major repairs and/or major alterations.

(2) The data must concern a U.S. State of Design aircraft, engine, propeller, or STC unless it is for an aircraft operated by a U.S. operator under 14 CFR §§ 121.153(c) or 135.25(d). (“U.S. State of Design” means the TC holder is located in the United States.)

(3) The DER must include this disclaimer in the "Purpose of Data" block on Form 8110-3 except as defined in (4) and (5) below:

“This FAA approval is provided for a foreign-registered aircraft. Acceptance is at the discretion of the civil aviation authority of the State of Registry. The installer must determine compatibility of this data with the aircraft configuration.”

(4) DER-approved major repair data applicable to Canadian registered aircraft will be accepted by Transport Canada Civil Aviation (TCCA) without the disclaimer per Order 8110.53, *Reciprocal Acceptance of Repair Design Data Approvals Between FAA and TCCA*. A DER will

approve the data as compliant with the applicable FAA requirements unless TCCA requests specific findings to the Canadian Aviation Regulations through the DER's managing ACO. The ACO will then determine if the DER has the knowledge and experience necessary to make findings to the Canadian Aviation Regulations and may delegate these finding to the DER on a case-by-case basis.

(5) A DER may approve major repair and major alteration data intended for use on foreign-registered aircraft operated by U.S. operators under 14 CFR parts 121 and 135 in the same manner that data is approved for U.S.-registered aircraft on the certificate without using the above disclaimer.

(6) A DER must identify the aircraft by serial number on Form 8110-3 per paragraph 4-12f in this order.

l. Engine, Propeller, and Component Activity. DERs approving data for a repair or alteration of an engine, propeller, or component not installed on an aircraft cannot always know where or when the item will be installed. Therefore, they may not know the registry of the aircraft the item will be installed on. A DER working within this authority when performing these approvals need not be concerned about the registry of the aircraft.

m. ICA. If ICA are affected, the applicant prepares ICA in accordance with 14 CFR § xx.1529, § 31.82, § 33.4, or § 35.4 that are acceptable to the FAA. If ICA are not affected, the applicant completes an impact assessment and provides it along with the approved data. Some ICA data for transport airplane electrical wiring are required to be approved to part 25 subpart H (reference part 25, appendix H, section H25.5). A properly authorized DER can approve data that complies with specific sections. In some cases DERs can approve data that is contained in the airworthiness limitations when that data meets a technical airworthiness standard such as §§ 25.571, 25.981, etc. Beyond this authority, no DER can accept or approve ICA as being compliant with the regulations. A DER can review ICA to ensure that the ICA reflects the correct engineering information necessary for maintenance. When a DER does this, there is no ICA compliance finding made, but a note can be included on Form 8110-3 that indicates what ICA the DER has reviewed relative to the engineering data being approved. See Order 8110.54, *Instructions for Continued Airworthiness Information Responsibilities, Requirements, and Contents*, for more guidance on ICA.

n. Articles with TSOA. Order 8150.1B states that repair to TSO articles should be approved by an appropriately rated DER. It should be clear that the DER cannot make a finding of compliance to the TSO for the repair. The repair must be approved to the applicable airworthiness regulations. Modifications to TSO articles by the non-TSOA holder must similarly be processed per Order 8150.1B, and 14 CFR 43.

4-13. Repair Specifications (RS). RSs provide an alternative to the major repair technical data as well as the methods, techniques and/or practices contained in the current manufacturer's manuals, service bulletins, or ICA. Approval as an RS is required for multiple-use major repairs that do not come from the DAH, and do not specifically identify serial numbers of all the products or parts currently in need of repair to which the RS applies. They are used only for major repairs. RSs include step-by-step "how to" instructions for performing the repair. In the past, this type of data has been referred to by many names, including RSs, repair procedures, and maintenance

specifications. An RS may include one or more process specifications as part of the “how to” instructions.

a. Examples.

(1) A repair station has four aircraft that need the same major repair. A DER with the authority of major repairs could, once the DER finds the substantiation data is sufficient to show compliance, approve the data for the major repair on an 8110-3 and put all four serial numbers on the form 8110-3. This would not be considered as requiring an RS. Nor would this DER need the special delegation of “RS”.

(2) A repair station has four aircraft all in need of the same major repair. The repair station decides that they will need to use this same repair on future aircraft as well. Now, since they want to develop a repair that is non serial number specific, non DAH, and use it repeatedly, they need to develop an RS.

b. The RS describes:

- (1) What the specific repair accomplishes,
- (2) When the repair is applicable,
- (3) How the repair will be accomplished,
- (4) How the repair is substantiated,
- (5) How the repair will be inspected,
- (6) How the repair must be maintained, and
- (7) How the RS will be kept up to date.

c. An acceptable RS:

(1) Results in a consistent, repeatable end state that can be evaluated to show compliance to the applicable airworthiness standards.

(2) Provides the technical data for use in approving the aircraft or product for return to service.

(3) Is a procedure not listed in the current manufacturer’s maintenance manual, ICA or FAA-approved portions of service documents.

(4) Is intended to be used repeatedly.

(5) Requires FAA data approval.

(6) Is authorized for use by the FAA for a specific maintenance entity. This includes maintenance facilities holding a 14 CFR part 145 certificate, and operators having a maintenance program authorized by operations specifications (OpSpecs) under 14 CFR part 121 or 135.

d. Requirements for ICAs. The developer of the RS 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, or need more frequent inspections. This determination should be performed with special consideration of the repair falling into an alteration category.

(1) The RS 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 RS must contain the appropriately revised ICA. These revised ICA become part of the RS. Subsequent revisions to the ICA will be processed in accordance with the RS revision process.

(3) The DER must not sign on the signature page of the RS until the ICA has been addressed. See appendix C for a sample title/signature page for an RS.

(4) The DER *cannot* approve/accept revisions to the ICA. Coordinate ICA changes with the appropriate FAA office as required. See Order 8110.54, *Instructions for Continued Airworthiness Responsibilities, Requirements and Contents*, for additional guidance.

e. Responsibilities of an RS-DER. To manage RS approvals, the RS-DER performs a role for the FAA similar to an ACO certification project manager for a design approval project. The RS-DER will review the RS to ensure that it complies with the established type certification requirements for the product. They will ensure compliance with each applicable certification regulation. The RS-DER evaluates the RS to ensure the repair design results in a repair that restores the part or product to an airworthy condition. Managing activities for compliance includes:

(1) **Coordinating Project Activity and Resolving Issues.** Before any data is approved, the RS-DER must coordinate with the managing FSDO, Certificate Management Office (CMO), or International Field Office (IFO) and confirm the proposed RS is within the capability of the applicant or that their rating will be adjusted to allow its use. The coordination should be retained with the project folder.

(2) **Managing Data approval.** An RS-DER will develop a compliance plan to ensure that all the activity necessary to review and approve individual data items is accomplished as part of the project. This includes design data, reports, analyses, inspection results, test plans, results, and reports. The approved technical data for the RS may originate either from the authority of the RS-DER, or from other DERs with the required authorization of multiple repairs. This approval is documented on one or more 8110-3s. DERs approved data in support of a RS must be authorized the special delegation of major repairs, and have specific authority to approve data for multiple-use repairs, but do not need to be RS-DERs. The RS-DER must review all Form 8110-3s submitted by other DERs to determine that all necessary findings of compliance have been made.

(3) **Managing Test Activity.** Normally, a repair does not require any testing to substantiate it. However, there may be some cases where testing is required. We authorize the RS-DER to review and approve test plans, coordinate the company's test article conformity, witness tests, and evaluate and make findings on test results. The RS-DER may rely on other DERs for some, all, or none of these tasks. The use of other DERs for structural, electrical, material, and other aspects of the repair are limited to those tasks for which they are authorized.

(4) **Approving the RS.** After the RS-DER finds that all the data necessary to substantiate the repair design is complete and the repair complies with applicable certification regulations, the RS-DER indicates the RS is approved for use on multiple products by signing the title/signature page of the RS with their DER number along with the applicant who plans on using the RS. Copies of the signed cover page of the RS must then be sent to the RS-DER's managing ACO advisor and the FSDO/CMO/IFO principal maintenance inspector (PMI). See appendix C for a sample title/signature page.

f. Form 8110-3 Does Not Indicate RS Approval. DERs must use one or more Form 8110-3s to approve RS technical data, but RS-DERs must *not* use Form 8110-3 to show approval of a complete RS. RS approval is indicated when the specification title/signature page bears all required signatures. The RS is not approved until the title/signature page bears the signature of the applicant, and the RS-DER with their DER number or, if appropriate, the ACO.

g. Limitation on Repairs Affecting Critical or Life-Limited Parts.

(1) An RS-DER may manage a RS project affecting critical or life-limited parts, but, prior to starting the RS project, the RS-DER must coordinate with the RS-DER's managing ACO. The ACO may or may not delegate the approval of the RS. If they do not delegate the approval, the amount of involvement and whether or not the RS-DER recommends approval of the RS is at the discretion of the ACO. In this case, the applicant and the ACO must sign the title/signature page of the RS to indicate the approval.

(2) It is the applicant's responsibility to state when the repair affects critical or life-limited parts. If the applicant states critical or life-limited parts are not affected, and the RS-DER believes otherwise, the RS-DER must notify the ACO. The ACO must make a determination and then notify the DER. If the ACO agrees with the DER, the DER notifies the applicant and the process may continue with ACO involvement. If the ACO determines the part is not critical or life-limited, the RS approval process may continue without ACO involvement.

4-14. Flammability Testing of Interior Materials. A DER with authority to witness flammability tests on our behalf must know how the material or part will be installed on an end product and must identify that use on Form 8110-3. For certification projects, a DER makes this finding of compliance per an approved test plan and using a conformed test article that represents the final configuration. For a specific repair or alteration, a DER makes this finding of compliance per an acceptable method as agreed upon by the managing ACO, which will include a defined test process and means to ensure test article conformity. Form 8110-3 may not be used by a DER to attest to compliance with 14 CFR § xx.853 or other material flammability test to support lot or quality control testing or in support of TSOAs.

4-15. TSOA Procedures. Order 8150.1, *Technical Standard Order Program*, covers procedures for issuing TSOAs. DERs may not make findings of compliance to support an applicant's statement of conformance.

4-16. Human Factors. There is no human factors authority that can be granted to a DER. DERs who approve data that has an impact on human factors should document and discuss any issues with the ACO.

4-17. Data approval in support of 14 CFR 21.8(d). The DER must obtain special authority to approve any data associated with compliance findings or approval of articles in accordance with 14 CFR 21.8(d). These approvals are required to be coordinated with FAA Headquarters, and as such, it is inappropriate for a DER to make a finding of compliance in support of a 14 CFR 21.8(d) article without contacting their advisor.

4-18 Commercial Parts . A commercial part means an article that is listed on an FAA-approved Commercial Parts List (CPL) included in the DAH's Instructions for Continued Airworthiness (ICAs). By creating a "commercial parts" classification, the FAA has constructed, under 14 CFR §21.9(a)(4), a mechanism by which a DAH may designate commercial parts that are acceptable for installation as replacement articles, without having to be produced under an FAA production approval. For commercial parts, the DAH is a TC/STC holder and certain PMA holders. TSOA holders are not eligible for commercial parts privileges. PMA holders who obtained PMA through evidence of a license agreement are also excluded, unless prior approval is obtained from the licensor. DERs may not approve the original issuance or changes to the CPL. DERs may approve data within their authorization in support of a commercial part replacement alternative, in the same manner they would approve any part substitution, using the FAA Form 8110-3, *Statement of Compliance with Airworthiness Standards*. For more information see AC 21-45, *Commercial Parts*.

Chapter 5. DER Guidance Material

5-1. DER Guidance Material consists of the airworthiness standards and FAA directives and ACs that the DER needs to effectively carry out their responsibilities as representatives of the Administrator. Each DER is responsible for accessing the required material.

a. Electronic DER Guidance Material. DER guidance material is available from the FAA website in accordance with paragraph 5-1c in this order. A DER needs to be familiar with the regulations, orders, and ACs appropriate to the work being done.

b. Other Guidance Material and Forms. Managing or project ACOs provide all necessary forms, instructions, and other material not available through the FAA website.

c. FAA Website. The primary source for DER guidance material is the FAA website, www.faa.gov. The FAA website offers access to RGL, an information database that contains many current FAA publications such as safety data, airworthiness regulations, orders, notices, ACs, and ADs. As an alternative to linking to this database from the main FAA website, information in RGL can be accessed directly at rgl.faa.gov. A DER may obtain other related regulations and policy through the managing ACO, the U.S. Government Printing Office, or U.S. government bookstores.

Appendix A. Limitations on DER Functions

1. The following items are approved or issued only by the FAA:
 - a. Departures from specific policy and guidance.
 - b. Use of new/unproven technologies.
 - c. Equivalent level of safety findings.
 - d. Special conditions.
 - e. Exemptions.
 - f. Establishment of a product certification basis.
 - g. TCs, PMAs and TSOAs.
 - h. Determination of an unsafe condition.
 - i. ADs.

2. We may delegate any examination, inspection, and test necessary for issuing a certificate. The decision to delegate is influenced by many factors. Some critical factors include the knowledge and expertise of FAA personnel and the potential delegated personnel; the impact of the delegated task on safety; and the political sensitivity of the task. Accordingly, for any particular certification program, we would generally reserve for ourselves the approval of the following items:
 - a. Structural**
 - (1) Approval of test plans.
 - (2) Basic load reports.
 - (3) Material and fastener allowables, including fatigue allowables.
 - (4) Approval of life limits.
 - (5) Previously unapproved crashworthiness matters.
 - (6) Emergency evacuation test plans and analysis.
 - (7) Damage tolerance evaluation methodologies.

Appendix A. Limitations on DER Functions (Continued)

- (8) Airworthiness limitations section of the instructions for continued airworthiness.
- (9) Approval of probability conclusions.
- (10) Interior compliance inspection.

b. Powerplant

- (1) Approval of test plans.
- (2) Flight test results.
- (3) Operational procedures and limitations.
- (4) Safety analyses activities for new engine installations. (See note at the end of appendix A)
- (5) Rotorburst analyses for new engine installations.
- (6) Fire safety hazard analyses.
- (7) Powerplant drainage test witnessing.
- (8) Induction system ice protection and installed engine characteristics in icing conditions for new engine installations.
- (9) Flammable fluid fire protection compliance inspection.
- (10) Fire detector and extinguishing systems and installations.
- (11) Software/Airborne Electronic Hardware:
 - (a) Plan for software/airborne electronic hardware aspects of certification.
 - (b) Configuration index.
 - (c) Accomplishment summary.
- (12) Engine performance methodology.

c. Systems & Equipment

- (1) Approval of test plans.

Appendix A. Limitations on DER Functions (Continued)

- (2) New concepts of system/equipment design.
- (3) Software/Airborne Electronic Hardware:
 - (a) Plan for software/airborne electronic hardware aspects of certification.
 - (b) Configuration index.
 - (c) Accomplishment summary.
- (4) Unconventional applications of systems/equipment.
- (5) Safety analyses activities. (See note at the end of appendix A)
- (6) Control systems compliance inspection.
- (7) Previously unapproved crashworthiness matters.
- (8) Interior compliance inspection.
- (9) Emergency evacuation test plans and analyses.
- (10) EWIS Assessment (Part 26.11).

d. Radio

- (1) Approval of test plans.
- (2) New concepts of system/equipment design.
- (3) Safety analyses activities. (See note at the end of appendix A)

e. Engine

- (1) Approval of test plans.
- (2) Operational procedures and limitations.
- (3) Critical rotating parts lifing methodologies.
- (4) Installation instructions.
- (5) Airworthiness limitation sections.

Appendix A. Limitations on DER Functions (Continued)

- (6) Repairs to critical engine parts.
- (7) Software/Airborne Electronic Hardware:
 - (a) Plan for software/airborne electronic hardware aspects of certification.
 - (b) Configuration index.
 - (c) Accomplishment summary.
- (8) Engine emissions.

f. Propeller

- (1) Approval of test plans.
- (2) Operational limits.
- (3) Vibration analysis methods.
- (4) Airworthiness limitation sections.
- (5) Fatigue allowables and fatigue life.
- (6) Loads reports, particularly vehicle usage spectra.
- (7) Software/Airborne Electronic Hardware:
 - (a) Plan for software/airborne electronic hardware aspects of certification.
 - (b) Configuration index.
 - (c) Accomplishment summary.

g. Flight Analyst

- (1) Approval of test plans.
- (2) Overall flight and ground test plans limitations, operating procedures, or sequences.
- (3) New methods or principles of testing or presentation of results.

Appendix A. Limitations on DER Functions (Continued)

- (4) Unusual aircraft flying qualities and aircraft performance.
- (5) Aircraft flight manuals or revisions, and flight manual supplements.
- (6) Flight advances technical design features.
- (7) New operational procedures.
- (8) Evaluation of several STCs on one aircraft.
- (9) Spot check of certification flight test results.
- (10) Reference profiles calculated in support of 14 CFR part 36

h. Flight Test Pilot

- (1) Approval of test plans.
- (2) Overall flight and ground test plan limitations, operating procedures, or sequences.
- (3) New methods or principles of testing or presentation of results.
- (4) Unusual aircraft flying qualities and aircraft performance.
- (5) Aircraft flight manuals or revisions and flight manual supplements.
- (6) Flight advances technical design features.
- (7) New operational procedures.
- (8) Evaluation of several STCs on one aircraft.
- (9) Spot check of certification flight test results.

i. Acoustical

- (1) Test witnessing (in accordance with an approved test plan).
- (2) Aircraft reference profiles (when based on approved aircraft performance).
- (3) Operating limitations.

Appendix A. Limitations on DER Functions (Continued)

- (4) Final aircraft noise certification levels compliance report approval.
- (5) Noise test site conditions.
- (6) Conformity deviation effect on noise testing.
- (7) Ambient weather conditions during testing (e.g., anomalous conditions).
- (8) Equipment calibration methods and/or intervals if different from or not clarified in the rules.

Note: “Safety Analysis” may include, but is not limited to, the following:

- (a) Functional hazard analysis (FHA),
- (b) Preliminary system safety assessments (PSSA),
- (c) Failure modes and effects analysis (FMEA),
- (d) Fault tree analysis (FTA),
- (e) Markov analysis (MA),
- (f) System safety assessments (SSA),
- (g) Zonal analysis (ZA),
- (h) Common mode analysis (CMA),
- (i) Particular risk analyses (PRA),
- (j) Evaluation of the need for warning information in response to unsafe operating conditions.

Appendix B. Delegated Functions and Authorized Areas

Figure 1. Chart A, DER Structural

Functions and areas that *can* be authorized are defined by *white squares*. Each DER’s authority may be different, and is identified in their letter of appointment.

		AUTHORIZED AREAS															
		Structural-General (1)	Structural-Wing Group	Structural-Fuselage Group	Structural-Empennage Group	Structural-Landing Gear	Structural-Flight Controls	Structural-Rotor	Loading Control Documents	Metallic Materials (2)	Nonmetallic Materials (3)	Interior Arrangements	Interior Materials	Fire Protection	Evacuation Systems	Door Systems	Special (Specify)
DELEGATED FUNCTIONS		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	STATIC ANALYSIS																
2	DYNAMIC ANALYSIS																
3	FATIGUE ANALYSIS																
4	DESIGN AND CONSTRUCTION																
5	FLUTTER/GROUND VIBRATION																
6	SAFETY ANALYSIS																
7	FLOTATION & DITCHING ANALYSIS																
8	STRUCTURAL LOADING LIMITATIONS																
9	SERVICE DOCUMENTS																
10	MATERIAL & PROCESS SPEC.																
11	FLAMMABILITY																
12	DAMAGE TOLERANCE EVALUATIONS																

Note (1): Includes all airframe components: wing, fuselage, empennage, landing gear, flight controls, engine mounts, and special components. Does not apply to rotors.

Notes (2) and (3): Select Specialty by Note number and sub-letter from lists below. General applies to all processes listed.

(2) Metallic Materials/Processes

- A - Materials & Processes - General
- B - Non-Destructive Inspection/Testing
- C - Metallurgy
- D - Metal Joining Processes
- E - Structural Adhesives
- F - Mechanical Fasteners
- G - Surface Treatment/Coatings
- H - Bearings

(3) Nonmetallic Materials/Processes

- A - Material & Processes - General
- B - Transparent (Glazed) Material
- C - Polymeric Materials
- D - Structural Adhesives
- E - Mechanical Fasteners
- F - Composites
- G - Non-Destructive Inspection/Testing
- H - Surface Treatment & Coatings
- I - Structural Joining Methods

Appendix B. Delegated Functions and Authorized Areas (Continued)

Figure 2. Chart B, DER Powerplant Installations

Functions and areas that *can* be authorized are defined by *white squares*. Each DER's authority may be different, and is identified in their letter of appointment.

		AUTHORIZED AREAS					
		Airplane Turbine Engine	Airplane Piston Engine	Rotorcraft Turbine Engine	Rotorcraft Piston Engine	Auxiliary Power Unit (APU)	Special (Specify)
DELEGATED FUNCTIONS		A	B	C	D	E	F
1	ENGINE INSTALLATION						
2	FUEL & OIL						
3	INDUCTION/EXHAUST SYSTEMS						
4	THRUST REVERSERS						
5	FIRE PROTECTION						
6	ICE PROTECTION						
7	COOLING						
8	ENGINE PERFORMANCE/OPERATIONS						
9	INDICATING SYSTEMS						
10	LIGHTNING/HIRF PROTECTION						
11	SOFTWARE						
12	CONTROL SYSTEM - ELECTRONIC						
13	CONTROL SYSTEM - MECHANICAL						
14	EMISSIONS						
15	VIBRATION - ENGINE, PROPELLER, OR DRIVE SYSTEM						
16	PROPELLER						
17	DRIVE SYSTEM						
18	TRANSMISSIONS						
19	SAFETY ANALYSIS						
20	SERVICE DOCUMENTS						

Appendix B. Delegated Functions and Authorized Areas (Continued)

Figure 3. Chart C1, DER Systems and Equipment (Mechanical Equipment)

Functions and areas that *can* be authorized are defined by *white squares*. Each DER’s authority may be different, and is identified in their letter of appointment.

		AUTHORIZED AREAS													
		Air Conditioning	Hydraulic	Ice Protection	Rain Protection	Oxygen	Pneumatics	Wheels, Tires, and Brakes	Interior Arrangements	Interior Materials	Pressurization	Fire Protection	Water System, Potable and Waste	Evacuation Systems	Special (Specify)
DELEGATED FUNCTIONS		A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	DETAIL DESIGN AND INSTALLATION														
2	EQUIPMENT QUALIFICATION TESTS														
3	SOFTWARE														
4	SAFETY ANALYSIS														
5	FLAMMABILITY														
6	LIGHTNING/HIRF PROTECTION														
7	SERVICE DOCUMENTS														

Appendix B. Delegated Functions and Authorized Areas (Continued)

Figure 4. Chart C2, DER Systems and Equipment (Electrical Equipment)

Functions and areas that *can* be authorized are defined by *white squares*. Each DER’s authority may be different, and is identified in their letter of appointment.

		AUTHORIZED AREAS											
		A	B	C	D	E	F	G	H	I	J	K	L
		Electrical Equipment/Systems	Electronic Equipment/Systems	Communications Systems/Antennas	Automatic Flight Controls/Augmentation	Instruments	Navigation Systems/Antennas	Air Data/Pitot Static	Warning Systems	Interior/Exterior Lighting	Flight Data/Voice Recording	Passenger Address/Entertainment	Special (Specify)
DELEGATED FUNCTIONS		A	B	C	D	E	F	G	H	I	J	K	L
1	DETAIL DESIGN AND INSTALLATION												
2	EQUIPMENT QUALIFICATION TESTS												
3	SOFTWARE												
4	SERVICE DOCUMENTS												
5	ELECTRICAL LOAD ANALYSIS												
6	SAFETY ANALYSIS												
7	LIGHTNING/HIRF PROTECTION												

Appendix B. Delegated Functions and Authorized Areas (Continued)

Figure 5. Chart D, DER Radio

Functions and areas that *can* be authorized are defined by *white squares*. Each DER’s authority may be different, and is identified in their letter of appointment.

		AUTHORIZED AREAS				
		Radio Design	Operating Characteristics	Antenna Design	Radio Installation	Special (Specify)
DELEGATED FUNCTIONS		A	B	C	D	E
1	ANALYTICAL SUBSTANTIATION					
2	DETAIL DESIGN					
3	SAFETY ANALYSIS					
4	SERVICE DOCUMENTS					

Appendix B. Delegated Functions and Authorized Areas (Continued)

Figure 6. Chart E, DER Engines

Functions and areas that *can* be authorized are defined by *white squares*. Each DER’s authority may be different, and is identified in their letter of appointment.

		AUTHORIZED AREAS		
		Turbine Engines	Piston Engines	Special (Specify)
DELEGATED FUNCTIONS		A	B	C
1	DETAIL DESIGN			
2	BLOCK TESTS			
3	PERFORMANCE CHARACTERISTICS			
4	VIBRATION ANALYSIS			
5	OPERATION MANUALS			
6	OVERHAUL MANUALS			
7	SERVICE DOCUMENTS			
8	EXHAUST EMISSIONS EVALUATION			
9	SOFTWARE			
10	SAFETY ANALYSIS			
11	LIGHTNING/HIRF PROTECTION			

Appendix B. Delegated Functions and Authorized Areas (Continued)

Figure 7. Chart F, DER Propellers

Functions and areas that *can* be authorized are defined by *white squares*. Each DER’s authority may be different, and is identified in their letter of appointment.

		AUTHORIZED AREAS		
		Controllable-Pitch Propellers	Fixed Pitch Propellers	Special (Specify)
DELEGATED FUNCTIONS		A	B	C
1	DETAIL DESIGN			
2	BLOCK TESTS			
3	PERFORMANCE CHARACTERISTICS			
4	VIBRATION ANALYSIS			
5	OPERATION MANUALS			
6	OVERHAUL MANUALS			
7	SERVICE DOCUMENTS			
8	SOFTWARE			
9	SAFETY ANALYSIS			
10	LIGHTNING/HIRF PROTECTION			

Appendix B. Delegated Functions and Authorized Areas (Continued)

Figure 8. Chart G, DER Flight Analyst

Functions and areas that *can* be authorized are defined by *white squares*. Each DER’s authority may be different, and is identified in their letter of appointment.

		AUTHORIZED AREAS													
		Aircraft Performance	Aerodynamics	Flight Characteristics	Sys. Calib. (Air Spd., Alt., Air Temp.)	Propulsion Sys. & Related Components	Elec./Electronic Sys.-Related Components	Mech. & Hyd. Sys.-Related Components	Pressure & Air Conditioning Systems	Auto Control Systems	Ice Protection System	Special (Specify)	Part 36 Reference Conditions (1)		
DELEGATED FUNCTIONS		A	B	C	D	E	F	G	H	I	J	K	L		
1	REVIEW FLIGHT TEST PLANS														
2	REVIEW FLIGHT TEST INSTRUMENTATION														
3	WEIGHT AND BALANCE SURVEILLANCE														
4	FLIGHT TEST DATA RECORDING														
5	FLIGHT TEST DATA REDUCTION/ANALYSIS														
6	FLIGHT TEST DATA EXPANSION (ALTITUDE/TEMPERATURE/WEIGHT)														
7	COMPILE FLIGHT TEST REPORTS														
8	COMPILE PERFORMANCE SUBSTANTIATION REPORTS														
9	COMPLETE PORTIONS OF TYPE INSPECTION REPORTS														
10	REVIEW AIRCRAFT FLIGHT MANUAL AND RECOMMEND APPROVAL (2)														
11	COMPILE PART 36 REFERENCE PROFILES														
<p>Note (1): Part 36 reference profiles and conditions may be controlled by identifying the specific appendix to part 36 (e.g., Appendix B, Appendix G, Appendix H, Appendix J) or by the 14 CFR part (e.g., parts 23, 25, 27, and 29) identified in the DER’s certificate of authority. Identify limitations as necessary</p> <p>Note (2): Although the chart authority limits a DER to recommending approval, the FAA may authorize a DER with this delegated function to approve AFM revisions or supplements. DERs should recommend approval, unless specifically authorized to approve AFM revisions or supplements.</p>															

Appendix B. Delegated Functions and Authorized Areas (Continued)

Figure 9. Chart H, DER Flight Test Pilot

Functions and areas that *can* be authorized are defined by *white squares*. Each DER’s authority may be different, and is identified in their letter of appointment.

		AUTHORIZED AREAS										
		Aircraft Performance	Flight Characteristics	Propulsion Systems	Hyd., Elec., & Pneu. Systems	Pressurization and A/C Systems	Flight Instruments & Systems	Auto Control Systems	Ice Protection Systems	Operating Limitations/Procedures	H/V (Rotorcraft)	Special (Specify)
DELEGATED FUNCTIONS		A	B	C	D	E	F	G	H	I	J	K
1	RECOMMEND APPROVAL OF FLIGHT TEST PLANS (1)											
2	CONDUCT GROUND TESTS AND EVALUATIONS											
3	CONDUCT FLIGHT TESTS AND EVALUATIONS											
4	COMPILE TEST REPORTS											
5	COMPLETE PORTIONS OF AND APPROVE THE TYPE INSPECTION REPORT											
6	RECOMMEND APPROVAL OF AIRCRAFT FLIGHT MANUAL (2)											
<p>Note (1): Although the chart authority limits a DER to recommending approval, the FAA may authorize a DER with this delegated function to approve flight test plans. DERs should recommend approval of test plans, unless specifically authorized to approve them.</p> <p>Note (2): Although the chart authority limits a DER to recommending approval, the FAA may authorize a DER with this delegated function to approve AFM revisions or supplements. DERs should recommend approval, unless specifically authorized to approve AFM revisions or supplements.</p>												

Appendix B. Delegated Functions and Authorized Areas (Continued)

Figure 10. Chart I, DER Acoustical

Functions and areas that *can* be authorized are defined by *white squares*. Each DER’s authority may be different, and is identified in their letter of appointment.

		AUTHORIZED AREAS	
		Acoustical	Special (Specify)
DELEGATED FUNCTIONS		A	B
1	MEASUREMENT LOCATIONS		
2	RECORDING EQUIPMENT		
3	ANALYSIS EQUIPMENT		
4	ENVIRONMENTAL CONDITIONS		
5	CALCULATION PROCEDURE		
<p>Note: Acoustical DERs may only recommend approval of test plans and final noise certification compliance reports. Acoustical DERs may also recommend approval for AFM/AFMS/SFM pages or other media related to compliance with 14 CFR § 36.1581 and § 36.1583.</p>			

Appendix C. Samples, Forms, and Letters

Figure 1. Form 8110-3 and Instructions for Preparation

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION STATEMENT OF COMPLIANCE WITH AIRWORTHINESS STANDARDS			1. DATE
AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION			
2. MAKE	3. MODEL NO.	4. TYPE (<i>Aircraft, Engine, Propeller, etc.</i>)	5. NAME OF APPLICANT
LIST OF DATA			
6. IDENTIFICATION	7. TITLE		
8. PURPOSE OF DATA			
9. APPLICABLE REQUIREMENTS (List specific sections)			
10. CERTIFICATION - Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under 14 CFR Part 183, 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 Airworthiness Standards listed.			
I (We) Therefore <input type="checkbox"/> Recommend approval of these data <input type="checkbox"/> Approve these data			
11. SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	12. DESIGNATION NUMBERS(S)	13. CLASSIFICATION(S)	

Form 8110-3 (03/10) SUPERSEDES PREVIOUS EDITION

(Sample Form 8110-3, representation only, at reduced size)

Appendix C. Samples, Forms, and Letters (Continued)**Figure 1. Sample Form 8110-3, Instructions for Preparation**

Block 1: Date – Enter the date the DER signs the form, making the finding(s) that the listed data complied with the applicable requirements. If more than one DER signs the same form, the date should be the date the last finding was made.

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION

Block 2: Make – Enter the make as listed on the product’s TC data sheet OR if the approval is for a part or component, separate from a type certification project, such as a repair or PMA, enter the manufacturer of the component.

Block 3: Model No. – Enter either the aircraft model series or the specific aircraft model number, as appropriate and as listed on the product’s TC data sheet. If the approval is applicable to multiple models, list them separately. If the approval is for a part or component, separate from a type certification project, such as a repair or PMA, enter the model number of the part or component.

Note: If additional space is needed for the model designation, list additional models in the List of Data, Title Block. If the data applies to a group of models, the note could state; “All CF6-50 models listed on TCDS E15NE through revision 9, Dated June 22, 1999,”

Block 4: Type – Enter the type of product as listed on the product’s TC data sheet, or describe the part or component.

Block 5: Name of Applicant – For a TC, STC, design change, or PMA, this is the name of the applicant for the approval or authorization. For a major repair or alteration, this is the name of the person or organization who arranged for the DER to approve the data.

Example: TC, ATC, Major Change, or STC

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION				
2. MAKE Boeing	3. MODEL NO. 757	4. TYPE (Aircraft, Engine Propeller, etc.) Airplane	5. NAME OF APPLICANT Boeing	

Example: STC, PMA, Major Repair or Major Alteration

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION				
2. MAKE General Electric	3. MODEL NO. CF6-50A	4. TYPE (Aircraft, Engine Propeller, etc.) Engine	5. NAME OF APPLICANT Delta Airlines	

Example: PMA, Major Repair or Major Alteration

AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION				
2. MAKE Parker	3. MODEL NO. 2HX	4. TYPE (Aircraft, Engine Propeller, etc.) Actuator	5. NAME OF APPLICANT Ralph’s Accessory Repairs	

LIST OF DATA

Block 6: Identification – Enter the report, drawing, analysis, or document number, date, and revision level.

Appendix C. Samples, Forms, and Letters (Continued)**Figure 1. Sample Form 8110-3, Instructions for Preparation**

Block 7: Title – Enter the title of the report, drawing, analysis, or document. Below this enter the exact extent of the approval. For instance, if the data is type design only and the compliance substantiating data will follow, the DER would annotate this block with *"Type design data approval only. Substantiating data approval pending."* A DER must reference all data covered by the approval: drawing numbers with change letters, report numbers with revision levels dates, etc.

Note 1: A DER must indicate any data that is not being approved by a separate list with the notation: *"FAA APPROVAL REQUIRED."* If this list is very long, the DER should write a statement clearly indicating which data is or is not approved. An example would be *"Structural Aspects Approved Only - No Approval of Electrical Data"* or similar statements.

Example:

LIST OF DATA	
6. IDENTIFICATION	7. TITLE
ABC Manual 1234 Rev B. 10/20/03	Converter Regulatory Installation Manual.
1000047 Revision A Dated 10/22/03	Drawing - Converter Regulator Cooling Mod.
1000048 Revision C Dated 10/22/03	Drawing - Scoop Assy. - Converter Regulator Cooling.
	NOTE: This approval covers electrical details only.

In addition, for a major repair or major alteration, enter the statement: *"This approval is for engineering design data only. It indicates the data listed above demonstrates compliance only with the regulations specified by paragraph and subparagraph listed below as Applicable Requirements. (Compliance with additional regulations not listed here may be required). This form does not constitute FAA approval of all the engineering data necessary for substantiation of compliance to necessary requirements for the entire alteration/repair."* Also list the remaining requirements generally (*"interior compliance inspection required"*, or *"structural aspects approved, electrical aspects are not included"*). See paragraph 4-12h of this Order.

Appendix C. Samples, Forms, and Letters (Continued)

Figure 1. Sample Form 8110-3, Instructions for Preparation

Example:

LIST OF DATA	
6. IDENTIFICATION	7. TITLE
<p>Report No. SR 88-25, N.C. New, Dated 6-69-88</p> <p>Sketch Dwg. 88 New, Dated 6-29-88</p>	<p>Stress Report, "Cabinet Installation, Bell Model 222 Helicopter S/N 12345".</p> <p>Sketch Package, Cabinet Installation, Pages 1, 2, & 3.</p> <p>Notes:</p> <p>1) The structural aspects only of the above listed data are approved herein. This approval is only for the engineering data. It indicates the data listed above demonstrates compliance only with the regulations specified by paragraph and subparagraph listed below as "Applicable Requirements."</p> <p>2) This form does not constitute FAA approval of all the engineering data necessary for substantiation of compliance to necessary requirements for the entire alteration. The requirements of 14 CFR 29.853 are not included in this approval and require separate approval.</p> <p>3) Aircraft interior compliance inspection is not included in this approval and requires separate approval.</p>

Note 2: When more than one DER signs the form 8110-3, the List of Data must clearly indicate which DER has found compliance to the data for each entry in the list. This distinction can be made item by item, or by grouping the items for each DER. If entries in this block cannot be clearly identified for each DER, then separate forms should be used with only one DER signature.

Example:

LIST OF DATA	
6. IDENTIFICATION	7. TITLE
<p>ABC Manual 1234 Rev B. 10/20/03</p>	<p>Converter Regulatory Installation Manual. (approved by DER{name})</p>
<p>1000047 Revision A Dated 10/22/03</p>	<p>Drawing - Converter Regulator Cooling Mod. (approved by DER{name})</p>
<p>1000048 Revision C Dated 10/22/03</p>	<p>Drawing - Scoop Assy. - Converter Regulator Cooling. (approved by DER{name})</p>
	<p>NOTE: This approval covers electrical details only.</p>

Appendix C. Samples, Forms, and Letters (Continued)

Figure 1. Sample Form 8110-3, Instructions for Preparation

Example:

LIST OF DATA	
6. IDENTIFICATION	7. TITLE
ABC Manual 1234 Rev B. 10/20/03	Approved by DER[name] Converter Regulatory Installation Manual.
1000047 Revision A Dated 10/22/03	Drawing - Converter Regulator Cooling Mod.
1000048 Revision C Dated 10/22/03	Approved by DER[name] Drawing - Scoop Assy. - Converter Regulator Cooling.
	NOTE: This approval covers electrical details only

If no additional compliance is required, enter *“This form constitutes FAA approval of all the engineering data necessary for substantiation of compliance to necessary requirements for the entire alteration/repair.”* See paragraph 4-12h of this Order.

Example:

LIST OF DATA	
6. IDENTIFICATION	7. TITLE
Report No. SR 88-25, N.C. New, Dated 6-69-88	Stress Report, "Cabinet Installation, Bell Model 222 Helicopter S/N 12345".
Sketch Dwg. 88 Rev. A, Dated 6-29-88	Sketch Package, Cabinet Installation, Pages 1, 2, & 3.
	Notes: 1) All engineering aspects of the above listed data are approved herein. This approval is only for the engineering data. It indicates the data listed above demonstrates compliance only with the regulations specified by paragraph and subparagraph listed below as "Applicable Requirements." 2) This form constitutes FAA approval of all the engineering data necessary for substantiation of compliance to necessary requirements for the entire alteration.

Appendix C. Samples, Forms, and Letters (Continued)**Figure 1. Sample Form 8110-3, Instructions for Preparation**

For PMA Identity enter “*FAA approval of the design is contingent upon FAA Engineering verification of the type design data listed.*” See Order 8110.42.

Example:

LIST OF DATA	
6. IDENTIFICATION	7. TITLE
A12345X Rev. D, 04/01/2001	Oil Pump Shaft Drawing.
RPT-2468 Rev. B, 04/12/2001	Certification and compliance report. Note: FAA approval of the design is contingent upon FAA Engineering verification of the type design data listed.

For AMOC, the DER must indicate the AMOC proposal, FAA letter (and date) granting AMOC approval authority, and that the approval meets the applicable sections of the aircraft type certification basis or other defined airworthiness standards as required by the AD. An AMOC for a temporary repair must indicate that the approval is time-limited and will have to be removed on or before a specific date (or cycle limit or flight time limit). See paragraph 4-8 of this Order.

Example:

LIST OF DATA	
6. IDENTIFICATION	7. TITLE
FR12345 Rev. C, 2/12/2001	Skin Panel Repair. Repair – 1 larger ext dblr, 1 int finger dblr, internal structure spliced per SRM, solid fasteners, 10 by 34 inch cutout for corrosion and cracks, SRM practices, thicker than SRM repair. Notes: 1. Delegation of AMOC authority for AD 2000-01-01 was granted to John Doe by the Seattle ACO letter of delegation, dated January 4, 2000. 2. This deviation has been approved as an Alternate Method of Compliance (AMOC) to paragraph (c)(3) of AD 2000-01-01 and has been found to meet the Type Certification Basis of this airplane. 3. These requirements must be coordinated with the cognizant Flight Standard District Office. 4. This approval is for a temporary repair that must be removed on or before 6000 landings, not to exceed 24 months from the date of this approval.

Block 8: Purpose of Data – Enter the type of project (i.e., original STC, etc.) and associated project number. If the data approval is in support of an aircraft major alteration or major repair, enter the serial number of the aircraft in lieu of the project number. For major repairs or major alterations of parts, components, engines, or propellers not installed on aircraft, the specific serial number of the parts, components, engines, propellers, or a specific work order for parts or components that are not serialized must be used in lieu of the project number. For multiple use

Appendix C. Samples, Forms, and Letters (Continued)**Figure 1. Sample Form 8110-3, Instructions for Preparation**

repairs, repair schemes, or establishment of repair limits for multiple use repairs without specific serial number or work order effectivity, an RS approval is required.

Examples:

8. PURPOSE OF DATA
In support of type certification of the fuel system for the Smithson 401 Aircraft.
Project No. SA-00146-AC.

8. PURPOSE OF DATA
Identity only under 14 CFR § 21.303.

8. PURPOSE OF DATA
In support of a major repair for S/N 12345.

8. PURPOSE OF DATA
In support of a major repair of Parker actuator 2HX by Ralph's Accessory Repair Station
for part number 1234 repaired under work order 5678 dated 2/2/06.

8. PURPOSE OF DATA
Multiple use major repair data in support of a repair specification for Ralph's Accessory
Repair Station repair of Parker actuator 2HX.

8. PURPOSE OF DATA
In support of AMOC for S/N 1357.

8. PURPOSE OF DATA
In support of global AMOC (number).

Block 9: List of Applicable Requirements - Enter the exact regulation(s) paragraphs, subparagraphs, or other appropriate airworthiness requirements with which the data comply. This includes applicable amendment levels. If the list is too long, attach additional sheets. It is not sufficient for the DER to merely indicate "structural regulations" or other generalizations. The DER may enter non-14-CFR requirements that are FAA adopted or accepted or that are specifically delegated to the DER.

Note: The only time 14 CFR part 21 sections can be listed in the "Applicable Requirements" block is for PMA identity findings (14 CFR § 21.303(a)(4)).

Examples:

9. APPLICABLE REQUIREMENTS (*List specific sections*)
14 CFR 25.1301(all)Amdt.25-123, 25.1309(a)Amdt.25-123, 25.1359(d)(3)Amdt.25-72.

Appendix C. Samples, Forms, and Letters (Continued)

Figure 1. Sample Form 8110-3, Instructions for Preparation

9. APPLICABLE REQUIREMENTS (*List specific sections*)
 CAR 6. [.200; .201; .202(a),(b); .260; .300; .301; .302; .303; .304(a),(b);
 .305; .306; .307(d); .730(b),(c).] released 12/20/ 1956.

9. APPLICABLE REQUIREMENTS (*List specific sections*)
 CAR 4b.202(a),(b),(d) released 12/31/1953
 AD 97-03-05, paragraphs (c)(3) and (d).

Block 10: Certification - Enter the number of additional sheets or enter N/A if there are none. Check the “Approve these data” block if the DER is approving the data or the “Recommend approval of these data” if the DER is recommending that the FAA approves the data.

Note: “Recommend approval” can only be used on Form 8110-3 for those delegated functions identified on the DER’s certificate of authority or related document. When DERs have the authority to "approve" but only "recommend approval," they must explain, in writing, why they didn’t approve the data.

Enter the DER’s typed or printed name(s) in the signature block, identification number(s) in the designation block, and discipline(s) in the classification block. A DER’s signature constitutes approval or recommendation for approval of the technical data as indicated on the form.

Example:

10. CERTIFICATION - Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under 14 CFR Part 183, 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.			
☐ Recommend approval of these data		☒ Approve these data	
‡ (We) Therefore			
11. SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	12. DESIGNATION	13. CLASSIFICATION(S)	
<i>James Bullock</i> James Bullock	DERY-123456-NM	SYSTEMS & EQUIPMENT	

Appendix C. Samples, Forms, and Letters (Continued)

Figure 2. Sample Form 8110-3, Statement of Compliance with Airworthiness Standards, with DER Candidate Review Note

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION STATEMENT OF COMPLIANCE WITH AIRWORTHINESS STANDARDS			1. DATE
AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION			
2. MAKE	3. MODEL NO.	4. TYPE (<i>Aircraft, Engine, Propeller, etc.</i>)	5. NAME OF APPLICANT
LIST OF DATA			
6. IDENTIFICATION	7. TITLE		
	THE ABOVE DATA HAS BEEN REVIEWED BY DER CANDIDATE NAME: _____ DATE _____ .		
8. PURPOSE OF DATA			
9. APPLICABLE REQUIREMENTS (List specific sections)			
10. CERTIFICATION - Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under 14 CFR Part 183, 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 Airworthiness Standards listed. <input type="checkbox"/> Recommend approval of these data I (We) Therefore <input type="checkbox"/> Approve these data			
11. SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	12. DESIGNATION NUMBERS(S)	13. CLASSIFICATION(S)	

Form 8110-3 (03/10) SUPERSEDES PREVIOUS EDITION

(Sample Form 8110-3, representation only, reduced size)

Appendix C. Samples, Forms, and Letters (Continued)

Figure 3. Sample Form 8110-3, Statement of Compliance with Airworthiness Standards, Software/AEH

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION STATEMENT OF COMPLIANCE WITH AIRWORTHINESS STANDARDS			1. DATE
AIRCRAFT OR AIRCRAFT COMPONENT IDENTIFICATION			
2. MAKE	3. MODEL NO.	4. TYPE (<i>Airplane, Engine, Propeller, etc.</i>)	5. NAME OF APPLICANT
LIST OF DATA			
6. IDENTIFICATION	7. TITLE		
PSAC-1000-001 Rev A Dated 10/30/09	Plan for Software Aspects of Certification for XXXX System.		
SCMP-1000-003 Rev B Dated 10/30/09	Software Configuration Management Plan for XXXX System.		
8. PURPOSE OF DATA			
In support of Type Certification (or Supplemental Type Certification or PMA) of XXXXX for ABC Company, Project No. SA-YYYY-ZZZ. This data provides evidence and artifacts of RTCA/DO-178B (or RTCA/DO-254) development process for Level A/B/C/D software (or AEH). The development process is not complete until the approval of the accomplishment summary.			
9. APPLICABLE REQUIREMENTS (List specific sections)			
14CFR § XX.1301, Amdt XX-XX, and 14CFR § XX.1309, Amdt XX-XX for software (or airborne electronic hardware) aspects only.			
10. CERTIFICATION - Under authority vested by direction of the Administrator and in accordance with conditions and limitations of appointment under 14 CFR Part 183, 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 Airworthiness Standards listed.			
<input type="checkbox"/> Recommend approval of these data I (We) Therefore <input type="checkbox"/> Approve these data			
11. SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	12. DESIGNATION NUMBERS(S)	13. CLASSIFICATION(S)	

FAA Form 8110-3 (03/10) SUPERSEDES PREVIOUS EDITION

(Sample Form 8110-3, representation only, at reduced size)

Appendix C. Samples, Forms, and Letters (Continued)

Figure 4. Sample Letter Authorizing Data Approval for Repairs and Alterations

(DER Name)
Designated Engineering Representative
(Address)
(City), (State) (ZIP Code)

Dear Ms./Mr.:

You are authorized to approve data for major repairs and major alterations within the scope of your authority as defined on your letter of authorization. However, you must obtain prior ACO approval when the work involves critical or life-limited parts or if you will be working outside the United States (reference Order 8110.37E, paragraph 4-12c).

This authorization will remain in effect until surrendered, suspended, revoked, or otherwise terminated, but is only valid in conjunction with your DER authorization. Should you have any questions, contact (ACO Advisor) at telephone number (number).

Sincerely;

(Manager)
Manager, _____ Certification Office,
Aircraft Certification Service

Appendix C. Samples, Forms, and Letters (Continued)

Figure 5. Sample Repair Specification Title/Signature Page

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

Data contained in this specification may be used as approved data when: The repair is accomplished by the Certificate Holder identified below, and the specification title page contains all required signatures.

[Company Name]

[Address]

[FAA Certificate Number and Ratings]

List of applicable products or components:

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 technical 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: _____

Appendix D. Definitions and Acronyms

Definitions

- 1. Applicant.** Any person (individual, company, aircraft owner, aircraft operator or certificated repair station, and so forth) applying for an FAA approval or authorization who has not yet gained approval, authorization, or has not yet been denied.
- 2. Compliance Inspection.** Physical inspections performed by the ACO engineer or the DER, when authorized. This inspection includes reviewing an installation and its relationship to other installations on a product to determine compliance with 14 CFR requirements that cannot be determined adequately by evaluating the technical data.
- 3. Field Approval.** Signature approval in block 3 of Form 337, *Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance)* by a flight standards district office airworthiness inspector signifying that the data identified on Form 337 complies with applicable airworthiness requirements and is approved for the described application subject to conformity inspection by a person authorized in 14 CFR § 43.7.
- 4. Managing ACO.** Office responsible for supervising, monitoring, training, tracking, and recommending renewal of a designee.
- 5. Product.** Aircraft, aircraft engine, or propeller.
- 6. Project ACO.** Geographic ACO with whom the DER coordinates when verifying compliance with regulations on certification projects for products and parts.

Acronyms

14 CFR	Title 14 of the Code of Federal Regulations (current revision level)
AC	Advisory Circular
ACO	Aircraft Certification Office
AD	Airworthiness Directive
AEE	FAA Office of Environment and Energy
AEG	Aircraft Evaluation Group
AFM/RFM	Airplane Flight Manual or Rotorcraft Flight Manual
AFMS/RFMS	Airplane Flight Manual Supplement or Rotorcraft Flight Manual Supplement
AMOC	Alternative Method of Compliance
ATC	Amended Type Certificate
CAA	Civil Aviation Authority
CAR	Civil Air Regulation
CMO	Certificate Management Office
COA	Certificate of Authority
CPL	Commercial Parts List
DAH	Design Approval Holder

Appendix D. Definitions and Acronyms (cont.)

DER	Designated Engineering Representative
DOT	Department of Transportation
EASA	European Aviation Safety Agency
EWIS	Electrical Wiring Interconnect System
FAA	Federal Aviation Administration
FOIA	Freedom of Information Act
FSDO	Flight Standards District Office
FSIMS	Flight Standards Information Management System
ICA	Instructions for Continued Airworthiness
IFO	International Field Office
IT	Information Technology
IVT	Interactive Video Teletraining
JAR	Joint Aviation Requirements
LODA	Letter of Design Approval
MIDO	Manufacturing Inspection District Office
MIO	Manufacturing Inspection Office
MISO	Manufacturing Inspection Satellite Office
MRB	Material Review Board
ODA	Organization Designation Authorization
PMA	Parts Manufacturer Approval
RFC	Request for Conformity
RGL	Regulatory and Guidance Library
RS-DER	Repair Specification DER
SFAR	Special Federal Aviation Regulations
SFM	Supplemental Flight Manual
STC	Supplemental Type Certificate
TC	Type Certificate
TCCA	Transport Canada Civil Aviation
TIA	Type Inspection Authorization
TSO	Technical Standard Order
TSOA	Technical Standard Order Authorization
VLA	Very Light Aircraft

Appendix E. Administrative Information

- 1. Distribution.** Distribute this order to Washington headquarters branch levels of the Aircraft Certification Service, Flight Standards Service, and to branch level of the regional aircraft certification directorates and regional flight standards divisions; to all ACOs, all manufacturing field offices (MIOs, MIDOs, and MISOs), the International Policy Office (AIR-40), and to the FAA Academy Regulatory Support Division.
- 2. Authority to Change This Order.** The issuance, revision, or cancellation of the material in this order is the responsibility of the AIR Engineering Division (AIR-100). The Engineering Procedures Office (AIR-110) makes changes, as required, to carry out the FAA's responsibility to provide guidance on the standardized usage of issue papers.
- 3. Suggestions for Improvement.** If you find any deficiencies, need clarification, or want to suggest improvements to this order, submit your comments (written or electronically) using Form 1320-19, Directive Feedback Information, to the Aircraft Certification Service, Administrative Services Branch, AIR-510, Attention: Directives Management Officer. Form 1320-19 is included as appendix F. You can also send a copy to the Aircraft Engineering Division, AIR-100, Attention: Comments to Order 8110.37. If you urgently need an interpretation, contact AIR-110 at 405-954-4103. Always use Form 1320-19 to follow up each verbal conversation.
- 4. Records Management.** Refer to Orders 0000.1, *FAA Standard Subject Classification System*; 1350.14, *Records Management*; and 1350.15, *Records, Organization, Transfer, and Destruction Standards*; or your office Records Management Officer or Directives Management Officer for guidance regarding retention or disposition of records.

Appendix F. Form 1320-19, Directives Feedback Form



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 _____

To: Directive Management Officer, AIR-510

(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: _____

Form 1320-19 (dated 10/98)