



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

**ORDER
8110.37F**

National Policy

08/31/2017

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). It was written for all DERs and the FAA staff who manage them. We designed this handbook to give FAA managing offices and DERs a better understanding of their individual and mutual responsibilities.

While information in this order is intended for DERs, it may also be useful to ODA engineering unit members when performing compliance finding functions, such as completing an 8100-9 form by following the 8110-3 functions in Appendix B.

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 that reads "Michael J. Kaszycki".

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Chapter 1. General Information

1. Purpose. This order prescribes the working procedures to be used by aircraft certification engineering field office staff 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 FAA Order 8100.8(), *Designee Management Handbook*.

2. Audience. This order is written for Designated Engineering Representatives (DER), and Washington headquarters branch and division levels of the Aircraft Certification Service. It is also written for aircraft certification engineering field offices, the International Division (AIR-400), and the FAA Academy Regulatory Support Division.

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 the FAA Regulatory and Guidance Library (RGL) at <http://rgl.faa.gov/>. On the RGL website, select “Orders/Notices”, then select “By Number”.

4. Cancellation. This order cancels FAA Order 8110.37E, *Designated Engineering Representatives (DER) Handbook*, dated March 30, 2011.

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 updated minor formats. Renumbered paragraphs and figures to align with revised text and illustrations. Updated Order and Advisory Circular references. (Entire document)

b. Added description of phraseology used in this order for emissions and Airworthiness Requirements. (chapter 2 para. 3)

c. Added a description of what is meant by a DER “approval.” (chapter 2 para. 4)

d. Removed information about DER Candidate and changed DER Candidate information to a DER appointment with limited authority. (chapter 2 para. 5, Chapter 3 para. 1, Appendix B)

e. Removed Administrative DER. (chapter 2 para. 7, chapter 3)

f. Restructured the information on the special delegations for Major Repairs and Major Alterations. The new structure makes it clear that Repair Specification (RS)-DER is a subset of the Major Repairs special delegation. Also added a note to specify completion of an on-line training course as a qualification for Major Repairs and/or Major Alterations special delegation. (chapter 2 para. 7)

g. Added a description of DER specific functions for Electrical Wiring Interconnection Systems (EWIS) and the Aging Airplane Safety Rule (AASR). (chapter 2 para. 7)

h. Moved information in Rev E Appendix A to body of document. Removed old appendix A, listings of tasks not delegated, and added the remaining information from old appendix A to section chapter 2 paragraph. 8. Added new section chapter 2 paragraph 8.c to accommodate information from old appendix A. Renumbered appendices and changed references in entire document to account for the deletion of old appendix A. (chapter 2 para. 8)

i. Added information on DER participation in repair and alteration of light sport aircraft to the list of predecessor regulations and other acceptable airworthiness requirements. (chapter 2 para. 8)

j. Clarified DER's role in determining if changes in type design are major or minor. (chapter 2 para. 8, chapter 4 para. 6)

k. Clarified DER's role in determining if an alteration also causes an acoustic or emissions change. (chapter 2 para. 8, chapter 4 para. 6)

l. Added a section to describe the FAA's expectation of the use of DER authority. (chapter 3 para. 1)

m. Expanded the section on the use of DER numbers to specify the instances where they may be used. (chapter 3 para. 1)

n. Clarified the appropriate use of FAA Form 8110-3 for finding of compliance only. (chapter 3 para. 2)

o. Added a section on rescinding an FAA Form 8110-3 when it is found to have been submitted in error. (chapter 3 para. 2)

p. Revised the guidance to DERs for distribution of FAA Form 8110-3 original and copies in support of a major repair or major alteration. (chapter 3 para. 2, chapter 4 para. 12)

q. Clarified FAA approval for the use of DERs on Parts Manufacturer Authority (PMA) projects. (chapter 4 para. 1)

r. Added more detail on the two types of data approved by the DER. (chapter 4 para. 1)

s. Added wording required on FAA Form 8110-3 when approving an Alternative Method of Compliance (AMOC). Also revised wording to clarify DER responsibilities when approving temporary repair data for an AMOC. (chapter 4 para. 8)

t. Removed Rev E paragraph 4-11.b that restricted findings of PMA identity for critical parts. (chapter 4 para. 11)

u. Added a note about DERs approving repairs in an area that is the subject of an AD or other safety concern. (chapter 4 para. 12)

v. Clarified the meaning of "future use" repairs. (chapter 4 para. 12)

w. Added paragraphs on determining airworthiness requirements applicable to repairs on Technical Standard Order (TSO) articles. (chapter 4 para. 12)

x. Added more guidance on DER responsibilities for Instructions for Continued Airworthiness (ICA). (chapter 4 para. 13)

y. Modified Charts B and E to identify authorizations available for approvals of fuel venting and engine emissions. (Appendix A)

z. Added instructions for FAA Form 8110-3, Block 7 for referencing Methods of Compliance (MOC) when finding compliance to the new Part 23 requirements. (Appendix B)

aa. Clarified FAA Form 8110-3, Block 9 instructions to include when references may be made to 14 CFR part 21. (Appendix B)

6. Effective Date. This order is effective when signed. Compliance date of this order is 30 days after the order is signed.

Chapter 2. DER Authority and Limitations

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 specify regulations as applicable to the type certification function. Section 44702(d) authorizes designation by the Administrator of a qualified private person or an employee under the supervision of that person, matters related to 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 examining, inspecting, and testing of persons and aircraft for the purpose of issuing airman and aircraft certificates. The manager of an Aircraft Certification engineering field office or the manager's designee is empowered by 14 CFR part 183 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. The privilege for appointments is defined by 14 CFR § 183.29 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. 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 requirements. A DER must follow the same procedures that an FAA engineer must follow when performing compliance finding functions such as those appearing in FAA Order 8110.4(), *Type Certification*, FAA Order 8110.42() *Parts Manufacturer Approval Procedures* and FAA Order 8300.16(), *Major Repair and Alteration Data Approval*. 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. The FAA's interaction with DERs is highly interdependent, building on mutual interests in achieving the highest level of safety.

3. Terms Used in This Order.

a. Emissions. Throughout this order, wherever the word "emissions" is referenced, it is intended to refer to the requirements of 14 CFR part 34, "Fuel Venting and Exhaust Emission Requirements for Turbine Engine Powered Airplanes."

b. Airworthiness Requirements vs. Airworthiness Standards. Throughout this order, the term "airworthiness requirements" refers to all requirements to which a DER finds compliance, such as Airworthiness Standards set forth in 14 CFR parts 23, 25, 27, 29, 33, etc., and also regulatory requirements that are not Airworthiness Standards, such as the requirements for noise, emissions, etc. Although FAA Form 8110-3 is titled "Statement of Compliance with Airworthiness Standards," it is used to document a finding of compliance to airworthiness requirements.

4. DER Authorities.

a. DER approval. It is the applicant's responsibility to show that engineering data will demonstrate their design complies with applicable airworthiness requirements. When a DER finds the engineering data shows compliance to those requirements it is referred to as a DER approval. For certification projects this approval is an approval of substantiating data or descriptive data, but is not a design approval as recognized in 14 CFR part 21. For repairs and alterations a specially delegated DER can approve some or all of the technical data intended to be used for a major repair or major alteration.

b. DERs may approve or recommend approval of engineering technical data within the limits of their authority by means of FAA Form 8110-3 where delegated. A recommendation for approval of technical data for a finding of compliance to airworthiness requirements can only be made by an authorized DER. When recommending approval, the DER must make the same determination of compliance as if full approval were authorized. A project office 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 DER's managing office and the DER at the initial appointment of a DER, and may be further limited for specific FAA projects. DER authorized areas within specific delegated functions are listed in the form of the charts in appendix A. The DER authority is documented in a letter of authorization sent to the DER. The DER authority may also be available in an on-line Designee Management System that defines DER authority and limitations.

5. DER Categories.

a. Company DER. A managing office 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. A managing office may appoint an individual to act as an independent consultant DER to approve or recommend approval of technical data for any client.

c. Dual Appointments. A managing office may appoint an individual to act both as a company DER and consultant DER. In such cases, the managing office makes two separate appointments and issues separate certificates of designation. The managing office will advise the DER that the FAA recommends the employer be informed of the dual appointment. The managing office may authorize the consultant DER designation for delegated areas different from the company DER designation, depending on the individual's experience, the particular authorities requested by the applicant, and limitations the managing office places on the DER. There are benefits to having both of these appointments managed by the same managing office, but it is not a requirement. If the company DER designation and the consulting DER designation are in the geographic area of responsibility of two different field offices, the two managing offices will work together to determine the best method of managing a dual appointment.

d. Limited Authority.

(1) If a DER applicant lacks significant experience working with the FAA, but otherwise meets all other appointment requirements, the managing office may appoint the DER and limit some or all of their authorities until the DER gains the necessary experience. DERs with the limited authority of "Recommend Only" may then recommend approval of data on FAA Form 8110-3 and submit the data to an appropriately rated DER (or if agreed to in advance to the FAA) for approval. There is no expectation that the FAA will approve the data unless specifically agreed in advance. Recommending approval requires the DER to make the same determination of compliance as if full approval were authorized. Once the DER has gained sufficient experience working with the FAA, the managing office may upgrade the DER's authority from "Recommend Only" to "Approve". It is at the managing office's discretion whether to upgrade all or only part of the DER's authority, based on their experience with the DER.

(2) This authority is only to be granted for a limited time for the express purpose of evaluating whether or not the DER with limited authority is of value to the FAA. A DER may only remain in this status for a maximum of two years from time of appointment. If at any time during this process the FAA finds the DER does not meet the standards expected of the FAA's designees the managing office must terminate the DER. The managing office will document the reason for this termination as lack of FAA need and ability to manage. A DER with recommend only authority, not likely to be upgraded to full authority, is of limited or no benefit to the FAA, and the need for that DER does not exist.

Note 1: Previously, applicants were identified as DER Candidates when they lacked only the experience working with the FAA. Identification of an applicant as a DER Candidate is no longer an option with the release of this revision. Instead, those applicants who would have previously been identified as Candidates may now be appointed as DERs with limited authority as described above.

Note 2: Within 3 months of the effective date of this order, existing DER Candidates will no longer be identified as Candidates, and, at the discretion of the appointing office, must be either: a) appointed as a DER with limited authority as described above, subject to the two year time limit starting from the date of appointment, b) appointed with full authority for some or all of their authorized functions, or c) denied appointment.

6. DER Delegations.

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. See chapter 4, paragraph 5 of this order for more information.

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 1: 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 acoustics test plans and compliance reports is reserved for the FAA.

Note 2: See chapter 4, paragraph 2 of this order for more information.

7. DER Special Delegations/Special Authorizations/Specific Functions.

a. Special Delegations. A DER may be appointed to approve technical data not specifically listed in the charts of appendix A. Each engineering delegation has an authorized area of “special”, with authorized functions to cover this contingency. When the FAA authorizes a special delegation, the FAA lists the “special” authorized area and specifically defines 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 granted:

(1) Certification Management.

(a) **Administrative DER.** On the effective date of this order the FAA will no longer appoint Administrative DERs. Existing Administrative DERs must be terminated within 3 months from the effective date of this order. Termination is only required for the special delegation of Administrative DER. Technical delegations also held by those DERs will not be affected.

(b) **Management DER.** Management DERs perform FAA certification project management duties for the Agency, acting as 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.

(2) Major Repairs and/or Major Alterations.

(a) A DER requires a special delegation to examine and approve data for major alterations and/or major repairs. The FAA may assign a DER the special delegation of Special - Major Repairs and/or Special - Major Alterations. A DER with these delegations may only make findings of compliance within their existing delegation. DER’s need this delegation only if their FAA Form 8110-3 will be referenced as the approval of the engineering data for a specific major repair or major alteration. The three (3) special delegations for major repairs and/or major alterations are:

1. Special - Major Repairs.
2. Special - Major Alterations.
3. Special - Major Repairs and Major Alterations.

Note 1: Service documents and overhaul manuals produced by the original design/Production Approval Holder (PAH) are not considered major repair or major alteration data requiring this special delegation.

Note 2: Before the DER may be granted a special delegation for Major Repairs and/or Major Alterations, the on-line training course must be satisfactorily completed. The course can be found at <https://av-info.faa.gov/DsgReg>.

Note 3: DERs granted a special delegation for major repairs may also be specifically authorized for multiple-use, non-serial number specific repair data in support of repair specification approval.

Note 4: DERs exercising their authority for major alterations may only approve data consistent with the category of alterations according to FAA Order 8300.16(). The DER does not require the special delegation for alterations in order to approve data in support of a Supplemental Type Certificate (STC) or TC amendment that will result in an alteration.

(b) **Special Delegation for Major Repairs and/or Major Alterations for Vintage Airplanes and Engines.** A DER may be appointed with a special delegation for major repairs and/or major alterations for vintage airplanes and/or engines. This delegation allows a DER to approve data for only the types of repairs and/or alterations to vintage airplanes and/or engines that would be eligible for FAA field approvals according to FAA Order 8300.16(). A DER with this special delegation may have their authority defined by multiple technical specialty areas with specific limitations noted. The specific delegations are:

- 1 Special vintage airplane (or engine) major repairs,
- 2 Special vintage airplane (or engine) major alterations, and
- 3 Special vintage airplane (or engine) major repairs and major alterations.

Note 1: DERs with the special delegation for vintage airplanes are limited to examination of data and findings of compliance within their specialty in support of field approvals according to FAA Order 8300.16().

Note 2: The intent of this special delegation is to allow individuals who do not meet the conventional DER appointment criteria to become DERs with limited approval authority in multiple technical specialties for repairs and/or alterations of specific makes of vintage airplanes and/or engines. This will facilitate complete approvals by a single DER when practical. Requirements for appointment of DERs with this authority are found in FAA Order 8100.8().

Note 3: DERs who already hold a special delegation for major repairs and major alterations need not be granted an additional special delegation for vintage airplanes.

(c) **Special Delegation for Repair Specification DER (RS-DER).** DERs granted specific authority to manage and approve technical data in repair specifications are called RS-DERs. An “RS-DER” is a shortened name for a DER with the special delegation to approve non-serial number-specific major repair data and manage repair specification approvals. Although RS-DERs may only make data approvals within their technical discipline, the project management function of this special delegation is not discipline specific. (More information about the functions and responsibilities of an RS-DER can be found in chapter 3, paragraph 4 and chapter 4, paragraph 13 of this order.)

(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. (More information on finding compliance by identity can be found in chapter 4, paragraph 11 of this order).

Note: This special delegation is for findings by identity only. Findings by test and computation are authorized within the scope of the DER’s basic delegation.

(4) **Alternative Methods of Compliance (AMOC) with Airworthiness Directives (AD).** The FAA 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 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. (More information on the AMOC process can be found in chapter 4, paragraph 8 of this order.) DERs with a special delegation for AMOC must follow the same procedures as an FAA engineer when approving the AMOC and coordinating with the Aircraft Evaluation Group (AEG). AMOC procedures are found in FAA Order 8110.103(), *Alternative Methods of Compliance (AMOC)*.

b. Special Authorizations. Depending on the complexity of the project, the FAA may vary the level of data approval and/or the delegation we grant a DER within the DER's scope of authorization. A project office manager or manager's representative may issue a special authorization, in writing, permitting a DER to approve data normally reserved for the FAA (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 project office 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 project office, and (2) does not make the final compliance finding. Verbal authorization from the project office is permitted in some cases, such as witnessing tests, if the DER documents it on the subsequent FAA Form 8110-3 or other acceptable method. A special authorization must not be used to grant a time-limited expansion of authority, either within or outside of the DER's delegated area. Expansions of authority must be processed in accordance with FAA Order 8100.8(). When requesting a special authorization, the DER must provide the project office 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.

Note: The project office may have specific requirements for submitting a request for special authorization. DERs must use the procedure for requesting a special authorization specified by the project office.

c. Specific Functions. Within a delegation and authorized area, a DER can be authorized specific function requirements by the project office or managing office. This is not an expansion of a DERs authority, rather a specific direction to the DER's role within his current delegation. Examples of specific functions are as follows:

- (1) Electrical DER-specific functions related to electrical wiring interconnection systems (EWIS), and
- (2) Structural DER-specific functions related to the aging airplane safety rule (AASR) to support 14 CFR part 26 requirements.

8. DER Limitations. DERs may only find compliance in the delegated functions and authorized areas for which they were appointed. A delegated function, or delegation, applies to the technical areas involved in determining compliance with applicable airworthiness requirements. An authorized area, or authorization, applies to the specific portion or system of an aircraft, 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.** Unless otherwise specified, a DER's 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 must check with their advisor for the best course of action regarding the certification basis.

(3) **Other Acceptable Airworthiness Requirements.** Non-CFR certification requirements that the FAA has adopted or accepted for special classes of aircraft must be specifically identified in a DER's authority in order for the DER to approve data that meet those requirements. Non-CFR requirements that we recognize include the airworthiness requirements 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).

(4) **Light Sport Aircraft.** Since aircraft that are produced under the light sport category are not produced to approved data their repairs do not need approved data. Therefore, a DER is not allowed to issue an FAA Form 8110-3 approving data substantiating or describing a repair or alteration on special and experimental light sport aircraft.

b. Items Requiring FAA Approval. The FAA does not delegate to DERs the authority and responsibility for establishing the certification basis and issuing any special conditions, exemptions, equivalent level of safety findings, TCs, STCs, PMAs, and Technical Standard Order Authorizations (TSOA). This limits the data that a DER can approve. The following items are not delegated to DERs:

- (1) Departures from specific policy and guidance.
- (2) Equivalent level of safety findings.
- (3) Special conditions.
- (4) Exemptions.
- (5) Establishment of a product certification basis.
- (6) TCs, STCs, PMAs, and TSOAs.
- (7) Determination of an unsafe condition.

(8) ADs.

Note: Issuing TCs and STCs may be delegated to select organizations in accordance with FAA Order 8100.15(), *Organization Designation Authorization Procedures*, but they are never delegated to individual designees.

c. Items Requiring FAA Decisions. In addition to the FAA approvals listed in section 8.b above, some interpretations and decisions may only be made by FAA employees as described below:

(1) **Interpreting 14 CFR (Including policy or guidance).** 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 project or managing office. A DER is not authorized to interpret regulations. A DER must be guided by existing policies, procedures, specifications, processes, and standards. A DER must consult with the project or managing office before departing from existing procedures in making findings of compliance, or interpreting policy or guidance, if unclear.

(2) **Determining if Type Design Changes are Major or Minor Changes.** The DAH is responsible for determining whether a type design change is major or minor, as defined in 14 CFR § 21.93. Although the DAH may use a DER to assist in the comparative analysis needed to determine if a change is in fact minor, the DER may participate as a representative of the applicant, and not the FAA. The FAA has the final responsibility to accept or reject that determination. This authority rests with the FAA and cannot be delegated to a DER.

(3) **Determining if Type Design Changes are Acoustic or Emission Changes.** The DAH is responsible for determining whether a design change is, or is not an acoustic or emission change. The FAA has the final responsibility to approve or reject that determination when the project is submitted by the DAH. This approval authority rests with the FAA and cannot be delegated to a DER. DERs may be delegated authority to recommend approval of the data associated with acoustic changes. DERs may be delegated authority to approve emissions changes.

(4) **Use of new/unproven technologies.** An applicant proposing to use new or unproven technologies must coordinate with the FAA office managing the project to determine if delegation of compliance finding is appropriate.

d. Items Likely to be Reserved for FAA Approval. The FAA's decision to delegate is influenced by the extent of our 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. Earlier revisions of this order have contained an appendix with a list of tasks for each delegated area that were typically reserved for the FAA. Current guidance allows us to delegate these tasks dependent upon the risk level associated with them by using risk-based decision making. The risk level is based on the task, the proposed designee, and the project as a whole.

Note: More information on FAA oversight and delegation can be found in FAA Order 8110.4().

If we do delegate, we must do it carefully and consistently as follows:

(1) Test Plans.

(a) When we delegate approval of test plans to appropriately qualified DERs, related to their delegated functions and authorized areas, this delegation can be documented in the DER's certificate of authorization, or it may be granted on a case-by-case basis. If not specifically authorized to approve test plans, a DER may recommend approval in the submittal to the FAA, but must first make the same determination of compliance as if approval had been delegated.

(b) The FAA will usually retain authority to approve plans for testing new and novel techniques, materials, and procedures.

(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 office 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. The DER must be granted a special delegation by the managing office to make a finding of identity.

(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 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 FAA Form 8110-3 to approve data.

(b) When authorized, a DER may find compliance to the appropriate airworthiness requirements 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. The TSO process relies on applicant's statement of conformance to TSO requirements without specific FAA findings.

(6) **Delegating AMOC Approval.** An FAA engineering field office initiating an AD may either approve an AMOC related to that AD or, in certain cases, delegate AMOC approval to a DER (see chapter 4, paragraph 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 defined deviations to ADs for repairs 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 engineering field office.

(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, the FAA requires the temporary repair to be designed so its inspection threshold is greater than its replacement period. In other words, there must 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 alteration 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

1. FAA Expectations for DERs.

a. Training. Training requirements for DERs are listed in FAA Order 8100.8() and may be supplemented by a managing office. Several types of training are available. The FAA offers on-line initial training for DERs and recurrent DER training as both seminars and on-line courses. 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. A DER must also have 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. When acting under a DER appointment, a DER 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. It is in the Company DER's best interest to consult their employer for company policy regarding indemnification. The FAA 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 FAA 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 proven to be reliable and satisfactory. A DER must not sign a Form 8110-3 until all substantiating data is available, understood, and has been identified on the form. An FAA office detecting DER methods or procedures inconsistent with, or departing from, good practice must bring this to the DER's attention. The managing office 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. Use of DER Authority. We expect DERs to exercise their authority to either find compliance or recommend a finding of compliance to airworthiness requirements, using FAA Form 8110-3. A DER may not use FAA Form 8110-3 to recommend a finding by the FAA unless the DER's authority is limited to recommend only by FAA policy or as agreed to on a specific project. A DER who is fully authorized to find compliance, but chooses to defer a finding to the FAA, must contact the managing office or project office, as appropriate, to discuss the concern with the technical data. If the FAA agrees to review the data and make the finding of compliance, the DER must submit the data to the FAA along with a written explanation of why the finding is being deferred. FAA Form 8110-3 must not be used for this submittal. Discussions with the FAA may conclude that the DER will still make the finding of compliance, under the DER's delegated authority.

f. Changes. A DER must notify the managing office 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 the managing office's records (contact information including address, email, 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 designation is not terminated when the DER leaves the company.

g. Operating Outside Managing Office 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 a project office other than the managing office**, the DER must follow the project office'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 office in order to document all activities. Failure to submit the form(s) may result in termination of an appointment.

(4) For DERs working outside the United States, refer to chapter 4, paragraph 10 for special procedures.

h. DER Responsibility When Using Other Engineers. The FAA allows DERs to use as many experienced engineers as needed to completely evaluate engineering technical data, however, the DER accepts 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 the FAA for approval. When this happens, we expect the DER to specify reasons for not approving the data.

i. Using Department of Transportation (DOT) Seal/FAA Logo. DERs are not authorized to use the DOT seal 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 DOT seal or FAA logo may result in termination of a DER appointment.

j. Using DER Numbers.

(1) DERs must use their DER number and title when:

(a) Signing FAA Form 8110-3 for a finding of compliance,

(b) Completing and reviewing FAA Form 8120-10, *Request for Conformity* (RFC), when authorized by the project office (see chapter 4, paragraph 1.h for further instructions). The RFC must specify DERs who are authorized to disposition nonconformities on the FAA Form 8100-1.

(c) Signing FAA Form 8100-1, *Conformity Inspection Record*, to disposition nonconformities found during the conformity process, if the DER has been given prior authorization to perform this function on the RFC.

(d) Signing a Repair Specification (RS), if the DER has been granted the special delegation as a Repair Specification DER (RS-DER).

(2) **Reviewing other certification related documents.** We encourage DERs to review and coordinate on certification documents submitted to us. In these cases, DERs may use their DER number and title to indicate that they reviewed the documents as an FAA representative. Examples of these activities may include the review of certification plans, determination of test equipment for maintenance, and review of ICA. These documents are reviewed for purposes other than finding compliance to airworthiness requirements, so using FAA Form 8110-3 for the reviews is not appropriate.

(3) 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 on these types of documents does not constitute FAA approval.

k. Separation of Duties. An Organization Designation Authorization (ODA) may identify individuals who are DERs as unit members (UM). DERs must 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 a Major Repair, Alteration, and Airworthiness ODA.

Note: For DERs who perform work as ODA UMs, it is up to a DER's managing office whether they will consider UM activity as acceptable for DER renewal.

l. Coercion. No one may pressure DERs to approve technical data they find does not comply with the applicable airworthiness requirements or have not had enough time to review. A DER must report any coercion to the project office, and/or managing office, as discussed during the DER appointment and orientation.

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

a. Using FAA Form 8110-3.

(1) **A completed FAA Form 8110-3 is the DER's only means of approving technical data.** This form is used when making or recommending a finding of compliance to airworthiness requirements, according to the DER's authority.

Note: Although FAA Form 8110-3 is titled "Statement of Compliance with Airworthiness Standards," it is also used to document a finding of compliance to some regulatory requirements that are not Airworthiness Standards, such as the requirements for noise, emissions, etc.

(2) **FAA Form 8110-3 is used only for documenting a DER's finding of compliance, and no other purpose.** For example, Form 8110-3 has been used to record the disposition of unsatisfactory items found during a conformity inspection. This is not an appropriate use of this form.

(3) The FAA permits FAA Form 8110-3 to be computer-generated, but a computer-generated form must be identical to the stock FAA-printed form 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 FAA Forms 8110-3 are shown in appendix B, figures 1 and 2. Appendix B, figure 1 prescribes specific requirements and instructions for correctly preparing FAA Form 8110-3.

b. Distribution of FAA Form 8110-3.

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

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

(2) **Major Repair and Major Alterations.** A DER must retain the original FAA Form 8110-3 supporting a major repair or a major alteration. The DER must submit copies of the form to the managing office and the owner/operator or repair station that 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 office for review and concurrence. The project office will transmit FAA approval to the foreign CAA.

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

c. Maintaining Files. A consultant DER is responsible for maintaining a file with a copy or the original, as appropriate, of each FAA 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 FAA Form 8110-3 and associated data when the FAA requests it.

d. Electronic FAA Form 8110-3 and electronic signatures.

(1) An electronic version of FAA 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 FAA Form 8110-3 can be authorized for use by the DER's managing office or the project office, and can be used for submitting data only to that office under an agreement as specified in FAA 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*.

e. Omissions and Errors. Careful preparation and use of FAA Form 8110-3 is important. DERs must 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 include 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 FAA Form 8110-3 to the project office;
- (7) Reference specific section(s) of 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 must identify the information from the 'Restricted category' TC and not from the 'Normal category' TC.

f. Rescinding FAA Form 8110-3. DERs are strongly cautioned to make sure all descriptive and substantiating data has been thoroughly reviewed prior to submitting FAA Form 8110-3. There is no official procedure to rescind a FAA Form 8110-3 once it has been submitted. If the form is subsequently found to be in error, or if the referenced data is found not to comply with airworthiness requirements, the following must take place:

(1) Where errors or airworthiness non-compliances are found during a certification program, it is important the DER work with the applicant and the project office to address the concern before continuing with the project. While work is ongoing, there may be an opportunity to correct the situation with minimal impact to the project. Once the certificate has been issued, the DER must contact the certificate management office and inform them of the error. The managing office must then make the DAH aware of the fact that the data was approved in error. The managing office can then work with the applicant to fix the error.

(2) For repairs or alterations, it is the responsibility of the DER to alert the applicant to the fact that the data on FAA Form 8110-3 does not comply with the airworthiness requirements. This will allow the user of the data to suspend further accomplishment of the repair or alteration until the data is corrected. This is especially true in the case of data used to support a Repair Specification. The only purpose this notification serves is to let the end user know as soon as possible that the data must not be used as approved any longer, thus preventing additional articles or products from being returned to service erroneously. The DER must also contact their managing office. Once the repair

or alteration has been accomplished on an aircraft, the only formal process to correct the airworthiness noncompliance is by AD. An AD may only be issued if the requirements of 14 CFR 39 are met, and only the FAA can make this determination.

3. Management DER Functions and Submittals.

a. Functions. A Management DER performs the following functions:

(1) FAA certification project management duties, including those identified in chapter 2, paragraph 7. 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.

(2) 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 Management DER coordinates the plan with the applicant and FAA program manager, and may include coordination with other DERs who will be involved in the project.

(3) Advises the FAA of any design features that might require special conditions, exemptions, equivalent safety findings, or any unsafe features or characteristics.

(4) Determines that the technical DERs accomplished all necessary findings of compliance with applicable regulations.

Note: This determination may include verification the appropriate revision level of the design data was used.

(5) When requested, prepares the minutes of FAA and applicant meetings, coordinates them with the appropriate DERs and specialists, and submits them to the FAA 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.

b. Submittals to the FAA. Management DERs are not authorized to sign a FAA Form 8110-3. The role of this DER is non-technical. The only use of FAA 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.a.(1) and (2) of this chapter. 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 are appropriate for approval by a DER via FAA Form 8110-3 indicating they are compliant with 14 CFR regulations. It is acceptable and often desirable for an appropriately authorized person, such as a Management DER, to submit these documents via letter, signed cover page, or a locally created form. These documents indicate that a qualified project manager has reviewed the submittal and 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 a Management DER.

4. RS-DER Functions.

DERs granted the specific authority to manage and approve technical data in the Repair Specifications are called Repair Specification – Designated Engineering Representative (RS-DERs). An RS-DER is responsible for managing the data approval portion of an RS and either approving the specific technical data via FAA Form 8110-3 or ensuring 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. (See chapter 4, paragraph 13 of this order for more information on the functions and responsibilities of an RS-DER.)

5. 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

1. Type Certification and PMA Projects. The FAA requires 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. Typically, the content of a delegation plan within an accepted certification plan is adequate evidence that a data approval or finding of compliance has been delegated to a DER. Since a certification plan is usually not developed for PMA, DERs working for a PMA applicant need not have specific authorization to work on each PMA project. However, they must have prior project office authorization to work for the PMA applicant (documented in the Partnership for Safety Plan or other agreement as determined by the managing office). DERs must still obtain specific approval before exercising authority on complex, critical, or life-limited PMA parts based on test and computation. A DER must follow FAA policy in determining compliance with pertinent regulations. Approval or a recommendation of approval of the engineering technical data on FAA 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, equivalent level of safety determinations, 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 office must establish the specific role, authorized area, and responsibility a DER has in performing these functions. The project office must be aware of a DER's limitations. More than one DER may be needed to cover the entire project. The project office determines the extent of FAA 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 office representatives will discuss necessary procedures, requirements for compliance inspections, and conformity requirements with the applicant and DER. The DER or the project office subsequently arrange, as necessary, periodic meetings to discuss problems, project status, and methods for reporting progress. These meetings also permit the project office to advise the DER on particular policies, standards, and procedures that apply to the project.

b. Certification Plan. Applicants are encouraged to submit a certification plan early in the project. Certification plans are required for TC and STC projects per FAA Order 8110.4(). At a minimum, the certification plan must 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 are appropriate for approval by a DER via FAA Form 8110-3 indicating they are compliant with the 14 CFR regulations.

c. Data Approval. The FAA limits the data that DERs approve to engineering data. Data approvals support an eventual design approval issued after compliance with all applicable airworthiness regulations is determined. There are two types of data that a DER typically approves. Descriptive data is the data that will become part of the type design as defined in § 21.31 upon FAA approval, and substantiating data documents the means or methods of compliance. We expect the DERs to be aware of which type of data they are approving. Approval of either the descriptive or substantiating data on FAA 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. Approval of descriptive data by a DER via an FAA Form 8110-3 indicates the listed compliance findings only. It does not indicate approval of that descriptive data as type design. DERs must advise the project office 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 FAA Form 8110-3, together with referenced approved reports and drawings, to the project office 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 FAA Order 4040.26(), *Aircraft Certification Service Flight Test Risk Management Program*.

e. Flight Manuals. Generally, a project office or their authorized representative approves AFMs, AFM supplements (AFMS), RFMs, and RFM supplements (RFMS), or major revisions to AFMs and RFMs. A DER may only *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 FAA Form 8120-10, *Request for Conformity (RFC)*. This form must not be "approved" using FAA Form 8110-3. The DER must identify any features, attributes, and components critical to the test results and provide special instructions as necessary in the RFC. DERs may be authorized to perform the final review of an FAA form 8120-10. If so, the DER will place their name, DER number and title on the "Reviewed by:" line normally reserved for the FAA Project Engineer.

Note: DERs involved in the conformity process may 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://www.faa.gov/aircraft/air_cert/design_approvals/nacip.

i. DER Disposition of Unsatisfactory Items. The project office 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 FAA Form 8120-10 or as part of a conformity plan or other agreement between the project office and applicant. When so authorized, a DER may:

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

(2) Use FAA 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 FAA Form 8100-1, as the later approved data may correct the unsatisfactory items.

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 may 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 FAA Form 8110-3 with the specific paragraphs of 14 CFR part 36, subpart O, listed in the requirements section.

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

4. Test Witnessing.

a. DERs must receive specific authorization from the project offices before witnessing a test or approving any test data on our, the FAA's, behalf. The DER must coordinate with the project office 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 project office 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. Documentation of test results witnessed by a DER is not done with an FAA Form 8110-3. The DER will sign, or otherwise notate on the test results, using their DER number to indicate that they were the official test witness.

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 office. 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 type inspection authorization (TIA) is required for conducting official FAA tests.

6. Changes in Type Design.

a. Major vs. Minor Change. 14 CFR § 21.93 classifies changes in type design as minor and major.

(1) Major changes require FAA involvement that may include specific DER authorization for the project.

(2) We may approve minor changes in type design under a method acceptable to the Administrator, per 14 CFR § 21.95. It is the DAH's responsibility to determine whether a change to type design is major or minor. If a change is determined to be minor, no FAA project is necessary. If the DAH determines that the data requires approval, then, with prior authorization from the project office, they may use an appropriately rated DER. Otherwise, DERs do not approve data for minor changes in type design.

Note: Minor changes to type design for a TC or STC should not be confused with minor repairs or minor alterations. DERs are not allowed to approve data for minor repairs or minor alterations.

(3) The decision as to whether a change and/or alteration is major or minor must be reviewed with the project office if the decision is controversial or if the applicant 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. The applicant is responsible for making this determination. 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 the FAA and the applicant in providing appropriate substantiating data in support of a determination.

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 of this order. For additional guidance, refer to FAA Order 8110.4(), Type Certification.

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 FAA Form 8110-3. (Reference FAA Order 8110.103(), *Alternative Methods of Compliance (AMOC)*.) 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, including part names, numbers, and serial numbers (if applicable). A description of damage, 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 DER's letter of appointment from the FAA (and date) granting AMOC approval authority to that particular DER;

(8) A statement that the approval meets the applicable sections of the aircraft type certification basis or other defined airworthiness requirements. For example, an alternative 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";

(10) The following statement: "All provisions of AD ****-**-** that are not specifically referenced above remain fully applicable and must be complied with accordingly.";

(11) The following statement (not required for global AMOCs): “The [*responsible office*] will revoke this AMOC if the [*responsible office*] later determines that this AMOC does not provide an acceptable level of safety,” and

Note: The responsible office is defined as the office identified in the AD as being authorized to approve AMOCs.

(12) DER signature and date.

b. Temporary Repairs. If a DER is approving data for a temporary repair as part of an AMOC, then the DER must:

(1) Include a statement on the FAA Form 8110-3 that the approval is time-limited and will have to be removed on or before a specified date, cycle limit or flight time limit.

(2) Keep all records (telexes, stress and life analyses, and letters) associated with the AMOC approval.

9. Approval of Service Documents.

a. Design Change Data. DAHs may identify changes to type design incorporated after original manufacture in service documents. The design change data of service documents require FAA approval. The project office 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 design data in service documents must clearly indicate those aspects of the document that the FAA approved. FAA Form 8110-3 submittals must list (in the “applicable requirements” block) the airworthiness requirements to which the DER found compliance. AC 20-176(), *Service Bulletins Related to Airworthiness Directives and Indicating FAA-Approval on Service Documents*, provides guidance by which DAHs may indicate our approval on service documents.

b. Service Documents and Revisions in an AD. Project offices and DERs must coordinate with the appropriate certificate management office on service documents and revisions that are made part of an AD or referenced in it.

10. DER International Operating Procedures. In FAA Order 8100.8() you will find guidance for DERs working on original certification projects (TC, Amended Type Certificate (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 repairs and alterations, see paragraph 12 of this chapter. For DERs working in Europe, the Technical Implementation Procedures (TIP) of the agreement between the FAA and the European Aviation Safety Agency (EASA) provides procedures and guidance when interacting with EASA. Contact AIR-400 (9-AWA-AVS-AIR400@faa.gov) for additional guidance when working with foreign registered aircraft.

11. PMA Identity Procedures. The FAA requires a DER to follow the provisions of FAA Order 8110.42(), *Parts Manufacturer Approval Procedures*, when conducting PMA activities. See an example of FAA Form 8110-3 with identity notations in appendix B, figure B3, page B-5 of this order. A DER with special authority for PMA identity may sign and submit FAA

Form 8110-3 to the project office without a certification plan or specific prior consent from us. The project office 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 office to make PMA identity findings. The DER and the PMA applicant must verify the DER's authority and limitations before proceeding with the finding of identity. The DER must have access to the DAH's data allowing for a direct comparison of design data. Authorized DERs may sign FAA 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 office with FAA Form 8110-3 and the PMA data.

b. Findings of Identity. If a DER checks the approved block on FAA 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 FAA Form 8110-3, the DER must state "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.

c. FAA Actions. The FAA 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. The FAA also verifies 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 Letter of Design Approval (LODA) if the FAA determines that the previously approved parts are still eligible for installation on the listed product models. After verifying that all requirements are met, the project office will continue processing the application in accordance with FAA Order 8110.42().

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 requirements both before and after the modification. RS and DER approval is discussed in paragraph 13 of this chapter.

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 descriptive and/or substantiating 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, alterations 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 managing office 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. Responsibility for determining whether a repair or alteration is a major repair or a major alteration rests with the applicant. DERs may assist the applicant in making this determination, but their participation is on behalf of the applicant and not as an FAA representative.

c. Authorization. A DER must have authorization from the managing office in order to approve data for major repairs or major alterations. The managing office's authorization may be verbal and confirmed in writing or 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 B, figure B-8. A DER who is granted this authority by letter may approve technical data for major repairs and major alterations without first notifying the managing office, 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 FAA Order 8100.8(). For critical or life-limited parts, the DER must contact the managing office for guidance.

Note: If a DER is aware that a proposed repair or alteration is in an area that is the subject of an AD, even though it may be prior to the compliance date of the AD, or is in an area under investigation as a safety concern, the DER must contact the office responsible for the AD for additional guidance. Contacting the responsible office will ensure the repair or alteration will adequately address the safety concern, or meet the intent of the AD, and will not contribute to or create a different unsafe condition. If an AD has been issued and the AD has been accomplished, additional changes to the affected area require an AMOC.

(1) **Repairs and Alterations for Specific Aircraft and Components.** 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 FAA Form 8110-3. Parts or components that are not serialized must be identified by a specific work order on FAA Form 8110-3.

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

(3) **Repair/Alteration Authority.** The repair/alteration authority listed in paragraph 12(c)(1) is for aircraft/components currently in a condition requiring repair or alteration. The DER may only list multiple aircraft/components, including engines, propellers, or articles installed on the aircraft, when they are specifically identified to receive an alteration. Data in support of alterations for aircraft or components that are not identified to receive an alteration, but may be identified at a later date, are considered data for “future use,” and may only be approved via STC or ATC. Data in support of repairs for “future use,” i.e., for those aircraft not currently requiring repair, may only be approved as an RS. Service Bulletins, or service documents, from Design Approval Holders or their suppliers, providing optional alterations/repair must 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 FAA Order 8110.4(). If DERs are not delegated this function, they must add the following note to the body of FAA Form 8110-3: “_____ compliance inspection is not included in this approval and requires FAA approval.”

e. Repair and Alteration Design Data. The FAA presumes 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 contain 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 must be noted on FAA 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 requirements have complied with the certification basis. For a major repair, the data must show that the repaired part is still compliant via a showing that the applicable airworthiness requirements 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 are encouraged to contact their managing office to determine if approval is appropriate and to establish 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. The applicant must show that the product will function reliably throughout its established inspection interval 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.

f. Data Submittal. The DER must submit a copy of FAA Form 8110-3 and the approved data to the owner/operator or repair station requesting approval. The DER must retain the original Form 8110-3 and send a copy to their managing office. If specifically requested by their managing office, the DER must send a copy of the approved data to their managing office also. These submittals are used by the managing office to perform DER oversight. DERs are encouraged to include a reference to the owner/operator or repair station, if available, on the FAA Form 8110-3 transmitted to the managing office. The DER must include the following notations in the “Purpose of Data” block on FAA Form 8110-3, as applicable (see example in appendix B, figure B-4):

(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. FAA Order 8300.16(), includes reference to 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 are encouraged to contact their managing office.

(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 “List of Data” block on FAA 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.’

This form (does/does not) approve all data necessary for the installer to reference in the approval for return to service”.

(Also, indicate if compliance with additional regulations not listed here may be required).

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 must 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 office 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 managing office, 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 (i.e. the TC holder is located in the United States) aircraft, engine, propeller, or STC unless:

(a) it is repair data applicable to Canadian registered aircraft, or

(b) it is for an aircraft operated by a U.S. operator under 14 CFR §§ 121.153(c) or 135.25(d).

(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 FAA 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 office. The managing office will then determine if the DER has the knowledge and experience necessary to make findings to the Canadian Aviation Regulations and may delegate these findings 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 FAA Form 8110-3 per paragraph 12.f in this chapter.

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 FAA Form 8110-3 that indicates what ICA the DER has reviewed relative to the engineering data being approved. See FAA Order 8110.54(), *Instructions for Continued Airworthiness Responsibilities, Requirements, and Contents*, for more guidance on ICA.

n. Articles with TSOA.

(1) DERs cannot make a finding of compliance to the TSO. DERs can approve repair data applicable to TSO'd articles the same as they can approve repair data for any other article. The repair approval for any article is based on continued compliance with the airworthiness requirements for the product(s) on which the article may be installed. For an Auxiliary Power Unit (APU), these airworthiness requirements might include: 14 CFR §§ xx.601, xx.603, xx.605, xx.1301, and xx.1309. It is important to note that the TSO is not the repair standard for the article being repaired. There is one unique consideration that must be given when repairing a TSO'd article; if the repair invalidates the article's conformance to the TSO, the TSOA marking must be removed. Although not required, the DER may include a note in the List of Data block that indicates incorporation of the approved repair data does not invalidate an APU's conformance with TSO-C77.

(2) It is not acceptable to base TSO'd article repair data approval solely on continued conformance to the TSO. Airworthiness standard compliance must be demonstrated. Because a TSO'd article is likely to be used on more than one type of aircraft, approval of repair data may be more complex than for a non-TSO'd article. The person seeking the repair approval must identify the appropriate certification basis for the repair, which may be a combination of rules and amendment levels from different product rules based on installation eligibility.

(a) An example of this is seat belt webbing repair. There is no assurance that a repaired belt will meet the same dynamic test standards required of the original, unless additional testing is done after the repair. Even though the repaired belt would conform to the TSO and carry the same part number, it may not meet the installation standards.

(b) Another example is for seat belt part number 123 that is used on Boeing 737 and Airbus A-319. A repair station gets a box of worn belts from ABC airline that only flies B-737s. They design a repair to re-web the belts. They generate repair data that only substantiates the dynamic seat certification for the B-737. They may repair the belts, but since there is no substantiating data to support installation in A-319s, the belts must be identified to make sure that they can only be used on B-737s.

(3) It is not acceptable to approve repair data in the form of general processes applicable to all articles that meet a particular TSO. Each repair data approval, whether individual or multiple approved by a repair specification, must identify each eligible article by part number. The repair must be approved to the applicable airworthiness regulations.

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 the repair. An RS may be developed that creates a procedure very similar to one listed in the current manufacturer's maintenance manual, ICA, or FAA-approved portions of service documents but is not required. 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 substantiating data is sufficient to show compliance, approve the data for the major repair on an FAA 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-DER".

(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. They want to develop a repair that is non-serial number specific, non-DAH, and use it repeatedly, so 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 requirements;

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

(3) Is intended to be used repeatedly;

(4) Requires FAA data approval;

(5) 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.

Note: this means that a 14 CFR part 135 operator must have a Continuous Airworthiness Maintenance Program (CAMP) in order to qualify.

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 require more frequent inspections. This determination must 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 B for a sample title/signature page for an RS.

(4) The DER cannot approve/accept revisions to the ICA. If Airworthiness Limitations are affected, then the DER must coordinate the approval of those changes with the DER's managing office and the certificate managing office. Otherwise, it is the maintenance entity's responsibility to ensure the modified ICA are acceptable to the FAA and provide them to the owner of any repaired article. The RS-DER must verify that these steps are included as part of the RS prior to signing the cover sheet. See FAA Order 8110.54(), 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 FAA 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 must 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, 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 FAA Form 8110-3. DERs approved data in support of RS must be authorized for 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 every FAA Form 8110-3 submitted by other DERs to determine 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. The FAA, authorizes 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 office advisor and the FSDO/CMO/IFO principal maintenance inspector (PMI). See appendix B, figure B-9, for a sample title/signature page.

f. FAA Form 8110-3 Does Not Indicate RS Approval. DERs must use one or more FAA Form 8110-3 to approve RS technical data, but RS-DERs must *not* use FAA 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 DER's managing office.

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

(1) An RS-DER may manage an RS project affecting critical or life-limited parts, but, prior to starting an RS project, RS-DERs must coordinate with their managing office. The managing office 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 managing office. In this case, the applicant and the DER's managing office must sign the title/signature page of the RS to indicate 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 managing office. The managing office must make a determination and then notify the DER. If the managing office agrees with the DER, the DER notifies the applicant and the process may continue with FAA engineering involvement. If the managing office determines the part is not critical or life-limited, the RS approval process may continue without FAA engineer involvement.

14. Flammability Testing of Interior Materials. A DER with authority to witness flammability tests on the FAA's behalf must know how the material or part will be installed on an end product and must identify that use on FAA 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 office, which will include a defined test process and means to ensure test article conformity. FAA 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.

15. TSOA Procedures. FAA 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.

16. Human Factors. There is no human factors authority available to be granted to a DER. DERs who approve data that has an impact on human factors must document and discuss any issues with the project office or their managing office.

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.

18. Commercial Parts. A commercial part is 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

DER Guidance Material consists of the airworthiness requirements 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.

- 1. 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.
- 2. Other Guidance Material and Forms.** Managing or project office provide all necessary forms, instructions, and other material not available through the FAA website.
- 3. 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 office, the U.S. Government Printing Office, or U.S. government bookstores.

Chapter 6. Administrative Information

- 1. Distribution.** Distribute this order to Washington headquarters branch levels of the Aircraft Certification Service, Flight Standards Service, and to branch levels of the regional aircraft certification directorates and regional flight standards divisions; to all engineering field offices, all manufacturing field offices, the International Division (AIR-400), 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 Policy and Innovation Division (AIR-600). The Delegation and Organizational Procedures Branch (AIR-6F0) makes changes, as required, to carry out the FAA's responsibility to provide guidance on the standardized usage of issue papers.
- 3. 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 Aircraft Certification Service, Policy and Innovation Division (AIR-600). If a deviation becomes necessary, the FAA employee involved must ensure the deviations are substantiated, documented, and concurred with by the appropriate supervisor. A copy of the deviation must be submitted to AIR-600 for review and concurrence.
- 4. Definitions and Acronyms.** Appendix C contains definitions for certain key terms, and a list of all acronyms and their meanings as used in this order.
- 5. Suggestions for Improvement.** If you find any deficiencies, need clarification, or want to suggest improvements to this order, submit your comments using FAA Form 1320-19, Directive Feedback Information, to the Aircraft Certification Service, Directives Management Officer at 9-AWA-AVS-AIR-DMO@faa.gov. FAA Form 1320-19 is included as appendix D. You can also send a copy to the Policy and Innovation Division, AIR-600, Attention: Comments to FAA Order 8110.37. If you urgently need an interpretation, contact AIR-600 at 202-267-1575, or email 9-AMC-Aircraft-Certification-Designees@faa.gov. Always use Form 1320-19 to follow up each verbal conversation.
- 6. Records Management.** Refer to FAA Orders 0000.1, *FAA Standard Subject Classification System*, 1350.14, *Records Management*, or your office Records Management Officer (RMO) / Directives Management Officer (DMO) for guidance regarding retention or disposition of records.

Appendix A. Delegated Functions and Authorized Areas

Figure A-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-Empenage Group	Structural-Landing Gear	Structural-Flight Controls	Structural-Rotor	Loading Control Documents (4)	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																
<p>Note (1): Includes all airframe components: wing, fuselage, empennage, landing gear, flight controls, engine mounts, and special components. Does not apply to rotors.</p> <p>Notes (2) and (3): Select Specialty by Note number and sub-letter from lists below. General applies to all processes listed.</p> <p>(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</p> <p>(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</p> <p>Note (4): Item H8 is the proper delegation for weight and balance manual approvals.</p>																	

Figure A-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.

DELEGATED FUNCTIONS		AUTHORIZED AREAS					
		A Airplane Turbine Engine	B Airplane Piston Engine	C Rotorcraft Turbine Engine	D Rotorcraft Piston Engine	E Auxiliary Power Unit (APU)	F Special (Specify)
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						

Figure A-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														

Figure A-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											
		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												

Figure A-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					

Figure A-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	EMISSIONS EVALUATION			
9	SOFTWARE			
10	SAFETY ANALYSIS			
11	LIGHTNING/HIRF PROTECTION			

Figure A-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			

Figure A-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) : 14 CFR Part 36 reference profiles and conditions may be controlled by identifying the specific appendix to 14 CFR 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 may only recommend approval, unless specifically authorized to approve AFM revisions or supplements.</p>													

Figure A-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 may only 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 may only recommend approval, unless specifically authorized to approve AFM revisions or supplements.</p>												

Figure A-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 B. Samples, Forms, and Letters

Figure B-1. FAA 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 NUMBER(S)	13. CLASSIFICATION(S)	

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

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

Figure B-2. Sample FAA Form 8110-3, Instructions for Preparation (Blocks 1 – 5)

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 must 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. 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 part 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

Figure B-3. Sample FAA Form 8110-3, Instructions for Preparation(Blocks 6 and 7)**LIST OF DATA**

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

Block 7: Title – Enter the title of the report, drawing, analysis, or document for both the descriptive data and/or the substantiating data. In general, descriptive data is part of the type design data as defined by § 21.31. This data is supported by substantiating data. If the data is descriptive only and the compliance substantiating data will follow, the DER would annotate the List of Data block with "*Substantiating data approval pending.*" Similarly, if the data is substantiating data only, the DER would annotate the List of Data block with "No descriptive data required". This would be used, for example, when a DER approves a loads report. A DER must reference all data covered by the approval: drawing numbers with change letters, report numbers with revision level dates, etc.

When finding compliance to the requirements of 14 CFR part 23, Amendment 23-64 (the "new Part 23"), DERs must list the means of compliance (MOC) under § 23.2010 in addition to the regulations. Block 7 must list either the MOCs used, or must reference the document containing the MOCs used for finding compliance.

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 must 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. Additional approvals required.

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 chapter 4, paragraph 12.h 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 New, Dated 6-29-88	Sketch Package, Cabinet Installation, Pages 1, 2, & 3.
	Notes: 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." 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. 3) Aircraft interior compliance inspection is not included in this approval and requires separate approval.

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 must be used with only one DER signature.

Example:

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

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. Approved by DER[name]
1000048 Revision C Dated 10/22/03	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 chapter 4, paragraph 12.h of this Order.

Example:

LIST OF DATA	
6. IDENTIFICATION	7. TITLE
Report No. SR 88-25, N.C. New, Dated 6-69-88 Sketch Dwg. 88 Rev. A, Dated 6-29-88	Stress Report, "Cabinet Installation, Bell Model 222 Helicopter S/N 12345". 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.

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 RPT-2468 Rev. B, 04/12/2001	Oil Pump Shaft Drawing. 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 requirements 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 chapter 4, paragraph 8 of this Order.

Example:

LIST OF DATA	
6. IDENTIFICATION	7. TITLE
FR12345 Rev. C, 02/12/2001	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 Aircraft Certification Service 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.

Figure B-4. Sample FAA Form 8110-3, Instructions for Preparation (Block 8)

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 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:

<p>8. PURPOSE OF DATA In support of type certification of the fuel system for the Smithson 401 Aircraft. Project No. SA-00146-AC.</p>
<p>8. PURPOSE OF DATA Identity only under 14 CFR § 21.303.</p>
<p>8. PURPOSE OF DATA In support of a major repair for S/N 12345.</p>
<p>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.</p>
<p>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.</p>
<p>8. PURPOSE OF DATA In support of AMOC for S/N 1357.</p>
<p>8. PURPOSE OF DATA In support of global AMOC (number).</p>

Figure B-5. Sample FAA Form 8110-3, Instructions for Preparation (Block 9)

Block 9: List of Applicable Requirements - Enter the exact regulation(s) paragraphs, subparagraphs, or other appropriate airworthiness requirements with which the data comply. In no case may a regulation be listed here that is not supported by the data listed in block 6. 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: Most references in block 9 are made to standards in 14 CFR parts 23, 25, 27, 29, 31, 33, 34, 35 or 36,. PMA identity findings are made to 14 CFR § 21.303(a)(4). For special classes of aircraft under 14 CFR § 21.17(b) and primary category aircraft under 14 CFR § 21.17(f)(1) references may be made to the non-CFR airworthiness criteria adopted under those rules (e.g. the Airship Design Criteria FAA-P-8110-2) when identified in the certification basis.

Examples:

9. APPLICABLE REQUIREMENTS <i>(List specific sections)</i> 14 CFR 25.1301 (all) Amdt. 25-123, 25.1309 (a) Amdt. 25-123, 25.1359 (d) (3) Amdt. 25-72.
9. APPLICABLE REQUIREMENTS <i>(List specific sections)</i> 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 <i>(List specific sections)</i> CAR 4b.202 (a), (b), (d) released 12/31/1953 AD 97-03-05, paragraphs (c) (3) and (d).

Figure B-6. Sample FAA Form 8110-3, Instructions for Preparation (Blocks 10 and 11)

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.

For major repairs and/or major alterations, the DER may find or recommend finding compliance to airworthiness requirements and also identify the data as approved for the purpose of accomplishing the major repair or major alteration. The DER must also indicate whether or not other data approvals are required for the complete repair or alteration. If the DER knows what other approvals are necessary, they must list them in the “List of Data” section. If the DER is unsure if other data approvals are required, they may use the “List of Data” section to describe what further evaluation is needed.

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 or as limited by policy.

Block 11: Signature - 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.			
I (We) Therefore		<input type="checkbox"/> Recommend approval of these data <input checked="" type="checkbox"/> Approve these data	
11. SIGNATURE(S) OF DESIGNATED ENGINEERING REPRESENTATIVE(S)	12. DESIGNATION	13. CLASSIFICATION(S)	
<i>James Bullock</i> James Bullock	DERY-123456-NM	SYSTEMS & EQUIPMENT	

Figure B-7. Sample FAA Form 8110-3, Statement of Compliance with Airworthiness Standards, Software/Airborne Electronic Hardware (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) 14 CFR § XX.1301, Amdt XX-XX, and 14 CFR § 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 NUMBER(S)	13. CLASSIFICATION(S)	

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

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

Figure B-8. 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 managing office approval when the work involves critical or life-limited parts or if you will be working outside the United States (reference FAA Order 8110.37F, chapter 4, paragraph 12.c).

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

Sincerely,

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

Figure B-9. 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.

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: _____
FAA Engineer/RS-DER Signature

Office ID/RS-DER ID Number: _____

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

Appendix C. Definitions and Acronyms

Definitions

- 1. Applicant.** Any person (individual, company, aircraft owner, aircraft operator, 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 FAA 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 FAA 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 FAA 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 Office.** Office responsible for supervising, monitoring, training, tracking, and recommending renewal of a designee.
- 5. Product.** Aircraft, aircraft engine, or propeller.
- 6. Project Office.** Geographic engineering field office 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)
AASR	Aging Aircraft Safety Rule
AC	Advisory Circular
AD	Airworthiness Directive
AEE	FAA Office of Environment and Energy
AEG	Aircraft Evaluation Group
AEH	Airborne Electronic Hardware
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
CAMP	Continuous Airworthiness Maintenance Program
CAR	Civil Air Regulation
CMO	Certificate Management Office
COA	Certificate of Authority
CPL	Commercial Parts List

DAH	Design Approval Holder
DAR	Designated Airworthiness Representative
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
MRB	Material Review Board
ODA	Organization Designation Authorization
PMA	Parts Manufacturer Approval
PMI	Principal Maintenance Inspector
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 D. FAA Form 1320-19, Directives Feedback Form

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: FAA Order 8110.37F

To: AIR Directives Management Officer at 9-AWA-AVS-AIR-DMO@faa.gov or complete the online form at <https://ksn2.faa.gov/avs/dfs/Pages/Home.aspx>.

(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: _____

FAA Form 1320-19 (10-98)