DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE LIFE CYCLE MANAGEMENT CENTER
WRIGHT-PATTERSON AIR FORCE BASE OHIO

CIRCULAR
AC–18-01A
1 SEP 21

AIRWORTHINESS CIRCULAR

FEDERAL AVIATION ADMINISTRATION AIRWORTHINESS CERTIFICATION PROCESS OVERVIEW

1. Purpose. This United States Air Force (USAF) airworthiness (AW) circular (AC) provides an overview of the Federal Aviation Administration's (FAA) AW certification process and products as pertaining to USAF applications.

2. Scope. This AC applies to USAF activities involving FAA-certified aircraft.

3. Attachments. (1) Abbreviations and Acronyms

4. Cancellations. This revision replaces the original issuance of this AC published on 26 October 2018.

5. Referenced Documents.

DoDD 5030.61, *DoD Airworthiness Policy*, 31 August 2018

FAA Order 8130.2J, *Airworthiness Certification of Products and Articles*, 21 July 2017

FAA Order 8110.4C, *Type Certification*, 12 October 2005

FAA Order 8110.101A, *Type Certification Procedures for Military Commercial Derivative Aircraft*, 25 February 2015

FAA Order 8300.16A, *Major Repair and Alteration Data Approval*, 11 December 2018

MIL-HDBK-516C, *Airworthiness Certification Criteria*, 12 December 2014

USAF AWB-340, *USAF Airworthiness Requirements for Contractor-Owned and Contractor-Operated Air Systems*, 26 October 2018

USAF AWB-360, *Commercial Derivative Aircraft Airworthiness*, 1 September 2021

6. Background. The USAF AW processes for commercial derivative aircraft (CDA) and contractor-owned, contractor-operated (COCO) aircraft are documented in AWB-360, *Commercial Derivative Airworthiness*, and AWB-340, *USAF Airworthiness Requirements for Contractor-Owned and Contractor-Operated Air Systems*, respectively. Executing the CDA and COCO aircraft AW processes requires a thorough understanding of the FAA AW certification process.

7. Discussion. Official FAA information is found in Title 14 of the Code of Federal Regulations (14 CFR), FAA Orders, FAA Advisory Circulars and other information available at www.faa.gov. Paragraph 8 of this AC contains recommendations for reviewing FAA AW products in support of USAF AW assessments and AW approvals.

7.1. AW Definition. FAA Order 8130.2J, *Airworthiness Certification of Products and Articles*, defines "airworthy" as the quality possessed by a type-certificated aircraft that conforms to its U.S. type certificate (TC) and is in a condition for safe operation. For non-

type-certificated aircraft, "airworthy" is defined as the quality possessed by an aircraft that is in a condition for safe operation.

7.1.1. "Conformity to the TC" means the aircraft configuration and the engine, propeller, and articles installed are consistent with the drawings, specifications, and other data that are part of the TC. This includes any supplemental type certificate (STC), repairs, and alterations incorporated into the aircraft.

7.1.2. "Condition for safe operation" refers to the condition of the aircraft relative to wear and deterioration, for example, skin corrosion, window delamination/crazing, fluid leaks, and tire wear. The aircraft items evaluated may vary. Refer to FAA Order 8130.2J for additional information.

7.2. Type Certification Process. FAA Order 8110.4C, *Type Certification*, defines the FAA's type certification process.[1] The FAA's type certification process encompasses both the design of the physical aircraft, engine, or propeller and the technical data for the operation and maintenance of the same. The following paragraphs describe the processes under which aircraft, engines, and propellers, or changes thereto, can be approved:

7.2.1. Type Certificate: The official document provided by the FAA to the applicant that indicates their aircraft, engine, or propeller design meets all the appropriate 14 CFR requirements. A TC is supported by documentation developed during the design process (stress reports, parts drawings, etc.) and operations and maintenance manuals (pilot operating handbooks, parts lists, structural repair manuals, etc.) Only some of this documentation is provided to the owner/operator of the aircraft, engine, or propeller. Top-level textual summary are documented in the Type Certificate Data Sheet (TCDS) maintained by the FAA and available at https://drs.faa.gov.

7.2.2. The TCDS includes, but is not limited to, engines, fuel, limitations, serial numbers, and certification basis information.

7.2.3. Amended Type Certificate (ATC): An official revision to the TC issued to the TC holder stating that the holder's aircraft, engine, or propeller design modification meets all the appropriate 14 CFR requirements. ATCs are commonly used for engine changes, optional equipment, landing gear changes, and gross weight increases. Installation of some ATC are documented on an FAA Form 337, *Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance)*, and the aircraft's maintenance log book.

7.2.4. Supplemental Type Certificate: A change to the type design of original aircraft, engine, or propeller that can range from a change of limitations (service life extension, approval of additional fuel, etc.) to a physical change to the aircraft, engine, or propeller. An approved STC meets the appropriate 14 CFR requirements. Installation of an STC is documented on an FAA Form 337 and the aircraft's maintenance log book. An aircraft can have multiple STCs installed. The FAA requires installers determine, prior to installation, if an STC is compatible with previously approved modifications. Furthermore, an STC may be amended by the STC holder, similar to how TCs may be amended.

[1] Refer to www.faa.gov for supporting FAA Orders and Advisory Circulars.

7.2.5. To obtain a TC, STC, or amended TC or STC the FAA typically requires applicants develop a project specific certification plan (or equivalent), perform applicant (or contractor) flight tests, obtain a Test Inspection Authorization approval, perform certification flight tests, show compliance at the product and system levels, and show article conformity to the type design.

7.3. Type Certification Process for Military Commercial Derivative Aircraft. FAA Order 8110.101A, *Type Certification Procedures for Military Commercial Derivative Aircraft*, defines supplemental procedures for type certification of military CDA.[1]

7.3.1. The FAA issues Type Certificates for military CDA with different levels of approval, as established in FAA Order 8110.101A.

7.3.2. FAA Full Approval (Equipment, Installation, and Operation). The USAF accepts full FAA approval without further review if USAF configuration, usage, and environment is consistent with the FAA design approval.

7.3.3. FAA Limited (for who may operate equipment) Approval. For equipment that may have no civil application (e.g., identification friend or foe [IFF], mission sensors, military global positioning system [GPS]), the FAA may require USAF assistance to find compliance with all applicable 14 CFR requirements. The approved operation of equipment is limited to military usage. The FAA utilizes a statement of functionality (SoF) to support their compliance finding when it is impractical or impossible for the FAA to determine if the military equipment performs its intended function.

7.3.3.1. The FAA is required to find compliance to all 14 CFR requirements for the specified type design. This includes verifying all equipment functions properly when installed (e.g., 14 CFR 25.1301[a][4]), since installed equipment is certified on and operating in all possible modes for limited FAA approvals. For military-unique equipment, the FAA, instead of establishing a unique means of compliance, may request the USAF assist in determining that the installed equipment performs its intended function.

7.3.3.2. Complete compliance finding for installed equipment involves many aspects in addition to verifying the equipment performs its intended function. The FAA can and does conduct full compliance finding for all other aspects (e.g., system safety, electromagnetic interference/electromagnetic compatibility, flight deck alerting, structural installation, software, etc.); SoF do not address these. The FAA's compliance findings consider the criticality of the function addressed by the SoF.

7.3.3.3. The SoF must only address that the system performs to the USAF-established specification/intended function. In addition to military-specific requirements, the FAA must use its own criteria, if appropriate, to address some aspects of the military-unique functions. The USAF should inform the FAA of issues discovered during testing conducted to support statements of functionally if they may impact the FAA's compliance finding for other regulations.

7.3.4. FAA Safe Carriage Approval. The FAA approves that equipment, in its non-functional state, complies with all applicable 14 CFR requirements. All wiring is capped, bagged, and stowed, and there is no controller allowed in the flight deck. The USAF is

responsible for ensuring the operation of this equipment complies with applicable criteria in MIL-HDBK-516, *Airworthiness Certification Criteria*.

7.3.5. FAA Provisions Only Approval. The FAA approves that aircraft structure, design characteristics, or system capabilities intended to meet defined and predetermined structural load, interface, attachment, and electrical power requirements. Provisions only approvals do not include the installation of any equipment. The USAF is responsible for ensuring installation and operation of this equipment complies with applicable criteria in MIL-HDBK-516.

7.3.6. The FAA Military Certification Office (MCO), established as part of the FAA/Armed Services Federal Reimbursable Agreement (FRA), is the single point of contact for all services provided by the FAA to the Department of Defense (DoD), as required in DoDD 5030.61, *DoD Airworthiness Policy*.

7.3.6.1. The FRA defines the scope of services provided by the FAA to the DoD for CDA, which include Technical Assistance, Certification Services, and Continued AW Support.

7.3.6.2. USAF CDA programs utilize the MCO for project management. Initiation of new projects with the MCO requires sponsorship from the USAF in accordance with the requirements of the FRA. The sponsorship letter ensures the program supports a USAF acquisition program, USAF sponsored foreign government, other U.S. government agency, or a U.S. security assistance program.

7.4. Repairs and Alterations. 14 CFR Part 43 and FAA Order 8300.16A, *Major Repair and Alteration Data Approval*, define the process for repairs and alterations to aircraft, engines, and propellers.[1] Repairs and alterations are classified as either "major" or "minor". The FAA publishes a Job Aid to assist in determining the level of approval required for major repairs and alterations. The *Major Repair and Alteration Data Approval Online Job Aid* is available at https://fsims.faa.gov. A summary of the key aspects of repairs and alterations is provided below.

7.4.1. Major Repairs and Alterations: A repair or change to the aircraft, engine, or propeller parts performed on a single aircraft that meets the definitions in 14 CFR §1.1. 14 CFR Part 43 documents repairs and alterations classified as major. Major repairs and alterations are supported by FAA-approved data. Approved data may be obtained from FAA Designated Engineering Representatives (DERs) with authority to approve data for that specific purpose or other sources listed in FAA Order 8300.16A, Chapter 4.[2] DERs analyze the repair or alteration, manufacturer's type design, lab/field testing results, and approve supporting data with an FAA Form 8110-3, *Statement of Compliance with Airworthiness Standards.* If all data is not FAA approved, an FAA Aviation Safety Inspector (ASI) or appropriately rated Designated AW Representative (DAR) approves the supporting data via the Field Approval process (signature in Block 3 of the Form 337).[3] Major repairs and alterations are documented on an FAA Form 337, as required by 14 CFR Part 43, Appendix B, and the aircraft's maintenance log book.

[2] Often, approval is needed by multiple DERs (e.g., structural, systems and equipment, etc.)
[3] Not available for non-U.S. registered aircraft.

7.4.2. Minor Repairs and Alterations: A repair or alteration to an aircraft, engine, or propeller that is not a major repair or alternation (ref. 14 CFR §1.1 and 14 CFR Part 43, Appendix A). Minor repairs and alterations are supported by FAA-acceptable data. A maintenance log book entry is required by an individual with an FAA Mechanic Certificate with an Aircraft and/or Powerplant rating.

7.5. AW Certificates. FAA Order 8130.2J defines the process for issuing AW certificates. All U.S. aircraft conducting civil aircraft operations must possess an FAA-issued AW Certificate. The AW Certificate is a physical piece of paper issued by an FAA representative after completing an aircraft inspection. The FAA AW Certificate must be displayed in the aircraft visible to passengers and crew when the aircraft is operated. The two types of AW Certificates are a Standard and a Special.

7.5.1. Standard AW Certificate: An FAA Form 8100-2, *Standard Airworthiness Certificate*, is issued for aircraft which have been issued a TC in the normal, utility, acrobatic, commuter, and transport categories. The AW Certificate is valid as long as the aircraft is maintained and operated in accordance with applicable 14 CFR requirements.

7.5.2. FAA Special AW Certificate: An FAA Form 8130-7, *Special Airworthiness Certificate*, is used for a wide variety of purposes as described in FAA Order 8130.2J, Chapter 4. They cover aircraft that have not been certified by the FAA in the five categories listed under the Standard AW Certificate. The Special AW Certificate categories include primary, limited, provisional, special flight permit, restricted, light sport, and experimental. The USAF Technical Airworthiness Authority (TAA) does not recognize FAA Special AW Certificates to as a basis for issuing USAF AW approvals (ref. Paragraph 8).

7.5.2.1. Experimental AW Certificates (colloquially known as X-tickets) may be issued to both FAA TC and non-FAA TC aircraft. These Certificates are for one of the following purposes: research and development, show compliance, exhibition, market survey, crew training, air racing, and amateur built. In general, aircraft with an Experimental AW Certificate are restricted from carrying persons or property for compensation and hire.

7.5.2.2. A Restricted category aircraft has the following potential purposes: agricultural, forest and wildlife conservation, aerial surveying, patrolling, weather control, aerial advertising, and other operations specified by the FAA.

7.5.2.3. Non-Type Certified aircraft do not possess an FAA approved design and do not have FAA approved documents supporting continued AW. Non-Type Certified aircraft may be eligible only for an Experimental AW Certificate.

7.5.2.4. Both experimental and restricted categories may include additional operating limitations, beyond those documented in the technical data, which impose requirements or limits on the operation and maintenance of the aircraft.

7.5.3. Some aircraft may have multiple AW Certificates. The associated operating limitations will include instructions for converting the aircraft between certificates.

8. Recommendations. The following paragraphs document USAF TAA and Delegated Technical Authority (DTA) considerations when approving AW assessments and issuing AW approvals. Program Offices should ensure AW assessments addresses these considerations.

8.1. For COCO aircraft, follow the process established in AWB-340.

8.2. For USAF CDA, follow the process established in AWB-360.

8.3. Assess if the aircraft is in a condition for safe operation through a review of AW Certificates, maintenance records, and FAA Form 337s. An on-site inspection of the aircraft should be conducted by someone familiar with FAA processes.

8.4. Ensure that the FAA AW approvals have been obtained through a complete FAA approval process. Assesses aspects that were not approved through the complete FAA approval process.

8.5. The USAF TAA and DTAs accept FAA type certification (TCs, STCs, and amended TCs and STCs) as evidence an aircraft type design meets the 14 CFR requirements. A separate or redundant evaluation of the supporting data is not required when the USAF configuration, usage, and environment is consistent with the FAA type certification.

8.6. The USAF TAA and DTAs do not recognize FAA Special AW Certificates as design approvals. The existence of an FAA Special AW Certificate may indicate the aircraft design configuration and/or operating intent is not fully certified within FAA regulations. It may also indicate aircraft modifications which were not (fully) supported by FAA-acceptable and/or FAA-approved data. .

8.6.1. Assess the aspects of the aircraft and/or operation baseline that drove the need for the FAA Special AW Certificate focusing on the design, manufacturing, operations and maintenance.

8.6.2. Closely examine aircraft documentation including the Aircraft Airworthiness Data Package (AADP) (ref. AWB-340), FAA Form(s) 337, FAA Form(s) 8110-3, and other records and substantiating analyses that support the aircraft configuration and operation (ref. paragraph 8.8). Attention should be given to the validation of this data and with any limitations, restrictions, or conditions imposed.

8.6.3. The TAA or DTAs ensure sufficient substantiating data exists to support the AW approval.

8.7. Some contractors operate aircraft with an FAA AW Certificate containing installed equipment that cannot be operated under civil regulations. In order to operate the equipment, the contractor must obtain additional authorizations, such as a declaration of Public Aircraft Operations, authorization from a Flight Standards District Office, or a different FAA AW Certificate. Verify all authorizations needed for the operation are obtained.

8.8. Closely examine modifications installed without FAA type certification. For example, the scope of work and oversight for modifications approved with only an FAA Form 337 may be determined by an FAA mechanic with an Inspection Authorization (IA). Examine the FAA Form(s) 8110-3 and/or supporting data to ensure <u>all</u> applicable 14 CFR requirements are addressed.

8.9. The lack of an FAA TC and/or STC for aircraft, engines, or propellers does not mean the design, manufacturing, operations, and maintenance do not have a safe and sound design basis. However, it does place a greater oversight burden on the TAA or DTA approving the AW assessment and issuing the AW approval.

9. Point of Contact. USAF AW Office, USAF.Airworthiness.Office@us.af.mil.

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Attachment 1

ABBREVIATIONS AND ACRONYMS

14 CFR – Title 14 of the Code of Federal Regulations
AADP - Aircraft Airworthiness Data Package
ASI – Aviation Safety Inspector
AC – Airworthiness Circular
ATC – Amended Type Certificate
AW - Airworthiness
CDA – Commercial Derivative Aircraft
COCO – Contractor-Owned, Contractor-Operated
DAR – Designated Airworthiness Representative
DER – Designated Engineering Representative
DoD – Department of Defense
DTA – Delegated Technical Authority
FAA – Federal Aviation Administration
FRA – Federal Reimbursable Agreement
GPS – Global Positioning System
IA – Inspection Authorization
IFF – Identification Friend or Foe
MCO – Military Certification Office
SoF – Statement of Functionality
STC – Supplemental Type Certificate
TAA – Technical Airworthiness Authority
TC – Type Certificate
TCDS – Type Certificate Data Sheet
USAF – United States Air Force