USAF Type Certification of Commercial Derivative Aircraft

25 October 2007

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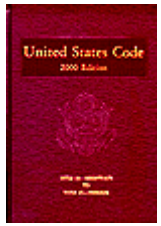
Course Outline

- Airworthiness Authority – FAA and USAF
- Air Force Airworthiness Tools – TACCs and MACCs
- When Civil and Military processes collide
- Managing the seam, maintaining FAA pedigree and safety levels on military installations
- New FAA Order 8110.101
- Levels of Certitude – Civil and Military
- Issues when mixing fish and foul
- Summary
- Conclusions

Airworthiness Authority

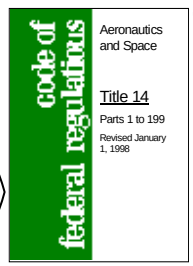
United States Code



Title 49 Department of Transportation

40113 FAA Administrator:
(a) Has discretionary authority
(b) May indemnify others to act…
44701 (a) in promoting safety may
(1) Establish minimum standards
(2) Issue regulations

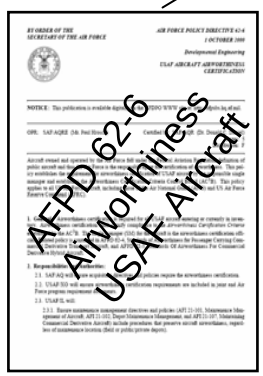
Code of Federal Regulations

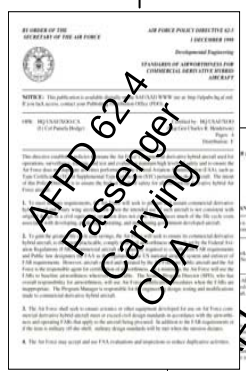


Title 14 Aeronautics and Space

Title 10 Department of Defense

8013 Secretary of the Air Force
(b)(3) Supplying, (3) Equipping,
(5) Training, (9) Administering
(including welfare)
(c)(2) Formulation of policies

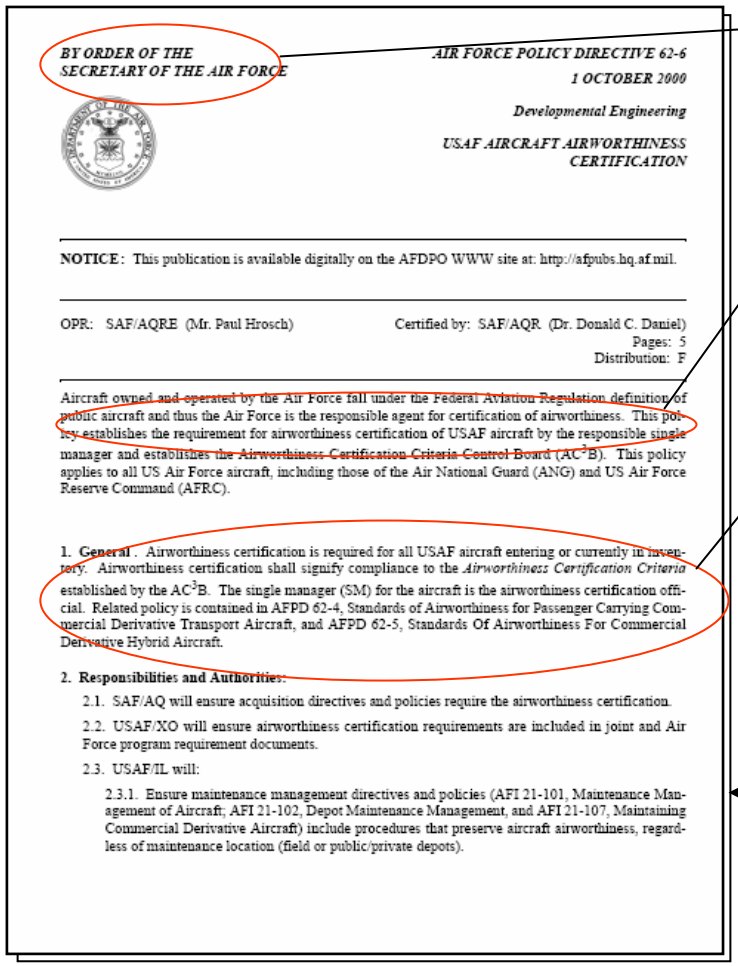

AFPD 62-6 Airworthiness USAF Aircraft


AFPD 62-4 Passenger Carrying CDA


AFI 21-107 Maintaining CDA


AFPD 62-5 Hybrid CDA

AFPD 62-6 USAF Aircraft Airworthiness Certification



BY ORDER OF THE SECRETARY OF THE AIR FORCE

AIR FORCE POLICY DIRECTIVE 62-6

1 OCTOBER 2000

Developmental Engineering

USAF AIRCRAFT AIRWORTHINESS CERTIFICATION

NOTICE: This publication is available digitally on the AFDPO WWW site at: http://afpubs.hq.af.mil.

OPR: SAF/AQRE (Mr. Paul Hrosch) Certified by: SAF/AQR (Dr. Donald C. Daniel)
Pages: 5
Distribution: F

Aircraft owned and operated by the Air Force fall under the Federal Aviation Regulation definition of public aircraft and thus the Air Force is the responsible agent for certification of airworthiness. This policy establishes the requirement for airworthiness certification of USAF aircraft by the responsible single manager and establishes the Airworthiness Certification Criteria Control Board (AC^3B). This policy applies to all US Air Force aircraft, including those of the Air National Guard (ANG) and US Air Force Reserve Command (AFRC).

1. **General**. Airworthiness certification is required for all USAF aircraft entering or currently in inventory. Airworthiness certification shall signify compliance to the *Airworthiness Certification Criteria* established by the AC^3B. The single manager (SM) for the aircraft is the airworthiness certification official. Related policy is contained in AFPD 62-4, Standards of Airworthiness for Passenger Carrying Commercial Derivative Transport Aircraft, and AFPD 62-5, Standards Of Airworthiness For Commercial Derivative Hybrid Aircraft.

2. **Responsibilities and Authorities:**

2.1. SAF/AQ will ensure acquisition directives and policies require the airworthiness certification.

2.2. USAF/XO will ensure airworthiness certification requirements are included in joint and Air Force program requirement documents.

2.3. USAF/IL will:

2.3.1. Ensure maintenance management directives and policies (AFI 21-101, Maintenance Management of Aircraft; AFI 21-102, Depot Maintenance Management, and AFI 21-107, Maintaining Commercial Derivative Aircraft) include procedures that preserve aircraft airworthiness, regardless of maintenance location (field or public/private depots).

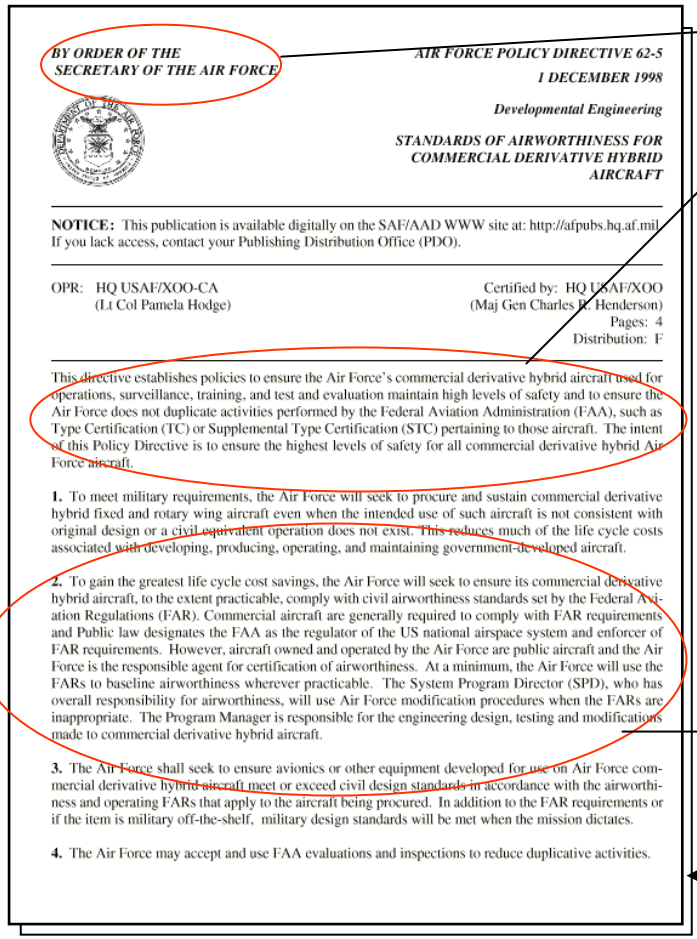
"By order of the Secretary of the Air Force"

"This policy establishes the requirement for Airworthiness Certification of USAF Aircraft by the responsible single manager"

"1. General: Airworthiness Certification …applies to all USAF aircraft…Related Policy..AFPD 62-4, AFPD 62-5.."

"Section 2.8 Aircraft Single Managers will:
…
2.8.8 Prior to first flight, make and document a positive determination of safety of flight **in accordance with ASC guidelines**.
…"

AFPD 62-5 - Hybrids



BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE POLICY DIRECTIVE 62-5
1 DECEMBER 1998

Developmental Engineering

STANDARDS OF AIRWORTHINESS FOR COMMERCIAL DERIVATIVE HYBRID AIRCRAFT

NOTICE: This publication is available digitally on the SAF/AAD WWW site at: http://afpubs.hq.af.mil. If you lack access, contact your Publishing Distribution Office (PDO).

OPR: HQ USAF/XOO-CA
(Lt Col Pamela Hodge)

Certified by: HQ USAF/XOO
(Maj Gen Charles R. Henderson)
Pages: 4
Distribution: F

This directive establishes policies to ensure the Air Force's commercial derivative hybrid aircraft used for operations, surveillance, training, and test and evaluation maintain high levels of safety and to ensure the Air Force does not duplicate activities performed by the Federal Aviation Administration (FAA), such as Type Certification (TC) or Supplemental Type Certification (STC) pertaining to those aircraft. The intent of this Policy Directive is to ensure the highest levels of safety for all commercial derivative hybrid Air Force aircraft.

1. To meet military requirements, the Air Force will seek to procure and sustain commercial derivative hybrid fixed and rotary wing aircraft even when the intended use of such aircraft is not consistent with original design or a civil equivalent operation does not exist. This reduces much of the life cycle costs associated with developing, producing, operating, and maintaining government-developed aircraft.

2. To gain the greatest life cycle cost savings, the Air Force will seek to ensure its commercial derivative hybrid aircraft, to the extent practicable, comply with civil airworthiness standards set by the Federal Aviation Regulations (FAR). Commercial aircraft are generally required to comply with FAR requirements and Public law designates the FAA as the regulator of the US national airspace system and enforcer of FAR requirements. However, aircraft owned and operated by the Air Force are public aircraft and the Air Force is the responsible agent for certification of airworthiness. At a minimum, the Air Force will use the FARs to baseline airworthiness wherever practicable. The System Program Director (SPD), who has overall responsibility for airworthiness, will use Air Force modification procedures when the FARs are inappropriate. The Program Manager is responsible for the engineering design, testing and modifications made to commercial derivative hybrid aircraft.

3. The Air Force shall seek to ensure avionics or other equipment developed for use on Air Force commercial derivative hybrid aircraft meet or exceed civil design standards in accordance with the airworthiness and operating FARs that apply to the aircraft being procured. In addition to the FAR requirements or if the item is military off-the-shelf, military design standards will be met when the mission dictates.

4. The Air Force may accept and use FAA evaluations and inspections to reduce duplicative activities.

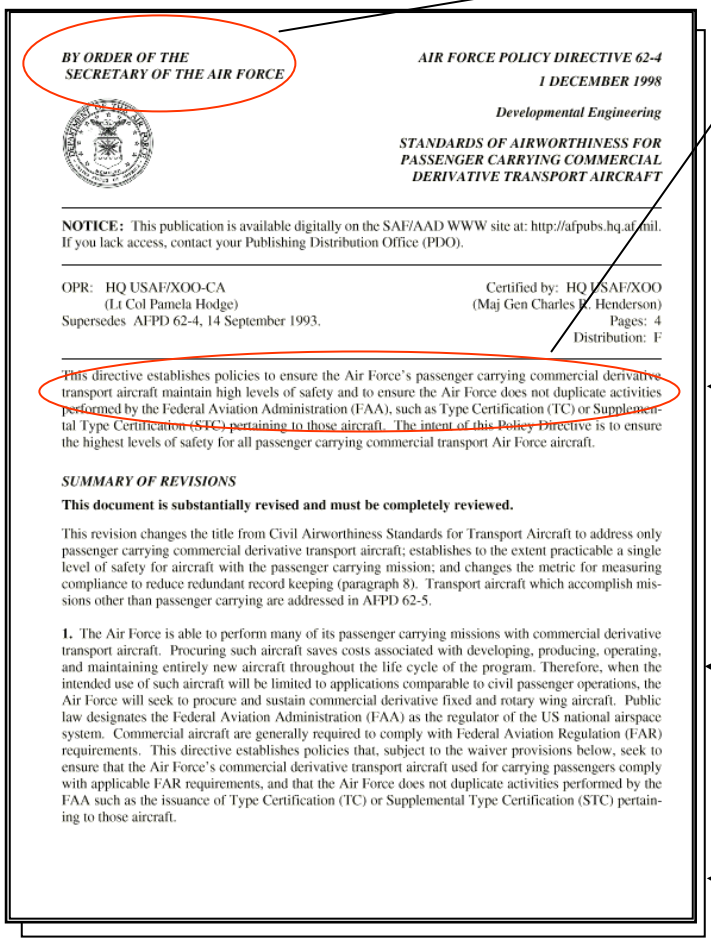
"By order of the Secretary of the Air Force"

"This directive establishes policies to ensure the Air Force's commercial derivative hybrid aircraft …maintain high levels of safety ... and to ensure the Air Force does not duplicate activities performed by the …FAA. …(to) ensure **highest level of safety** for all commercial derivative hybrid Air Force aircraft."

2. To gain the greatest life cycle cost savings, the Air Force will seek to ensure its commercial derivative hybrid aircraft, to the maximum extent practicable, comply with civil airworthiness standards set by the Federal Aviation Regulations (FAR). … At a minimum, the Air Force will use the FARs to baseline airworthiness whenever practicable. …"

4. The Air Force may accept and use FAA evaluations and inspections to reduce duplicative activities

AFPD 62-4 Passenger CDA



BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE POLICY DIRECTIVE 62-4
1 DECEMBER 1998

Developmental Engineering

STANDARDS OF AIRWORTHINESS FOR PASSENGER CARRYING COMMERCIAL DERIVATIVE TRANSPORT AIRCRAFT

NOTICE: This publication is available digitally on the SAF/AAD WWW site at: http://afpubs.hq.af.mil. If you lack access, contact your Publishing Distribution Office (PDO).

OPR: HQ USAF/XOO-CA
(Lt Col Pamela Hodge)
Supersedes AFPD 62-4, 14 September 1993.

Certified by: HQ USAF/XOO
(Maj Gen Charles E. Henderson)
Pages: 4
Distribution: F

This directive establishes policies to ensure the Air Force's passenger carrying commercial derivative transport aircraft maintain high levels of safety and to ensure the Air Force does not duplicate activities performed by the Federal Aviation Administration (FAA), such as Type Certification (TC) or Supplemental Type Certification (STC) pertaining to those aircraft. The intent of this Policy Directive is to ensure the highest levels of safety for all passenger carrying commercial transport Air Force aircraft.

SUMMARY OF REVISIONS

This document is substantially revised and must be completely reviewed.

This revision changes the title from Civil Airworthiness Standards for Transport Aircraft to address only passenger carrying commercial derivative transport aircraft; establishes to the extent practicable a single level of safety for aircraft with the passenger carrying mission; and changes the metric for measuring compliance to reduce redundant record keeping (paragraph 8). Transport aircraft which accomplish missions other than passenger carrying are addressed in AFPD 62-5.

1. The Air Force is able to perform many of its passenger carrying missions with commercial derivative transport aircraft. Procuring such aircraft saves costs associated with developing, producing, operating, and maintaining entirely new aircraft throughout the life cycle of the program. Therefore, when the intended use of such aircraft will be limited to applications comparable to civil passenger operations, the Air Force will seek to procure and sustain commercial derivative fixed and rotary wing aircraft. Public law designates the Federal Aviation Administration (FAA) as the regulator of the US national airspace system. Commercial aircraft are generally required to comply with Federal Aviation Regulation (FAR) requirements. This directive establishes policies that, subject to the waiver provisions below, seek to ensure that the Air Force's commercial derivative transport aircraft used for carrying passengers comply with applicable FAR requirements, and that the Air Force does not duplicate activities performed by the FAA such as the issuance of Type Certification (TC) or Supplemental Type Certification (STC) pertaining to those aircraft.

"By order of the Secretary of the Air Force"

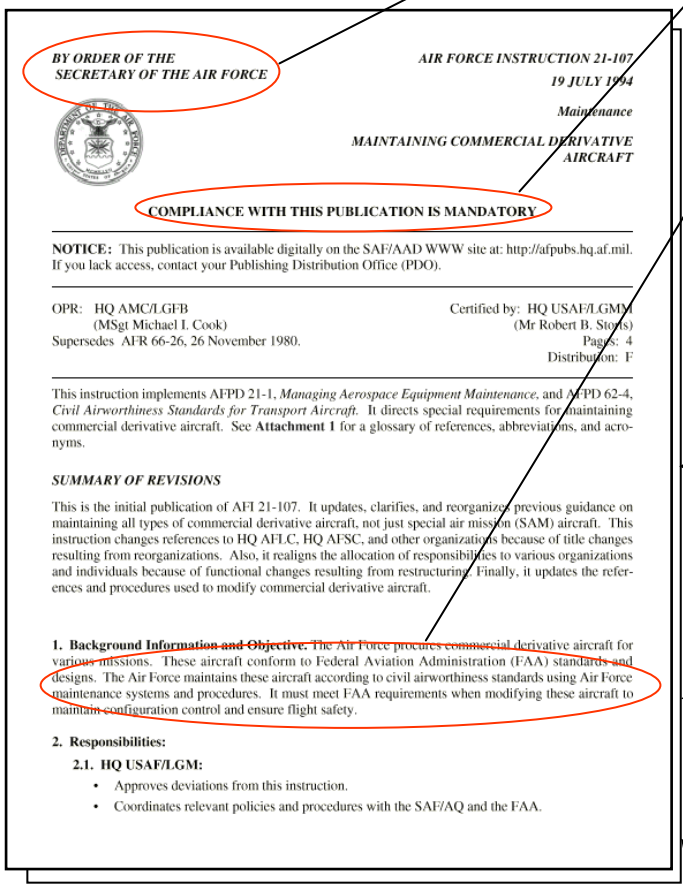
…To maintain high levels of safety and to ensure the Air Force does not duplicate FAA Activities

2. ..meet or exceed civil design standards in accordance with airworthiness and operating FARs.. ;military equipment may be used but must be reflected as deviations to type design...

3. ..avionics must meet or exceed FAR rqts…seek to obtain Equiv Level of Safety related to equipment carried on civil missions

6.3 … MAJCOM maintain to FAA Standards; 6.5 May request waiver after "all possible solutions to resolving FAR issues have been exhausted."

AFI 21-107 Maintenance



BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 21-107
19 JULY 1994

Maintenance

MAINTAINING COMMERCIAL DERIVATIVE AIRCRAFT

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

NOTICE: This publication is available digitally on the SAF/AAD WWW site at: http://afpubs.hq.af.mil. If you lack access, contact your Publishing Distribution Office (PDO).

OPR: HQ AMC/LGFB
(MSgt Michael I. Cook)
Supersedes AFR 66-26, 26 November 1980.

Certified by: HQ USAF/LGMM
(Mr Robert B. Stotts)
Pages: 4
Distribution: F

This instruction implements AFPD 21-1, *Managing Aerospace Equipment Maintenance*, and AFPD 62-4, *Civil Airworthiness Standards for Transport Aircraft*. It directs special requirements for maintaining commercial derivative aircraft. See **Attachment 1** for a glossary of references, abbreviations, and acronyms.

SUMMARY OF REVISIONS

This is the initial publication of AFI 21-107. It updates, clarifies, and reorganizes previous guidance on maintaining all types of commercial derivative aircraft, not just special air mission (SAM) aircraft. This instruction changes references to HQ AFLC, HQ AFSC, and other organizations because of title changes resulting from reorganizations. Also, it realigns the allocation of responsibilities to various organizations and individuals because of functional changes resulting from restructuring. Finally, it updates the references and procedures used to modify commercial derivative aircraft.

1. Background Information and Objective. The Air Force procures commercial derivative aircraft for various missions. These aircraft conform to Federal Aviation Administration (FAA) standards and designs. The Air Force maintains these aircraft according to civil airworthiness standards using Air Force maintenance systems and procedures. It must meet FAA requirements when modifying these aircraft to maintain configuration control and ensure flight safety.

2. Responsibilities:

2.1. HQ USAF/LGM:

- Approves deviations from this instruction.
- Coordinates relevant policies and procedures with the SAF/AQ and the FAA.

"By order of the Secretary of the Air Force"

"*Compliance with this publication is mandatory*"

1… AF maintains these aircraft according to FAA standards using AF maint systems and procedures;…must meet FAA rqts when modifying to maintain config control and ensure flight safety.

2. Resp; 2.2 AFMC obtains FAA Form 337 for work performed; Reviews extension rqsts for ADs, SBs, letters; 2.4 Field Units send escalation request to SPD through MAJCOM

3. Cert Rqts; maintain to certification rqts as close to FAA rqts as possible; maintain certification per AFPD 62-4; Use only FAA Certified contractors for maint;

4.Inspection Rqts: Must not allow inspection intervals longer than FAA intervals

Airworthiness Tools

- MIL-HDBKS
  - 514 Operational Safety Suitability and Effectiveness for the Aeronautical Enterprise
  - 516 Airworthiness Certification Criteria
- Airworthiness Certification Circulars
  - #4 Certification Basis
  - #x Modified Certification basis
- Policy Memorandums
  - AFMC/EN 28 Jan 2002, Review of TACC
  - ASC/CC 19 Jul 2001 Notification of Airworthiness Certification
- Each program generates its own Taylored Airworthiness Criteria Checklist (TACC) for the baseline and Modified Airworthiness Criteria Checklist (MACC) for follow on mods.

MIL-HDBK-514

- Section 11.2.1 “Judged to be airworthy if… meets approved set of criteria … defined in MIL-HDBK-516”
- Section 11.10.1 “Provide written notice to ASC/EN on certification”, gives guidance on reportable modifications
- Section 11.10.2 “… accomplished by developing and maintaining ASC/EN coordination on a (MACC) for each reportable modification”

MIL-HDBK-516
TACC and MACC

- Tailored Airworthiness Certification Criteria (TACC) – Use for New Air Force Aircraft – Certification basis
  - Documents airworthiness criteria, requirements and methods of compliance used in development of the aircraft
  - Provides a baseline for configuration control throughout the life of a system (ACC#4, pg1)
- Modified Aircraft Certification Criteria (MACC) – Use when Modifying Air Force Aircraft
  - Maintains sound airworthiness baseline
  - Documents changes to airworthiness criteria, requirements and methods of compliance
  - Documents seams between FAA approved areas and military approved areas.
  - Transient document – folded into TACC

ACC #4

- Airworthiness Certification Circular #4 – Certification Basis
  - Issued 11 Mar 04
  - Primarily aimed new aircraft, therefore TACCs
  - Calls out *MIL-HDBK-514* and *MIL-HDBK-516B* Enhanced
  - Refers to FAA Type Certification Basis for Commercial Derivative Aircraft
    - "FAA certification is a valid certification approach for criteria completely **satisfied by FAA** type certification on commercial derivative aircraft"

Completion of TACCs for CDA

- For the TACC boiler plate such as the cover and the airplane description follow the guidance right out of the HDBK – explain your system
- For the certification basis download it from the FAA Regulatory and Guidance Library (RGL).
  - http://rgl.faa.gov/
  - Select “Type Certification Data Sheets (Make/Model)” at the bottom of the lower right hand column
  - Search for your aircraft’s data sheet.
    - The search engine works well for common civil names: 172, 747-400, G-V, King Air, and some military names: KC-10A, C-12A
- Use the data sheet to verify serial numbers and the civil certification basis of the aircraft
  - General Amendment level is needed, but all the specific sub paragraphs don’t add much value to the TACC. The contractors will work the details with the FAA anyway.
    - CAR3b through Amnd 15, Part 21 up to Amendment 21-42, Part 23 incldng Amdmnt 23-56, Part 25 through Amendment 25-86, etc.

TACC/MACC Section 4

- Section 4 includes Tools, Quality, Systems Engineering and Manufacturing, Tech Manuals and Config – crossing over all disciplines
- The basic rule applies, but in the manufacturing section, care must be taken
  - When parts are installed on a CDA, they need to be produced under an approved production system.
  - All parts covered by FAA certification, need to be produced under an FAA approved production system.
  - If any non FAA approved parts are installed, don't let them fall through the crack. They need to be produced under a military approved production system.

Picking the Standards

- Once the applicable criteria have been identified the “tabs” corresponding to chapters in MIL-HDBK-516 need to be addressed
- The basic rule for cases where the criteria is met by FAA certification or an approved FAA process is:
  - For Standards where FAA Cert covers the criteria, an acceptable entry for the Standard is “FAA Certification (or approved process)”
  - An acceptable entry for methods of compliance is “Inspection of the FAA approving document”
    - This is the top sheet of the STC, TC, TSO, or what ever the FAA process relies on to document the approval
    - In some cases it may be a FAA Form 337, or even a Logbook entry,

If you have non compliant items

- Policy relies on limiting the non-FAA approved items (Para. 2 in both 62-4 and 62-5)
- Non conforming items will be listed on FAA Form 8130-2 “Conformity Certificate - Military Aircraft”
  - Standards for Non Conforming items must be “measurable parameters” (ACC #4)

If you don't get FAA Certification…

- The Standard and Method of Compliance for the FAA compliant areas of the aircraft are still the same i.e, proven by the FAA process
- For 62-4 Aircraft: non-FAA compliant areas must "meet or exceed civil airworthiness standards" (AFPD 62-4, Paragraph 2)
- For 62-5 Aircraft: "use the FARs to baseline requirements where ever practicable", and "the SM may use Air Force modification procedures when the FARs are inappropriate" (AFPD 62-5, Paragraph 2)

IT IS EXPECTED THE STANDARDS FOR THE 8130-2 ITEMS WILL MEET OR EXCEED FAA REQUIREMENTS (62-4) OR MEET MILITARY REQUIREMENTS (62-5) – IN EITHER CASE YOU NEED TO IDENTIFY WHAT THE AIRWORTHINESS REQUIREMENTS FOR THE 8130-2 ITEMS ARE, AND HOW THEY WILL BE MET

New FAA Order 8110.101
Type Certification Procedures for Military Commercial Derivative Aircraft

- **New FAA Order: Effective September 7, 2007**
- **Published and Available on FAA Regulatory and Guidance Library Under “Orders and Notices”**
- **Defines Role of the FAA Military Certification and Procedures for All Type Certification Approval for Military Conversion/Modification of Commercial Aircraft**
- **Contains FAA Procedures, Guidance, and Policy- Essential for Military Program Offices and Contractors Pursuing Commercial Derivative Programs**
- **Contact the FAA MCO for More Information**

Managing the Seam between Civil and Military Airworthiness Approvals on Commercial Derivative Aircraft

- **Issue: Military CDA are being modified with FAA issued design approvals, but items waived from FAA certification are often incorporated without military technical oversight**

- **Issue: Military CDA are being modified using "psuedo" FAA Field Approval Process**

- **Issue: Military Operators and Contractors are operating numerous commercial, military organic, and foreign aircraft with FAA experimental airworthiness certificates**

- **Issue: Contractors/Logistics Suppliers may be providing parts to military CDA which are not FAA approved parts**

- **Recognize Issues and Manage Airworthiness Seams**

Issue: What process are you using to ensure items waived from civil type certification (FAA Form 8130-2) receive military airworthiness approval?

- **FAA type certification is a closed loop airworthiness process for civil aircraft- it requires all modifications and installed equipment meet airworthiness standards defined by civil regulations**

- **Installed equipment cannot be 'waived' from FAA approval on civil aircraft and the aircraft allowed to operate with a standard (unrestricted) airworthiness certificate**

- **The two methods for obtaining FAA approval are**
  - **the structured type certification process with technical oversight (usually multiple aircraft applications), and**
  - **the FAA field approval process using qualified field personnel and airworthiness inspectors (for specific single aircraft only)**

- **NOTE: No FAA personnel or FAA designees can sign a field approval on an aircraft under foreign or military registration- will discuss later**

Issue: What process are you using to ensure items waived from civil type certification (FAA Form 8130-31 **formerly 8130-2**) receive military airworthiness approval?

- **Items which have been identified on the existing FAA Form 8130-31 "Military Statement of Conformity" are not certified and have not been examined by the FAA for airworthiness (recognizing that in some cases civil certification is not possible)**
- **As military CDA are often procured with intent that FAA certification will satisfy airworthiness approval criteria, there is often no plan presented for military qualification/approval of waived items**
- **Your military Program Office may or may not have the cognizance or technical resources to review or conduct the airworthiness approval**
- **Late FAA certification issues, poor program planning, or intentional contractor strategy may mean delays and $$$- your Program Office's nightmare. It may SEEM appropriate to accept system or component as a waived item and accept contractor oversight approval.**

Issue: What process are you using to ensure items waived from civil type certification (FAA Form 8130-31) receive military airworthiness approval?

- **First, consider certifying the modifications to the aircraft using civil airworthiness standards to the maximum extent practical**

- **FAA MCO has incorporated guidance into New FAA Order 8110-101 for Type Certification of Military Commercial Derivative Aircraft which allow various levels of certitude to maximize use of civil standards**

- **These levels of certitude are designed to ensure that modifications follow a closed loop process, type design presented for certification comply with all applicable FAA airworthiness standards, and provide clear definition of the civil and military airworthiness seam**

Levels of FAA Approval for Military CDA

- **Full Approval.** **The requirements for military modifications and associated systems and equipment that meet full FAA approval are:**

  - **Must meet the same requirements for a commercial modification to a civil aircraft. Include type design data, compliance substantiation, airplane flight manual supplements, maintenance and continued airworthiness documentation.**

  - **Meet all applicable airworthiness regulations.**

  - **The installation is compatible and eligible for use on a civil aircraft of same type without special restrictions or limitations.**

Levels of FAA Approval for Military CDA

- **Installation Approval: Military Use Only**

  The requirements for military modifications and associated systems and equipment that meet Military Use Only are:

  - **Must meet the same requirements as for a commercial modification to a civil aircraft. Include type design data, system and safety analysis, software validation, compliance substantiation, airplane flight manual supplements, maintenance and continued airworthiness documentation.**
  - **Meet all applicable airworthiness regulations.**
  - **Installation is NOT compatible or eligible for use on a civil aircraft of same type without special restrictions or limitations (authorization for use, operational limitations, maintenance requirements).**
  - **FAA may need help from the military to evaluate and determine compliance with this type of equipment because of the restriction on civil operation.**
  - **Installation approvals must have limitations and restrictions defined on the type design change, such as the supplemental type certificate description.**
  - **If the limitations and restrictions can be followed, these installations may be legally permissible to install on aircraft of civil registry.**

Levels of FAA Approval for Military CDA

- **Safe Carriage (Partial Approval).** **A partial approval, signifying that the military hardware and equipment comply with applicable regulations in a non-functional state. The requirements are:**
  - **The FAA examines the physical aspects of the installation including aerodynamic effects, structural provisions, cabin safety, and weight and balance.**
  - **The installation, as defined on the type design, complies with regulations and poses no hazard to the aircraft.**
  - **Approval includes any modifications made to aircraft structure or systems to accommodate installation of the equipment. Approval does not authorize or allow the installed equipment to operate.**
  - **Equipment must be disconnected from power sources, antenna couplers, and other interfaces with the aircraft and these interfaces on aircraft type design are safely capped and stowed.**
  - **Cockpit controls that are not included as part of the type design, if the equipment is controlled or will interface with the cockpit.**
  - **The type design may incorporate blanking plates or other means to show that the equipment is not approved for function, and cannot be enabled or operated from the cockpit.**
  - **Maintenance covers only that required for aircraft provisions (structure, mounts, wiring, etc.) removal, and physical attachment for securing equipment to the aircraft.**
  - **"Safe Carriage" approvals cannot be extended to weapons, pyrotechnics, or any other hazardous materials that would otherwise be prohibited from carriage on a commercial aircraft.**
  - **The receiving military airworthiness authority is responsible for design approval, equipment qualification, system integration, compatibility, system architecture, functionality, and interface with aircraft systems, operation, and airworthiness approval for the installed equipment.**

Levels of FAA Approval

- **Provisions Only (Partial Approval).**

  The FAA may also work with the applicant and the military to define "Provisions Only" approvals to support modifications to the MCDA to receive subsequent military equipment. Provisions Only approvals are not on-board installation approvals for the military equipment. Provisions Only approvals assess and approve aircraft structure, design characteristics, or system capabilities to handle defined and predetermined structural loads, interface or attachment provisions, and electrical power requirements. The requirements for Provision Only approvals are:

  - **Provide evidence to support relevant compliance findings with applicable civil regulations.**
  - **Address approvals in the airplane flight manual and instructions for continued airworthiness well enough to operate and maintain the FAA approved type design configuration.**
  - **Include the specific criteria for which the provisions are approved on the description of the type design change, or reference a document that establishes all interface points and design limits.**
  - **Ensure that the receiving military airworthiness authority is responsible for further modification to the aircraft using the approved provisions criteria.**

Issue: Is your military operator accepting a 'pseudo' FAA Field Approval process for CDA modifications?

What Is a Field Approval?

- **A field approval is FAA method for approval of a major repair or alteration made to a single civil aircraft, documented as part of the FAA Form 337 Return to Service**
- **FAA field approvals on U.S. registered civil aircraft are conducted under oversight and signoff of an FAA Flight Standards Inspector; field approvals are accomplished for approval of major repairs and alterations on an individual aircraft**
- **Technical data for substantiation of major repairs or alterations may be approved by authorized Designated Engineering Representatives for a aircraft of particular type design, but still require field approval for installation**
- **The FAA, FAA employees, or FAA designees are not authorized to signoff field approvals on foreign registered or military aircraft**
  - **Exceptions- foreign civil authorities with provisions in bilateral (e.g. Canada), and by request of foreign civil authority for their aircraft in the U.S.**
- **FAA Order 8300.10 provides mandatory instructions and guidance for FAA personnel regarding execution of field approvals- including requirements for technical involvement by FAA ACO engineering as complexity increases**
- **Modifications which go beyond the criteria for field approvals on civil aircraft must obtain type certification approval**
- **The FAA, FAA personnel, or FAA designees have no authority to approve major repairs or alterations to an aircraft under military registration**

Issue: Is your military operator accepting a ‘pseudo’ FAA Field Approval process for CDA modifications?

- **Some contractors have proposed following the “FAA Field Approval Process” for modifications to military commercial derivative aircraft as a method for airworthiness approval**
- **Some FAA Inspectors and FAA designees, with good intention, have attempted to support this in an effort to assist the operator**
- **WARNING: Proceed with risk and extreme caution. This may be a viable solution in some circumstances, but has a history of problems. Typically:**
  - **Multiple aircraft modified with inadequate documentation of type design/compliance, inadequate testing and/or substantiation**
  - **Complex modifications and system integrations which go far beyond the scope of what would be allowed by FAA field approval**
  - **Often proposed or implemented when schedule/mission need prevents appropriate procedures from being followed**
  - **No oversight or signoff by FAA; has led to abuse**

Issue: Military Users and Contractors are operating numerous commercial derivative, military organic, and foreign commercial/military aircraft with N number and experimental airworthiness certificates

- **Anyone with proof of ownership can apply and obtain FAA registration for any type of aircraft- registration is not authorization to fly**

- **Civil registered aircraft require a standard FAA airworthiness certificate to operate in national airspace- civil aircraft which may not, or cannot, comply with civil airworthiness standards may be issued experimental airworthiness certificate for specific purposes**

- **Experimental airworthiness certificates require operator to attest to airworthiness of aircraft, aircraft may be inspected, but type design is not reviewed, approved, or certified for airworthiness by the FAA**

- **Experimental airworthiness are issued for specific purposes defined by CFR Title 14 Part 21.191 with appropriate restrictions and operating limitations and must be renewed every year (R&D, Show Compliance, Crew Training, Exhibition, Air Racing, Market Survey, Amateur Built, Primary Kit Built, and Light Sport)**

- **Aircraft operated for Public Use operations do not require a civil airworthiness certificate and are the responsibility of the agency directing their operations.**

Issue: Military Users and Contractors are operating numerous commercial derivative, military organic, and foreign commercial/military aircraft with N number and experimental airworthiness certificates

- **What happens when operator of the civil registered experimental aircraft declares the aircraft "public use"?**
- **The aircraft becomes exempt from compliance with FAA civil airworthiness regulations and limitations of the experimental certificate**
- **The responsibility for configuration oversight, safety, maintenance, and risk management are assumed by the government agency operating, or contracting for use of, the aircraft**
- **If a military operator, or contractor, is operating the aircraft on behalf of an armed service, the Armed Service is the responsible airworthiness authority**
- **If your military operator or contractor says their "public use" aircraft operations are oversighted by the FAA, they are WRONG**

Issue: Military Users and Contractors are operating numerous commercial derivative, military organic, and foreign commercial/military aircraft with N number and experimental airworthiness certificates

- **Does your armed service have a system in place which monitors these experimental public use aircraft? Examples:**
  - **Special Operations Groups, Security, Intelligence, Covert or Clandestine Operations**
  - **Target Towing, Adversary Aircraft, Foreign Training Assistance**
  - **Research and Development, Special Temporary Need Leases, Etc.**
- **Do you know how many and which aircraft are operating in this capacity for your service?**
- **Does your airworthiness authority monitor configuration, operational safety, maintenance, or risk management for these aircraft?**
- **Do you have a system which requires flight releases or airworthiness oversight for these aircraft- owned, leased, or contracted service?**

Issue: Contractors/Logistics Suppliers may be providing parts to military CDA which are not FAA approved parts

- **Once FAA certifies type design, replacement parts sold for a type certificated product require manufacture under some kind of FAA Production Approval. Examples:**
  - **Production Certificate**
  - **Parts Manufacturer Approval (PMA)**
  - **Technical Standard Order Authorization (TSOA) [design and production approval]**
  - **Exception: Owner/Operator Produced Parts (inspected/approved at installation, not for sale)**
  - **Other Exceptions: parts manufactured under type certificate only (require direct inspection by FAA), Repair Station fabricated and inspected/approved on-site (not for sale)**
- **But, all FAA approved parts are manufactured under some kind of FAA approved quality system or direct inspection**
- **Processes, identification, and marking of approved parts are controlled in the civil airworthiness system, and for international export**

Issue: Contractors/Logistics Suppliers may be providing parts to military CDA which are not FAA approved parts

- **Number of cases identified where military contractor/supplier has not provided approved replacement parts for military CDA Examples:**
  - **Detail parts direct shipped from OEM subcontractor, bypassing FAA approved Production Inspection System**
  - **STC holder or supplier fails to obtain Parts Manufacturer Approval (PMA)**
  - **TSOA components installed without installation approval**
  - **Contractor claimed produced as Owner/Operator Produced Parts for military, but cannot be approved/inspected in compliance with Part 43 requirements**

- **FAA vigorously enforces and prosecutes violators on civil aircraft under FAA Suspected Unapproved Parts (SUPS) program**

- **FAA enforcement difficult or impossible on military CDA when parts leave civil system, maintenance occurs outside civil repair stations, no review of aircraft logbooks, no access to billing/shipping records**

Issue: Contractors/Logistics Suppliers may be providing parts to military CDA which are not FAA approved parts

- **Military Airworthiness Concerns for Unapproved Parts on CDA**
  - **Parts may or may not conform to type design, no FAA inspection**
  - **Military relying totally on contractor system (?), with no government oversight of manufacturing or inspection procedures**
  - **Discovery of Unapproved parts on military CDA could exclude eligibility for parts pooling with civil fleet**
  - **If discovered, flight critical or safety related impacts often difficult to determine**
- **FAA has taken enforcement action on unapproved parts supplied to the military- when civil investigation yielded enough evidence to prosecute**
- **FAA has also assisted military in pursuing contract fraud investigations when contract specified supply of FAA approved parts for military CDA**
- **Although civil regulations require compliance for parts on type certificated products under civil, foreign, or military registration, MCO recommends requirement be clearly incorporated in military procurement/logistics support contracts**

CONCLUSIONS

- By the USAF and the FAA working in partnership the integration of military and civil equipment can be safely accomplished on Commercial Derivative Aircraft
- Care is required to avoid the seams between the two safety systems

QUESTIONS