

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 62-601**

**11 JUNE 2010**

***Developmental Engineering***

***USAF AIRWORTHINESS***



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OPR: SAF/AQRE

Certified by: SAF/AQR  
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Pages: 26

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This instruction implements Air Force Policy Directive (AFPD) 62-6, *USAF Airworthiness*, and applies to all aircraft organizationally operated by components of the Air Force (AF), both manned and unmanned, including aircraft operated by Air Force Reserve Command (AFRC) and Air National Guard (ANG). It does not apply to non-AF aircraft operated by AF aircrew in accordance with AFI 11-401, *Aviation Management*. Airworthiness responsibilities for aircraft procured under Foreign Military Sales (FMS) cases shall be defined in the Letter of Offer and Acceptance (LOA) for the case.

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To ensure standardization, any organization supplementing this instruction must send the implementing publication to SAF/AQR for review and coordination before publishing.

## Chapter 1

### ESSENTIAL ELEMENTS OF AIRWORTHINESS

**1.1. Airworthiness.** Airworthiness is the verified and documented capability of an air system configuration to safely attain, sustain, and terminate flight in accordance with (IAW) the approved aircraft usage and operating limits. The air system Program Manager (PM) is responsible for planning and executing airworthiness programs for managed aircraft IAW AFD 62-6 and this instruction. Establishing and maintaining airworthiness throughout the entire air system life cycle is essential to assuring Operational Safety, Suitability and Effectiveness (OSS&E).

**1.2. Independent Airworthiness Determination.** Independent airworthiness determination is a process by which an authority outside of the program execution chain is responsible for approving the flight operation of an air system configuration and the conditions of that operation. Airworthiness determinations shall be made based upon the processes in this instruction.

**1.3. Independent Technical Airworthiness Authority (TAA).** The Commander, HQ Air Force Materiel Command (AFMC), designates the TAA as directed by AFD 62-6. The TAA is a General Officer/SES-level technical leader whose activities include the following:

**1.3.1. Independent Airworthiness Approval.** The TAA, or delegated official per paragraph f2.2.6, shall approve the basis for air system airworthiness certification, tailored airworthiness certification criteria (TACC), and reportable modification airworthiness certification criteria (MACC) documents; make findings of compliance for program airworthiness certification applications; and issue Military Type Certificates (MTC), Military Experimental Flight Releases (MEFR), Military Restricted Flight Releases (MRFR), and non-design-based special flight releases.

**1.3.2. AF Airworthiness Board (AB).** The TAA, or delegated official per paragraph 2.2.6, chairs the AF Airworthiness Board (AB). The AB provides advice and recommendations to the TAA regarding the disposition of airworthiness actions requested by all air system PMs. Membership of the AB consists of senior engineering functional organization representatives, an Air Force Safety Center (AFSC) representative, and a representative from owning AFMC engineering organizations (as requested by the TAA). The TAA may elect to include (for specific AB meetings) representatives from the Federal Aviation Administration (FAA) and applicable test organizations. The Wing Commander/Director and PM of the air system under consideration, an operational MAJCOM representative, and other program stakeholders may also be invited to participate as advisors. In summary, the AB:

1.3.2.1. Provides recommendations to the TAA regarding approval of TACC and MACC documents submitted by PMs.

1.3.2.2. Provides recommendations to the TAA regarding findings of compliance with the approved system certification basis and TAA issuance of MTCs.

1.3.2.3. Provides recommendations to the TAA regarding the issuance of MEFRs for flight test and developmental aircraft.

1.3.2.4. Provides recommendations to the TAA regarding the issuance of MRRs for aircraft which do not fully comply with the certification basis and which are assessed to have serious to high risk.

1.3.2.5. Provides recommendations to the TAA for approval or disapproval of waivers and exemptions to applicable MIL-HDBK-516 criteria and applicable FAA Federal Aviation Regulation (FAR) requirements for commercial derivative passenger carrying aircraft.

1.3.2.6. Provides recommendations to the TAA regarding the issuance of non-design-based special flight releases.

**1.3.3. Airworthiness Process Management.** The TAA develops, documents, and deploys standard processes and issues supplementary guidance as needed to assess and maintain the airworthiness of AF aircraft.

**1.3.4. Airworthiness Project Support Teams.** The TAA designates, when requested by air system PMs, project support teams to assist programs in planning airworthiness activities. The designated support team functions as liaison to the AB throughout airworthiness process planning and execution, and assists the TAA in reaching findings of compliance for airworthiness certification.

**1.3.5. Subject Matter Expert (SME) Accreditation.** The TAA defines accreditation requirements for airworthiness SMEs, and accredits individuals to serve as SMEs. SMEs provide direct support to the AB in reviewing program airworthiness efforts.

**1.3.6. Delegated Technical Authorities (DTAs).** The TAA defines accreditation requirements and accredits individuals as DTAs. DTAs are accredited at one of two levels: Director of Engineering (DOE) or equivalent, and Chief Engineer (CE) or equivalent. Individuals occupying air system DOE and air system CE positions shall obtain accreditation as DTAs. DTA accreditations are valid for a period defined by the TAA and may be renewed pending satisfaction of renewal criteria defined by the TAA. DTAs may temporarily subdelegate their authority one level down to qualified personnel IAW local instructions; however, responsibility for sub-delegated actions remains with the DTA. Subdelegations shall be documented.

**1.3.6.1. Chief Engineer DTAs (CE/DTAs).** DTAs at the Chief Engineer level coordinate on applications for MTCs; coordinate on product acceptance documents and Military Certificates of Airworthiness (MCAs); approve deviations from MTC compliance; classify modifications as airworthiness related or not airworthiness related; and approve final MACCs for aircraft undergoing nonreportable modifications. Refer to Attachment 2 for a listing of CE/DTA responsibilities.

**1.3.6.2. Director of Engineering DTAs (DOE/DTAs).** In addition to CE/DTA authority, DTAs at the DOE level have the authority to classify modifications as reportable or nonreportable. DOE/DTAs are required to submit an annual summary report of reportable/nonreportable modification determinations to the TAA, and participate in periodic reviews of their DTA related activities with the TAA. Refer to Attachment 2 for a listing of DOE/DTA responsibilities.

1.3.7. **Airworthiness Audits.** The TAA conducts organizational airworthiness audits to verify ongoing adherence to airworthiness policies and processes.

**1.4. Issue Resolution.** Airworthiness issues shall be resolved at the lowest level possible. PMs may appeal a DTA decision to the TAA. Wing Commanders/Directors may appeal a TAA decision to AFMC/EN. Center Commanders/PEOs may appeal AFMC/EN decisions to SAF/AQR.

**1.5. Airworthiness Planning.** Airworthiness planning shall be accomplished early in the acquisition cycle for new aircraft programs and for modification programs which impact the airworthiness of existing aircraft. This planning shall define the overall program approach to achieving and maintaining air system airworthiness and create the framework within which detailed airworthiness planning and execution is accomplished. Top level airworthiness planning shall be documented in the system Life Cycle Management Plan (LCMP) and shall be implemented through the program acquisition strategy, the System Engineering Plan (SEP), and the Integrated Master Plan (IMP). Early and frequent engagement with the TAA is highly encouraged during airworthiness planning. Airworthiness planning documentation shall include:

1.5.1. A description of the overall approach to obtaining and maintaining airworthiness certification or flight release

1.5.2. A description of the certification basis development/approval process and schedule for TAA interactions

1.5.3. Approach and activities for obtaining first flight release and conducting the flight test program, as applicable

1.5.4. Description of airworthiness related entrance and exit criteria for major program reviews

1.5.5. For contractor executed efforts, the approach by which airworthiness activities will be incorporated into program contractual documents (IMP, work statements, and specifications).

**1.6. Tailored and Modification Airworthiness Certification Criteria Documents.** All AF aircraft programs which follow the design-based airworthiness assessment process (see paragraph 1.7) shall develop a TACC document. Programs shall develop MACC documents for modifications which impact airworthiness (see paragraph 1.9 for additional information on modifications). The PM shall obtain documented agreement from the TAA regarding the exact version of MIL-HDBK-516 to be used in developing the proposed certification basis prior to release of development acquisition packages. PMs for new programs and reportable modification programs shall obtain TAA approval of the proposed certification basis contained in draft TACC or MACC documents no later than completion of critical design review (CDR) or prior to the start of system level design verification activities. The program CE/DTA approves the certification basis for nonreportable modifications (refer to paragraph 1.9).

1.6.1. **Certification Basis Definition.** The foundation of TACC and MACC documents is the certification basis. Programs shall establish the certification basis early in the development process. This is typically accomplished by the following steps:

1.6.1.1. Select the applicable criteria from MIL-HDBK-516, Airworthiness Certification Criteria and document the rationale for all criteria deemed not applicable to the certification basis. New “program unique” criteria may be included in the certification

basis definition if suitable criteria for a specific air system application cannot be found in MIL-HDBK-516. (Note: although criteria from MIL-HDBK-516 may be declared not applicable, the criteria themselves may not be modified);

1.6.1.2. For each applicable criterion, define specific requirements to be met. This is accomplished by tailoring (as necessary) the recommended “standard” from MIL-HDBK-516 for each criterion;

1.6.1.3. For each applicable criterion, define activities to show compliance with each standard. This is accomplished by tailoring (as necessary) the recommended “method of compliance” from MIL-HDBK-516.

**1.6.2. Draft TACC and MACC Documents.** Draft TACC and MACC documents are created in the early stages of preliminary design and are refined over the course of the development effort, and approved NLT CDR or equivalent. Draft TACC/MACC documents shall include the proposed certification basis and a description of the air system covered and any modifications (for MACCs).

**1.6.3. Final TACC and MACC Documents.** Final TACC and MACC documents shall include the approved certification basis, the system description, document identifiers needed to maintain configuration control, references to operating limitations or restrictions that apply to the air system (these are typically included in operating manuals), a summary of the “show compliance” results, references to the source of “show compliance” data for each criterion in the certification basis, and identification of any noncompliance with applicable airworthiness criteria along with associated risk(s).

**1.6.4. TACC and MACC Documents for FAA Certified Aircraft.** Military air systems which utilize FAA type certification as the certification basis shall include military certification criteria derived from MIL-HDBK-516 in the TACC/MACC only for items which are not included in the FAA issued type certification (i.e., military-unique items listed on an FAA Form 8130-2 or 8130-31). Final TACC/MACC documents for FAA type certified air systems will comply with the content requirements described in paragraph 1.6.3 above; however, the FAA type certification data sheet (TCDS) is included in the TACC/MACC as the certification basis for FAA type certified items, and FAA type certification constitutes the “show compliance” data for these items. If the program planning does not include maintenance of the FAA type certification, the certification basis shall be constructed IAW paragraph 1.6.1 and approved by the TAA.

**1.7. Airworthiness Assessment Process.** Aircraft shall be assessed for airworthiness, and determinations made, before any flight authorization may be granted. PMs shall request the TAA to make a determination to proceed with one of two possible alternative assessment processes: a design-based airworthiness assessment or a non-design-based airworthiness assessment. Design-based assessments are the preferred approach, while non-design based assessments are typically performed on a “by-exception” basis for unique aircraft or situations.

**1.7.1. Design-Based Airworthiness Assessment.** A design-based airworthiness assessment shall be conducted when (a) an airworthiness certification basis can be established consisting of a specified set of design criteria, and (b) the design of an air system can be assessed for compliance with the specified criteria. This is the only path which will lead to military certification of the type design and airworthiness certification of individual aircraft.

1.7.1.1. **Issuance of a MEFR.** Programs planning to conduct development flight testing shall develop and document an experimental flight release basis. The PM shall submit a draft experimental flight release basis (along with a copy of the previously approved certification basis) to the TAA for approval. After approval of the experimental flight release basis the program shall develop the “show compliance” data for the experimental flight release. For programs which require a First Flight Executive Independent Review Team (FFEIRT) (see paragraph 1.8), the TAA may issue a MEFR after reaching a finding of compliance with the experimental flight release basis. A MEFR constitutes release for first flight and authorization to initiate the flight test program. It applies to developmental and flight test aircraft and is valid for the duration of the flight test program or as defined by the issuing authority. Since developmental aircraft typically fly within an initially restricted operating envelope that is incrementally expanded over the course of the flight test program, the MEFR will include flight envelope expansion criteria as needed. The CE/DTA may be delegated authority to make incremental findings of compliance that flight envelope expansion criteria have been successfully met. For programs which do not require a FFEIRT the CE/DTA approves the experimental flight release basis, issues a finding of compliance, MEFR, and approves envelope expansion.

1.7.1.2. **Issuance of MTC.** The PM shall obtain a MTC prior to system entry into dedicated Operational Test & Evaluation (OT&E) or delivery of aircraft for first operational use. When the program “show compliance” activities (e.g., tests, modeling and simulation activities, analyses, inspections, demonstrations) identified in the approved certification basis have been completed, the PM shall submit to the TAA an application, signed by the PM and CE/DTA, which includes the final TACC/MACC and a request for a finding of compliance with the approved certification basis. In the event that one or more instances of noncompliance exist with respect to the approved certification basis then the application must include a request for exemption (refer to paragraph 1.17). After verification of compliance with the certification basis, formal risk acceptance by the appropriate risk acceptance authority (IAW DoDI 5000.02), and coordination by the AB members, the TAA may approve the final TACC/MACC and issue a MTC for the type design defined in the application. Issuance of a MTC indicates that:

1.7.1.2.1. Aircraft design documentation accurately defines the configuration which meets the certification basis.

1.7.1.2.2. The aircraft design is in compliance with the approved certification basis, including any approved exemptions.

1.7.1.2.3. The design package includes all necessary technical information required to construct, maintain, and operate the aircraft system within the approved conditions of operation throughout its approved service life.

1.7.1.2.4. Mission usage has been defined and approved, and the flight manual accurately describes the permissible flight envelope.

1.7.1.2.5. A service life limit has been established and approved for the type design (refer to paragraph 1.15).

1.7.1.3. **Issuance of MCA.** Coincident with issuance of the MTC, the TAA shall authorize the PM to issue MCAs. The TAA may rescind or restrict the PM's authority in this regard if issues with the MTC warrant such action. MCAs are issued by the PM for individual aircraft in the type design covered by the MTC (typically at acceptance of new or modified aircraft) when the delivered aircraft is in compliance with the MTC and IAW the program product acceptance process (refer to paragraph 1.18). The MCA remains in effect for the approved service life as long as the air system configuration is in a condition for safe operation (i.e., properly maintained in accordance with approved maintenance documentation, and the system is operated in accordance with the approved flight manual and within the approved mission usage).

1.7.1.4. **Issuance of Military Restricted Flight Release (MRFR).** A PM, in recognition of a compelling military need, may request that the TAA issue a MRFR for aircraft for which the TAA has declined to issue an MTC due to significant noncompliance with the approved certification basis. A PM requesting a MRFR shall include a request for waiver (refer to paragraph 1.17). A MRFR may be issued only after appropriate waiver(s) are approved by the TAA, and will be issued for a finite duration; upon expiration it may be re-issued after re-evaluation and acceptance of residual risks. A MRFR authorizes flight operations for specific aircraft under defined conditions. Limitations and restrictions to flight operations identified as necessary by the TAA will be listed in the release and communicated by the PM to the affected MAJCOM. The appropriate risk acceptance authority (refer to Attachment 4) must accept the risk, and an equivalent level official in the MAJCOM must coordinate on the risk acceptance. Removal/modification of flight restrictions may be approved by the TAA after evidence of appropriate risk mitigation is presented by the PM. If all certification basis noncompliance has been corrected, the PM may request TAA issue an MTC (see paragraph 1.7.1.2)

1.7.1.4.1. There may be occasions when an aircraft has sustained damage which renders it not airworthy under the MCA issued for that aircraft. In these cases the CE/DTA is delegated authority to issue a MRFR for a "one time" flight under defined and controlled conditions. The CE/DTA shall conduct a risk assessment of such a flight and shall obtain acceptance of the risk at the appropriate level IAW Attachment 4. The MAJCOM conducting the "one time" flight must coordinate on the risk acceptance at a level commensurate with the risk acceptance authority before a MRFR may be issued. The conditions of operation and applicable restrictions for the one time flight will be documented in the MRFR.

1.7.1.4.2. An aircraft which has been granted flight release via a MRFR shall not be used for carrying passengers. Refer to Attachment 1 for the definition of passenger.

1.7.2. **Non-Design-Based Airworthiness Assessment.** A non-design-based airworthiness assessment is conducted when it has been determined by the TAA that a design-based airworthiness certification cannot reasonably be accomplished, but when there is a compelling military need to operate the air system. This would typically be the case for a system in which design and/or airworthiness criteria compliance information is prohibitively difficult or costly to obtain. When followed to a successful conclusion, the result of this process is TAA issuance of a special flight release. This allows operation of aircraft for which the design based certification basis and/or certification compliance status is unknown

or indeterminate. The non-design-based special flight releases process is used to identify and assess the inherent risks of operating these aircraft and to formally acknowledge acceptance of these risks by the organization responsible for their flight operations.

1.7.2.1. The AF special flight release process is based on an assessment of overall system risk in the planned operating environment and risk handling to acceptable levels primarily through imposition of special operating limits/restrictions and procedures. A special flight release permits air system operations for a finite duration under limited operating circumstances in fulfillment of specific military missions at specified locations.

1.7.2.2. The special flight release process shall not be used for granting flight authorization of AF operated passenger-carrying aircraft.

**1.8. First Flight Executive Independent Review Teams.** First Flight Executive Independent Review Team assessments are required for new air system development programs and for some reportable modification programs. Programs initiating reportable modification programs shall consult the TAA when submitting their draft certification basis to obtain a determination that a FFEIRT is, or is not, required. The TAA shall make the determination and notify the PM accordingly. If a FFEIRT is required, the TAA shall select the FFEIRT chairperson and appoint the team members. PMs shall ensure that development contracts include tasking and funding to support FFEIRT reviews and will plan for the FFEIRT to engage with the program no later than CDR or equivalent. The FFEIRT shall assess compliance of airworthiness activities performed during development to the experimental flight release basis. The FFEIRT will assess the risk for first flight and for the development flight test program. After formal risk acceptance by the appropriate authority IAW Attachment 4, and review of the FFEIRT findings, the TAA may issue a MEFR. If the request for flight release is not approved, the TAA shall provide the PM with an identification of additional actions which must be accomplished to secure approval.

**1.9. Airworthiness Certification of Modified Air Systems.** This paragraph applies to all permanent and temporary modifications as defined in AFI 63-131, *Modification Program Management*, to include service life extensions and /or major mission modifications. Modifications to commercial derivative passenger-carrying aircraft shall not cause the aircraft to lose FAA type certification.

1.9.1. **Modification Determinations.** Determination of modifications as reportable, nonreportable, or no impact to airworthiness shall be documented, along with the rationale for the determination. All airworthiness related modifications require development of a MACC document; however, only reportable modifications require MACC review and approval by the TAA (refer to Attachment 3 for the procedure for determining whether a modification is reportable). The TAA may issue MTCs for air systems with reportable modifications after finding compliance with the modification certification basis and approving the final MACC for the modification. Nonreportable modification MACCs may be approved by CE/DTAs; these shall be included in or appended to the air system TACC and maintained as part of the system airworthiness baseline. A new MTC shall not be issued for type designs incorporating nonreportable modifications.

1.9.2. **Temporary Modifications.** The PM shall ensure that aircraft maintain airworthiness upon removal of temporary modifications and are returned to an approved configuration IAW AFI 63-131.



**1.10. Commercial-Derivative Aircraft (CDA).** FAA type certification is the preferred method of certifying airworthiness of AF operated CDA; this method is appropriate when the military usage will be no more severe than the FAA certified flight envelope and usage environment. CDA require the issuance of a MTC by the TAA; MTCs for CDA are based on the FAA type certification and a finding of compliance with the approved military certification basis for any items not certified by the FAA (if any). MIL-HDBK-516 shall be used to define applicable military airworthiness certification criteria, standards, and methods of compliance for any items listed on an FAA form 8130-2 or 8130-31 (i.e., items which are not included in the FAA TC). FAA special airworthiness certificates in the experimental category are not an acceptable certification basis for AF CDA airworthiness certification. Refer to AFI 21-107, *Maintaining Commercial Derivative Aircraft*, for maintenance requirements for CDA.

1.10.1. **Commercial derivative passenger-carrying aircraft.** The primary mission of these aircraft is transport of passengers. PMs for commercial derivative passenger-carrying aircraft shall obtain and maintain FAA type certification (see FAA Order 8110.101 and AFI 63-131) of the type design. The PM shall request exemption(s) for any FAR noncompliance (the TAA must approve the airworthiness standard(s) to be met for the exemptions).

**1.10. 2 FAA Certified Modifications.** MACCs for FAA certified modifications shall include the FAA TCDS as the certification basis, and “FAA type certification” shall be used to show compliance with the certification basis. The TAA shall be notified of FAA certified reportable modifications; the TAA shall issue a new MTC for these modified aircraft. The PM issues MCAs to individual aircraft based on conformance to the FAA TC, military airworthiness criteria (as applicable), and the program product acceptance process.

**1.11. FAA Certification of AF Developed Aircraft.** Airworthiness certification of aircraft developed by AF may be accomplished by obtaining an FAA type certification of the military type design. PMs who wish to obtain an FAA certification of a military unique design shall consult with the TAA early in the program to determine the feasibility of this approach. If a positive determination is made, then the TAA shall approve the use of the FAA certification approach.

1.11.1. There is no direct correlation or substantive equivalence between the FARs and MIL-HDBK-516 military airworthiness criteria. Therefore, FAA type certification of a military design shall be used only when the air system is designed from the outset to comply with the FARs. Any military-unique items not covered under the FAA type certification shall be listed on an FAA form 81302 or 8130-31 and shall comply with applicable military airworthiness standards. TACCs for these aircraft will include the FAA TCDS as the certification basis along with the applicable criteria, standards, and methods of compliance from MIL-HDBK-516 for any military-unique items.

1.11.2. The TAA issues a MTC for the type design; the MTC cites the FAA type certification and compliance with military airworthiness criteria (if applicable) as the basis for the military type certification. The PM issues MCAs to individual aircraft based on conformance to the FAA type certification, military airworthiness criteria (as applicable), and the program product acceptance process. FAA special airworthiness certificates in the experimental category are not an acceptable certification basis for AF airworthiness certification.

**1.12. Military Certified Aircraft from Other DOD Components.** Aircraft designs certified by other United States Armed Forces may be accepted as airworthy by the TAA if the certification basis is known and understood and the planned AF usage is consistent with the certified configuration and operating environment. An application for airworthiness certification shall be submitted by the PM to the TAA. The certification basis shall be the previous certification; however, the TAA may request data used in the previous certification process to assist in reaching a finding of compliance for AF airworthiness certification. For additional information, refer to the *Memorandum of Agreement between the United States Air Force, the United States Navy, and the United States Army on Mutual Acceptance of Airworthiness Data, 5 February 2007* (available from AFMC/EN).

**1.13. Airworthiness Certification in Jointly Managed Acquisition Programs.** The Air Force often participates in jointly managed programs with one or more of the other US military services, either as the lead service or as a member. These joint programs typically employ a tailored airworthiness certification process which may or may not precisely follow the AFD 62-6 defined process. Since the AF will ultimately operate aircraft developed and produced by these programs, the following AF actions are required:

1.13.1. The TAA shall approve the certification basis for airworthiness certification for all AF operated variants.

1.13.2. The TAA shall issue findings of compliance for airworthiness certification and shall issue a MTC for all AF-operated variants.

1.13.3. MCAs shall be issued under the authority of the AFPEO/AC for all AF-operated, jointly managed aircraft.

**1.14. Certification of Temporary Equipment.** Although temporary equipment is not part of the baseline configuration of an air system, it can affect airworthiness. Therefore, all temporary equipment proposed for use with an air system shall be in the air system certification basis. For legacy air systems DOE/DTAs shall assess the risk associated with proposed temporary equipment items and shall classify these items as reportable or nonreportable modifications. PMs shall plan and execute airworthiness activities for temporary equipment IAW this determination. Authorized temporary equipment shall be included in the program documentation of the type design.

**1.15. Service Life and Condition for Safe Operation.** MTCs are valid for the approved service life of the type design. PMs shall establish and document a recommended system service life limit (SLL) expressed in flight hours, years of service, or other suitable metric for each type design and shall include this SLL in all applications for MTCs. The TAA shall approve and document a SLL in the MTC at the time of issuance. PMs shall include the approved SLL in MCAs issued for individual aircraft within a type design, and shall provide a copy to the MAJCOMs for fleet management.

1.15.1. PMs shall assess the status of fielded aircraft throughout their life cycle to ensure that all aircraft for which a MCA has been issued are in a condition for safe operation, i.e., that they have not exceeded the approved SLL, that environmental (e.g., corrosion) or other factors have not degraded airworthiness, that aircraft are properly maintained in accordance with approved maintenance documentation, and the aircraft are operated in accordance with the approved flight manual within the approved mission usage. The PM shall immediately

implement appropriate risk mitigation activities or revoke the MCA of any aircraft found not to be in a condition for safe operation. (Note: MCAs need not be revoked for conditions correctable by normal maintenance IAW approved maintenance documentation).

1.15.2. PMs may wish to implement service life extension programs (SLEPs) for systems which are approaching the SLL imposed by the MTC. For purposes of airworthiness certification, SLEPs shall be considered to be reportable modifications and shall follow the processes defined in this instruction for the conduct of these activities.

**1.16. Interrelationship of Safety Hazard Risk Acceptance Process to Airworthiness Assessment Process.** Airworthiness assessments and individual safety hazard risk acceptance are two separate and distinct processes. The results of the individual safety hazard risk acceptance process shall be used by the TAA to support system airworthiness assessments. Safety hazard risk acceptance is accomplished at the individual hazard level by the PM chain of authority (PM/PEO/CAE), while the issuance of MTCs and other flight releases is accomplished at the air system level by the TAA.

1.16.1. **Safety Hazard Risk Acceptance.** Noncompliance with an applicable airworthiness certification criterion is an indication of a potential safety hazard or other limitation in the design of the system and may have airworthiness ramifications. A key factor in the decision process that may lead to airworthiness certification is the successful resolution of individual safety hazards or the acceptance of their residual risk by the appropriate decision authority prior to the submittal of the airworthiness application to the TAA. Per DODI 5000.02, *Operation of the Defense Acquisition System*, Enclosure 12, paragraph 6, the Component Acquisition Executive (CAE) is the acceptance authority for system safety risks classified as high; the PEO-level is the acceptance authority for serious safety risks; and the PM is the acceptance authority for medium and low safety risks. Further implementation details of this requirement for AF programs are identified in AFI 91-202, *The US Air Force Mishap Prevention Program*. MIL-STD-882 describes the process for classification of high and serious risks and provides further guidance on the risk acceptance requirements for individual hazards.

**1.17. Exemptions and Waivers.** In conjunction with issuance of an MTC, TAA (or delegate) may issue a permanent *exemption* to an applicable airworthiness certification criterion if the PM provides adequate substantiation and risk acceptance documentation. If the TAA cannot approve an exemption request and issue an MTC, the PM can request a temporary *waiver* to the airworthiness criterion to allow limited aircraft operations until a permanent solution can be completed. For nonreportable modifications, authority to approve exemptions and waivers is delegated to CE/DTAs.

1.17.1. PMs must show that their aircraft type design fully complies with the approved airworthiness certification basis before the TAA can issue an MTC. If an applicable airworthiness certification criterion is not satisfied, the PM shall include a request for permanent exemption from the criterion. Each exemption request shall substantiate the need for the exemption, provide the results of a risk hazard assessment, and include risk acceptance documentation by the appropriate authority (refer to Attachment 4) and evidence of coordination with the MAJCOM at a level commensurate with the risk acceptance authority. Approved exemptions shall be noted in the MTC.

1.17.2. If the TAA declines to approve a requested exemption or issue a MTC he/she shall notify the PM and shall define additional action(s) to enable the airworthiness process to proceed. These actions could take the form of defining additional activities required to demonstrate design compliance with the criteria in question, or alternatively, issuing instructions to prepare a waiver to support issuance of a MRFR. Waiver requests shall substantiate the need for the waiver; include the results of a risk assessment, a risk closure plan, and proposed waiver time limits; provide recommended aircraft operating limitations/restrictions; and include risk acceptance documentation signed by the appropriate authority (refer to Attachment 4) and evidence of coordination with the MAJCOM. Approved waivers shall be noted in the MRFR.

**1.18. Product Acceptance Process.** Programs are required to implement a formal product acceptance process to ensure that individual aircraft are built and delivered IAW the approved engineering baseline and the MTC. The TAA may conduct audits to verify program adherence to acceptance processes (refer to paragraph 1.3.7). The product acceptance process shall include the following:

1.18.1. Implementation of a formal configuration management process to ensure control of the product definition baseline at all levels of the supply chain.

1.18.2. Implementation of quality assurance processes at all levels of the product supply chain.

1.18.3. Use of explicit product acceptance criteria based on characteristics of the system design at all levels of the supply chain.

1.18.4. If the CE/DTA finds that all requirements of the product acceptance process have been satisfied at the time of delivery of each new or modified aircraft, the CE/DTA shall coordinate on the acceptance documentation (the CE/DTA may delegate this authority in writing). The PM may then issue a MCA for that aircraft. If the product acceptance process finds noncompliances with approved MTCs, the CE/DTA may approve **deviations** for individual aircraft. All deviations for a particular aircraft must be approved before the PM may issue an MCA for that aircraft. Programs shall maintain a record of exemptions, waivers, and deviations approved by the CE/DTA.

**1.19. Operational Airworthiness.** The MAJCOMs have responsibility for maintaining aircraft configuration control and shall ensure that no unauthorized changes are made by their activities (Note: This instruction does not differentiate between lead and component MAJCOM responsibilities). This is accomplished by establishing and implementing aircrew and maintenance personnel training and evaluation requirements and by defining and adhering to approved operating procedures for each type design. If unauthorized configuration changes are discovered, the MAJCOM shall take appropriate action to ensure the safety of the affected aircraft and notify the PM. The PM may revoke the MCA but may reissue the certificate after the aircraft has been returned to an approved configuration. Refer to AFI 63-131.

1.19.1. **Operation of Non AF Owned or Managed Aircraft.** These aircraft may be operated by AF aircrew members only when approved IAW AFI 11-401, *Aviation Management*.

1.19.2. **Statement of Operating Intent.** PMs shall request a statement of operating intent from the MAJCOM early in the development process to assist in the definition of operational

usage and intended maintenance profiles of aircraft systems. The PM shall request updates to these statements every five years or whenever significant changes to mission usage and/operations are planned.

**1.20. Special Access Programs.** Special access programs shall follow the processes included herein, and shall contact the TAA to coordinate appropriate levels of independent reviews, delegations, and approvals.

**1.21. Commander's Prerogative on Mission Capability.** This instruction does not infringe on the MAJCOM commander's prerogative to operate airworthy, but less than fully mission capable, aircraft systems.

## Chapter 2

### RESPONSIBILITIES AND AUTHORITIES

#### 2.1. Assistant Secretary of the Air Force for Acquisition (SAF/AQ):

- 2.1.1. Ensures that airworthiness requirements are included in AF acquisition directives and policies, including those addressing joint programs.
- 2.1.2. Resolves disputes regarding airworthiness process and procedural issues when requested by Air Force Program Executive Officers (AFPEOs) or Designated Acquisition Officials (AFDAOs).
- 2.1.3. Serves as the risk acceptance authority for “high” safety risks IAW Attachment 4.

#### 2.2. The Technical Airworthiness Authority (TAA):

- 2.2.1. Chairs the AF Airworthiness Board (AB).
- 2.2.2. Approves type design certification basis documents.
- 2.2.3. When requested, determines if a FFEIRT is required and notifies the PM. Selects the FFEIRT chairperson.
- 2.2.4. Issues MTCs for type designs and authorization to PMs to issue MCAs when the PM has shown compliance with the approved certification basis.
- 2.2.5. Issues a MEFR, MRFR, or non-design-based special flight release when required risk assessment, risk management, and risk acceptance actions have been accomplished and documented by the PM.
- 2.2.6. Delegates airworthiness authorities at his/her discretion. The terms and conditions of the delegation shall be documented.
- 2.2.7. Accepts type certifications, airworthiness certifications, and certification data from other military services or FAA airworthiness authorities when the certification basis is known and understood, and the certified configurations and environment are consistent with the planned usage contained in the statement of operating intent.
- 2.2.8. Documents and issues decisions based on AB recommendations.
- 2.2.9. Establishes accreditation criteria for delegated airworthiness positions and accredits individuals as DTAs who meet accreditation requirements.
- 2.2.10. Conducts organizational airworthiness audits to verify ongoing adherence to established airworthiness policies and processes.
- 2.2.11. Publishes interim airworthiness direction between formal updates to this instruction.

#### 2.3. HQ Air Force Materiel Command, AFMC:

- 2.3.1. Staffs and supports the AB.
- 2.3.2. Identifies and proposes subject matter experts and DTAs to the TAA for accreditation.
- 2.3.3. Provides qualified personnel to staff airworthiness project support teams.

2.3.4. Develops and issues supporting guidance and training as required to implement this AFI, including establishing, updating, and distributing process guidelines and tools for issuance of military type certifications, aircraft certifications and flight releases.

2.3.5. Leads, staffs, and supports FFEIRTs and conducts other safety-of-flight related investigations and airworthiness assessments.

2.3.6. Updates, coordinates, publishes, and distributes MIL-HDBK-516, *Airworthiness Certification Criteria*, including tailorable standards and methods of compliance for the approved airworthiness criteria.

2.3.7. Works with other U.S. military services, the FAA, and other civil and military aviation authorities to establish and maintain airworthiness organizational interrelationships and understandings.

2.3.8. Supports development and revision of joint (DoD, Army, Navy, and AF) airworthiness processes and documents to facilitate cross-service acceptance of airworthiness certifications and releases.

2.3.9. Submits proposed revisions to this instruction.

2.3.10. Disseminates flight safety related information as needed to increase awareness of flight safety technical issues and flight safety concerns consistent with privilege guidelines as identified in AFI 91-204, *Safety Investigations and Reports*, and as approved by AFSC/JA.

2.3.11. Resolves disputes regarding airworthiness process and procedural issues when requested by Wing Commanders/Directors.

#### **2.4. Major Commands (MAJCOMs):**

2.4.1. Review, coordinate, and sign airworthiness risk acceptances as requested and appropriate.

2.4.2. Notify passengers flying on non-FAA-certified aircraft of the inherent risks of flying on military certified aircraft.

2.4.3. Ensure operation and maintenance of aircraft in their fleet is accomplished in accordance with approved technical data.

2.4.4. Maintain aircraft configuration control to ensure no unauthorized changes are made.

#### **2.5. Air Force Program Executive Officers (AFPEOs) and Designated Acquisition Officials (AFDAOs):**

2.5.1. Ensure that managed aircraft systems employing design-based airworthiness assessments have successfully completed airworthiness reviews prior to first flight and have appropriate flight releases or certifications issued prior to the start of dedicated OT&E (or first MAJCOM operation if dedicated OT&E is not employed).

2.5.2. Serve as the risk acceptance authority for “serious” safety risks IAW Attachment 4.

#### **2.6. Program Managers (PMs):**

2.6.1. Obtain statements of operating intent from the MAJCOM early in the development cycle to assist in defining the usage spectrum and intended maintenance profiles of aircraft systems.

- 2.6.2. Develop Tailored Airworthiness Certification Criteria documents for newly acquired aircraft and Modification Airworthiness Certification Criteria documents for modifications to existing aircraft systems which have airworthiness impact.
- 2.6.3. Obtain TAA approval of TACC and reportable MACC documents.
- 2.6.4. Request and support FFEIRT assessments prior to first flight of developmental aircraft and selected aircraft with reportable modifications.
- 2.6.5. Serve as the risk acceptance authority for medium/low safety risks IAW Attachment 4.
- 2.6.6. Obtain risk acceptance for all serious or high safety risks IAW Attachment 4.
- 2.6.7. Obtain certification basis exemptions (as necessary) from the TAA when applying for a MTC.
- 2.6.8. Obtain certification basis waivers (as necessary) from the TAA to support issuance of a MRFR.
- 2.6.9. Obtain waivers from the CE/DTA (as necessary) before issuing MCAs for aircraft which do not fully conform to the MTC and/or the product acceptance process.
- 2.6.10. Ensure that aircraft maintain airworthiness when temporary modifications are removed and the aircraft are returned to an approved configuration IAW AFI 63-131.
- 2.6.11. Obtain documented recommendations from original equipment manufacturers (OEM) and/or aircraft prime contractors as necessary when making airworthiness certification and safety-of-flight assessments.
- 2.6.12. Ensure that test plans, work statements, and contracts include specific tasking and requirements to support airworthiness assessments and to verify system compliance with the approved certification basis.
- 2.6.13. Obtain MTCs for each managed type design prior to the start of dedicated OT&E (or first MAJCOM operation if dedicated OT&E is not employed).
- 2.6.14. Obtain MTCs for type certified aircraft with reportable modifications.
- 2.6.15. Develop and implement formal air system product acceptance processes.
- 2.6.16. Issue MCAs for individual aircraft prior to delivery to a MAJCOM, when the aircraft conforms to the approved military type design and is in a condition for safe operation.
- 2.6.17. Establish and execute monitoring and surveillance processes for fielded systems to identify when fielded aircraft no longer meet MTC requirements due to age, usage, unforeseen issues, etc. Implement risk mitigation actions and/or remove MCAs as appropriate.
- 2.6.18. Maintain and manage air system data and configurations in support of life cycle airworthiness. Ensure that all airworthiness certification documentation, including TACC and MACC documents, supplemental and supporting data, associated verification data, airworthiness certificates and flight releases, and waiver and exemption packages are maintained for the life of the aircraft system. Include instructions for life cycle airworthiness in technical orders and/or maintenance instructions.



2.6.19. Ensure that de-modified aircraft conform to the approved military type design and are in a condition safe for operation prior to MAJCOM usage of former test assets.

2.6.20. Obtain non-design-based special flight releases from the TAA for any aircraft for which it is impossible or impractical to conduct a design-based airworthiness assessment.

### **2.7. AFMC Test Centers, Test Organizations, and Laboratories:**

2.7.1. If delegated, make and document a positive safety-of-flight determination prior to the first flight of temporarily modified aircraft. Fully document any configuration changes and inform the PM.

2.7.2. Prohibit alterations or modifications to aircraft without the approval of the airworthiness authority or the delegated safety-of-flight determining authority.

2.7.3. Define and implement local implementation instructions consistent with this AFI.

### **3.1. Adopted Forms.**

AF IMT 847, *Recommendation for Change of Publication*

DAVID M. VAN BUREN  
Air Force Service Acquisition Executive

## Attachment 1

### GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

#### *References*

DODI 5000.02, *Operation of the Defense Acquisition System*, 8 December 2008

DODD 5000.01, *The Defense Acquisition System*, 12 May 2003

AFPD 10-9, *Lead Command Designation and Responsibility for Weapon Systems*, 8 March 2007

AFPD 62-6, *USAF Airworthiness*, 11 June 2010

AFI 11-401, *Aviation Management*, 18 May 2009

AFI 21-107, *Maintaining Commercial Derivative Aircraft*, 19 July 1994

AFI 63-101, *Acquisition and Sustainment Life Cycle Management*, 17 April 2009

AFI 63-131, *Modification Program Management*, 6 November 2009

AFI 63-1201, *Life Cycle Systems Engineering*, 23 July 2007

AFI 91-202, *The US Air Force Mishap Prevention Program*, 1 August 1998

AFI 91-204, *Safety Investigations and Reports*, 24 September 2008

AFMAN 33-363, *Management of Records*, 1 March 2008

MIL-STD-882, *Standard Practice for System Safety*, 10 February 2000

MIL-HDBK-516, *Airworthiness Certification Criteria*, 29 February 2008

FAA Order 8110.101, *Type Certification Procedures for Military Commercial Derivative Aircraft*, 7 September 2007

#### *Terms*

**Airworthiness**—The verified and documented capability of an air system configuration to safely attain, sustain, and terminate flight in accordance with approved usage and limits.

**Airworthiness Certification**—A repeatable process which documents compliance with the approved certification basis.

**Certification Basis**—The set of approved airworthiness certification criteria, standards, methods of compliance, and exemptions that apply to a specific air system. It is typically derived from MIL-HDBK-516, *Airworthiness Certification Criteria*.

**Commercial Derivative Aircraft (CDA)**—Any fixed- or rotary-wing aircraft procured as a commercial, FAA type certified, off-the-shelf nondevelopmental item, and whose serial number is listed on an FAA Type Certificate Data Sheet.

**Commercial Derivative Passenger Carrying Aircraft**—Any CDA used primarily for the transport of passengers.

**Delegated Technical Authority (DTA)**—Senior engineers in leadership positions who meet criteria established by the TAA and are authorized to exercise delegated airworthiness authorities.

**Deviation**—A specific written authorization to depart from a particular requirement(s) of an item's current approved configuration documentation for a specific number of units or a specified period of time, and to accept an item which is found to depart from specified requirements, but nevertheless is considered suitable for use "as is" or after repair by an approved method.

**Exemption**—Documentation of permanent air system design feature that does not comply with an airworthiness certification criterion in the TACC or MACC.

**Finding of compliance (find compliance)**—TAA concurrence that the “show compliance” data supports the determination of airworthiness.

**Flight Release**—Documentation which authorizes flight of specific aircraft at specific locations under approved conditions and limitations.

**Military Certificate of Airworthiness (MCA)**—The document issued by a PM to each individual aircraft that provides evidence of compliance with its approved MTC and its condition relative to safe operation.

**Military Experimental Flight Release (MEFR)**—The document issued to individual test or developmental aircraft which provides evidence of the level of compliance with a limited set of airworthiness criteria defined for test purposes and its condition relative to safe operation.

**Military Restricted Flight Release (MRFR)**—The document which indicates that an aircraft carries a significant degree of flight risk and authorizes flight only under defined conditions and restrictions, and at specific locations.

**Military Type Certificate (MTC)**—The TAA issued document which provides evidence that the aircraft system type design is in full compliance with its approved certification basis.

**Modification**—A change to the form, fit, function, or interface (F3I) of an in-service AF hardware or software configuration item (CI). For additional terms and guidance related to modifications, consult AFI 63-131.

**Modification Airworthiness Certification Criteria (MACC) Document**—A document comprised of the certification basis for the modification, a description of the aircraft covered, a description of the modification, operating limitations or restrictions that apply to the modified aircraft, references to “show compliance” data, and a summary of any noncompliance with an applicable airworthiness criteria.

**Nonreportable Modification**—Any permanent or temporary configuration change or alteration to an item, change in capability, or change in mission usage that does not have a potentially significant impact on airworthiness (see Attachment 3 to this AFI).

**Passenger**—Any person on board an air vehicle who is not trained regarding the passenger safety/emergency capabilities of that particular air vehicle and mission. For a specific flight, this includes any person who does not have active crewmember duties and is not essential for accomplishing mission tasks. NOTE: Mission training constitutes specialized air vehicle training beyond preflight safety briefings.

**Program Manager (PM)**—The DODI 5000.02 designated individual with responsibility for, and authority to accomplish, program objectives for development, production, and sustainment to meet user's operational needs. PMs for sub-systems support overall system objectives as required by the System Program Manager (SPM). PMs for acquisition programs are accountable

for credible cost, schedule, performance, and materiel readiness to the MDA. PMs addressed by this AFI are those who are responsible for weapon systems identified in AFPD 10-9, *Lead Command Designation and Responsibility for Weapon Systems*, space systems, and programs identified on the Acquisition Program Master List and Sustainment Program Master List. PMs are assigned in accordance with AFI 63-101, *Acquisition and Sustainment Life Cycle Management*.

**Reportable Modification**—Any permanent or temporary configuration change or alteration to an item, change in capability, change to the service life limit, or change in mission usage that has a potentially significant impact on airworthiness (see Attachment 3 to this AFI).

**Safety of Flight**—The property of a particular air system configuration to safely attain, sustain, and terminate flight within prescribed and accepted limits for injury/death to personnel and damage to equipment, property, and/or environment.

**Service Life Limit (SLL)**—The maximum permissible period of aircraft operational service expressed in units of time and/or operating hours/cycles. The approved SLL shall be documented in MTCs and MCAs. Extensions to the SLL are considered reportable modifications for the purpose of airworthiness.

**Showing of compliance (show compliance)**—Substantiating data provided by the PM that supports a finding of compliance by the TAA.

**Tailored Airworthiness Certification Criteria (TACC) Document**—It is comprised of a description of the aircraft system; the certification basis; any operational limitations or restrictions that must be implemented in order to ensure airworthiness of the aircraft; references to “show compliance” data; and a summary of any noncompliance with applicable airworthiness criterion in the certification basis.

**Technical Airworthiness Authority (TAA)**—The AF official authorized to define airworthiness standards, approve the certification basis, issue findings of compliance, and issue Military Type Certificates and other flight releases. (See attachment 2)

**Temporary Equipment**—Any item or equipment (including carry-on equipment) which is not permanently installed in an air system and which can be operated (i.e., is not inert) during air system operation.

**Type Design**—Description of the physical configuration of similar aircraft systems which, from an airworthiness perspective, are functionally equivalent.

**Waiver**—Documentation of a temporary air system design feature that does not comply with an airworthiness certification criterion in the TACC or MACC.

## Attachment 2

## AIRWORTHINESS PROCESS RESPONSIBILITIES

Product/Activity	Responsibility			
	PM	TAA	Chief Engineer/ DTA	Wing Director of Engineering/ DTA
Airworthiness Assessment Process Determination	Requests	Approves	Coordinates	Coordinates
Airworthiness Related Modification Determination	Requests		Approves	
Reportable/ Nonreportable Modification Determination	Requests		Recommends	Approves
Certification Basis	Requests Approval	Approves	Coordinates	CE/DTA Alternate
Final TACC/MACC (Reportable Modification)	Shows Compliance and Requests Approval	Finds Compliance and Approves	Coordinates	CE/DTA Alternate
Final MACC (Nonreportable Modification)	Shows Compliance and Requests Approval		Finds Compliance and Approves	CE/DTA Alternate
Military Experimental Flight Release (FFEIRT Required)	Shows Compliance and Requests Approval	Finds Compliance and Issues	Coordinates	Coordinates
Military Experimental Flight Release (FFEIRT Not Required)	Shows Compliance and Requests Approval		Finds Compliance and Issues	CE/DTA Alternate

<b>Product/Activity</b>	<b>Responsibility</b>			
	<b>PM</b>	<b>TAA</b>	<b>Chief Engineer/ DTA</b>	<b>Wing Director of Engineering/ DTA</b>
Military Type Certificate	Shows Compliance and Requests Approval	Finds Compliance and Issues	Coordinates	CE/DTA Alternate
Military Certificates of Airworthiness	Finds Compliance and Issues	Delegates	Coordinates	CE/DTA Alternate
Military Restricted Flight Release	Requests Approval	Approves & Issues	Coordinates	CE/DTA Alternate
Military Restricted Flight Release (One- Time Flight)	Requests Approval		Approves & Issues	CE/DTA Alternate
Exemption to Certification Basis (TACC, FAA FARs, Reportable MACC)	Requests Approval	Approves	Coordinates	CE/DTA Alternate
Exemption to Certification Basis (Nonreportable MACC)	Requests Approval		Approves	CE/DTA Alternate
Waiver to Certification Basis	Requests Approval	Approves	Coordinates	Coordinates
Waiver to MTC/Acceptance Process	Requests Approval		Approves	CE/DTA Alternate
Aircraft Acceptance	Approves or Delegates		Coordinates or Delegates	CE/DTA Alternate
Non-design-based special flight release)	Requests Approval	Approves & Issues	Coordinates	Coordinates

Attachment 3

PROCEDURE FOR CLASSIFICATION OF MODIFICATIONS

**A3.1.** All modifications have the potential to impact airworthiness of an aeronautical system. For this reason all design, operational usage, flight envelope changes, and service life extensions to an air system require an airworthiness assessment. The purpose of such an assessment is to (a) determine if the modification is airworthiness related, and (b) for airworthiness related modifications to classify the modification as reportable or nonreportable. Modifications determined to be unrelated to airworthiness are not governed by this instruction. The classification of modifications as reportable or nonreportable is done as follows:

**A3.2.** The CE/DTA shall conduct or direct an assessment of the modification to determine the degree of airworthiness impact. This assessment shall consider the risks associated with the proposed modification in terms of the probability of occurrence and the severity of occurrence.

Table A3.1. Modification Risk Analysis.

PROBABILITY	SEVERITY			
	Negligible	Marginal	Critical	Catastrophic
	Could result in injury or illness not resulting in a lost work day, or minimal environmental damage not violating law or regulation.	Could result in injury or occupational illness resulting in one or more lost work day(s), or mitigable environmental damage without violation of law or regulation where restoration activities can be accomplished.	Could result in permanent partial disability, or injuries or occupational illness that may result in hospitalization of at least three personnel, or reversible environmental damage causing violation of law or regulation.	Could result in death, permanent total disability, or irreversible severe environmental damage that violates law or regulation.
<b>Frequent:</b> Continuously experienced; likely to occur often in the life of an item, with a probability of occurrence greater than $10^{-1}$ in that life.				
<b>Probable:</b> Will occur frequently; will occur several times in the life of an item, with a probability of occurrence less than $10^{-1}$ but greater than $10^{-2}$ in that life.				
<b>Occasional:</b> Will occur several times; likely to occur some time in the life of an item, with a probability of occurrence less than $10^{-2}$ but greater than $10^{-3}$ in that life.				
<b>Remote:</b> Unlikely, but can reasonably be expected to occur; unlikely but possible to occur in the life of an item, with a probability of occurrence less than $10^{-3}$ but greater than $10^{-6}$ in that life.				
<b>Improbable:</b> Unlikely to occur, but possible; so unlikely it can be assumed occurrence may not be experienced, with a probability of occurrence less than $10^{-6}$ in the life of the item.				

Reportable Modification     Non Reportable Modification

**Table A3.2. Examples of Airworthiness Related Modifications.**

(a) Changes that affect structural integrity, propulsion/drive system operation (including software), aircraft performance, aerodynamic characteristics (including drag, control response, and stability), electromagnetic characteristics, navigational system effectiveness, flight control system power requirements, significant software revisions, weight and balance, air crew station noise levels, restrict air crew vision or performance, or increase the danger to the crew or passengers in the event of an accident.
(b) Modification to the exterior contour/mold line of the air vehicle (addition/removal of antenna, wing fence, ventral fin, vortex generator, air induction system, auxiliary inlets, etc.)
(c) Modification of the displays, annunciation or critical information presented to the aircrew which may affect situational awareness, aircraft control, weapons launch, etc.
(d) Aircraft modifications incorporating a source of energy or that can be energized to emit any form of radiation that may be hazardous, such as explosive ordnance, explosive or flammable fluids, laser energy, and so forth.
(e) Changes that affect the operating limits and/or emergency procedures prescribed by the operator's flight manual.
(f) Modification to weapons release/firing system, including stores management system and associated weapons system software.
(g) Installation of nondevelopmental items (NDI) or commercial-off-the-shelf (COTS) equipment and effects of its installation on the authorized configuration.
(h) Changes that affect the prescribed limits for continued airworthiness, including additions, deletions, or reconfiguration of hardware and software, and material substitutions.

**A3.3. Table A3. 1** illustrates the criteria for classifying modifications. CE/DTAs shall utilize this table unless the TAA has delegated responsibilities to them specifying alternative reportability criteria. The CE/DTA shall examine the modification (including all design and/or mission usage changes) and estimate the unmitigated consequences of potential *hazards* and the *probability* of each (The intent is that the development/qualification program for the modification, if properly conceived and executed, will mitigate the hazard down to an acceptable level. However, for purposes of assessing the potential airworthiness impact of the change it is necessary to evaluate the unmitigated risk). Table A3.1 also provides working definitions for use in determining the level and probability of the hazard.

**A3.4. Table A3. 2** contains a number of examples of the types of changes which would typically be classified as airworthiness related; depending on the risk characterization they may also be reportable modifications. These examples may be used as guidance to assist in executing the process.

**A3.5.** If any aspect of the modification has a combination of hazard severity and frequency of occurrence that falls in the yellow portion of Table A3.1, the modification is classified as



reportable. The depth and formality of the technical analysis to complete Table A3.1 for any modification will depend on the complexity and criticality of the modification, relying on the technical judgment of the CE/DTA.

**A3.6.** For those modifications determined by CE/DTA to be airworthiness related, the CE/DTA shall provide reportable/nonreportable classification recommendations to the DOE/DTA. The DOE/DTA shall, in turn, determine the final classification. The program shall execute the modification program in concert with the DOE/DTA modification classification decision in accordance with this instruction.

**Attachment 4**  
**RISK ACCEPTANCE TABLE**

<b>Hazard Category</b>  <b>Frequency of Occurrence</b>	<b>Negligible</b>	<b>Marginal</b>	<b>Critical</b>	<b>Catastrophic</b>
	Could result in one or more of the following: injury or illness resulting in less than 10 lost work days, loss less than \$100K, or minimal environmental impact.	Could result in one or more of the following: injury or occupational illness resulting in 10 or more lost work days, loss exceeding \$100K but less than \$1M, or reversible moderate environmental impact.	Could result in one or more of the following: permanent partial disability, injuries or occupational illness that may result in hospitalization of at least three personnel, loss exceeding \$1M but less than \$10M, or reversible significant environmental impact.	Could result in one or more of the following: death, permanent total disability, loss exceeding \$10M, or irreversible significant environmental impact.
<b>Frequent:</b> Likely to be experienced several times by a fleet/inventory within a 12-month period; a probability of occurrence greater than 10 <sup>-1</sup> over 12 months.	13	7	3	1
<b>Probable:</b> Likely to be experienced by a fleet/inventory within a 12-month period; a probability of occurrence less than 10 <sup>-1</sup> but greater than 10 <sup>-2</sup> over 12 months.	16	9	5	2
<b>Occasional:</b> May be experienced by a fleet/inventory within a 12-month period; a probability of occurrence less than 10 <sup>-2</sup> but greater than 10 <sup>-3</sup> over 12 months.	18	11	6	4
<b>Remote:</b> Unlikely, but possible to be experienced by a fleet/inventory within a 12-month period; a probability of occurrence less than 10 <sup>-3</sup> but greater than 10 <sup>-6</sup> over 12 months.	19	14	10	8
<b>Improbable:</b> So unlikely, it can be assumed occurrence may not be experienced by a fleet/inventory within a 12-month period; a probability of occurrence of less than 10 <sup>-6</sup> over 12 months.	20	17	15	12

<b>LEGEND</b>	<b>RISK LEVEL</b>	<b>ACCEPTANCE AUTHORITY</b>
1 - 5	High	Component Acquisition Executive (CAE)
6 - 9	Serious	Program Executive Officer (PEO)
10 - 20	Medium/Low	Program Manager (PM)