BY ORDER OF THE DIRECTOR

AFLCMC OPERATING INSTRUCTION 62-601

5 December 2013

Developmental Engineering

USAF AIRWORTHINESS PROCESSES FOR DELEGATED TECHNICAL AUTHORITY (DTA)

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This AFLCMCOI documents organizational processes and responsibilities for Airworthiness (AW) within Delegated Technical Authority (DTA) organizations consistent with, Department of Defense Directive (DoDD) 5030.61, *DoD Airworthiness Policy*; Air Force Policy Directive (AFPD) 62-6, *USAF Airworthiness*; Air Force Instruction (AFI) 62-601, *USAF Airworthiness*; AFI 62-601 AFMC Supplement I, *USAF Airworthiness*; MIL-HDBK-516B, *ASC/EN Airworthiness Certification Criteria Expanded Version of MIL-HDBK-516B,* and applicable USAF Airworthiness Bulletins (AWBs). This instruction applies to all owned, leased, operated, used, designed, or modified manned or unmanned aircraft or air systems managed by AFLCMC, including those operated by the Air National Guard and U.S. Air Force Reserve. This OI serves as direction to assigned program management and engineering personnel responsible for tailoring the USAF AW processes consistent with the above policies. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management Systems (AFRIMS) Records Disposition Schedule (RDS) located at https://www.my.af.mil/afrims/afrims/afrims/rims.cfm.

1. Overview. AFPD 62-6, *USAF Airworthiness*, establishes policy for independent airworthiness determinations and flight authorizations by the USAF Technical Airworthiness Authority (TAA). The responsible System Program Managers (SPMs) must plan and execute airworthiness programs that will enable them to obtain the TAA issued flight authorizations. The AW flight authorization documents the independent technical determination that flying the weapon system configuration in its intended operations/usage is approved and all associated AW risks are accepted. This OI serves to establish AFLCMC guidance to comply with AFI 62-601,

AFMCSUP I, MIL-HDBK-516B Expanded, and all USAF AWBs regarding reportability of Airworthiness (AW) modifications and basic roles and responsibilities for key stakeholders. This OI will be reviewed on a bi-annual basis.

1.1. Purpose. The primary purpose of this OI is to provide the Program Executive Officer (PEO), SPM, modification Project Manager (PM), Director of Engineering (DOE), Chief Engineer (CE), Project Engineer (PE), System Safety, Configuration Manager and associated program office staff clear and concise instructions for implementing specific requirements as they relate to the AW process and assigning roles and responsibilities for AFI 62-601 compliance.

1.2. AW Technical Authorities. AFI 62-601 defines the AW roles of the USAF TAA; the AFMC Supplement specifies that the Director of the Engineering Directorate, Air Force Life Cycle Management Center (AFLCMC/EN-EZ) is designated as the USAF TAA. The TAA is authorized to delegate some TAA roles and authority to accredited DOE/Delegated Technical Authority (DTA). The DOE/DTAs, in turn, are permitted to sub-delegate technical authority to accredited CE/DTAs. Likewise, the CE/DTA are permitted to sub-delegate, as identified within their letter of delegation. For limited absences (like schooling, vacation, special assignment), a DOE or CE/DTA may temporarily sub-delegate their duties; the DOE/DTA and USAF AW office must receive a copy of this delegation letter.

Normally the CE/DTA sub-delegation will be restricted to CEs at the Air Force Test Center (AFTC), Edwards Air Force Base, accomplishing testing or T-2 modifications in support of flight testing on behalf of the CE/DTA. These delegations typically mirror associated position titles but may be made to individuals that do not hold DOE or CE/Lead Engineer (LE) positions. Delegations and Conditions of Delegation shall be in writing. (Note: The AFTC process for execution of AFTC directed modifications, including T-2s, is documented in AFTC OI 62-601.)

In this OI, persons assigned as DTAs shall be referred to as DOE/DTA and CE/DTA. Detailed roles and responsibilities for these positions are covered in the higher level AW policies and summarized/expanded in paragraph 2, herein. A Mission Design Series (MDS) has only one MDS DOE/DTA and CE/DTA; AW approvals must be addressed through them.

1.3. Foreign Military Sales (FMS). AFI 62-601 states "Airworthiness responsibilities for aircraft procured under FMS cases shall be defined in the Letter of Offer and Acceptance (LOA) for the case." Further, the AFLCMC Commander has directed, consistent with AF Legal guidance, if the LOA makes no mention of AW, the USAF will treat the FMS case as if it states "AW shall be addressed in accordance with (IAW) established USAF policy and process." Therefore, USAF airworthiness policy shall be applied to FMS cases to the greatest extent practical. The USAF will issue a flight authorization to support acceptance, ferry and flight test, unless an alternate authorization is identified in the LOA. Upon transfer of title to the foreign country, aircraft airworthiness is the responsibility of the FMS customer.
While the USAF cannot legally certify airworthiness of a foreign owned aircraft, we can make a recommendation to the aircraft owner. Additionally, the program office may provide copies of documentation including artifacts that support customer country airworthiness certification

(including copies of AW flight authorizations for equivalent AF configurations if allowed under Foreign Disclosure guidelines).

The CE/DTA should consult with the USAF Airworthiness Office and Air Force Security Assistance and Cooperation (AFSAC) Directorate, AFLCMC/WF, if clarification or consultation on application tailoring to specific cases is required. Exceptions to this FMS approach will be considered on a case-by-case basis and shall be approved by the SPM and the DOE/DTA in coordination with the TAA and AFSAC and documented in the FMS case LOA.

2. Roles and Responsibilities. The following summarizes the roles and responsibilities of key stakeholders in the AW process from AFMC Supplement I to AFI 62-601 and applicable AWBs.

2.1. TAA. The TAA is the overall USAF AW process owner, to include verification of ongoing adherence to AW policies and processes. The TAA has responsibility for all AW flight authorizations but may delegate "non- reportable" AW flight authorizations to DTAs through formal delegation. The TAA defines accreditation requirements as well as accredits individuals to serve as DTAs. The DTAs are an extension of the TAA and ensure the AW processes are applied in accordance with policy and data assessed by qualified USAF engineers. The TAA endorses Subject Matter Experts (SME) to assess compliance with MIL-HDBK-516B expanded for reportable modifications and support the USAF Airworthiness Board (AB). The TAA assigns the USAF AB members and they provide expertise in the TAA's decision to issue a flight authorization.

2.2. Component Acquisition Executive (CAE) and Program Executive Officer (PEO). Per Department of Defense Instruction (DoDI) 5000.02 and AFI 62-601, paragraph 1.16.1, the AF CAE and the AF PEO serves as the risk acceptance authority for "high" and "serious" risks respectively. For aircraft not governed under the AF CAE/PEO, the equivalent authority would be required to accept AW risks. The PEO shall ensure successful completion of AW reviews/releases prior to First Flight (FF), ensure final flight authorization has been secured prior to Operational Test & Evaluation and fielding, and monitor risk mitigation implementation as defined in MIL-STD-882 when appropriate.

2.3. System Program Manager (SPM). Per AFI 63-101/20-101, the platform SPM is responsible for compliance with AFI 62-601, paragraph 2.6, which articulates a comprehensive list of tasks the SPM shall undertake to initiate and complete the AW certification process for a program/modification to include establishing and executing a process for monitoring and surveillance of fielded systems to support continued AW. It is anticipated the engineering staff will execute the majority of the AW process on behalf of the SPM. Additionally, the SPM serves as risk acceptance authority for medium and low safety risks. The SPM issues the Military Certificate of Airworthiness (MCA).

2.4. DOE/DTA. The DOE/DTA is the primary liaison between the TAA and the program offices, approves the reportability determination recommendation made by the CE/DTA, and approves AW documentation for non-reportable modifications, unless delegated to the CE/DTA. The DOE/DTA is expected to attend all Airworthiness Boards held for platforms in his/her portfolio. Any Letter of Delegation issued by the DOE/DTA shall comply with the

Conditions of Delegation documented in their TAA delegation letter. The DOE/DTA shall submit a directorate Annual Determination Summary Report IAW attachment 4 of AWB-007, no later than 31 Oct for the previous fiscal year.

2.5. CE/DTA. The CE has overall responsibility for the technical execution of airworthiness for assigned MDS aircraft portfolio/platform. The Letter of Delegation issued by the CE/DTA's shall comply with the conditions of delegation as documented in their DOE/DTA delegation letter.

The CE/DTA is responsible for assessing AW impact for any baseline change/modification to the aircraft. Examples of changes include production modifications, maintenance deficiency, repairs outside of the Technical Orders.

2.6. Project Engineer (PE). Project Engineers supporting a MDS aircraft or leading a modification to an MDS aircraft have no AW technical authority. PEs support the CE/DTA in the development and review of AW documentation.

2.7. Configuration Management (CM). CM personnel are key supporters of the AW process. CM personnel manage the implementation of the Military Type Certificate/Military Flight Release (MTC/MFR) numbering scheme for the directorate/divisions; ensures incorporation of AW decisions into Configuration Control Board (CCB) charts; supports review of AW documentation; reviews Section 4.6 and 4.7 of the Tailored Airworthiness Certification Criteria/Modified Airworthiness Certification Criteria (TACC/MACC); and assists in finalizing the directorate Annual AW Determination Summary Report.

2.8. System Safety. The System Safety personnel are responsible for execution of Safety processes within the Program Offices, providing inputs to Section 14 of MIL-HDBK-516, providing the initial Hazard Risk Assessment during the Compliance Review, preparing any AW risk assessments, obtaining AW risk acceptance using the MIL-STD-882 process, and tracking AW risk status in accordance with policy.

3. Airworthiness Certification Process. The AW certification process is detailed in the USAF AW Bulletins. It is composed of: AW Determination and Planning, Certification Basis, and Flight Authorization (to include Compliance Reporting and Risk Acceptance). Attachment 2 contains the Airworthiness Process Timeline and Attachment 3 contains the Airworthiness Determination Form (ADF).

3.1. AW Determination and AW Plan. This phase captures the airworthiness events the program office conducts as soon as they begin to act on any approved requirement that impacts the aircraft type design. Utilize the ADF (Attachment 3) to document AW Impact, Reportability Determination and AW Plan. All AW determinations (impact or no impact, reportable or non-reportable) shall be documented in the directorate Annual AW Determination Summary Report. The DOE/DTA has the prerogative to request a briefing to supplement the ADF.

Prior to contract award, AW impact, reportability determination, AW plan and certification basis must be completed to the greatest extent possible to ensure AW work is funded and scheduled. The following sub paragraphs provide details for the ADF:

3.1.1. Project Information. The Project Information Section requires filling in the Date of Recommendation, Prepared By, Platform, Project Title, Requirement Source and Modification Description blocks in Section 1 of the ADF. Date of Recommendation should be the date the CE/DTA finalizes their assessment for AW impact and reportability. Examples of Requirements include: Urgent Operational Need (UON), Operational Requirement Document (ORD), Capability Development Document/Capabilities Production Document (CDD/CPD), LOA, Engineering Change Proposal (ECP), AF Form 1067, and Operational Flight Program /software (OFP/SW) change list. Modification description should have sufficient detail to understand the extent of the hardware/software and/or usage modification.

3.1.2. Impact Assessment. The CE/DTA will determine if a modification impacts airworthiness through the ADF Section 2 questions and assessment (as needed) and document the finding on the ADF. A positive response to one of the Section 2.1 questions is a good, but not absolute, indicator of an airworthiness impact. The list of questions is intended to guide: the CE/DTA must use engineering judgment to make the final AW impact decision. However, if any of the questions in Section 2.1 are answered affirmatively, but the CE/DTA determines there is no AW impact, the rationale for that decision must be included in Section 2.3 of the ADF. Upon a decision of no AW impact, the CE/DTA shall sign the ADF, which completes the required documentation (no other signatures are required.) The ADF will serve as supporting documentation for any DOE/DTA and TAA audit of "No AW Impact" decisions.

3.1.3. Reportability Determination. The ADF is utilized to document the reportability determination as well. When the CE/DTA determines the modification has an AW impact they are required to complete the Modification Assessment Matrix. The matrix is aligned with MIL-HDBK-516B Expanded to define the credible hazards associated with the design prior to any proposed mitigations. Currently available data should be utilized in defining the hazard. Ultimately an Overall Modification AW Hazard Index (AWHI) is identified. The value of examining the design risk without mitigation is that it emphasizes the intent for a robust primary architecture, assigns an early weighting to the resources required for the design and facilitates attention to the problematic aspects of the change. This "unmitigated" AWHI is evaluated against AWB-013 risk matrix for Severity/Consequence. The individual reviewing the hazard by Section should be identified and the CE/DTA will recommend the final AWHI for the accumulation of hazards for that Section. Note: Neither the CAE nor PEO are required to accept risk associated with the ADF. This information is a tool to support the reportability assessment.
The overall modification AWHI is typically the worst AWHI of all the sections; however, the resultant could become more severe due to the integration/interaction between system/subsystems. The overall AWHI associated with the program/modification will determine whether the program/modification is reportable or non-reportable, which in turn determines the level of approval required for AW plans, certification basis, and flight

authorization, i.e., TAA for reportable vs. DOE/DTA for non-reportable (unless explicitly delegated to the CE/DTA). If the overall AWHI is 1 to 9, the modification is reportable; if the AWHI is 10 to 20 the modification is non-reportable.

Upon completion of the ADF, the CE/DTA will seek approval by the DOE/DTA as described below. The DOE/DTA may choose to submit any ADF to the TAA for coordination.

3.1.4. AW Plan. All programs that impact airworthiness (reportable and non-reportable) require an AW Plan. The ADF is the AW plan for all modifications. It describes the modification, the approach, pertinent schedule dates and existing airworthiness certifications (USAF MTC, Federal Aviation Authority (FAA), sister Service, or foreign military certification) and is approved by the CE/DTA, SPM and DOE/DTA or TAA (for reportable).

The plan also must describe how flight testing will be conducted, such as combined or separate Developmental Testing (DT) and Operational Testing (OT). Final airworthiness certification will be required before OT if testing is separate. Combined DT/OT will require final airworthiness certification before a full rate production decision.

Reportable AW plans (along with the Project Tracker) will be submitted to the TAA for approval early in the project development. The Project Tracker is a critical agreement between EN-EZ and the program office for the review schedule of airworthiness documentation to support program execution. Lack of early coordination with the EN-EZ staff could lead to delays in meeting program milestones. New aircraft systems may require a more detailed AW Plan depending on the complexity.

3.1.5. Approvals. The SPM (or their delegate) is required to approve the AW Plan as they are responsible for integrating appropriate AW events into program execution activities. The DOE/DTA is the final approval authority for reportable/non-reportable modification determinations. For non-reportable efforts, the DOE/DTA reserves the right to delegate approval for follow-on AW activities to the CE/DTA when appropriate. The details of that decision should be documented within the Additional Comments section of the ADF.

3.2. Certification Basis. All modifications that impact AW (i.e., reportable/non-reportable mods) require development of a Certification Basis, which documents the applicable paragraphs (Criteria, Standards and Methods of Compliance) from MIL-HDBK-516B Expanded. A Tailored AW Certification Criteria (TACC) defines applicable criteria for an MDS, whereas a Modification AW Certification Criteria (MACC) defines applicable criteria for a modification to an MDS. Standards and Methods of Compliance are tailorable within the TACC/MACC; however an equivalent (to MIL-HDBK-516B Expanded) Standard or Method of Compliance is expected with supporting rationale for the tailoring and should be coordinated with the appropriate AW SME prior to contract award.

Generally two Certification Bases are constructed and approved during a development configuration changes: the Experimental Flight Release Basis (EFRB), (the flight test

certification basis), to be assessed for entrance to flight test and the TACC/MACC (operational) certification basis to be assessed prior to aircraft delivery for fleet operations. Each is addressed more completely below.

3.2.1. TACC/MACC Certification Basis. This document defines the paragraphs within MIL-HDBK-516B Expanded applicable to the operational aircraft (TACC or MACC). The TACC/MACC certification basis documents the criteria, standards, and methods of compliance the design will be assessed against prior to issuance of a flight authorization for operational fleet usage of the aircraft design.

3.2.2. Experimental Flight Release Certification Basis (EFRB). Developmental flight test is typically employed when programs need to verify and reduce significant safety of flight risk at the aircraft system level. If there is a flight test program, a compliance report (see paragraph 3.3.1) will be needed prior to flight; against an associated certification basis is required: the EFRB. The EFRB is typically a subset of the aircraft level TACC/MACC, tailored to reflect the criteria and associated qualification tests and analysis that must be completed prior to first flight. Compliance with the EFRB may become an input to the Test Review Board and Safety Review Board process.

The EFRB may be submitted and approved in conjunction with the TACC/MACC; the program office will document their approach in Section 4 of the ADF. As the flight test aircraft are generally unique, any modification must consider associated integration issues within the EFRB.

3.3. Flight Authorization Process. The flight authorization process is a recognized AFLCMC Standard Process. While the AFLCMC Flight Authorization Process timelines are documented for reportable modifications, the tasks are generally followed within the DTA organization. The Flight Authorization Process entails, in the following order: review of the Compliance Report culminating in identification of non-compliances, obtaining risk acceptance for the non-compliances, TAA or DTA issuance of the flight authorization and SPM issuance of the Military Certificate of Airworthiness for reportable modifications.

3.3.1. Compliance Report. The program office develops the Compliance Report which includes the TACC/MACC certification basis or EFRB along with the associated artifacts/data to show compliance/non-compliance and acceptance of the hazards resulting from the non-compliant criteria. Mitigations such as limitations/restrictions can be identified for non-compliances to minimize hazards. For non-reportable determination, the DOE/DTA will be the final reviewing authority to find compliance against the certification basis (and the DOE/DTA may delegate this responsibility to the CE/DTA). For reportable determinations, the final review authority will be the USAF AW Office, with the TAA finding compliance to the certification basis, defining any residual hazard.

3.3.2. Risk Acceptance. The TAA will coordinate on the program office's proposed Serious and High risk assessments (which capture the Serious and High hazards) for criteria non-compliance, prior to the program office seeking risk acceptances to reduce the

need to re-accomplish the Risk acceptance process in the event some airworthiness hazard risk was overlooked or mischaracterized.

All AW risks, due to non-compliances with applicable AW criteria, must be accepted by the appropriate authority in accordance with the USAF AW process IAW AWB-013.

3.3.3. Flight Authorization. A flight authorization is the recognition by the TAA that the technical design is safe to fly considering the documented restrictions, limitations, intended usage and accepted risks. Upon risk acceptance and documentation of appropriate limitations/restrictions, a flight authorization will be issued by the Airworthiness Authority or DTA, as appropriate. A flight authorization will only take one of two forms: Military Type Certificate (MTC) or Military Flight Release (MFR). The MTC approves a production type design for the intended usage and Service Life Limits and the design was determined to be significantly compliant with MIL-HDBK-516B Expanded with any residual risk acceptance by the appropriate authorities. An MFR is an approval to fly a design configuration for a defined period of time that may not meet the full standards and or intent of the MTC. For example an MFR would be issued for flight test, temporarily modified aircraft, aircraft which are outside of their type design or systems which have a significant level of non-compliance with MIL-HDBK-516B Expanded, and/or the associated risks are generally High/Serious requiring future mitigation. A flight authorization with the lowest reasonable level of risk is the ultimate goal.

The issuance of the final MTC/MFR for operational use is required before the Full Rate Production decision (if the program is using integration DT/OT) or the Operational Test Readiness Review.

3.3.4. Military Certificates of Airworthiness (MCA). Upon TAA issuance of a flight authorization (MTC or MFR), approving a reportable modification design for fleet operations, it is the SPMs responsibility to issue an MCA for all modified aircraft tail numbers. The MCA attests that the modified aircraft meets the approved flight authorization design, including restrictions, limitations, operating/maintenance instructions and any specific TAA authored statements. Additionally, the MCA affirms the SPM (through his Operational Safety, Suitability and Effectiveness (OSS&E) role) has assured all of the necessary products and processes are in place to assure continuing airworthiness. Thus, the aircraft is in a condition for operation and can be maintained to keep it in an airworthy condition. The MCA for a specific tail number or block of tail numbers remains valid until the next reportable change is made to that aircraft.

4. Additional Considerations.

4.1. Airworthiness Audits. The DOE/DTA and TAA will conduct organizational AW audits to verify ongoing adherence to AW policies and processes. Official airworthiness files shall be treated like any official program document. The CE/DTA for each Program Office is responsible for maintaining all official AW documentation.

4.2. Aircraft Mishap/Grounding. TO 00-5-15 addresses notification of grounding; but does not currently cover AW office notification, which is required. Consequently, the SPM or CE/DTA shall notify PEO, DOE/DTA and TAA in writing within 24 hours if a mishap occurs or an action is taken to ground an entire or significant portion of an AFLCMC managed MDS. Individual aircraft "Red X" due to maintenance does not require TAA notification. The notification shall include a brief description of the issue, and to the extent possible the schedule for any analysis, repairs, modifications, and the anticipated timeline for return to flight. Notification by email is acceptable. The CE shall be available to provide a detailed briefing to the PEO, DOE/DTA and/or TAA, if requested.

4.3. Risk Level Change. The program office's System Safety Program will be utilized to monitor/track/address all Serious and High risks. The SPM or CE/DTA shall notify the PEO and DOE/DTA when, during development or testing of a modification, evidence or analysis reveals modification risk previously judged to be "low" or "medium" increases to "serious" or "high". Notification shall be accomplished in writing within 30 days of discovery or prior to next flight, whichever occurs first. The DOE/DTA shall collaborate with the TAA on any required flight authorization adjustments. Notification by email is acceptable.

4.4. One-time Flight Authorization. A CE/DTA may issue a one-time flight authorization (MFR) to support a mission or operational need, not a routine flight. The one-time MFR cannot allow passengers. An example of when this might apply: ferry of a damaged aircraft.

4.5. Flight Authorization Naming Convention. Each Flight Authorization shall be named and numbered in accordance with USAF Airworthiness Office direction. It is incumbent upon the CE/DTA to ensure the release is appropriately issued and recorded for tracking.

4.6. Documentation Repository. AW documentation files will be stored within the program office airworthiness folder on the Directorates SharePoint or a link to the program office site to support collaboration prior to moving the final documentation to the permanent electronic records management (ERM) location or Program files as security requirements dictate. All AW documentation will adhere to the Scientific and Technical Information Office (STINFO) process, Foreign Disclosure requirements and applicable Distribution Statements to the level required by their respective programs.

Program Offices shall include the following documentation in their repository: ADF, approved certification basis, compliance reports with all artifacts, signed risk acceptance documentation, signed flight authorizations and MCAs. Artifacts not maintained in the repository are required to be accessible. Records Custodians shall be responsible for filing and maintaining a copy of the official Airworthiness documentation files for their respective programs in their approved file plans. Airworthiness records should be kept as long as the aircraft is in operational service and disposed of when the aircraft is retired.

JORGE F. GONZALEZ
USAF Technical
Airworthiness Authority

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

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

DoDD 5030.61, *DoD Airworthiness Policy*, May 24, 2013

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

AFI 62-601, *USAF Airworthiness*, 11 June 2010

AFI 62-601 AFMC Supplement I, *USAF Airworthiness*, 12 May 2011

AFI 63-101/20-101, *Integrated Life Cycle Management*, 07 March 2013

AFI 63-131, *Modification Management*, 19 March 2013

AFI 91-202, with Change 2, The *US Air Force Mishap Prevention Program*, 20 August 2013

AFI 91-202, AFMC Supplement, *The US Air Force Mishap Prevention Program*, 16 September 2013

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

AFMCMAN 21-1, with Change 2, *Air Force Materiel Command Technical Order System Procedures*, 14 November 2011

MIL-STD-882, *System Safety*, 11 May 2012

MIL-HDBK-516B Expanded, *ASC/EN Airworthiness Certification Criteria Expanded Version of MIL-HDBK-516B*

TO 00-5-15, *Air Force Time Compliance Technical Order Process*, 1 January 2010

Airworthiness Bulletins (AWBs)*:

AWB-002, *Airworthiness Planning*

AWB-003, *Tailored Airworthiness Certification Criteria/Modification Airworthiness Certification (TACC/MACC) Document Approval Process*

AWB-004, *Development of an Airworthiness Certification Basis*

AWB-005, *Tailored Airworthiness Certification Criteria/Modification Airworthiness Certification Criteria (TACC/MACC) Document Construction and Format*

AWB-006, *Military Flight Release (MFR)*

AWB-007, *Determining Reportability of Modifications*

AWB-008, *First Flight Executive Independent Review Team (FF EIRT)*

AWB-009, *Airworthiness Advisories*

AWB-013, *Risk Identification and Acceptance for Airworthiness Determinations*

AWB-014, *Notice of Airworthiness Board Action*

AWB-015, *Military Type Certificate (MTC) and Supplemental Military Type Certificate (SMTC)*

AWB-018, *Military Certificate of Airworthiness (MCA)*

AWB-019, *Exemptions and Waivers*

**Note: The current AWB guidance is to be considered as applicable to this OI.*

Prescribed Forms

AF Form 1067, Modification Proposal, 19991101, V2

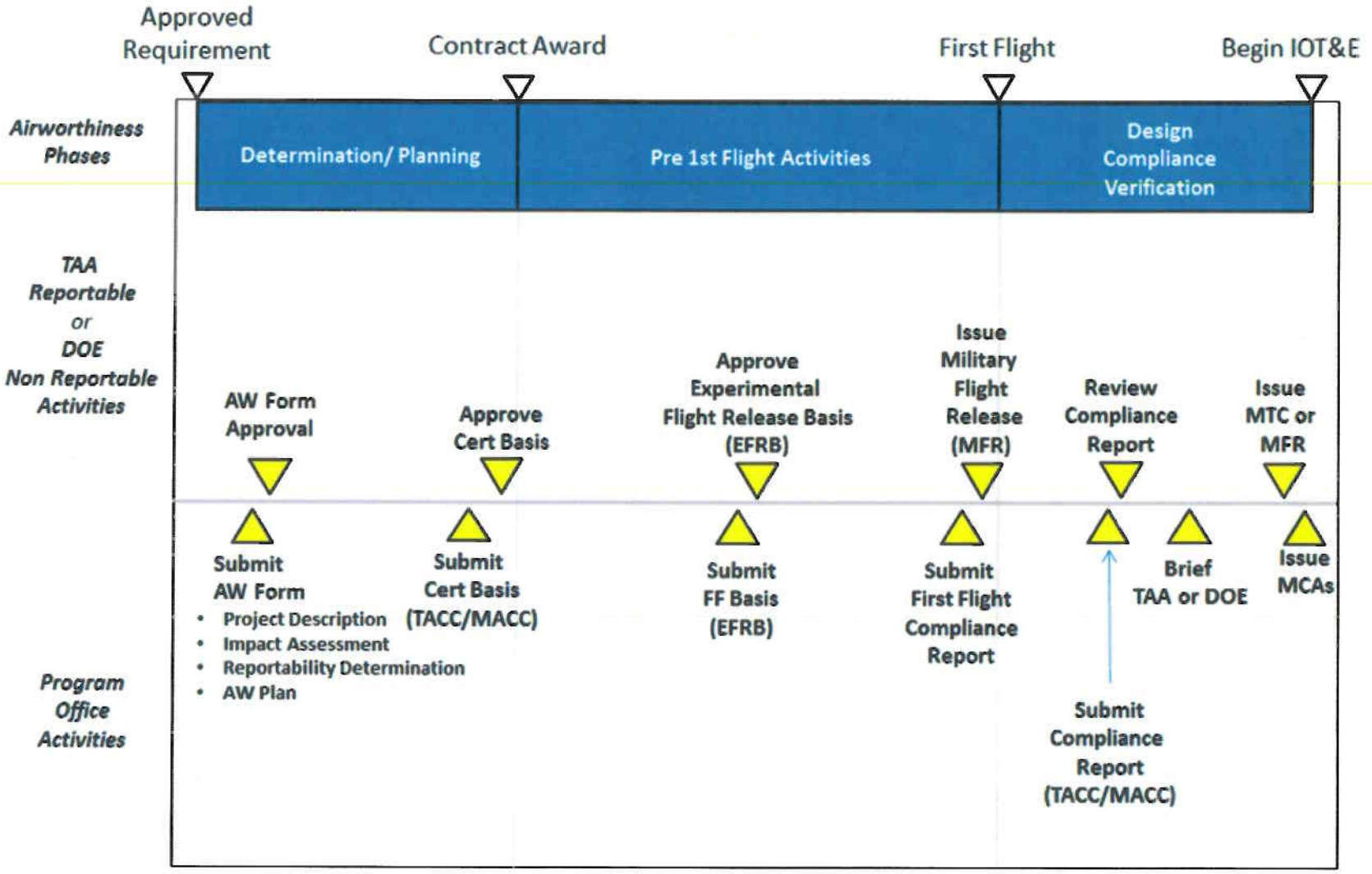
Abbreviations and Acronyms

AB	Airworthiness Board
ADF	Airworthiness Determination Form
AF	Air Force
AFLCMC	Air Force Life Cycle Management Center
AFI	Air Force Instruction
AFMAN	Air Force Manual
AFMC	Air Force Materiel Command
AFMCMAN	Air Force Materiel Command Manual
AFPD	Air Force Policy Directive
AFSAC	Air Force Security Assistance and Cooperation Directorate
AFSEC	Air Force Safety Center
AFTC	Air Force Test Center
AW	Airworthiness
AWB	Airworthiness Bulletin
AWHI	Airworthiness Hazard Index
CAE	Component Acquisition Executive
CCB	Configuration Control Board
CDD	Capability Development Document
CE	Chief Engineer
CM	Configuration Management
CPD	Capabilities Production Document
DOE	Director of Engineering
DT	Developmental Testing
DTA	Delegated Technical Authority
ECP	Engineering Change Proposal
EFRB	Experimental Flight Release Basis
ERM	Electronics Records Management
FAA	Federal Aviation Authority
FF	First Flight
FMS	Foreign Military Sales
FRP	Full Rate Production
IAW	In Accordance With
LE	Lead Engineer
LCMP	Life Cycle Management Plan
LOA	Letter of Offer and Acceptance
MACC	Modification Airworthiness Certification Criteria
MCA	Military Certificate of Airworthiness
MDS	Mission Design Series

MFR	Military Flight Release
MTC	Military Type Certificate
OFP	Operational Flight Program (Software)
OI	Operating Instruction
OPR	Office of Primary Responsibility
ORD	Operational Requirements Document
OT	Operational Testing
OTRR	Operation Test Readiness Review
PE	Project Engineer
PEO	Program Executive Office/Officer
PM	Program Manager
RAA	Required Assets Available
SME	Subject Matter Expert
SPM	System Program Manager (single manager for the platform)
STINFO	Scientific and Technical Information Office
TAA	Technical Airworthiness Authority (AFLCMC/EN-EZ)
TACC	Tailored Airworthiness Certification Criteria
UON	Urgent Operational Need
USAF	United States Air Force

Attachment 2

AIRWORTHINESS PROCESS TIMELINE



Attachment 3

CENTER OF EXCELLENCE FOR AIRWORTHINESS

Airworthiness Determination Form (ADF)

1. Project Information.

This form is intended to be filled out electronically and converted to .pdf format. Signatures can be added to the .pdf document electronically.

1.1 Date: **Date of Recommendation**

1.2 Prepared By:

1.3 Platform:

1.4 Project Title:

1.5 Requirement: *Cite document driving the change (e.g., UON, ORD, CDD/CPD, AF1067, ECP, LOA or OFP/SW change list)*

1.6 Modification Description *(Applicant should use as much space as needed)*:

2. Airworthiness Impact Assessment.

2.1 Airworthiness impact questions (AWB-007):

A positive response is a good indicator of an Airworthiness impact but is not the final decision

Yes/No

Y/N	1) Does the approved certification basis (applicable criterion, standards and methods of compliance) need to be updated (*refer to Section 3.1*)?
Y/N	2) Is re-accomplishment of verification activities required to show compliance to the certification basis?
Y/N	3) Have any existing safety hazards been impacted or have new safety hazards been identified?
Y/N	4) Are any safety-/flight-critical items, logic and/or functions impacted?
Y/N	5) Is analysis/test/simulation/demonstration required to assess the change?
Y/N	6) Is formal flight test required?
Y/N	7) Does the operational usage change?
Y/N	8) Does the flight envelope change?
Y/N	9) Does the service life change?
Y/N	10) Does this require a new Mission Design Series (MDS)?

2.2 Does this modification impact airworthiness?

The final impact assessment is a judgment made by the CE/DTA with DOE/DTA oversight

Y/N

2.3 If there is a "No Impact" determination and a positive response to one of the above questions; provide rationale for decision below.

If "No Impact" the CE must sign Section 5 which makes this form complete and no other signatures are required. This form must then be forwarded to the DOE for record.

If "Yes Impact" leave this area blank and continue with Section 3.

3. Reportability Determination.

Reportability Determination is explained in AWB-00.7

3.1 Modification Assessment Matrix:

Col. 2 *– Identify MIL-HDBK-516B sections that will be impacted with modification.*
Col. 3 *– Provide brief description of change that affects criteria within MIL-HDBK-516B Expanded.*
Col. 4 *- Identify credible hazards for each section which will be rolled up into one AW Hazard Index (AWHI).*
Col. 5 *- Identify one AW Hazard Index (AWHI) associated with summation of hazards for section as defined in AWB-013.*
Col. 6 *- Identify the name of person making hazard recommendation, per Function.*

Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
Impacted MIL-HDBK-516 Sections	**Description of Impact to MIL-HDBK-516 Criteria**	**Summation of Credible Hazard(s) for Section**	**AWHI**	**Name Subject Matter Reviewer**
4 - Systems Engineering 4.1 ☐ Design criteria 4.2 ☐ Tools and databases 4.3 ☐ Materials selection 4.4 ☐ Manufacturing and quality 4.5 ☐ Op. & maint. manuals/TOs 4.6 ☐ Configuration identification				
5 - Structures 5.1 ☐ Loads 5.2 ☐ Structural dynamics 5.3 ☐ Strength 5.4 ☐ Damage tolerance and durability (fatigue) 5.5 ☐ Mass properties 5.6 ☐ Flight release				

Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
Impacted MIL-HDBK-516 Sections	**Description of Impact to MIL-HDBK-516 Criteria**	**Summation of Credible Hazard(s) for Section**	**AWHI**	**Name Subject Matter Reviewer**
6 - Flight Technology 6.1 ☐ Stability and control 6.2 ☐ Vehicle control functions 6.3 ☐ Aerodynamics and performance				
7 - Propulsion 7.1 ☐ Propulsion safety management 7.2 ☐ Gas turbine engine applications 7.3 ☐ Alternate propulsion systems				
8 - AV Subsystems 8.1 ☐ Hydraulic/pneumatic systems 8.2 ☐ Environmental control system 8.3 ☐ Fuel system 8.4 ☐ Fire and hazard protection 8.5 ☐ Landing gear and deceleration systems 8.6 ☐ Auxiliary/emergency power system(s) 8.7 ☐ Aerial refueling system 8.9 ☐ Mechanisms 8.10 ☐ External cargo hook systems (rotary wing) 8.11 ☐ External rescue hoist (rotary wing) 8.12 ☐ Fast rope insertion/extraction system (rotary wing)				

Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
Impacted MIL-HDBK-516 Sections	**Description of Impact to MIL-HDBK-516 Criteria**	**Summation of Credible Hazard(s) for Section**	**AWHI**	**Name Subject Matter Reviewer**
9 - Crew Systems 9.1 ☐ Escape and egress system 9.2 ☐ Crew stations & a/c interiors 9.3 ☐ Air vehicle lighting 9.4 ☐ Human performance 9.5 ☐ Life support systems 9.6 ☐ Transparency integration 9.7 ☐ Crash survivability 9.8 ☐ Air transportability and airdrop 9.9 ☐ Lavatories, galleys, and areas not continuously occupied				
10 - Diagnostic Systems 10.1 ☐ Failure modes 10.2 ☐ Operation				
11 – Avionics 11.1 ☐ Avionics architecture 11.2 ☐ Avionics subsystems 11.3 ☐ Avionics a/c installation				
12 - Electrical Systems 12.1 ☐ Electric power generation sys 12.2 ☐ Electrical wiring/power distr.				
13 - EMI/EMC 13.1 ☐ Component/subsystem E3 qual 13.2 ☐ System-level E3 qual				

Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
Impacted MIL-HDBK-516 Sections	**Description of Impact to MIL-HDBK-516 Criteria**	**Summation of Credible Hazard(s) for Section**	**AWHI**	**Name Subject Matter Reviewer**
14 – System Safety 14.1 ☐ System safety program 14.2 ☐ Safety design requirements 14.3 ☐ Software safety program				
15 – Computer Resources 15.1 ☐ Air vehicle processing architecture 15.2 ☐ Functional design integration of processing elements 15.3 ☐ Subsystem/processing element				
16 - Maintenance 16.1 ☐ Maintenance manuals/checklists 16.2 ☐ Inspection requirements				
17 - Armament/ Stores Integration 17.1 ☐ Gun/rocket integration and interface 17.2 ☐ Stores integration 17.3 ☐ Laser integration and interface 17.4 ☐ Safety interlocks				
18 - Passenger Safety 18.1 ☐ Survivability of passengers 18.2 ☐ Fire resistance 18.3 ☐ Physiology requirements of occupants				

Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
Impacted MIL-HDBK-516 Sections	**Description of Impact to MIL-HDBK-516 Criteria**	**Summation of Credible Hazard(s) for Section**	**AWHI**	**Name Subject Matter Reviewer**
20 - Other Considerations 20.1 ☐ Mission/test equipment and cargo/payload safety				

3.2 Based on the above assessment what is the overall risk hazard index for this mod?

The overall modification AWHI is typically the worst of all the sections, however, as several hazards are combined, the resultant overall AWHI could be more extreme due to the interaction between system/subsystem updates as described in AWB-007.

HAZARD CATEGORIZATION		SEVERITY*			
		CATASTROPHIC (1)	CRITICAL (2)	MARGINAL (3)	NEGLIGIBLE (4)
FREQUENCY	FREQUENT (A) = or > 100/100K flt hrs	1	3	7	13
	PROBABLE (B) 10-99/100K flt hrs	2	5	9	16
	OCCASIONAL (C) 1.0-9.9/100K flt hrs	4	6	11	18
	REMOTE (D) 0.01-0.99/100K flt hrs	8	10	14	19
	IMPROBABLE (E) = or < 0.01/100K flt hrs	12	15	17	20

*__Severity__ is the worst credible consequence of a hazard in terms of degree of injury, property damage or effect on mission defined below:

(1) **Catastrophic:** Class A (damage > $2M / fatality / permanent total disability / loss of Aircraft)
(2) **Critical:** Class B ($500K < damage < $2M / permanent partial disability / hospitalization of 5 or more personnel)
(3) **Marginal:** Class C ($50K < damage < $500K / injury results in 1 or more lost workdays)
(4) **Negligible:** All other injury/damage less than Class C

Overall Modification AWHI = ☐

Reportable RHI 1-9

4. Airworthiness Plan.

Airworthiness Plan is explained in AWB-002 if not available then explain why in 4.3.

4.1 Airworthiness Schedule.

- Certification Basis Submittal Date (*estimate)* **Cert Basis**
- Contract Award (M/S B, EMD) **Contract Award**
- Experimental Flight Release Basis (EFRB) Submittal (*estimate)* **EFRB**
- EFRB Compliance Submittal (*estimate)* **EFRB Submittal**
- First Flight Date for testing **First Flight**
- Is DT/OT combined? **Y/N**
  - If No, OTRR Date **OTRR**
  - If Yes, FRP Decision Date **FRP**
- Final Airworthiness Approval (Final Compliance) **Final AW Approval**
  Should be no later than OTRR or FRP Date above
- IOC/RAA **IOC/RAA**

  To establish the program completion date.

4.2 Describe the Airworthiness Approach.

- *What existing airworthiness certifications will be utilized (i.e., USAF MTC , FAA Cert, cert from other branch of US military, Foreign Military Cert)*
- *How will testing be conducted? Will Operational Testing and Developmental Testing be combined?*
- *Are there other important dates or events that will impact the airworthiness approval schedule?*
- *If Reportable, are there any special arrangements that need to be made for SMEs to review artifacts?*
- *Will cert basis be approved before Milestone B/ EMD Contract Award? If not why?*
- *Identify if the certification basis and Experimental Flight Release Basis (EFRB) will be submitted for review with one TACC/MACC*

Airworthiness Approach *(Applicant should use as much space as needed to explain AW approach or if no plan at this time, explain why):*

5. Airworthiness Approvals.

5.1 Impact and Reportability Signature Block.
This is my recommendation of the Impact Assessment and Reportability Determination. I also declare that the information provided herein is accurate and complete. This document will be attached to the program LCMP IAW AWB-002 and the EN/EZ Project Tracker will be completed for Reportable Modifications and delivered to USAF Airworthiness office a minimum of 30 days prior to Certification Basis submission.

	Office	Signature	Date
CE/DTA Y/N AW Impact Y/N Reportable			

5.2 Airworthiness Plan Signature Block.
I concur with the Airworthiness Plan presented herein and will ensure its implementation.

	Office	Signature	Date
SPM Or Delegate			

5.3 Technical Authority Signature Block.
I understand the modification described herein and concur with the assessments.

	Office	Signature	Date
DoE/DTA Y/N Reportable			
TAA (Only if Reportable)			

5.4 Additional comments, restrictions or delegations from signatories.