



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AERONAUTICAL SYSTEMS CENTER (AFMC)
WRIGHT-PATTERSON AIR FORCE BASE OHIO

BULLETIN
AWB-003A
17 JUNE 2011
(supersedes AWB-003)

United States Air Force (USAF) Airworthiness Bulletin (AWB) -003

Subject: Tailored Airworthiness Certification Criteria /Modification Airworthiness Certification Criteria (TACC/MACC) Document Approval Process

Attachments: (1) Glossary of References and Supporting Information
(2) TACC/MACC Certification Basis Approval Process
(3) TACC/MACC Compliance Report Approval Process
(4) TACC/MACC Certification Basis Approval Timeline
(5) TACC/MACC Compliance Report Approval Timeline

- 1. Purpose:** This bulletin provides instructions to Program Managers (PMs)/Chief Engineers (CEs) on how to submit a Tailored Airworthiness Certification Criteria (TACC) or Modification Airworthiness Certification Criteria (MACC) document. In addition, this bulletin outlines the process for review and approval of a TACC/MACC document by the Technical Airworthiness Authority (TAA). This process is required for new aircraft system developments and modifications to aircraft systems that impact airworthiness. Non-reportable modifications follow the same process; however, the Delegated Technical Authority (DTA) is the approving authority in place of the TAA.
- 2. Office of Primary Responsibility (OPR):** USAF Airworthiness Office (ASC/EN) is the OPR. Comments, suggestions, or questions on this bulletin should be emailed to the USAF Airworthiness Office Mailbox (ASC.ENSI.Mailbox@wpafb.af.mil).
- 3. Policy:** [Air Force Instruction \(AFI\) 62-601](#) requires all USAF aircraft programs which follow the design-based airworthiness assessment process to develop a TACC document for new aircraft systems and a MACC document for modifications to aircraft systems that impact airworthiness. The AFI mandates that PMs for new programs and reportable modification programs shall obtain TAA approval of the proposed military type certification basis contained in the TACC or MACC documents no later than completion of Critical Design Review (CDR) or prior to the start of system level design verification (“show compliance”) activities. Review of the certification basis as late as CDR may discover that one or more critical airworthiness verification activities were not planned (e.g., outside contract scope), thus unable to produce the required substantiating data (i.e., artifacts). **To avoid this potential pitfall, the TAA is instructing PMs to obtain TAA approval of the certification basis prior to contract award, whether competitive or non-competitive.** When the

program “show compliance” activities identified in the approved certification basis have been completed, the PM submits a TACC/MACC Compliance Report. Submittal of this TACC or MACC Compliance Report signals a request to the TAA to proceed with a finding of compliance to the approved certification basis. In the event that one or more instances of noncompliance exist with respect to the approved certification basis, then the “TACC/MACC Compliance Report” must reflect the noncompliant criterion with an associated system safety risk assessment (SSRA). The TAA may approve the airworthiness certification for this type design after verification of compliance with the certification basis, formal risk acceptance by the appropriate risk acceptance authority, and coordination by the Airworthiness Board (AB) members.

For non-reportable modifications, the AFI directs the CE/Designated Technical Authority (DTA) to approve the certification basis no later than CDR or equivalent. **Hereby, the TAA is directing the Director of Engineering/Delegated Technical Authority (DOE/DTA) to perform the CE/DTA non-reportable certification basis approval (AFI 62-601, paragraph 1.6) and the associated final MACC compliance finding and approval function (see AFI 62-601, Attachment 2).** As mentioned above, approval of the certification basis as late as CDR may cause critical airworthiness verification activities to be outside the contract scope and thus not produce the necessary substantiating data. **Therefore, the TAA is instructing DOE/DTAs to approve the certification basis prior to contract award / ECP.** When the program “show compliance” activities identified in the approved certification basis have been completed and documented in the “MACC Compliance Report”, the PM requests a finding of compliance with the approved certification basis. The program DOE/DTA can then document the compliance with the approval of the “Compliance Report” which certifies airworthiness.

- 4. Overview:** TACC and MACC documents are a critical element of the airworthiness certification process. These documents capture the technical requirements for airworthiness certification that have been tailored for a specific aircraft design or modification. They also include references to the results of the “show compliance” activities (e.g., test, modeling and simulation, analysis, inspection, demonstration) that verify compliance of the design with the airworthiness requirements. Because of the central role of TACCs/MACCs in the process, the language of airworthiness has come to equate TACC/MACC approval with the approval of airworthiness requirements (i.e., the certification basis) or certification of a design as airworthy (military type certification). A TACC/MACC is an evolving document that follows the development of an aircraft or modification design. [AFI 62-601](#) refers to TACC/MACC documents as either *Draft* or *Final* – the only difference being additional data reflecting the stage of the airworthiness certification effort. This bulletin introduces new terms for a TACC or MACC document which help to clarify the phase of approval required for the document. The term “TACC/MACC Certification Basis” replaces the “Draft TACC/MACC”, because it defines the approved certification basis. The term

“TACC/MACC Compliance Report” replaces the “Final TACC or MACC Document”, since it shows the references to the compliance verification data. For more information on the use of these terms and documents refer to [USAF AWB-005, TACC/MACC Document Construction and Format](#).

- a. Certification Basis Approval:** The approved TACC/MACC Certification Basis becomes the formal starting point for airworthiness certification. Program Office responsible engineers (REs) are encouraged to informally coordinate the TACC/MACC document with ASC/EN Airworthiness Subject Matter Experts (SMEs) at this stage. Prior to contract award, the PM/CE will formally submit the TACC/MACC Certification Basis to the TAA for approval. See [USAF AWB-004, Development of an Airworthiness Certification Basis](#) for more details on the certification basis.
- b. Compliance Report Approval:** After the development and approval of the TACC/MACC Certification Basis, the Program Office continues the airworthiness certification process by producing the verification evidence and developing SSRAs for non-compliant criteria. The PM submits this completed TACC/MACC Compliance Report to the TAA requesting review and approval. This is required prior to dedicated Operational Test and Evaluation (OT&E) and occurs in conjunction with the formal qualification testing that precedes dedicated OT&E.

5. Process Description: This section provides details of the TACC/MACC document submittal and review process for the airworthiness certification activities described above in paragraphs 4.a (Certification Basis Approval) and 4.b (Compliance Report Approval). Refer to Attachments 2 and 3 for the corresponding process flow diagrams. The detailed activities in this section are strictly the interface between the PM/CE and the TAA supporting staff.

a. Certification Basis Approval Process:

- 1) PM/CE contacts ASC/ENSI to initiate the TACC/MACC Certification Basis approval process by requesting a TD Forum no later than **15 weeks** before the certification basis needs to be approved.
- 2) ASC/ENSI designates a Point of Contact (POC) who schedules a Technical Director (TD) Forum. This is a meeting of the program PM/CE and the ASC/EN TDs to discuss TACC/MACC Certification Basis submittal and review requirements. The objective is to agree on a timeline and associated ground rules that will facilitate TAA approval of the certification basis and ensure a smooth airworthiness certification process.
- 3) PM/CE prepares a documentation package for the TD Forum as described below and provides it electronically to ASC/ENSI five working days prior to the meeting. The documentation package includes:

- a) An overview briefing describing the new air system/modification configuration.
 - b) A description of the program's airworthiness certification planning. This should be a top-level summary of the key activities leading to certification. It should include all critical activities that must be accomplished, including the appropriate interfaces with ASC/EN, and a detailed certification schedule. The PM/CE may elect to present this material in his briefing rather than as a separate document. See [AWB-002, *Airworthiness Planning*](#) for guidance on planning.
 - c) The TACC/MACC document in its current state and an overview of its status. The status can be included in the overview briefing but the TACC/MACC Certification Basis document must be provided electronically as a separate document.
 - d) An overview of engineering functions (and disciplines) that are affected by the TACC/MACC. Information on Program Office REs and ASC/EN SME contacts will be exchanged at the meeting.
 - e) An outline of how the Program Office will make substantiating data available (delivery, on-site review, etc.) to show compliance with TACC/MACC criteria (this should be part of the overview briefing).
- 4) At the TD Forum, the PM/CE will be prepared for discussions on the following topics:
- a) Arrangements will be discussed for archiving the substantiating data and ASC/EN Airworthiness SME access to the information. ASC/ENSI will be responsible for archiving the submitted TACCs and MACCs and the corresponding correspondence as well as any meeting minutes.
 - b) Any unique review requirements (i.e., travel to review data on-site, computer system access requirements, etc.) will be discussed.
 - c) If non-compliances are anticipated, program plans for generating SSRAs and delivery of that information will be discussed. SSRAs (in accordance with MIL-STD-882) must be provided with the delivery of substantiating data.
 - d) An overview of the TACC/MACC review process will be provided by ASC/ENS. This discussion will raise issues and resolve timing disconnects between the program office schedule and ASC/EN review processes and standards. ASC/ENS will also address the TAA's minimum content and format requirements for TACC/MACC documents.
- 5) At the conclusion of the TD Forum, the TDs provide their assessment of Program Office readiness and suggest changes to the PM's plan for certification basis approval. ASC/ENSI publishes minutes of the meeting, including action items.

PM/CE addresses all actions prior to submittal of the “TACC/MACC Certification Basis”. Program Office REs should begin working closely with ASC/EN SME’s to validate applicable criteria and provide justification for non-applicable criteria.

- 6) The PM/CE submits the TACC/MACC Certification Basis document into the Airworthiness SharePoint web-site or transmits it to the USAF Airworthiness Mailbox (asc.ensi.mailbox@wpafb.af.mil). The actual amount of time required for the certification basis approval process will be different for each program and should be negotiated in the first TD Forum. New aircraft systems that require development of a new TACC will require more time than modifications to existing aircraft systems that already have an established TACC. Attachment 4 shows an example of the time typical programs will require from this point to the certification approval which could be **9-13 weeks** depending on the level of complexity. The actual amount of time should be negotiated with the TDs at the TD Forum and should be used to plan accordingly to ensure that the approval can occur prior to contract award/ECP. Planning is critical at this stage of the airworthiness process.
- 7) ASC/ENSI POC will conduct a quality check of the submitted TACC/MACC and, if required, coordinate any necessary format/content changes with the PM/CE prior to review tasking.
- 8) ASC/ENSI POC drafts and sends tasker to ASC/ENS TD.
- 9) ASC/ENS TD tasks ASC/EN Divisions/TDs to execute an ASC/EN SME review of TACC/MACC.
- 10) ASC/EN TDs initiate an Airworthiness SME review of TACC/MACC in response to tasking. SME interaction with Program Office engineering staff (and vice versa) is encouraged throughout the TACC/MACC review to clarify and resolve issues, as noted in Step 5. Review focuses on the technical adequacy and completeness of the criteria applicability, standards and methods of compliance.
- 11) ASC/EN TDs compile their Division-level review comments and submit inputs to ASC/ENSI Mailbox (cc: ASC/ENSI POC).
- 12) ASC/ENSI consolidates comments and prepares formal submittal to PM/CE by the ASC/ENS TD.
- 13) ASC/ENS TD sends consolidated ASC/EN comments to PM/CE.
- 14) Program Office engineering staff reviews and addresses ASC/EN comments through dialog with ASC/EN SMEs and TDs, if necessary.
- 15) Unresolved technical issues should be addressed to the ASC/EN TDs and Senior Leaders (SLs) for resolution prior to scheduling an AB (if required). The resolution of these unresolved issues shall start as soon as they are identified in

order to keep the project on schedule. The PM/CE or TDs/SLs may request a meeting to resolve TACC/MACC issues.

- 16) If there are technical issues that cannot be resolved by the Tech Directors/ Senior Leaders (TDs/SLs) then they must be addressed at an AB. Only in this case will the PM/CE request that ASC/ENSI schedule an AB for adjudication of the TACC/MACC issues. AB procedures are addressed in [USAF AWB-022, *Airworthiness Board Preparation and Execution*](#).
- 17) After all the technical issues are adjudicated, the PM/CE will submit a complete updated TACC/MACC to ASC/ENSI, ASC/EN SMEs will verify all agreements have been incorporated, and the TAA approves the TACC/MACC certification basis.

b. Compliance Report Approval Process:

- 1) PM/CE contacts ASC/ENSI to initiate the TACC/MACC Compliance Report approval process by requesting a TD Forum no later than CDR.
- 2) ASC/ENSI designates a POC who will handle all administrative details of the review process and sets up the TD Forum.
- 3) PM/CE prepares a documentation package for the TD Forum as described below and provides it electronically to ASC/ENSI five working days prior to the meeting. The documentation package includes:
 - a) An overview briefing describing the new air system/modification configuration.
 - b) A description of the program's airworthiness certification progress from the certification basis approval and plan for compliance report approval. This should be a top-level summary of the key activities leading to certification. It should include all critical activities that must be accomplished, including the appropriate interfaces with ASC/EN, and a detailed certification schedule. The PM/CE may elect to present this material in his briefing rather than as a separate document.
 - c) The TACC/MACC document in its current state and an overview of its status. The status can be included in the overview briefing but the TACC/MACC document must be provided electronically as a separate document.
 - d) An overview of engineering functions (and disciplines) that are affected by the TACC/MACC. Information on Program Office REs and ASC/EN SME contacts will be exchanged at the meeting. An outline of how the Program Office will make substantiating data available (delivery, on-site review, etc.) to show compliance with TACC/MACC criteria (this should be part of the overview briefing)

- e) An update on the status of a First Flight Release SSRA, flight test progress, flight manual and technical order (TO) release, including operating limitations, as well as the schedule to complete the approval.
- 4) Meet with TDs and discuss airworthiness certification progress and plan for TACC/MACC Compliance Report approval.
- 5) At the conclusion of the TD Forum, the TDs provide guidance of how the Program Office shall proceed with Compliance Report approval. ASC/ENSI publishes minutes of the meeting, including action items. PM/CE addresses all actions prior to submittal of the “TACC/MACC Compliance Report”.
- 6) As substantiating data is generated by “show compliance” activities (e.g., test, modeling and simulation, analyses, inspections, demonstrations), finalized versions are made available to ASC/ENS and archived in files in accordance with agreements established during the aforementioned TD Forum. SSRAs for noncompliant criteria are also made available. Informal review of substantiating data and SSRAs by affected ASC/EN SMEs can commence at this time.
- 7) When all the required substantiating data, SSRAs and other supporting data have been compiled and finalized, PM/CE submits their TACC/MACC Compliance Report and all supporting documentation into the USAF Airworthiness SharePoint web-site or transmits it to the [ASC/ENSI Mailbox](#). If the standards for one or more criteria are not satisfied, the PM/CE must include a corresponding SSRA (see [USAF AWB-013](#)) for each criterion found to be non-compliant. These non-compliant criteria must be summarized in the TACC/MACC document as specified in [USAF AWB-005, TACC/MACC Document Construction and Format](#). The amount of time required from this point to the TACC/MACC Compliance Report approval will be different for each program and should be discussed in the previous TD Forum. New aircraft systems that require development of a new TACC will require more time than modifications to existing aircraft systems that already have an established TACC. Attachment 5 shows an example of what typical programs will require depending on the level of complexity which could be **15-21 weeks**. This established amount of time should be used to plan accordingly to ensure that the approval can occur prior to the system entry into dedicated Operational Test and Evaluation (OT&E) or delivery of aircraft for first operational use. Planning is critical at this stage of the airworthiness process.
- 8) ASC/ENSI POC performs a check to ensure that all substantiating data, SSRAs and supporting documentation have been delivered in the correct format. If required, ENSI POC coordinates any necessary format/content changes with the PM/CE prior to review tasking.
- 9) ASC/ENSI POC drafts and sends tasker to ASC/ENS TDs.

- 10) ASC/ENS TD tasks ASC/EN Divisions/TDs to execute an ASC/EN SME review of the final TACC/MACC.
- 11) ASC/EN TDs initiate an Airworthiness SME review of this TACC/MACC in response to tasking. SME interaction with Program Office engineering staff (and vice versa) is encouraged throughout the “TACC/MACC Compliance Report” review to clarify and resolve issues.
- 12) ASC/EN TDs compile their Division-level review comments and submit those inputs to [ASC/ENSI Mailbox](#) (cc: ASC/ENSI POC) for consolidation and formal submittal to the PM/CE by the ASC/ENS TD. ASC/ENSI POC notifies ASC/EN Workflow to close out the internal tasker.
- 13) ASC/ENSI POC consolidates comments and prepares formal submittal to PM/CE by the ASC/ENS TD.
- 14) ASC/ENS TD sends consolidated ASC/EN comments to PM/CE.
- 15) Issues with substantiating data (“show compliance data”) are worked between Program Office engineers and their ASC/EN SME counterparts in accordance with the scheduled review cycle.
- 16) Unresolved issues with the “TACC/MACC Compliance Report” are resolved at the TD level for the affected disciplines. The PM/CE provides a copy of the draft AB briefing and supporting documents to the TDs for their review. The PM or TDs may request a meeting to discuss the AB briefing or resolve TACC/MACC issues. The resolution of these unresolved issues shall start as soon as they are identified to in order keep the project on schedule. Issues that cannot be resolved by the TDs must be addressed at the AB.
- 17) When technical discussions with the TDs are complete, the Program Office requests that ENSI schedule an AB for approval of the “TACC/MACC Compliance Report” (i.e., issue an MTC or MRFR). AB procedures are addressed in [USAF AWB-022, Airworthiness Board Preparation and Execution](#).

18) The final MTC or Flight Release approval by the TAA will occur after all the action items are resolved and the formal risk acceptance by the appropriate risk acceptance authority.



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Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

AFI 62-601, *USAF Airworthiness*, 11 June 2010
USAF AWB – 002, *Airworthiness Planning*
USAF AWB – 004, *Development of an Airworthiness Certification Basis*
USAF AWB – 005, *TACC/MACC Document Construction and Format*
USAF AWB – 013, Risk Identification and Acceptance for Airworthiness Determinations
USAF AWB – 022, *USAF Airworthiness Board Procedures*
MIL-HDBK-516, *Airworthiness Certification Criteria*
MIL-HDBK-516B Expanded, *ASC/EN Airworthiness Certification Criteria Expanded Version*

Abbreviations and Acronyms

AB – Airworthiness Board
CCP – Contract Change Proposal
MACC– Modification Airworthiness Certification Criteria
CDR – Critical Design Review
CE – Chief Engineer
DTA – Delegated Technical Authority
ECP – Engineering Change Proposal
EFRB – Experimental Flight Release Basis
EMD – Engineering & Manufacturing Development
MFR – Military Flight Release
MTC – Military Type Certificate
OT&E – Operational Test & Evaluation
PDR – Preliminary Design Review
PM – Program Manager
POC– Point of Contact
SL – Senior Leader
SME – Subject Matter Expert
TAA—Technical Airworthiness Authority
TACC– Tailored Airworthiness Certification Criteria
TD– Technical Director

Terms

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.

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.

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.

TACC/MACC Certification Basis – This document includes the criteria, standards and methods of compliance for new or modified aircraft system.

TACC/MACC Compliance Report – This document defines the approved certification basis with references to substantiating data that show compliance with the certification basis and lists risk levels and acceptance for non-compliant criteria. This document is used for final approval of an MTC or MRFR.

TACC/MACC Experimental Basis – This document includes the criteria, standards and methods of compliance for new or modified aircraft system which apply to first flight. The first flight certification basis is a subset of the military type certification basis.

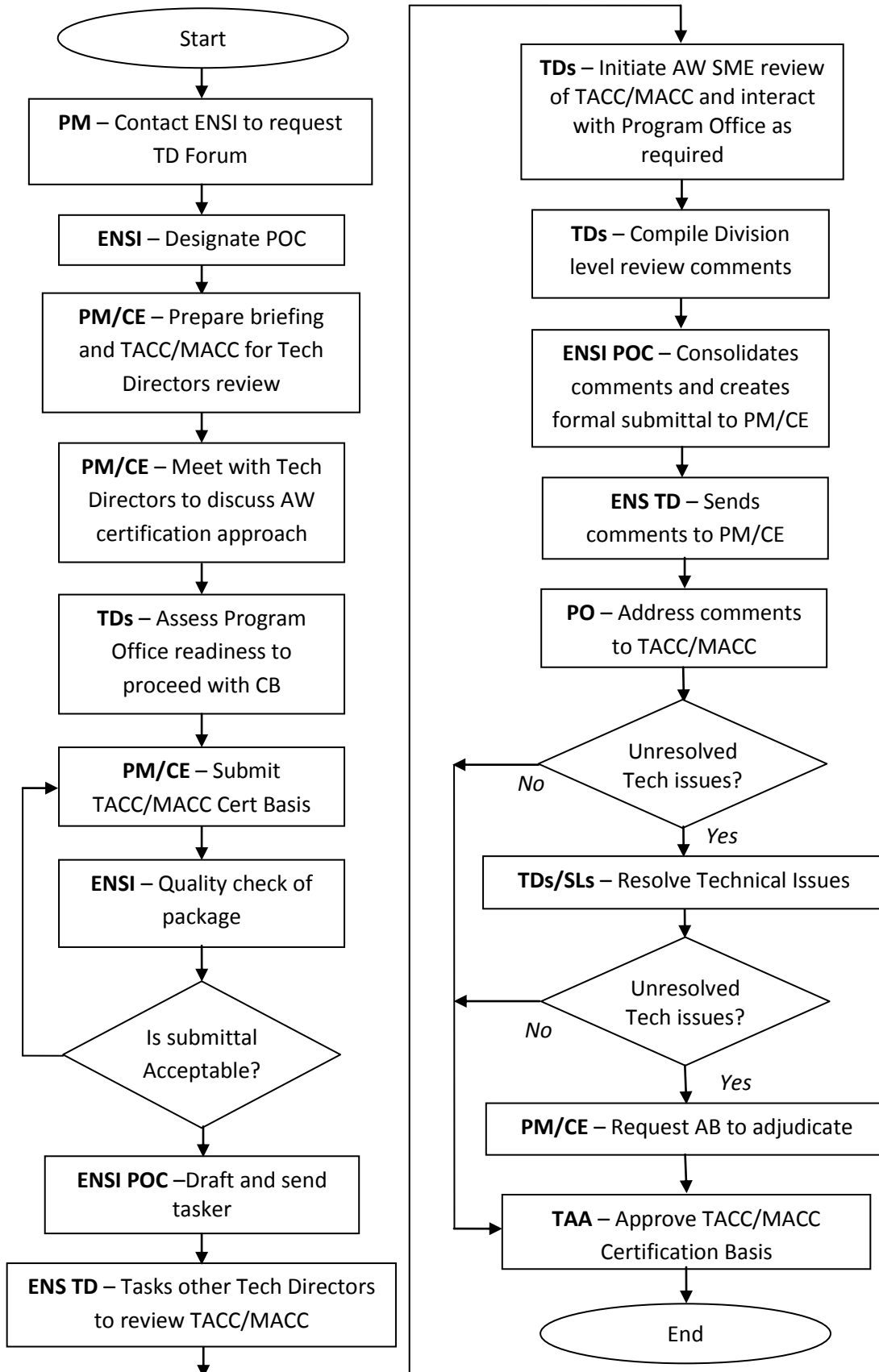
TACC/MACC Experimental Compliance Report – This document defines the approved certification basis for first flight with references to substantiating data that show compliance with the certification basis and lists risk levels and acceptance for non-compliant criteria. This document is used for final approval of a first flight release.

Technical Airworthiness Authority (TAA) – The USAF official authorized to define airworthiness standards, approve the certification basis, issue findings of compliance, and issue Military Type Certificates and other flight releases (see AFI 62-601).

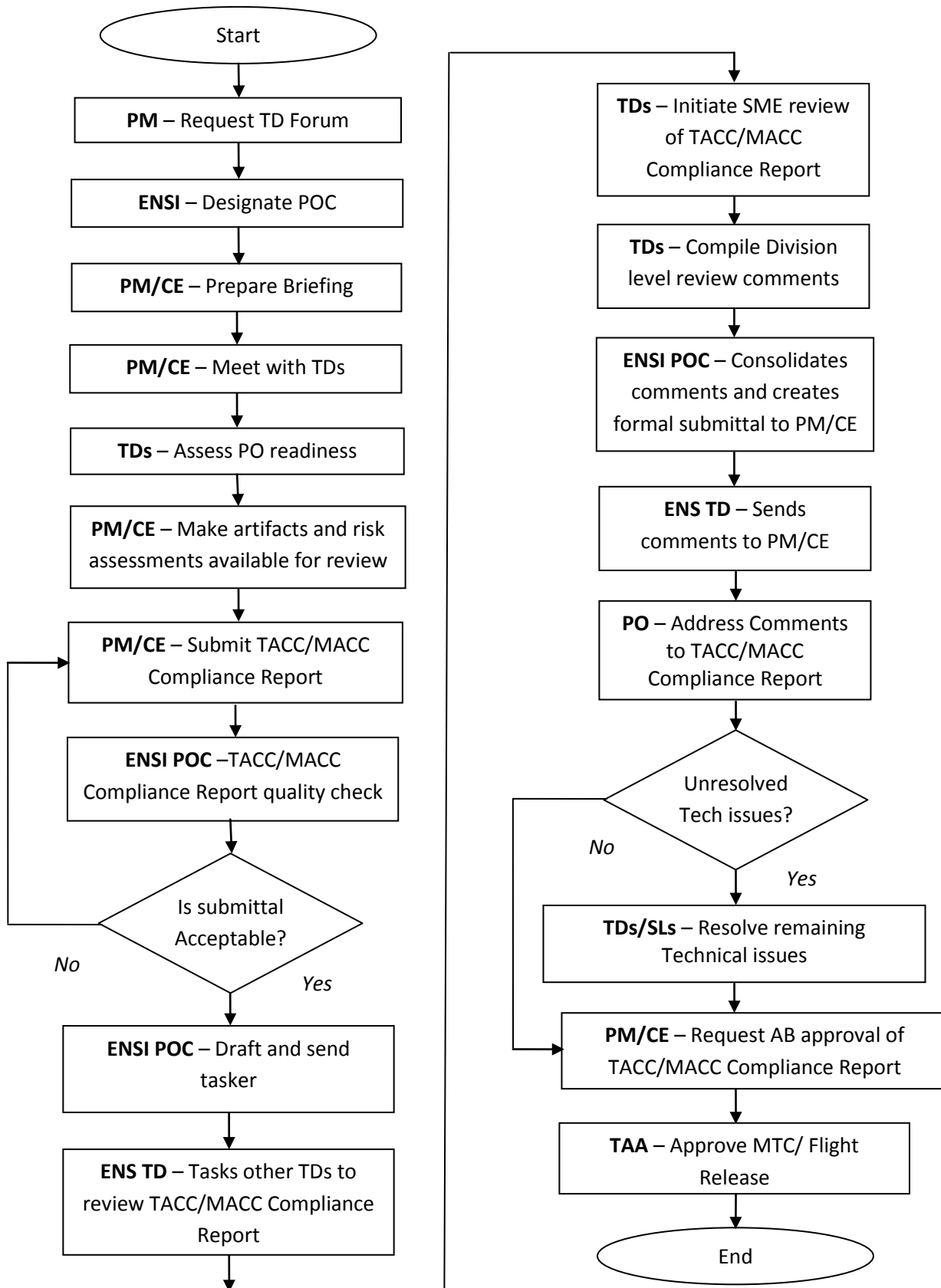
Technical Directors Forum – A meeting between the program Chief Engineer and ASC/EN Technical Directors (TDs) to discuss program plans for airworthiness certification or flight release and establish agreements on TACC/MACC submittal and review as required.

Attachment 2

TACC/MACC Certification Basis Approval Process

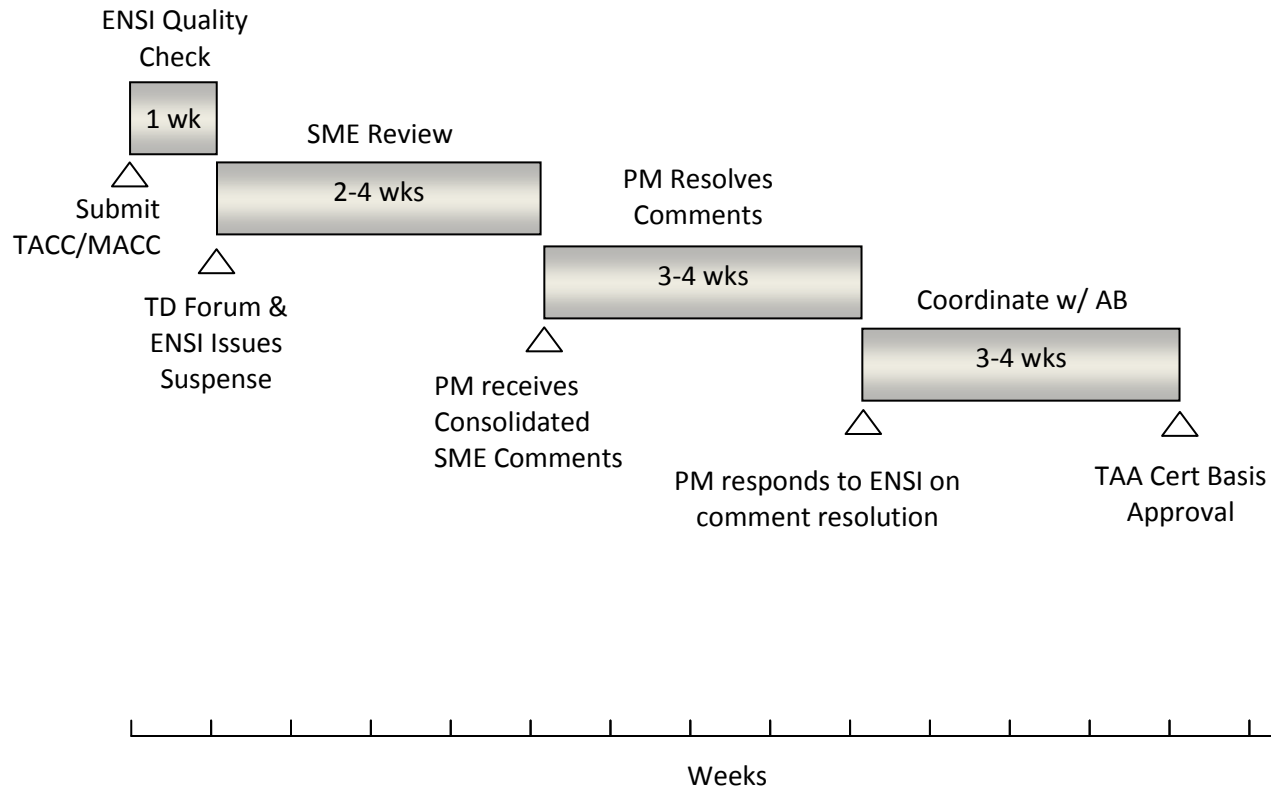


TACC/MACC Compliance Report Approval Process



Attachment 4

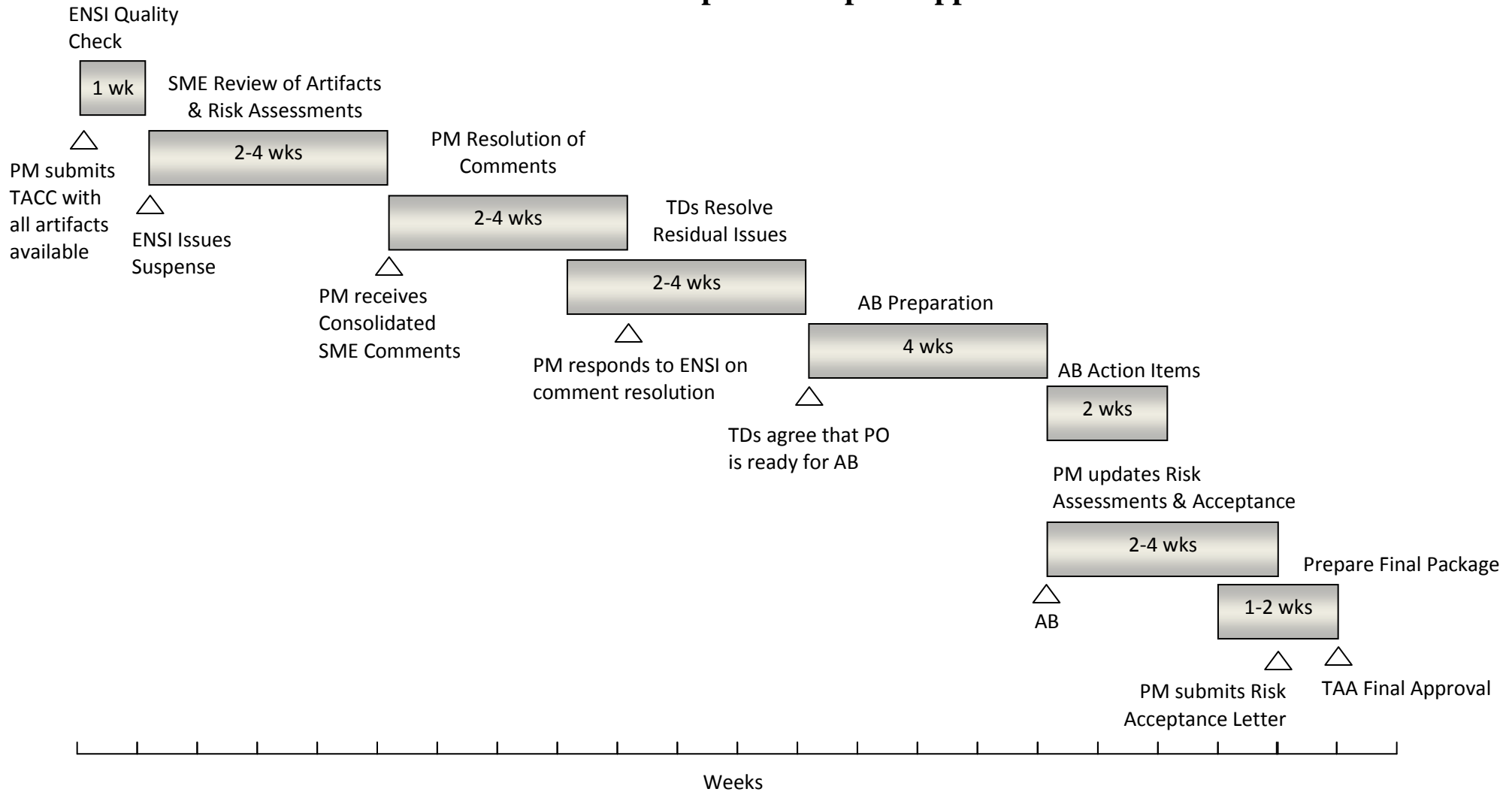
TACC/MACC Certification Basis Approval Timeline



Note: Each certification project is different due to varying requirements complexity, presenting its own unique issues requiring resolution. TACCs will typically require more time than a MACC. The time required (assumes that proper planning was done) for the approval a TACC/MACC Certification Basis is approximately 9 to 13 weeks, however due to unexpected circumstances it is still possible for programs to fall outside of this time frame.

Attachment 5

TACC /MACC Compliance Report Approval Timeline



Note: Each Certification Project is different and will have its own issues and requirements that need to be resolved. The Program Office is encouraged to allow as much time as possible to adequately schedule the review of a TACC/MACC. The development of a new TACC will typically require more time than a MACC. The typical time required (this assumes that proper planning was done) for the approval of a final TACC/MACC with artifacts is approximately 15 to 21 weeks but it is still possible for programs to fall outside of this time frame.