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AIR FORCE MATERIEL COMMAND**



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**TEMPORARY 2 (T-2) MODIFICATION
OF AEROSPACE VEHICLES**

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This instruction establishes Air Force Materiel Command (AFMC) policy, implements the intent of AFI 21-101, *Aerospace Equipment Maintenance Management*, AFPD 62-6, *USAF Aircraft Airworthiness Certification* and AFPD 63-1, *Acquisition System*. The weapons System Program Manager (SPM) is the modification approval authority for all aerospace vehicles under their control. This instruction specifically prescribes procedures for managing, controlling, documenting, and processing Temporary 2 (T-2) modifications of aerospace vehicles. This instruction does not apply to the Air National Guard or US Air Force Reserve units and members. This AFMCI may be supplemented at any level. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number

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(EGLINAFB) AFMCI 21-126 is supplemented as follows: This supplement applies to the execution of Configuration Control Board (CCB) and Modification Engineering Authority (MEA) delegated to the 96 Test Wing (96 TW) from aircraft systems program offices (SPM) regarding T-2 modification of aircraft by the 96th TW. To ensure successful test mission accomplishment by those activities requiring T-2 modification support, a good working knowledge of the T-2 modification program by managers of development and test functions and strict adherence to this directive are required. Per the authority granted by paragraph 17 of the AFMC Instruction, this supplement provides additional guidance and procedures for 96 TW offices in the execution of CCB and MEA delegated authorities. Ensure that all records created as a result of processes prescribed in this publication are maintained IAW Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). Send recommended changes or comments for this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*.

SUMMARY OF CHANGES

This interim change revises AFMCI 21-126 by adding the implementing/supplementing publications statement and the waiver authority statement. A margin bar (|) indicates newly revised material.

(EGLINAFB) This document has been substantially revised and needs to be completely reviewed. Major changes include the addition of guidance clarifying 96 TW modification categories; configuration management roles and responsibilities; Air Force SEEK EAGLE office stores management; 96TW modification classification roles and procedures; Independent Modification Reviews; Modification Engineering Authority responsibilities; 53 TMG responsibilities; 96 TW Configuration Control Board processes and membership; procedures for processing T-2 modifications; documentation requirements; Post Modification Acceptance procedures; Physical Configuration Inspections; demodification plans; modification revalidation and contractor designed or installed modifications.

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1. Temporary 2 (T-2) Modifications Defined.

1.1. T-2 modifications are configuration changes that support research and development; design changes to existing T-2 modifications; and Developmental Test and Evaluation programs or in-service testing of systems or equipment. The T-2 modifications are temporary hardware or software changes or alterations to aerospace vehicles (aircraft, guided weapons, drones, Remotely Piloted Vehicles (RPV), Unmanned Aerial Vehicle (UAV), and their associated ground stations, and missiles other than strategic), airborne support equipment, external and internal stores, subsystems, components, or support equipment which is governed by Technical Orders (T.O.) that interface with an aerospace vehicle. T-2 modifications include instrumentation modifications, but can also be temporary changes to prove, develop, or characterize future permanent modifications.

1.2. T-2 modifications may be installed only for the duration of the flight test program unless stated in the demodification plan or an extension is approved by the Modification Engineering Authority (MEA) (reference [paragraph 12.2](#)).

1.3. Carrying of uncertified aircraft/stores combinations for other than certifying the store is considered a T-2 modification. AFI 63-104, *The Seek Eagle Program*, governs formal certification of external and internal stores through the US Air Force aircraft/stores certification program, and issuance of flight clearances for Initial Operational Test and Evaluation (IOT&E) purposes.

1.4. Hardware & Software Change Actions. Form, fit, and function exchanges of hardware or software offering negligible risk do not need to adhere to the strict requirements identified in this instruction. However, they do require approval of the T-2 Mod MEA, and will be accomplished In Accordance With (IAW) local procedures approved by the T-2 Mod Configuration Control Board (CCB) authority. Configuration control will be maintained at all times.

1.5. Aircraft Modifications for Ground Testing Only. The rigorous requirements identified in this instruction are not intended to be applied to modifications intended for ground testing only, and which are completely removed prior to flight. However, such modifications do require approval of the T-2 Mod MEA, and will be accomplished IAW local procedures approved by the T-2 Mod CCB authority. Verification must be made by either analysis or testing, indicating that after removal, no flight critical systems have been affected. No modifications shall be made under this provision for which T.O. repair provisions are insufficient to restore the test article to its pre-modified configuration. Configuration control will be maintained at all times.

1.6. **(Added-EGLINAFB)** The T-2 Modification Process Accomplished by the 96 TW. The 96 TW accomplishes modifications per AFI 62-601, AFI 63-131, and AFMCI 21-126. Two categories of modifications occur: 1) modifications accomplished in the course of testing aircraft and weapons system development and sustainment and 2) hardware modifications to 96 TW maintained and supported aircraft (e.g., both 96 TW aircraft and 53 WG aircraft) in support of developmental and operational test activities.

2. Functional Manager for T-2 Modifications. HQ AFMC/LGMM is the functional manager for the T-2 modification instruction. The Instrumentation Division, 412 TW, Air Force Flight Test Center (AFFTC), Edwards AFB, California, is the Center of Expertise for T-2 modification procedures. HQ AFMC/LGMM performs staff surveillance over the AFMC T-2 modification process and staff assistance visits.

2.1. **(Added-EGLINAFB) 96 TW Configuration Management.** The 40 FLTS/CAX (40 Flight Test Squadron/Modification Manager, 96 TW Aircraft) will have the primary responsibility of ensuring configuration control of 96 TW test assets, and the scheduling of modifications to these resources. 40 FLTS/CAX will provide planning and scheduling of test assets, including aircraft, AME, weapons, and resources necessary to perform required flight testing. The Operational Flight Plan (OFP) Combined Test Force (CTF) as the integrated test management organization for F-15 and F-16 OFP testing and associated hardware in the 53 WG and 96 TW will provide long range planning for the F-15 and F-16 test fleet to include future required test aircraft configurations. The 40th FLTS/DO will chair a modification meeting as needed to resolve any issues with upcoming aircraft modifications or long range test fleet planning. The CCB Chairperson will be briefed at least quarterly on test fleet long range planning and is the final approval authority for the long range test fleet plan.

3. Acronyms and Terms Explained. Acronyms and terms are explained in [Attachment 1](#).

4. Uncertified External and Internal Stores (General).

4.1. Although clearance of stores is part of the T-2 modification process, it involves highly specialized engineering disciplines and experience generally not available within modification activities. As a result, AFMC has set up a separate stores compatibility activity at the Air Force SEEK EAGLE Office (AFSEO), Eglin AFB, Florida. While each MEA is responsible for the successful conclusion of a T-2 modification, the MEA will contact the AFSEO to issue a flight clearance for all uncertified stores on all aircraft. For aircraft not assigned to a SPM, the modification activity will request a flight clearance for stores carried on those aircraft.

4.2. To be able to recommend a flight clearance, the stores compatibility activity often must conduct extensive analyses and tests, some of which may involve contracts. The modification activity or applicable store design activity is responsible for providing any necessary engineering data (physical, aerodynamic, structural, aero thermal, and electromagnetic) on the store and for providing funds to support compatibility studies and tests. To minimize program delays, it is recommended that the stores compatibility efforts be initiated early, usually well before the T-2 modification action itself is initiated.

4.3. The compatibility activity, after completing analyses and tests, can issue flight clearances to the modification activity. After MEA approval, the clearances will become part of the modification documentation. If a change is needed on a cleared store, aircraft configuration, or flight envelope, the modification activity will contact the issuing office for aircraft compatibility to determine if additional clearance is warranted.

4.4. **(Added-EGLINAFB) The Air Force SEEK EAGLE Office.** The Air Force SEEK EAGLE Office (AFSEO; 96 SK) issues only recommended flight clearances (RFC) or stores modification assessments (SMA) for developmental and operational flight test activities involving changes, both hardware and software, to certified and uncertified stores to include changes in carriage quantity and/or location. These RFCs and SMAs must be approved for use by the aircraft SPM via an appropriate flight authorization document (e.g., MFR, FC, etc.).

4.4.1. **(Added-EGLINAFB) Legacy Test RFC.** RFCs issued by AFSEO and approved by legacy test processes prior to May 30, 2013 (F-16C) or June 12, 2013 (F-15C/E) were incorporated into the baseline military flight release (MFR) for each aircraft over which the 96 TW or preceding 46 TW had CCB and modification engineering authority (MEA). As a part of the baseline MFR for those aircraft, the previously approved legacy RFCs may continue to be used until the conditions of carriage changes, or until the store is modified.

4.4.2. **(Added-EGLINAFB) AFSEO Involvement.** The SEEK EAGLE process is the Air Force certification process for determining safe carriage, employment and jettison limits, safe escape, and ballistics accuracy, when applicable, for all stores in specified loading configurations on Air Force and Foreign Military Sale Aircraft. The AFSEO certification process is described in AFI 63-124. AFSEO subject matter experts will be consulted whenever test activities involve modifications to stores, regardless of whether the SPM/CE is solely issuing the modification approval. Any changes to 96 TW maintained test-unique stores (e.g., ACE-IV pod, J-RIP pods, and SKYNET pods) require an AFSEO RFC or SMA as part of the 96 OG and CCB approval process. The AFSEO

certification process does not include Certification/Accreditation or Information Assurance verification/validation of stores that connect to classified or unclassified aircraft data buses. The end product is source data for flight, delivery, and loading manuals, and the weapon ballistics portion of the aircraft OFP.

4.4.2.1. **(Added-EGLINAFB)** All non-certified external stores require a local checklist prepared and certified according to AFI 21-101, *Aerospace Equipment Maintenance Management*.

4.5. **(Added-EGLINAFB)** The 96 OG/CC approval is required when an external store other than an Electronic Countermeasures Pod is to be carried in a non-jettisonable configuration.

5. Modification Classification. All T-2 modifications, to include hardware/software, will be classified as either Major or Minor.

5.1. A modification will be classified as Major if it involves a high degree of technical uncertainty, and it affects critical portions of one or more of the following areas: structure, propulsion sub-systems, avionics systems, software, aerodynamics, stability and control, etc. A high degree of technical uncertainty may exist if available technical data or analytical techniques are insufficient to provide an adequate basis for sound engineering design of the modification, and sufficient testing has not been accomplished to resolve the technical uncertainties. A reportable modification, as defined in MIL-HDBK-514, *Operational Safety, Suitability, And Effectiveness For The Aeronautical Enterprise* paragraph 11.10.1, would also be classified as Major. When determining classification, it is recommended that the MEA's technical staff review the proposed modification. All other modifications are classified as Minor.

5.2. The MEA is the classification approval authority (see [paragraph 7.1](#)).

5.2.1. **(Added-EGLINAFB)** Authority to classify locally generated modifications is delegated to the 96 TW T- 2 Modification Engineering Authority (MEA) by the System Program Manager (SPM) of each currently assigned aircraft type. Memorandums of delegation are maintained and filed by the 896 TSS.

5.2.2. **(Added-EGLINAFB)** In those cases where the proposed T-2 modification is not considered major/reportable, but sufficient corporate knowledge of the proposed aircraft modification area does not exist within the 96 TW, the 896 TSS will coordinate with the SPM to ensure structural, safety issues, etc. are not overlooked to ensure an airworthy modification.

5.3. The proposed T-2 modification will be reviewed by the MEA and the SPM to ensure technical data and/or analytical techniques are adequate to provide a basis for sound engineering and for resolution of technical uncertainties. If the MEA has any questions as to the technical uncertainty for a particular modification, they should contact the responsible SPM.

5.4. **(Added-EGLINAFB) Baseline Aircraft.** The baseline aircraft configuration is defined as the minimum configuration in which the aircraft is authorized for flight by the SPM.

5.5. **(Added-EGLINAFB) Store.** Additions to the aircraft baseline configuration (defined in 5.4) to include non-jettisonable alternate mission equipment (AME) are considered

‘stores.’ PMs may authorize 96 TW modification authority over AME via letter or message. 96 OG test teams will verify which office maintains the authority to certify modifications to AME required for their test programs in order to ensure airworthiness certification is obtained in a timely manner.

5.6. (Added-EGLINAFB) Approval . Carriage by a 96 OG aircraft of any store not currently authorized for use by either the T.O. or a valid flight authorization (e.g., MFR, FC., etc.) is defined as a modification and requires a Form 244 and supporting documentation of the authorized configuration and appropriate limits (e.g., a flight clearance with an MFR). The Form 244 must be approved by the CCB Chairperson prior to flight.

5.6.1. (Added-EGLINAFB) Joint Use Restriction on Modification(s). The requirement for CCB Chairperson approval of store configuration modifications also applies to joint-use of 53 WG aircraft per memorandum of agreement between the 96 OG and 53 TEG. Since 53 WG processes for approval of SPM-issued modifications differ and may not involve the 96 TW CCB, prior to joint-use of 53 WG aircraft, the 96 OG unit scheduling office will confirm the configuration (e.g., operational flight program of the stores and aircraft) has been approved by the 96 TW CCB.

5.6.2. (Added-EGLINAFB) Stores Requiring Other Hardware Modification(s). If the addition of a store involves a hardware modification to the baseline aircraft or to an existing T-2 modification installed on the aircraft, the full 96 TW CCB process (complete aircraft T-2 modification process) is required, even if the SPM accomplishes a separate CCB. Local CCB approval is required to ensure compatibility with 96 TW installed instrumentation.

5.7. (Added-EGLINAFB) SPM-Approved T-2 Modifications and Form, Fit, Function & Interface Modification(s). SPM-issued and approved modifications to stores and/or aircraft, as well as Form/Fit/Function/Interface (FFFI) modification(s) approved by the SPM both require 96 TW CCB Chairperson approval prior to installation and use. If the modification(s) requires an aircraft hardware modification and/or change to aircraft security procedures (e.g., modification of TMATS files), a full CCB presentation (complete aircraft T-2 modification process) and coordination is required. If the modification does not require any of these aforementioned changes, and can be installed in a normal maintenance cycle using standard maintenance procedures (e.g., red-lined T.O.s), then CCB Chairperson approval can be accomplished via electronic coordination of a locally filled out AFMC Form 244 cover sheet attached to the SPM approval documents; a full CCB presentation is not required.

5.8. (Added-EGLINAFB) Software-Only Modification(s). Software-only modifications (e.g., Operational Flight Program changes to stores, aircraft or both) which do not require changes to existing security processes or media handling procedures may be electronically coordinated through the CCB for approval by the CCB Chairperson. CCB Chairperson approval is required before first flight.

5.9. (Added-EGLINAFB) Software-only modifications and form, fit, function & interface (FFFI) modifications require the requester provide the following information to the CCB and MEA on the AFMC Form 244:

Software change documentation specifying added capabilities and any standard capabilities

deleted.

Airworthiness impact assessment to include the associated military flight release under which the airworthiness impact assessment of the software/FFFI was accomplished.

A certification that the change has been operationally checked in a full-up operating aircraft system to ensure it performs as designed and any impacts/effects on any other aircraft system capability(ies) is(are) identified.

5.10. **(Added-EGLINAFB) Local Stores Loading Checklists.** All changes to external stores require a local checklist prepared and certified according to AFI 21-101 and 96 Test Wing Writing Guide.

6. Independent Modification Review (IMR).

6.1. All Major T-2 aircraft modifications require an Independent Modification Review (IMR) by the responsible SPM. The comprehensiveness and extent of the IMR will be negotiated and agreed upon by the responsible program SPM and the MEA prior to approval of the preliminary modification package. Minor modifications and demodifications do not require an IMR. The IMR is a technical review of the modification from an airworthiness point of view. It will include a detailed review of the modification's engineering (including software and information security changes), impacted air vehicle characteristics, systems and flight safety, drawings, analyses, test plans, data, changes to related flight manuals, operating and maintenance instructions, and the demodification plan with its associated analyses and drawings. This detailed review will concentrate on those areas of the modification that are the basis for declaring the modification Major. The SPM should ensure that verification activities are in place to support any necessary subsequent airworthiness recertification efforts (MIL-HDBK-514, section 11.10).

6.1.1. **(Added-EGLINAFB)** 896 TSS will coordinate with the SPM to provide the data required to accomplish the Independent Modification Review (IMR).

6.2. The classification of the modification as either Major or Minor must be made as early as possible so the IMR requirements will be fulfilled. If the modification is classified as Major, the responsible program SPM will be contacted before formalizing any program schedules so all IMR required documentation can be identified.

6.3. As a part of the IMR, the responsible program SPM and the MEA may take part in the preliminary design review (PDR) and critical design review (CDR), the Physical Configuration Inspection (PCI), and the review of all test results. The MEA will recommend Safety of Flight approval or disapproval to the responsible program SPM unless delegated to the AFMC Test Center, test organization or laboratories IAW AFD 62-6 para. 2.8.4.

6.4. **(Added-EGLINAFB) Airworthiness Assessment.** SPMs and respective chief engineers (CE) are delegated airworthiness determination authority per AFI 62-601, Air Force Technical Authority (AF/TA) airworthiness bulletins and advisories, and AFMC instructions, as supplemented. In turn, SPM CE(s) may delegate airworthiness assessment technical authority (DTA) by-name to individuals within AFTC. These DTAs are identified by-name by SPM/CE letter and are members of the 896 TSS. Specific DTA actions and authorities are described by those delegation letters and 896 TSS instructions (e.g., 896 TSS

OI 99-1). Program and Test Engineers must involve DTA(s) early in the modification planning process to ensure an appropriate airworthiness assessment is accomplished.

7. Approval Authority.

7.1. Modification Engineering Authority (MEA).

7.1.1. The SPM is the approval authority for all T-2 modifications, including engineering and Safety of Flight approval, to aircraft unless delegated to AFMC Test Centers or Laboratory IAW AFPD 62-6. Normally, this responsibility is delegated to the MEA leader who then functions as the modification engineering approval authority for all aerospace vehicles under his/her control.

7.1.1.1. The authority to approve Minor modifications, including engineering and Safety of Flight approval, to aerospace vehicles is the responsibility of the SPM unless delegated to the Test Centers and Laboratory.

7.1.1.2. T-2 modifications are unique and only remain on a specific aerospace vehicle for the duration of the flight test program. An approved T-2 modification shall not be installed on a different aerospace vehicle without a CCB action.

7.1.1.3. Approval or disapproval recommendations for Major modifications to aerospace vehicles are assigned to the responsible program SPM. Engineering approval for Major T-2 modifications is the responsibility of the MEA if delegated by the SPM.

7.1.2. When Government Furnished Property (GFP) aircraft are assigned and/or possessed by a contractor (EB coded), the SPM functions as the MEA authority. When the GFP aircraft are to be flight tested by an AFMC test organization, the test organization must take part in the CCB. The test organization will participate in other reviews as requested by the MEA authority.

7.1.3. For unaccepted aerospace vehicles, the MEA authority will be the SPM responsible for the program. If the aerospace vehicle is to be flown at an AFMC test facility, the AFMC test organization will be a member of the MEA.

7.1.4. For leased or loaned aerospace vehicles, or Laboratory-assigned and possessed (XY coded), the lease or loan agreement will specify which government agency, such as the FAA, SPM, or MEA has modification approval authority.

7.1.5. For non-AFMC aerospace vehicles not under lease or loan agreement, the MEA will be specified in the Memorandum of Agreement (MOA). Normally, this authority is delegated to the AFMC Test Centers or Laboratory. This approval will be coordinated with the appropriate SPM.

7.1.6. **(Added-EGLINAFB) Modification Engineering Authority.** The 896 TSS acts as the Modification Engineering Authority when delegated by the aircraft SPM. The 96 TW MEA is the 896 TSS/CL or alternate 896 TSS/RNMD. The MEA will evaluate the cumulative effect of adding an additional modification to an aircraft with one or more currently existing modifications. The 896 TSS (Engineering) is the Office of Primary Responsibility (OPR) for the T-2 modification program and will interface with program managers, RTOs, associate organizations, AFMC, and SPM to define requirements,

identify resources, and obtain authorizations or concurrence for T-2 modification accomplishment.

7.2. MEA Responsibilities.

7.2.1. Recommends approval/disapproval for all T-2 modifications and demodifications to the CCB.

7.2.2. Approves/disapproves the preliminary modification design and releases it for final design, and fabrication, and subject to CCB approval before installation.

7.2.3. Reviews all modification contracts and documents.

7.2.4. Utilizes appropriate airworthiness criteria (MIL-HDBK-516, *Airworthiness Certification Criteria* or FAA FARs) to accomplish preliminary Safety of Flight assessments (ref [para 8.2](#)) in order to evaluate if the technical approach to the modification will provide acceptable margins of safety.

7.2.5. Approves PDR and CDR for contracted T-2 modifications and design reviews for T-2 modifications conducted in-house.

7.2.6. Directs the development of local procedures to make sure that appropriate review and approval of subsequent changes to the design are assessed for their cost, schedule, safety, technical, and operational performance impacts.

7.2.7. Identifies areas of concern to the IMR in the case of Major modifications.

7.2.8. Safety Determination.

7.2.8.1. Ensures the accomplishment of design safety reviews and makes final Safety of Flight determination utilizing either MIL-HDBK-516 or FAA FAR criteria. The SPM may delegate Safety of Flight determination IAW AFPD 62-6. Normally, this is the delegated MEA leader.

7.2.8.2. Identifies aircraft flight test requirements for Safety of Flight determination as the result of modifications to aerospace vehicles.

7.2.8.3. Reviews results of laboratory, ground, or Safety of Flight tests.

7.2.9. Recommends assignment of status prefix symbol “N” (special test permanent) according to AFI 16-401, *Designating and Naming Defense Military Aerospace Vehicles*.

7.2.10. Approves tailoring and waivers to military standards and specifications that will be used to document and accomplish the modification.

7.2.11. Sends an information copy of the T-2 modification package to the appropriate AFMC item manager or weapons system SPM when requested.

7.2.12. The responsible MEA will ensure a PCI is conducted when modification, installation, design baseline changes, or demodifications are accomplished. The PCI is required before issuance of a flight release.

7.2.13. Addresses the following areas during revalidation:

7.2.13.1. Necessity of modification for current or future use.

7.2.13.2. Estimated demodification costs.

7.2.13.3. Increased Programmed Depot Maintenance (PDM) cost as the result of revalidated modifications.

7.3. CCB Concept.

7.3.1. The primary purpose of the CCB is to disposition proposed modification packages, waivers and deviations against established configuration baselines. The hardware and/or software authorized to be changed must represent the current configuration baseline. The purpose of the CCB is to control these baselines. They are documented in the form of weapon system specifications, drawings, software code listings, etc.. The CCB functions as an advisory body to the CCB Chairperson and meets at the discretion of the Chairperson. The weapon SPM has the CCB responsibility for his/her respective weapons systems. The CCB Chairperson is the modification process approval authority and may approve variances to normal procedures to accomplish modifications.

7.3.2. Configuration Control Board Delegation. The SPM may delegate CCB and MEA to AFMC Test Centers and Laboratory for the purpose of accomplishing T-2 modifications on test center or laboratory assigned, possessed, loaned, or leased aerospace vehicles. The CCB authority may not be delegated to other activities other than the AFMC Test Centers and Laboratory for the purposes of accomplishing T-2 modifications. Delegation from the SPM also may not bypass the established CCB authority at the AFMC Test Centers and Laboratory by going direct to subordinate organizations.

7.3.3. Major Modifications. The weapons SPM will approve all Major T-2 modifications.

7.3.4. For additional CCB guidance, see MIL-HDBK-61A, *Configuration Management Guidance* and AFMC Pamphlet 63-104, *IWSM Configuration Management Implementation Guide*.

7.4. CCB Membership. The following minimum membership is recommended for the CCB to advise the Chairperson in the discharge of his/her responsibilities:

7.4.1. Safety.

7.4.2. Maintenance/Logistics.

7.4.3. Engineering.

7.4.4. Operations.

7.4.5. Quality Assurance/Control.

7.4.6. Responsible Test Organization (RTO) (if CCB authority is not the RTO).

7.4.7. Responsible SPM for Major modifications.

7.4.8. Contracting (When the modification effort requires contracting or involves a lease or loan agreement, identify contracting as part of the CCB membership).

7.4.9. Configuration management.

7.4.10. Information Security.

7.4.11. Others as identified by the CCB Authority.

7.4.11.1. **(Added-EGLINAFB) Other Offices** . The 53 TMG/TO (Configuration Management, 53 WG Aircraft) will have the primary responsibility of ensuring configuration control of 53 WG test assets, and the scheduling of these resources. The 53 TMG/TO configuration manager will initiate an AFMC Form 244 to request modification, revalidation, or demodification, and they will ensure adequate funds are available and lead-time is adequate to design and install the modification to support test program schedules.

7.5. **(Added-EGLINAFB) 96 TW Configuration Control Board.** T-2 modifications to 96 OG operated and maintained aircraft, to include aircraft system program manager (SPM) issued/approved T-2 modifications and flight authorizations (e.g., MFRs, CMs, FCs, etc.), must be reviewed for compatibility with existing aircraft modifications and approved for flight use by the CCB Chairperson. Requests to modify a previously approved T-2 modification(s), or to extend use past the end of the original flight test program, must be also approved by the CCB Chairperson.

7.5.1. **(Added-EGLINAFB) CCB Chairperson** . The 96 TW Configuration Control Board (CCB) Chairperson is the 96 OG/CC, who may delegate this Chairperson authority to 96 OG deputy commander (96 OG/CD), 96 MXG maintenance commander (MXG/CC) or 96 MXG deputy commander (MXG/CD) in writing.

7.5.2. **(Added-EGLINAFB) CCB Members.** The 96 TW CCB will consist of the Chairperson (96 OG/CC or designee), the CE/DTA (896 TSS), the recorder (896 TSS), representatives from the Systems Engineering Flight and Modification Design Flight (896 TSS/RNME/RNMD), aircraft flying unit representative (i.e., 40th Flight Test Squadron (40 FLTS)), SEEK EAGLE (AFSEO), Chief of Systems Safety (96 TW/SES), Quality Assurance (96 MXG/MXQ), Munitions Test Division (96 OG/OGM), and the 46th Test Squadron (46 TS). The 53 WG Modification Manager is encouraged to attend to answer questions that may arise concerning specific 53 WG modification/test requirements. Each organization will nominate primary members and alternate(s). A quorum will consist of at least the Chairperson and one authorized representative from 96 TW/SES, 40 FLTS/CAX, 96 MXG, 96 MXG/MXQ, and 896 TSS. A copy of the minutes will be sent to each CCB member.

7.5.3. **(Added-EGLINAFB) CCB Meetings.** CCB meetings are normally scheduled once a week. Notification will be given by 896 TSS if there are any changes to the schedule.

7.5.3.1. **(Added-EGLINAFB) Agenda Preparation.** The agenda for each meeting will be prepared by 896 TSS and an electronic copy will be available for review by all members. The agenda will be distributed by 896 TSS three working days preceding the meeting.

7.5.3.2. **(Added-EGLINAFB) Package Review.** T-2 modification packages, including those prepared by contractors and SPM authorized modifications, for modifications to be installed on 96 TW and Eglin assigned 53 WG aircraft, will be reviewed by 896 TSS for completeness before submission to the CCB.

8. Procedures and Control. Guidelines for a typical implementation of this instruction are provided within this section. This instruction may be supplemented according to **paragraph 17** to suit local requirements and capabilities.

8. (EGLINAFB) Procedures and Control . To exercise the authority articulated in paragraphs 8 and 17 of the parent instruction, the procedures for processing T-2 modifications by 96 TW units will be as described in Table 1, below. More detailed processes are provided in other instructions governing modifications to aircraft. Table 1 should be used as a reference for 96 TW modification processes. Where in conflict with HHQ guidance, the HHQ guidance and procedures take precedence.

Table 1. (Added-EGLINAFB) Procedures for Processing T-2 Modifications.

LINE	A	B	C
	Activity	Action	Dissemination
1	RTO	Complete items as follows on AFMC FORM 244: items 2, 3, 4, 5, 7, 9, 11 - 14, 18, 20. Signature of 3-letter office chief required as initiator in block 20. Coordinate with 40 FLTS/CAX or 53 TMG to determine aircraft serial # to be modified. Complete item 3 of AFMC FORM 244.	Submit original to 40 FLTS/CAX CCB representative or 53 WG Mod Manager.
2	40 FLTS/CAX or 53 TMG	Appropriate 40 FLTS/CAX CCB Representative or the 53rd WG Mod Manager will review modification request and coordinate by signing block 21.	Submit original to 896 TSS.
3	896 TSS	Complete original AFMC Form 244, items 1, 6, 8, 10, 15-17, and 19. Convene Modification Working Group, consisting of 896 TSS and 96 MXG backshop personnel, and AFSEO and others as required and generate cost estimate. Accomplish preliminary engineering design. Prepare preliminary hazards list. Obtain 96 TW/SES review for the hazard analysis, if required. Prepare CCB agenda.	Send AFMC Form 244 with cost information to Project Manager, 40 FLTS/CAX, 53 TMG, and mod management office (896 TSS/RNMD). Present to CCB.

4	CCB	Review modification proposal for approval/disapproval. 896 TSS, 96 MXG rep, 96 MXG/MXQ, Ops, 40 FLTS/ CAX or 53 TMG, and 96 TW/SES sign block 22. Chairperson checks block 24, sign block 25, and dates block 26.	Return to 896 TSS for modification design completion.
5	896 TSS	Complete the modification package and assemble the kit. Present design changes to MEA and any capability changes to CCB for approval.	896 TSS
6	Mod Management (896 TSS)	Preplan installation. Convene pre-dock meeting with 896 TSS and 96 MXG crew chief. Monitor installation. Convene weekly scheduling meetings to forecast input dates and ETICs (estimated time in commission). Ensure attendees include: 896 TSS/RNME/RNMD/RNMS, 96 MXG, Machine/Sheet metal shop representative, 40 FLTS/CAX, 53 WG mod representative (53 TMG/TO), OFP CTF.	Provide installation package to 896 TSS/RNMS. Send Mod Integrated Schedule to all members of scheduling meeting.
7	896 TSS/ RNMS	Install modification. Assigned dock chiefs will plan, schedule, and control work on their aircraft. (NOTE 1) Schedule PCI and final release for flight certification. AFMC FORM 272, Physical Configuration Inspection (PCI) Report, requires 896 TSS, 96 MXG/MXQ, and 96 TW/SEF signatures. AFMC FORM 273, Final Release for Flight Clearance, requires 96 TW/SEF, 96 MXG/MXQ, OPS OFFICER, and 896 TSS signatures (NOTE 2). Update mod package as required (NOTE 3).	Send completed forms to 896 Configuration Control Manager. File completed mod package.

Notes:

1. Aircraft modification dock chiefs manage and direct maintenance efforts on their aircraft. Specialists working on aircraft modifications will coordinate work with the dock chiefs. Dock chiefs will coordinate access schedules for electrical, structural, and other required specialists. They will also schedule inspections of completed work.
2. A Systems Safety representative (96 TW/SES) will normally sign the AFMC Form 244 (T-2 Mod CCB Directive), and a Flight Safety representative will sign the AFMC Form 273 (Final Release for Flight), however, either representative can sign for the other when one of the representatives is unavailable.
3. 896 TSS will provide updated engineering information (e.g., red-lined drawings changed during actual installation).

8.1. Modification Phases. The modification process will be accomplished in the following phases: identification of modification requirements, preparation of the preliminary modification package, preliminary CCB approval, CCB approval, modification design, modification, Safety of Flight determination, and demodification.

8.1.1. Identification of Modification Requirements.

8.1.1.1. Initial Identification. Early identification of a T-2 aircraft modification requirement is vital. As soon as a program with modification requirements is initiated, the organization that has modification management responsibility will be contacted by the Program Manager (PM). This contact will be made before preparing the modification request to ensure smooth transition into the modification process (for more information, see T-2 Modification Lessons Learned, [Attachment 2](#)).

8.1.1.2. Formal Identification. As soon as funding and schedule parameters allow, a modification request will be sent to the MEA by the PM. The AFMC Test Centers, and Laboratory will use locally established funding processes.

8.1.1.3. **(Added-EGLINAFB) Other MAJCOM Asset Modifications.** 896 TSS will negotiate agreements with other MAJCOMs to establish modification responsibilities for modifications of MAJCOM assets not assigned to the 96 TW. Other MAJCOM activities or associate organizations requiring T-2 modification support from 96 TW will submit an AFMC Form 244 **T-2 Modification Configuration Control Board Directive**, to the 40 FLTS/CAX, with the exception of 53 WG who submits AFMC Form 244 directly to 896 TSS. The 53 WG modification manager or their designated representative within 53 TMG/TO has signature authority of modifications to be installed on 53 WG aircraft and will sign in item 20 of AFMC Form 244.

8.1.2. Preparation of the Preliminary Modification Package.

8.1.2.1. Before initiating detailed design, a preliminary modification package will be prepared by the PM or his representative for MEA review and approval. The designated modification organization, with the assistance of the RTO and the organization initiating the modification, will prepare the package that will contain as a minimum the following:

8.1.2.1.1. An initial AFMC Form 244, **T-2 Modification Configuration Control Board Directive**.

8.1.2.1.2. Preliminary hazard analyses.

8.1.2.1.3. Justification and HQ AFMC program directives (where applicable).

8.1.2.1.4. Preliminary design information, profile, and support engineering data, as available.

8.1.2.1.5. Environmental, Safety & Occupational Health (ESOH Analysis).

8.1.2.1.6. Major Modifications: Identification of the airworthiness certification criteria to be considered during PDR, CDR, and Safety of Flight assessments.

8.1.2.2. For Major modifications, the responsible modification organization will send a copy of the package to the responsible SPM (if applicable) before MEA review and coordination.

8.1.3. Preliminary Modification Approval.

8.1.3.1. Preliminary modification approval is authority to proceed with detailed modification design, at which time the functional baseline for the modification is defined. The MEA is the approval authority.

8.1.4. Modification Design.

8.1.4.1. The final design must include all information necessary to fabricate, install, functionally check out, and verify Safety of Flight of the modification. The design must be accomplished with considerations for demodification. Approval from the SPM is required whenever standard T.O. repair procedures are insufficient to restore the test article to the pre-modified configuration. The requirements of MIL-STD-27733, Modification and Marking Requirements for Test and Aerospace Vehicles and Related Support Equipment, will be satisfied for all T-2 modifications to air vehicles and alternate mission equipment. Deviations to this engineering standard can be approved by either the Modification Engineering Authority (MEA), or the CCB Chairperson

8.1.4.2. If the modification is Major and with contracted engineering design, then the AFMC organization awarding the contract will conduct a PDR and a CDR. When aircraft with contracted modifications are to be flight tested by an AFMC test organization, that test organization must take part in the PDR and CDR. The test organization will participate in other reviews as requested by the MEA. If the modification is Minor and with contracted engineering design, the MEA will determine PDR and or CDR requirement.

8.1.4.3. For those modifications with in-house design, a design review will be established.

8.1.4.4. A PDR will normally address the following areas:

8.1.4.4.1. Preliminary design data, including preliminary drawings, diagrams, and sketches.

8.1.4.4.2. System safety.

- 8.1.4.4.3. Preliminary analyses and tests including Loads and Structural Analyses.
- 8.1.4.4.4. Mass properties.
- 8.1.4.4.5. External stores compatibility.
- 8.1.4.4.6. Power requirements, subsystems compatibility, and electrical loads analysis.
- 8.1.4.4.7. Electromagnetic compatibility.
- 8.1.4.4.8. Operating restrictions.
- 8.1.4.4.9. Changes to performance, stability, and control.
- 8.1.4.4.10. Preliminary flight test plan for Safety of Flight determination.
- 8.1.4.4.11. Group B Safety of Flight determination.
- 8.1.4.4.12. Demodification plan.
- 8.1.4.4.13. Schedule.
- 8.1.4.4.14. Thermal design and constraints.
- 8.1.4.4.15. Human factors.
- 8.1.4.4.16. Corrosion control.
- 8.1.4.4.17. Interface requirements.
- 8.1.4.4.18. Producibility (including the capabilities of manufacturing processes to meet design requirements).
- 8.1.4.4.19. Affordability.
- 8.1.4.4.20. Information security.

8.1.4.5. A CDR will normally address changes to scope, features and capabilities from those presented at the PDR. The CDR will also identify design and operating requirements or specifications not satisfied by the proposed design. In addition, the following areas should also be included:

- 8.1.4.5.1. Final design data, including detailed design drawings and diagrams.
- 8.1.4.5.2. System safety.
- 8.1.4.5.3. Final analyses and tests.
- 8.1.4.5.4. Detailed mass properties.
- 8.1.4.5.5. External stores compatibility.
- 8.1.4.5.6. Detailed power requirements, subsystems compatibility, and electrical loads analysis.
- 8.1.4.5.7. Updated electromagnetic compatibility.
- 8.1.4.5.8. Strength summary and operating restrictions.
- 8.1.4.5.9. Changes to performance, stability, and control.

- 8.1.4.5.10. Flight test program for Safety of Flight determination.
- 8.1.4.5.11. Operation, maintenance, and inspection instructions.
- 8.1.4.5.12. Project equipment list.
- 8.1.4.5.13. Drawing list.
- 8.1.4.5.14. Lists of engineering analyses, tests, and reports.
- 8.1.4.5.15. Flight test plan.
- 8.1.4.5.16. Updated demodification plan.
- 8.1.4.5.17. Thermal design and constraints.
- 8.1.4.5.18. Human factors.
- 8.1.4.5.19. Corrosion control.
- 8.1.4.5.20. Interface requirements.
- 8.1.4.5.21. Software detailed design.
- 8.1.4.5.22. Producibility (including the capabilities of manufacturing process to meet design requirements).
- 8.1.4.5.23. Affordability.
- 8.1.4.5.24. Information security.
- 8.1.4.5.25. Reliability, Maintainability, and Availability (RMA statistics/projections).
- 8.1.4.5.26. **(Added-EGLINAFB) Airworthiness.** 96 TW CE/DTAs will determine airworthiness of each aircraft modification in accordance with MIL-HDBK-516 and applicable airworthiness instructions. AFMC Form 3, **Component Airworthiness Certification** is used to document individual component airworthiness criteria.

8.1.4.6. The CDR or the final in-house design review establishes the design baseline of the modification.

8.1.5. CCB Approval. CCB approval is authority to proceed with the modification installation. When time is critical and risk is determined by the MEA to be minimal, the CCB authority may provide interim approval to accomplish installation concurrent with engineering and fabrication. (Exercise of this provision does not relieve any final documentation requirements contained herein.) CCB approval is accomplished through the signing of the CCB directive by the CCB Chairperson. CCB approval establishes the configuration baseline for the modification; however, change is a normal part of the modification process, and it is important that local procedures clearly define CCB involvement in design baseline changes. The changes must not affect critical flight systems, such as, flight controls or cockpit instruments, nor can the function of the software go beyond the functional range envisioned when the original T-2 modification was approved. Any alteration to design that meets the Major modification criteria will cause the entire modification to be classified as Major. If that occurs, Major modification procedures apply.

8.1.5. **(EGLINAFB) CCB Approval.** The 96 OG/CC or alternate (see paragraph 7.5.1.) has the final signing authority for the modification. The CCB Chairperson's signature on AFMC Form 244 signifies that the T-2 modification, as was presented to the CCB, is authorized to proceed. After completion of the T-2 modification, the CCB Chairperson will sign the AFMC Form 272 and AFMC Form 273 to indicate that the aircraft can be released for flight.

8.1.6. Modification.

8.1.6.1. Normally, fabrication begins after the CDR for contracted modifications or after an internal design review for in-house modifications. Installation may only occur after CCB approval.

8.1.6.2. After the PCI, the responsible CCB authority ensures final documentation matches the current aircraft configuration.

8.1.6.3. **(Added-EGLINAFB)** In the case of a contractor-prepared T-2 modification, representatives of that contractor will be available to 896 TSS during all phases of the modification. Additionally, 896 TSS will monitor the entire modification installation.

8.1.6.4. **(Added-EGLINAFB)** The 896 TSS will comply with guidance contained in local 96 MXG 0I 21-105, *Accountability and Control of Weapons Alternate Mission Equipment (AME)*, pertaining to modification of AME.

8.1.7. Safety Determination. The SPM is responsible for ensuring design safety and Safety of Flight determination, unless delegated authority to MEA. By approving the modification, the CCB approves the requirements for laboratory, ground, and flight tests, as contained in the modification package.

8.1.7.1. **(Added-EGLINAFB)** The 896 TSS safety focal point, in conjunction with the T-2 modification design engineer, will notify 96 TW/SE when a preliminary hazard analysis or system safety hazard analysis is required.

8.1.8. Demodification. When flight testing is completed, the demodification plan ([paragraph 12](#)), certified during the MEA review and approval process (or as later amended), will be implemented, except as noted in [paragraph 14](#).

8.2. Documentation Requirements. The T-2 modifications will be documented in a modification file that will be maintained by the organization possessing configuration control responsibility for the aerospace vehicles. Follow documentation and TCTO waiver procedures in AFI 21-101, *Air and Space Equipment Maintenance Management*, AFI 21-101_ 21-101 AFMCSUP 1; and the 00-20 Series Technical Orders. For contracted T-2 modifications, the responsible organization will ensure the modification is properly documented according to this instruction by using appropriate tasking in the Statement Of Work (SOW)/Request for Proposal (RFP) while identifying the necessary data in the Contract Data Requirements List (CDRL). Portions of the file may be decentralized (e.g., drawings; Modification Flight Manuals; operation, maintenance, and inspection instructions; etc.); however, references to location of decentralized documents will be maintained in the modification file. A complete modification package will be provided to the gaining organization when an aircraft is transferred. When an aircraft is temporarily assigned to

support test programs at other locations, a MOA between the affected organizations will address the transfer of T-2 modification packages. The modification file will contain all of the following data, if applicable to the modification:

8.2. (EGLINAFB) Documentation Requirements. The 896 TSS will: provide the design and system analysis of modifications; provide planning, scheduling, mod installation, and configuration status accounting; prepare T-2 modification packages documenting the installation of test systems vehicles; assemble the Group A and B items required for accomplishing the aerospace vehicle modification; maintain the file of reproducible T-2 modification packages and supporting technical/engineering documentation; furnish a Technical Source Document to the 40 FLTS for Modification Flight Manual (MFM) development. The 896 TSS will also serve as the office of record for completed modifications. An 896 TSS signature on the AFMC Form 244 signifies that the T-2 modification is within the scope of what can be supported by the 896 TSS. The 896 TSS is also responsible for performing PCIs and signing the AFMC Form 272 (PCI Report) when complete. An 896 TSS signature on AFMC Form 273 (or Form 243) indicates that the T-2 modification is complete (or with exceptions noted on Form 243), all applicable checks (ex. Operational, EMI/EMC, Weapons) were performed with satisfactory results and that the aircraft can be released for flight. The 896 TSS will coordinate with the 96 MXG on the Eglin Form 704, Component Disposition, and Eglin Form 69, Aerospace Vehicle Modification Control Form. Coordination can be completed via electronic forms and email correspondence or via printed forms hand carried between offices. Printed forms can be obtained from the 896 TSS.

- 8.2.1. Table of Contents for the entire modification package.
- 8.2.2. AFMC Form 243, **Temporary Release for Flight Certificate.**
- 8.2.3. AFMC Form 244, **T-2 Modification Configuration Control Board Directive.**
- 8.2.4. AFMC Form 272, **Physical Configuration Inspection (PCI) Report.**
- 8.2.5. AFMC Form 273, **Final Release for Flight Certificate.**
- 8.2.6. Preliminary hazards analysis.
- 8.2.7. Weight and balance data.
- 8.2.8. Inventory and disposition of equipment removed to facilitate the modification.
- 8.2.9. Stress and loads analysis.
- 8.2.10. Aerodynamic analysis.
- 8.2.11. Hydraulic load analysis.
- 8.2.12. Pneumatic load analysis.
- 8.2.13. Flutter analysis.
- 8.2.14. Ejection/jettison analysis.
- 8.2.15. Life support analysis.
- 8.2.16. Uncertified stores flight clearance.
- 8.2.17. Applicable airworthiness criteria and Safe for Flight determination.

- 8.2.18. Electrical loads analysis.
- 8.2.19. Ground support equipment analysis.
- 8.2.20. T-2 modification wire list.
- 8.2.21. On-board calibration procedures.
- 8.2.22. T-2 modification acceptance test plan.
- 8.2.23. System maintenance concept.
- 8.2.24. Group B components maintenance and calibration procedures.
- 8.2.25. Periodic inspection and maintenance requirements.
- 8.2.26. Ground crew preflight procedures.
- 8.2.27. Ground crew operation checklist.
- 8.2.28. Aircrew operation checklist.
- 8.2.29. Modification flight manuals.
- 8.2.29. **(EGLINAFB) Modification Flight Manuals.** The 96 OG will review T-2 modification designs and data packages provided by the 896 TSS. The data package will include a Technical Source Document containing system description and operation. The 896 TSS will supply this no later than two full weeks prior to modification completion. The flying unit will prepare Modification Flight Manuals (MFM) based upon this information as a part of the T-2 modification package. The MFM will be reviewed and endorsed for use in accordance with AFI 11-215 AFMCSUP, *USAF Flight Manuals Program (FMP)*. 96 OG/CC (or as delegated) signature on AFMC Form 244 signifies that the modification meets aircraft operations requirements.
- 8.2.30. Ground crew post-flight procedures.
- 8.2.31. Flight test plan.
- 8.2.32. Aircraft modification worksheets.
- 8.2.33. T-2 modification drawings list.
- 8.2.34. T-2 modification drawings.
- 8.2.35. Photographic records of T-2 modification installation.
- 8.2.36. Orange-bordered AFTO Form 781As, **Maintenance Discrepancy and Work Document.**
- 8.2.37. Design review meeting minutes.
- 8.2.38. CCB meeting minutes.
- 8.2.39. Orange-bordered AFTO Form 95, **Significant Historical Data.**
- 8.2.40. Variances and Request for Variances.
- 8.2.41. ASC/EN coordination for Major modifications.
- 8.2.42. Man-hours and cost documentation.

8.2.43. Project Equipment List

8.3. **(Added-EGLINAFB) . Group A and Group B.** The 896 TSS will assemble the Group A and B items required for accomplishing the aerospace vehicle modification.

8.4. **(Added-EGLINAFB) . Modification Sustainment.** The 896 TSS will: provide the pre-flight, post-flight, and maintenance of airborne instrumentation systems; provide the design and analysis of modifications; provide planning, scheduling, mod installation, and configuration status accounting; prepare T-2 modification packages documenting the installation of test systems vehicles; maintain the file of reproducible T-2 modification packages and supporting technical/engineering documentation; furnish a Technical Source Document to the appropriate unit for Modification Flight Manual (MFM) development.

8.5. **(Added-EGLINAFB) . T-1 Modifications.** The 40 FLTS/CAX Modification Manager or 53 TMG/TO Configuration Manager will coordinate with 896 TSS regarding the installation of T-1 Modifications on aircraft with existing T-2 modifications. The 896 TSS will review the T-1 Modification Package to evaluate potential impacts of the modification, such as mechanical interference problems and AC/DC electrical load requirements. The Modification/Configuration Manager will ensure that adequate funding is provided to 896 TSS to conduct this review.

8.6. **(Added-EGLINAFB) . Time Compliance Technical Order (TCTO) .** The 96 MXG/MXMK will coordinate each aircraft Time Compliance Technical Order (TCTO) design with 896 TSS to evaluate potential effects on installed T-2 modifications. In addition, if a TCTO involves a software mod, 96 OG/CC must initiate checkout of that standard software and all other software T-2 modifications incorporated into aircraft systems to ensure their continued operability.

9. Post Modification Acceptance (PMA). A PMA will normally be completed prior to the PCI and before issuance of a flight release. The PMA consists of a ground-based checkout of the modification (when possible) to verify the following:

9.1. System operation.

9.2. Compliance with applicable airworthiness criteria Safety of Flight determination, to include, completion of electromagnetic interference and electromagnetic compatibility tests of the modification.

9.3. Modification satisfies the users" requirements as specified in the Program Introduction (PI) Document, Engineering Change Proposal (ECP), or AFMC Form 244.

9.4. Adequacy of the operation, maintenance, inspection instructions, and associated work cards. The PMA requirements will be recorded on an orange-bordered AFTO Form 781A. or a headquarters approved, locally developed form. All discrepancies will be reported to the CCB. The PMA findings will be considered before release for flight test or issuance of flight releases.

9.5. **(Added-EGLINAFB) . Flight Release.** At the completion of the T-2 modification the 96 OG/CC or CD will review the modification installation, documentation, and MFM, and sign the AFMC Form 273 (or AFMC Form 243) to indicate that the aircraft can be released for flight.

10. Physical Configuration Inspection (PCI). A PCI will be conducted for each modification, design baseline change, or demodification before it is released for operation. The PCI is a detailed inspection of the modification to ensure that the installation was done as prescribed by the approved modification package. It requires, as a minimum, an inspection of hardware and documentation to include engineering drawings, approved changes, maintenance instructions, work cards, and weight and balance mass properties. The PCI may be done in phases or when the work is completed, depending upon the magnitude of work. When a PCI is completed, the organization performing the inspection will certify its accomplishment. All discrepancies observed during a PCI will be recorded on an orange-bordered AFTO Form 781A and reported to the cognizant CCB. The PCI findings will be considered before Final Flight release for flight test or issuance of the final Safety of Flight determination. The PCIs will be documented on an AFMC Form 272.

10.1. **(Added-EGLINAFB)** . Physical Configuration Inspections will be accomplished as follows:

10.1.1. **(Added-EGLINAFB)** 96 MXG/MXQ will inspect 100 percent of Group A and B installations and de-modifications after completion of inspections referenced in paragraphs 10.1.1., and 10.1.2., of this supplement.

10.1.2. **(Added-EGLINAFB)** The MOD Installation Flight, 896 TSS/RMS, will schedule the PCI sign-off upon completion of modification/de-modification and prior to release for operation to include power on checks. The 896 TSS/RNMS or a designated representative will provide each organization with advance notification of the time and place the sign-off is to occur. Representatives of 96 OG/CC, 96 TW/SEF, 896 TSS, and 96 MXG/MXQ are required to participate in the PCI sign-off.

10.1.3. **(Added-EGLINAFB)** Discrepancies found during PCIs, if not correctable, will be presented to the CCB to determine if military specifications should be tailored or waived.

10.2. **(Added-EGLINAFB)** When an aircraft is modified at a contractor facility, representatives from 896 TSS, Quality Assurance (96 MXG/MXQ), 96 OG/CC, and Safety (96 TW/SE) will be sent on temporary duty (TDY) to the contractor facility for physical configuration inspection (PCI) and flight release. As a minimum, Quality Assurance and 896 TSS CE/DTAs will review modifications to 96 TW aircraft accomplished by other Air Force agencies at facilities not located at Eglin AFB (e.g., speed-line modifications accomplished at other Air Force facilities).

11. Safety Requirements. As a minimum, T-2 aircraft modifications will incorporate the following requirements:

11.1. Group B Safety of Flight Determination. The government PM, initiating government organization, or the government organization providing the equipment will determine the Safety of Flight of the Group B components and identify associated hazards and limitations. The component's determination will be documented using the AFMC Form 3, *Component Safety of Flight Certificate*. Final determination of Safety of Flight will rest with the T-2 MEA lead if delegated by the SPM.

11.1. **(EGLINAFB) Group B Safety of Flight Determination** . When 96 TW and 53 WG aircraft depart Eglin AFB for a significant period of time (programmed depot maintenance

(PDM), extended TDY, loan, etc.), the Group B components that are not required to be in the aircraft during the time away from Eglin AFB will be removed prior to departure. Subject Group B components will be identified by an 896 TSS memorandum for removal and storage by the designated activity. Aircraft weight and balance records will be adjusted accordingly. Upon return to Eglin AFB, the Group B components will be reinstalled, 96 MXG/MXQ representatives will inspect/examine the reinstalled configuration, and all existing modifications will be operationally checked and restored before mission scheduling.

11.2. System Safety. The engineering design must include safety program requirements. These requirements will be determined by tailoring the current version of MIL-STD-882, *Department of Defense Standard for System Safety*, to the complexity of the modification and the degree of risk created by the modification. The SOWs/RFP will specify those safety program tasks required for the modification or equipment (Group B) development. Ensure the appropriate tasking is included for both modification and demodification when uses of known or potentially hazardous agents are being considered.

11.3. Safety Review Board (SRB). The MEA will ensure a SRB, or equivalent review, is conducted to provide formal safety reviews of ground and flight-test plans associated with the modification (references: AFMCI 99-103, *Test Management*, and AFI 91-202_AFMCSUP1, *The US Air Force Mishap Prevention Program*). The SRB will include representatives from safety, engineering, operations, project personnel, maintenance, cognizant test organization(s), and other disciplines as appropriate, including the SPM for Major modifications. Utilize appropriate airworthiness criteria ([paragraph 8.1.2.1.6](#)) as a checklist for Safety of Flight assessments.

11.3.1. **(Added-EGLINAFB)** Requirements for Safety Review Board (SRB) action regarding modifications will be processed by the 96 TW CCB since all safety and technical disciplines are represented at the CCB or are available on call and the MEA is a CCB member.

12. Demodification Plan.

12. (EGLINAFB) Demodification Plan. The organization/individual (normally a programming or test engineer) that initiated the original T-2 modification requirement is responsible for initiating the de-modification or revalidation request. An AFMC Form 244 requesting de-modification or revalidation will be initiated upon completion of flight testing and prior to close-out of the test against which the modification is validated. Requests for de-modification will be processed through the same personnel/process as the original modification request. The de-modification should be accomplished prior to test closeout if possible. The 896 TSS will notify the RTO programmer if demodification prior to closeout is not possible. Demodification charges will be assessed immediately after installation and checkout is complete including AFMC Form 244, **Temporary Release for Flight Certificate**, sign-offs. The demodification plan for 96 TW-installed modifications consists of the estimated completion of the demodification schedule shown on the AFMC Form 244. The demodification package will be prepared when the test is complete and demodification request, AFMC Form 244, has been forwarded to 846 TSS.

12.1. This plan details the procedures necessary for return of the test vehicle to its premodification configuration. The demodification plan must be as complete as possible and should address such items as funding, disposition of removed Group A and Group B assets,

location of basic aircraft equipment removed to accommodate the modification, and other areas which may not have been resolved during the modification. A demodification plan will contain enough detail to allow the MEA to approve the concept. The organization funding the modification is responsible for funding the demodification unless specific arrangements are formalized for other disposition.

12.2. The demodification plan must be reviewed, and approved by the MEA, as necessary, before the actual demodification. The demodification must be done after flight test is completed, unless the CCB determines that all or portions of the modification should be preserved to support known future test requirements or general support test programs (see **paragraph 14** for revalidation).

12.3. The IMR procedures do not apply to demodification unless specifically requested by the MEA.

12.4. The demodification plan will include estimates of man-hours and cost required to return the modified aerospace vehicle or support equipment to its premodified configuration.

12.5. The plan will address necessary action for parts that have been repaired or altered through demodification. These parts should be marked IAW the 00 series TOs and will not commingle with standard items.

12.6. **(Added-EGLINAFB)** 896 TSS will be responsible for the disposition of equipment removed during de-modification. Equipment removed from 53 TEG aircraft should be coordinated with the 53 WG Modification Manager. 896 TSS will comply with guidance contained in local MXG OI 21-105, *Accountability and Control of Weapons Alternate Mission Equipment (AME)*, paragraph 2.4.1.3.5, pertaining to demodification of AME.

13. Flight Releases.

13.1. Final Flight Releases. The responsible CCB authority will issue an AFMC Form 273 for the aircraft after a PCI and positive Safety of Flight determination has been accomplished.

13.2. Temporary Flight Releases. When a final flight release cannot be issued (e.g., an incomplete modification/demodification not affecting flight safety or a program requirement), then an AFMC Form 243 of up to 180 days may be issued by the responsible CCB authority. Subsequent temporary flight releases may be issued, as deemed necessary, by the responsible SPM or CCB authority if delegated. Temporary flight releases cannot be utilized to retain residual T-2 modifications after flight testing is completed. (see **paragraph 12.2**)

13.3. Major Modification Flight Releases. The MEA will provide recommendations for release or non-release to the responsible program SPM, unless the SPM has delegated Safety of Flight determination to the MEA.

14. Modification Revalidation.

14.1. The CCB authority may elect to retain all or portions of the modification through revalidation. Revalidation must be accomplished at least annually or at the completion of each test program:

14.1.1. To preserve some portion of the modification to be used on another program.

14.1.2. If portions of the modification cannot be removed without extensive damage and repair to the aerospace vehicle or system.

14.2. Revalidations can be made to either of the following:

14.2.1. An existing modification program.

14.2.2. A general test support program.

14.3. For revalidation due to paragraph **14.1.2**, the CCB authority will gain a one-time concurrence from the SPM prior to authorizing the revalidation. The CCB will ensure that analyses, tests, and installation actions necessary to qualify the residual modification comply with the current design criteria for permanent modifications and the airworthiness certification basis for the aircraft. In the event that the SPM does not concur, the test article will be fully demodified and the organization funding the modification will be responsible for funding the demodification.

14.4. Revalidation will be reviewed and approved by the responsible CCB authority who will ensure adequate management and technical controls exist to document the residual configuration. The responsible SPM (if applicable) will advise the CCB on the affected areas of a Major modification.

14.5. **(Added-EGLINAFB) Revalidation of Modifications.** Revalidations accomplished exclusively for changing the Job Order Number (JON), with no change to the modification, will not require CCB review, but will require an AFMC Form 244 for the revalidation. Required signatures are as follows: 96 TW CCB Chairperson, 896 MEA, 40 FLTS Configuration Manager or 53 TMG/TO Configuration Manager.

15. Contracted Modifications and Lease or Loan Agreements.

15.1. All organizations utilizing contractual support to accomplish T-2 modifications will comply with this instruction.

15.1.1. Purchase Request must be coordinated through the organization having test vehicle modification management responsibility during the modification installation to ensure the appropriate T-2 modification design standards, airworthiness criteria, and data are included. Instrumentation installed by contractors to support Test and Evaluation (T&E) is considered a T-2 modification regardless whether the aircraft has been accepted or rejected without a design baseline.

15.2. If a lease or loan agreement does not specifically require complete demodification upon lease or loan termination, or if the aerospace vehicle is to be returned in a modified configuration, a complete T-2 modification package will accompany the aerospace vehicle.

15.3. The responsible SPM will coordinate on all contracts, leases, and loan agreements involving aircraft requiring modification installation, flight test, or demodification for which the government has assumed the risk of loss, damage, or destruction. This includes aircraft that have not undergone final acceptance by the government and aircraft provided as government furnished property. The documentation of the responsible SPM coordination must comply with AFI 21-101 and AFI21-101_AFMCSUP1.

15.4. **(Added-EGLINAFB) Contractor designed/installed Modifications.** T-2 modifications to be designed/installed by contract on 96 TW aircraft, or aircraft to be

subsequently assigned to 96 TW, will be initiated by the program manager or RTO. Modification PCIs and acceptance responsibilities for contractor efforts will be defined in the contract/statement of work. DCMA is the government activity responsible for administration of contractor(s)'s performance under US Government contracts on Eglin (ref: DLAH 4105.4). However, this administration responsibility must either be set forth in the contract or delegated by offices of primary administration.

16. Funding Reimbursement. Modification and demodification costs of an aerospace vehicle will be reimbursed by the requesting activity using locally established funding processes or processes similar to AFMCI 65-602, *Uniform Reimbursement and Pricing Procedures*. When modifications are done for organizations outside of AFMC, the agreements will call for reimbursement similar to the procedures in AFMCI 65-602.

17. Local Supplements. AFMC field activities may prepare locally approved supplements and forms, as required, to detail procedures. These local supplements must be coordinated through HQ AFMC/LGM prior to unit Group-level approval. Once approved, send one copy of the official supplements and forms to HQ AFMC/LGMM for reference.

18. List of Prescribed Forms. DD Form 250, Orange-bordered AFTO Form 95, Orange-bordered AFTO Form 781A, AFMC Form 3, AFMC Form 243, AFMC Form 244, AFMC Form 272, and AFMC Form 273.

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

AFI 21-101, *Aerospace Equipment Maintenance Management*
(Added-EGLINAFB) AFI 11-215, *USAF Flight Manuals Program, AFMC Supplement*
(Added-EGLINAFB) AFI 21-101, *Aircraft and Equipment Maintenance Management*
AFI 21-101_AFMCSUP1, *Air and Space Equipment Maintenance Management*
(Added-EGLINAFB) AFI 62-601, *USAF Airworthiness*
AFI 63-104, *The Seek Eagle Program*
AFI 63-1101, *Modification Management*
AFI 91-202, *The US Air Force Mishap Prevention Program and AFMC Supplement 1*
AFI 16-401, *Designating and Naming Defense Military Aerospace Vehicles*
AFMCI 65-602, *Uniform Reimbursement and Pricing Procedures*
(Added-EGLINAFB) 96 MXG OI 21-105, *Fabrication Program*
(Added-EGLINAFB) AFMAN 33-363, *Management of Records, 1 March 2008*
AFMCI 99-103, *Test management*
AFMC Pamphlet 63-104, *IWSM Configuration Management Implementation Guide*
AFPD 62-6, *USAF Aircraft Airworthiness Certification*
AFPD 63-1, *Acquisition System*
(Added-EGLINAFB) MIL-HDBK 516, *Airworthiness Certification Criteria*
MIL-HDBK-61, *Configuration Management Guidance*
MIL-HDBK-514, *Operational Safety, Suitability, & Effectiveness for the Aeronautical Enterprise*
MIL-HDBK-516, *Airworthiness Certification Criteria*
MIL-STD-882, *Department of Defense Standard Practice for System Safety*
MIL-STD-27733, *Modification and Marking Requirements for Test Equipment in Aerospace Vehicles and Related Support Equipment*

Prescribed Forms

(Added-EGLINAFB) Eglin Form 704, *Component Disposition*
(Added-EGLINAFB) Eglin Form 69, *Aerospace Vehicle Modification Control Form*

Adopted Forms

(Added-EGLINAFB) AFMC Form 3, *Component Airworthiness Certification*

(Added-EGLINAFB) AFMC Form 243, *Temporary Release for Flight Certificate*

(Added-EGLINAFB) AFMC Form 244, *T-2 Modification Configuration Control Board Directive*

(Added-EGLINAFB) AFMC Form 272, *Physical Configuration Inspection (PCI) Report*

(Added-EGLINAFB) AFMC Form 273, *Final Release for Flight Certificate*

(Added-EGLINAFB) AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

AFFTC—Air Force Flight Test Center (Edwards AFB CA)

AFI—Air Force Instruction

AFJI—Air Force Joint Instruction

AFMC—Air Force Materiel Command

AFMCI—Air Force Materiel Command Instruction

AFPD—Air Force Policy Directive

AFSEO—Air Force SEEK EAGLE Office (Eglin AFB FL)

AFTO—Air Force Technical Order

ASC/EN—Aeronautical Systems Center, Engineering Directorate (WPAFB OH)

CCB—Configuration Control Board

CDR—Critical Design Review

CDRL—Contract Data Requirements List

ECP—Engineering Change Proposal

FAA—Federal Aviation Administration

FAR—Federal Acquisition Regulation

GFE—Government Furnished Equipment

GFP—Government Furnished Property

HQ AFMC—Headquarters Air Force Materiel Command

HQ AFMC/LGMM—HQ AFMC Director of Logistics and Sustainment, Base-Level Maintenance Division

HQ USAF—Headquarters United States Air Force

IAW—In Accordance With

IMR—Independent Modification Review

IOT&E—Initial Operational Test and Evaluation

MEA—Modification Engineering Authority

MIL-STD—Military Standard

MOA—Memorandum of Agreement
PCI—Physical Configuration Inspection
PDM—Programmed Depot Maintenance
PDR—Preliminary Design Review
PHA—Preliminary Hazard Analysis
PI—Program Introduction Document
PM—Program Manager
PMA—Post Modification Acceptance
RPV—Remotely Piloted Vehicle
RTO—Responsible Test Organization
SC—Statement of Capability
SOW—Statement of Work
SPM—System Program Manager
SRB—Safety Review Board
T&E—Test and Evaluation
T-2—Temporary 2
T.O—Technical Order
UAV—Unmanned Aerial Vehicle

Terms

AFMC Test-Bed Aircraft—An aerospace vehicle that is assigned to AFMC for the purpose of providing long-term general test-bed capability in support of research and development testing, as well as operational testing and evaluation. This definition does not apply to an aerospace vehicle assigned to AFMC from another MAJCOM for a limited test period; that is, in support of a specific program for a specified duration.

Airworthiness Certification Basis—This is the subset of MIL-HDBK-516 airworthiness certification criteria and/or FAA type certifications that have been identified as applicable for the system being certified.

Component Safety of Flight Certificate (AFMC Form 3)—Verification that sufficient engineering or flight tests have been done to ensure safe flight of an aerospace vehicle or component within a specified envelope. This determination must also address the crashworthiness of the article.

Certification of Stores—The determination of a specific store or aircraft compatibility and the formal publication of all information necessary for appropriate employment of the store in the applicable technical and flight operations manuals.

Configuration Control Board (CCB)—A Board composed of representatives from program or project functional areas; such as, safety, maintenance and logistics, engineering, operations,

quality assurance and control, RTO, ASC/EN (Major modifications), contracting, configuration management, and using or supporting organizations. The Board recommends approval or disapproval of proposed modifications to the CCB Chairperson. The Chairperson makes the final decision on all modifications, design baseline changes, revalidations, and demodifications unless otherwise directed by command policy. The CCB issues a directive to implement its decision (AFMC Form 244).

Contract Data Requirements List (CDRL)—The Contract Data Requirements List, DD Form 1423, **Contract Data Requirements List** is the standard format for identifying potential data requirements in a solicitation and deliverable data requirements in a contract. The CDRL is used to define data requirements, delivery requirements, approval criteria, references to tasking documents, and distribution statements. The compilations of specific CDRLs are exhibits to the contract. The CDRLs are specified as contract line items. With the exception of data specifically required by Federal Acquisition Regulation (FAR) or Defense Federal Acquisition Regulation (DFARS), the CDRL is the contractual instrument used to establish data requirements.

Critical Design Review (CDR)—A formal technical review of the detailed design of a modification. It will be conducted before fabrication or production design release so the detail design solutions satisfy performance requirements set by the PDR. Incremental reviews may be conducted instead of a single CDR.

Design Baseline—The baseline established by either the CDR (for contracted modifications) or the final in-house design review. This baseline delineates the necessary design interface requirements between the aerospace vehicle and the modification components (Group A and Group B).

Demodification—Removal of a modification (Group A and Group B components) related to a specific program/project.

EB-Coded Aircraft—Contractor test/test support: Aerospace vehicles provided to contractors as GFP in support of a prime Air Force contract. These aerospace vehicles will be utilized for complete system evaluation, testing to improve the capabilities of the designated aerospace vehicles, support of specific test programs, or production support. This code is for use as possession reporting identifiers only.

Final Flight Release—An AFMC Form 273 is issued to formally release an aerospace vehicle for mission use based upon sufficient engineering and flight tests to ensure safe flight within a specified envelope. Final flight release implies completion of the modification installation and documentation or demodification process.

Flight Clearance—An authorization for flight after appropriate engineering analyses have been made that an aircraft and store combination precludes an unacceptable risk for a specific, limited purpose of a munition or other external store. The flight clearance attests to the physical, mechanical, electrical, and aerodynamic compatibility of the aircraft-store configuration. The flight clearance will specify flight limits for the loading configuration desired and tolerances on store physical properties to include weight, center of gravity, moments of inertia, and employment.

Functional Baseline Configuration—The initial configuration of the modification as approved by the CCB. This configuration reflects the functional requirements associated with the

modification as described in the program directive, PI, ECP, or other modification program requirement documents.

Group A—The items to be installed as part of a modification to support, secure, interconnect, or accommodate the Group B components. In general, anything that cannot be readily removed, provides support, or provisions for equipment installation is considered Group A. Examples of Group A items are: electrical wiring, power junction boxes, brackets, oxygen lines, signal wiring, interconnect cabling, waveguide, racks, beams, longerons, skins, spars, stringers, intercostals, plates, seats, mounts, trays/slides, fairings, lighting, and other structural support equipment for Group B items.

Group B—The equipment installed as part of a modification which is readily removable. Examples of Group B items: computers, printers, controllers, digital recorders, digital formatters, avionics encoders, antennas, radomes, and, in general, “black boxes.”

Independent Modification Review (IMR)—A detailed technical review of Major modifications by ASC/EN personnel and the weapons system SPM of the modification engineering data, impacted air vehicle characteristics, drawings, analyses, test plans, and changes to related flight manuals and operating and maintenance instructions required to ensure safe operation. Personnel having no prior involvement in the modification will accomplish this review.

Initial Operational Test and Evaluation (IOT&E)—The first phase of operational test and evaluation conducted on preproduction items, prototypes, or pilot production items and normally completed prior to the first major production decision. It is conducted to provide a valid estimate of a system's operational effectiveness and operational suitability prior to the first major production decision.

Memorandum Of Agreement (MOA)—A document signed by authorized representatives of organizations which are working together such as a program office and a test and evaluation activity. The agreement establishes the organizational relationships and agreements.

Modification Engineering Authority (MEA)—The engineering activity responsible for the safe integration of the T-2 modification into the aerospace vehicle.

Physical Configuration Inspection (PCI)—A detailed inspection of the modification to ensure the modification has been installed as prescribed in the modification package.

Post Modification Acceptance (PMA)—A power up, ground test, and functional checkout of the equipment/modification to the maximum extent possible. During this system checkout, operation, maintenance, and inspection instructions will be evaluated for adequacy, and electromagnetic interference/electromagnetic compatibility test will be accomplished as required.

Preliminary Design Review (PDR)—A formal technical review of the basic approach for a modification design. It will be held after the preliminary design efforts are done, but before start of the detailed design.

Preliminary Hazard Analysis (PHA)—An analysis of hazardous conditions as an initial risk assessment of a concept or system identifying safety critical areas, evaluating hazards, and identifying the safety design criteria to be used.

Preliminary Hazard List—A list which identifies potential hazards associated with the modification (see AFMC Form 244).

Program Introduction (PI) Document—The PI document officially introduces the test program to the support agencies. The PI is a long-range planning document submitted by a potential user to the support agency immediately upon identification of the scope and duration of program activity. The potential user should submit the PI using best available information, enabling the support agency to initiate resource and technical planning. This information, while sometimes fragmentary and incomplete, is of substantial value to the support organization in determining the scope of the program. For minor or short lead-time programs, the PI is designed to eliminate further documentation except for conduct of specific tests. The PI is submitted by a user to a Range or Test Center to officially identify test support requirements. It should be initiated early enough to interface with test activity, fiscal, and planning cycles. The individual test activity should be consulted for assistance in preparation. When appropriate, the using command should assist in preparing the PI.

Program Manager (PM)—The designated individual assigned by an organization (i.e., the organization making the modification request in support of a project flight test) to oversee the project accomplishment.

Remotely Piloted Vehicle (RPV)—An aerospace vehicle that is remotely controlled. NOTE: For this instruction, an RPV is not considered a store and does not include guided bombs or missiles.

Responsible Test Organization (RTO)—The organization responsible for accomplishing the test program.

Revalidation—A method by which all, or portions, of a T-2 modification are retained after the project is completed. Documentation records are annotated to reflect the residual configuration as part of another modification program or a general test support program.

Request for Variance (RFV)—A request to determine the hazards and assess the risk of the proposed variance from or waiver of a requirement, or a specified method or process. The change in the risk involved in accepting the variance shall be identified when variance request, alter the requirement, method, or process will reduce the level of safety of the system.

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. The intent of the Safety-of-Flight assessment is to show that appropriate risk management has been completed and the level of risk (hazards to system, personnel, property, equipment, and environment) has been appropriately identified and accepted by the managing activity prior to first flight of the air system. Component Safety of Flight is documented on AFMC Form 3.

Safety Review Board (SRB)—A board convened to review the project flight test plan and the Safety of Flight determination flight test plan (if applicable) to ensure all hazards have been identified and considered.

System Program Manager (SPM)—The designated individual with responsibility and authority to accomplish program objectives for development, production, and sustainment to meet the user's operational needs. Depending on the phase of the system (acquisition or sustainment), the SPM will normally reside at either a Product Center or Air Logistics Center (ALC). If a program is in acquisition, the SPM will be at the Product Center and will be supported by a System Support Manager (SSM) normally located at an ALC. If a program is in Sustainment, the SPM

will normally reside at the appropriate ALC or other Sustainment location and will be supported by a Developmental System Manager (DSM) normally located at a Product Center. In all cases, except for Acquisition Category (ACAT) 1D programs, the SPM is the supported commander.

Software—A set of computer programs, procedures, and possible associated documentation concerned with the operation of a data processing system (compilers, library routines, manuals).

Statement of Capability (SC)—The SC is an activity's formal response to a request for test support listing capability and cost which, when signed, is a formal commitment of resources.

Stores—Any item suspended from a standard weapons station or in the bomb bays of an aerospace vehicle (e.g. bombs mounted on pylons, electronic countermeasure pods, missiles, external fuel tanks, and instrumentation pods and their suspension equipment).

Temporary Flight Release—AFMC Form 243 issued for no more than 180 days for an aerospace vehicle, due to incomplete installation or documentation of a T-2 modification.

Unaccepted Aerospace Vehicle—Aerospace vehicles being procured on an Air Force contract that are past final assembly, have not been accepted as completed per contract requirements, and a DD Form 250 has not been signed to accept the vehicle.

Uncertified Store—The particular aircraft-store configuration is not authorized in Section 5 of the Flight Manual (-1 T.O.) or wherever aircraft-store limitations are depicted for the aircraft.

Unmanned Aerial Vehicle (UAV)—An unmanned aerospace vehicle with autonomous guidance and control capability. NOTE: For this instruction, a UAV is not considered a store and does not include guided bombs or missiles. However, a UAV can carry stores as defined in this instruction.

XY-Coded ACFT—Leased, or loaned aerospace vehicles or trainers on lease to commercial agencies or loaned to other governmental agencies for accomplishment of test or other projects. This code is for use as possession reporting identifiers only.

Attachment 2

T-2 MODIFICATION LESSONS LEARNED

The following lessons learned have been identified to assist program managers involved in T-2 modifications in developing effective T-2 modification program plans. The listing provides questions that are presented in chronological sequence, which provides the user with an outline that follows the modification process. Since this listing is not necessarily exhaustive, the individual initiating the T-2 modification is encouraged to contact the activity performing the T-2 modification to learn more about local lessons learned.

A2.1. Initial Contact With RTO.

A2.1.1. Has the planning PI been accomplished? Not using a PI for planning normally results in higher cost due to confusion as to the job content.

A2.1.2. Has the test approach been agreed upon? A vague test approach often results in high cost due to out-of-scope changes for reconfiguration and additional instrumentation.

A2.1.3. Has aircraft availability and suitability been addressed? Aircraft that are not operationally suitable or supportable, especially at off-site locations, have increased program costs in the past.

A2.1.4. Have certification requirements been established and coordinated?

A2.1.5. Have the requirements for utilization of existing DoD ranges, facilities, or other resources to support the T-2 modification been addressed (e.g. waivers, etc.)?

A2.2. Group B.

A2.2.1. Has a Group B Safety of Flight determination been addressed? Rejection due to lack of analyses after design have, in the past, greatly increased program costs and stretched out modification schedules. Non-flight qualified hardware must be identified early in the program to ensure correct installation during the modification.

A2.2.2. Has AFSC DH 1-X, Design Handbook, been used to design Group B components? In the past, non-use of this design handbook has resulted in high recertification and documentation costs.

A2.2.3. Have deliverable Group B components and data been addressed as items for delivery to the government under the Group B, CDRL?

A2.2.4. If Group B components cannot be delivered in time for use during modification, have arrangements been made for high fidelity (accurate size and mounting dimensions, electrical, waveguide, and cooling interfaces) Group B mockups? Failure of the mockup to accurately reflect Group B configuration has resulted in Group A rework with impact on program cost and schedule.

A2.2.5. Have spare components been identified and allowances been made for procurement?

A2.2.6. Have arrangements been made for the contractor to supply peculiar system equipment and components to the modification facility?

A2.2.7. Have substitutions for long-lead items been addressed?

A2.2.8. Have the modification and the Group B component delivery schedules been integrated?

A2.2.9. Has contractor peculiar instrumentation been identified? Lack of identification usually results in increased costs due to out-of-scope changes.

A2.2.10. Has the organization with aerospace vehicle T-2 modification CCB authority coordinated on all Group B contractual documents prior to contract award?

A2.3. Modification Planning.

A2.3.1. Have the modification requirements been clearly defined and conveyed to the activity performing the modification design? Failure to clearly define and convey the design requirements, coupled with requirement changes, are a significant source of rework. This will result in increases to modification program cost and schedule.

A2.3.2. Has complete funding for the modification been identified by source and fiscal year?

A2.3.3. Has demodification funding been identified by source and fiscal year?

A2.3.4. Is the modification a Major modification? If so, has consideration been given to independent modification review, ASC/EN requirements, SPM coordination, documentation, and contractor support for the modification?

A2.3.5. Has a decision been made to design the modification in-house or through a contractor?

A2.3.6. Has aircraft assignment by tail number been done?

A2.3.7. Is the flight testing of the modification considered hazardous? If so, has HQ AFMC/LGM been notified?

A2.3.8. Have modification marking, master power switch installation, and polyvinyl chloride (PVC) wiring (described in MIL-STD-27733, *Modification And Marking Requirements For Test Equipment In Aerospace Vehicles and Related Support Equipment*) been identified?

A2.3.9. Does the present modification schedule have any conflicts between Group B delivery, aircraft modification, and requirement for use of the vehicle for flight test? Have modification, post modification, maintenance interface, and checkout schedules been developed?

A2.3.10. Has the CCB authority been determined?

A2.3.11. Has the system safety preliminary hazard analysis been performed? Use of this technique often finds system deficiencies.

A2.3.12. Have the Safety of Flight determination flight test requirements been defined (pace, chase, photographic requirements, required test results, test technique, and schedule)?

A2.3.13. Have the responsibilities for Government Furnished Equipment (GFE) instrumentation been outlined (supply, format, calibration, and data reduction)?

A2.3.14. Has support GFE, such as, special aerospace ground equipment, including suitable substitutes and spares, been identified?

A2.3.15. Has an off-site support or range agreement been coordinated (special ramp and hangar facilities, safety zones, and power requirements)?

A2.3.16. Has an environmental assessment been done?

A2.3.17. Have radio and telemetry frequencies been coordinated with appropriate agencies?

A2.3.18. Have other support requirements, such as special construction, rehabilitation, new range facilities, or special use simulators, been identified?

A2.3.19. Have flight performance and operational systems impacts been carefully considered?

A2.3.20. Are there any known requirements for military specifications? Many military specifications have been deleted, therefore, a waiver may be required to invoke a military specification.

A2.3.21. Are there any known requirements for waiver of military specifications?

A2.3.22. Has consideration been given to Programmed Depot Maintenance impacts coming due during the modification installation duration? This issue can result in schedule and cost impacts if the modification Group B equipment must be removed and reinstalled to support aircraft maintenance. These costs are normally borne by the organization requesting the modification.

A2.3.23. Have fabrication and assembly processes been identified and their capabilities assessed and/or have constraints related to fabrication and assembly processes been communicated to the activity performing the design? Failure to consider manufacturing process capabilities during the design process often results in expensive rework of designs and/or manufacturing.

A2.4. Modification Phase.

A2.4.1. Have firm Group B delivery schedules been set up and have these schedules been checked for impact on the overall modification timetable?

A2.4.2. Have long-lead time items been delivered or reasonable substitutes found, or has a delivery schedule been agreed to that does not affect the modifications?

A2.4.3. Has design data for the modification been approved?

A2.4.4. Have mockups been delivered if it was agreed that the Group B items would not be available for the modification, fabrication, and installation phase?

A2.4.5. Have quality assurance inspections been scheduled and accomplished (in progress, blind area closeout, final, and functional)?

A2.4.6. Has the detailed fabrication and installation plan been coordinated?

A2.4.7. Has on-site contractor support been obtained?

A2.4.8. Have base support agreements at test operating locations been completed?

A2.4.9. Have maintenance support agreements at operating locations been completed?

A2.4.10. Has special maintenance support equipment been delivered and have special maintenance agreements been formalized?

A2.4.11. Have disposition instructions (storage, shipment, turn-in) been developed and implemented for basic aircraft equipment removed to accommodate the modification? Do these instructions address reinstallation requirements at demodification?

A2.4.12. Have control measures, such as, caution and warning notes identified in the PHA and failure mode, effects, and criticality analysis that affect operations and maintenance, been incorporated in modification flight manuals and maintenance instructions?

A2.4.13. Have deficient fabrication and assembly processes been improved, new processes developed, and/or designed robustness improved to ensure all such processes are capable?

A2.5. Demodification.

A2.5.1. Has a demodification schedule and funding profile been coordinated?

A2.5.2. Have requirements for functional check flights after completion of the demodification been identified?

A2.5.3. Has a disposition of the removed Group A and Group B components been coordinated?

A2.5.4. Has the possibility of revalidation been considered versus demodification?

A2.5.5. Have follow-on test requirements been identified?

A2.5.6. Has the impact of the demodification on other test programs been identified?

A2.5.7. Has a return agreement to other major commands (assumes aircraft not from AFMC inventory) been completed?

A2.5.8. Have transfer inspection requirements been identified?

A2.5.9. Has a requirement for revalidation of flight and technical manuals been addressed?

A2.5.10. Have residual special maintenance requirements been addressed?

A2.5.11. Has recertification of basic aircraft systems been addressed if those systems were affected by the modification?

A2.5.12. If the demodification requires the reinstallation of standard aircraft equipment (aircraft-21 equipment, such as an external tank), has re-procurement of the aircraft equipment been considered?