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AIR MOBILITY COMMAND

AIR MOBILITY COMMAND
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FABRICATION PROGRAM

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This instruction implements Air Force Policy Directive 21-1, *Maintenance of Military Materiel*, and establishes guidance consistent with Department of the Air Force Instruction (DAFI) 21-101, *Aircraft and Equipment Maintenance Management*, and Air Force Instruction (AFI) 21-131, *Joint Oil Analysis Program (JOAP).* This instruction provides guidance and direction necessary to develop an effective Aircraft Metals Technology (AMT) Program, Nondestructive Inspection (NDI) Program and Aircraft Structural Maintenance (ASM) Program. This publication is applicable to all Air Mobility Command (AMC) active-duty units, AMC Air Reserve Component (ARC) Classic Associate units, Air Force Reserve Command (AFRC), Air National Guard (ANG) upon mobilization and/or AMC led classic AFRC and ANG associations. This publication does not apply to the United States Space Force. Ensure all records generated as a result of processes prescribed in this publication adhere to AFI 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Contact supporting records managers as required. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command. Supplements to this instruction will not lessen the requirements nor change the basic content or intent of this instruction. Process supplements in accordance with (IAW) DAFI 90-160, *Publications and Forms Management*. The authorities to waive wing level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, T-3") number following the compliance statement. See Department of the Air Force Manual (DAFMAN) 90-161, *Publishing Processes and Procedures,* for description of the authorities associated with

the Tier numbers. Submit requests for waivers through the chain of command to the appropriate tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items using the DAF Form 679, *Department of the Air Force Publication Compliance Item Waiver Request/Approval*, to HQ AMC Maintenance Division (AMC/A4M) using the following: **AMC.A4MM.Fabrication@us.af.mil**. See **Attachment 1** for a glossary of references and supporting information. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Department of the Air Force.

SUMMARY OF CHANGES

Major changes include the introduction of additive manufacturing, aircraft battle damage repair, aircraft standard markings and deviations, aircraft welding certification, and local manufacture.

Chapter 1

AIRCRAFT METALS TECHNOLOGY PROGRAM (2A7X1)

1.1. MAJCOM/A4M Responsibilities. The designated Senior Noncommissioned Officer (SNCO) or designee will manage the Aircraft Metals Technology (AMT) program and perform the following duties:

1.1.1. Establish base metal groups required for welding certification in accordance with Technical Order (TO) 00-25-252, *Intermediate Maintenance and Depot Level Maintenance Instructions - Aeronautical Equipment Welding*.

1.1.1.1. Ensure all 2A7X1 journeyman, craftsman, and civilian equivalent welders are weld certified in four mandatory base metal groups: Group I (Carbon and Low Alloy Steel), Group II (Stainless Steel), Group III (Nickel Alloy), and Group IV (Aluminum Alloy).

1.1.1.2. Ensure all 2A7X1 journeyman, craftsman, and civilian equivalent welders, are weld certified in at least one of the following base metal groups:

1.1.1.2.1. Group V (Magnesium Alloy), Group VI (Titanium Alloy), Group VII (Cobalt Alloy).

1.1.1.2.2. The base metal group(s) will be selected by each Aircraft Metals Technology Section and include all base metal groups required to accomplish the mission at that location.

1.1.2. Develop and manage command guidance and procedures for AMT functions.

1.1.3. Approve all intra-command AMT Temporary Duty (TDY) manning assistance requests.

1.1.4. Coordinate inter/intra-command 2A7X1 equipment transfers.

1.1.5. Forecast and ensure scheduling of 2A7X1 supplemental training.

1.1.6. Coordinate and approve Technical Order (TO) Publication Change Requests (PCR) and Source Maintenance and Recoverability Code reviews applicable to the AMT community.

1.1.7. Support the Air Force Metals Fabrication and Technology Office (MFTO) by participating in equipment evaluations, field surveys, Integrated Process Teams (IPT), Product Improvement Teams (PIT), managers' meetings/working groups and advisory board meetings.

1.1.8. Disseminate all official MFTO correspondence to the field. MFTO messages can be found at the following: **https://usaf.dps.mil/teams/21761/SitePages/Home.aspx**. Depending on the criticality of the MFTO message, maintenance cross-tells may be utilized to ensure official routing through Quality Assurance office to expedite compliance with any requirements outlined within the message.

1.1.9. The Command Fabrication Superintendent will serve as the MAJCOM voting authority during the 2A7X1 Specialty Training Requirements Team (STRT) and Utilization and Training Workshop (U&TW). May appoint a 2A7X1 Subject Matter Expert (SME) to accompany them as an advisor to ensure proper advocacy for field-level requirements.

1.1.10. Review the MAJCOM Routine Inspection List (RIL) for 2A7X1 and submit changes to the MAJCOM Quality Assurance Functional Manager.

1.2. Maintenance Squadron Commander (MXS/CC) Responsibilities. Ensure funding is available for 2A7X1 or civilian equivalent personnel requiring welder's certification or recertification to be certified at an Air Logistics Center (ALC) to perform welding operations when local certification capabilities do not exist.

1.3. Fabrication Flight Superintendent Responsibilities.

1.3.1. Ensure all 2A7X1 journeyman, craftsman, and civilian equivalent welders assigned to the AMT section are certified in accordance with TO 00-25-252 to perform welding operations in the required metal groups directed by the Command Fabrication Superintendent, outlined in paragraphs **1.1.1.1** through **1.1.1.2**. Serves as certifying official for unit level welding examinations and executes all responsibilities IAW TO 00-25-252.

1.3.2. Ensure all Active Duty, Air National Guard (ANG), Air Force Reserve, and civilian equivalent welders are certified to Level II in accordance with TO 00-25-252. Level I certification can be obtained prior to achieving Level II if necessary to meet the mission needs.

1.4. Aircraft Metals Technology (AMT) Section Chief Responsibilities.

1.4.1. Ensure machines and shop equipment are maintained and inspected IAW TO 34-1-3, *Inspection and Maintenance - Machinery and Shop Equipment,* and hand/measuring tools are maintained IAW TO 32-1-101, *Use and Care of Hand Tools and Measuring Tools*.

1.4.2. Ensure assigned AMT personnel maintain welding certifications outlined in **paragraph 1.3**.

1.4.3. Coordinate requests for an ALC or other qualified organization to qualify welders. If qualification and certifications are accomplished locally, coordinate certification requirements with the NDI section to ensure radiographic capability and required image quality indicators are present.

1.4.4. Ensure correct completion of DD Form 2757, *Welding Examination Record*, and AFTO Form 1, *Welding Proficiency Log*, for shop welders. DD Form 2757 can be found at: **https://www.esd.whs.mil/Directives/forms/dd2500_2999/**

1.4.4.1. The Observing Official is required to be a 5 or 7-level AMT technician or civilian equivalent welder.

1.4.4.2. The AMT Section Chief or designated representative will function as the testing official.

1.4.4.3. The visual inspector must be a 2A771 or civilian equivalent. The AMT section will perform visual and metallographic testing only. **(T-2)**

1.4.5. Ensure all military and non-ALC civilian personnel maintain proficiency by welding at least one ferrous and non-ferrous specimen in the Gas Tungsten Arc Welding (GTAW) process every 90 days and document on the AFTO Form 1 IAW TO 00-25-252.

1.4.6. Ensure all military and non-ALC civilian personnel maintain proficiency by welding at least one specimen in the Gas Metal Arc Welding (GMAW) and/or Shielded Metal Arc Welding (SMAW) process every 90 days and document on the AFTO Form 1 IAW TO 00-25-252.

1.4.7. Ensure journeymen are weld certified no later than (NLT) 12 months (24 months for ARC) after award of 5-skill level. Individuals that PCS from another MAJCOM that do not possess the same weld certification metal groups must be certified within 6 months of assignment. **(T-2)**

1.5. Additive Manufacturing.

1.5.1. Local Purchase Equipment. Equipment items for Additive Manufacturing (AM) process will not be purchased locally without the knowledge and approval of the Command Fabrication Superintendent and the Advanced Manufacturing Program Office (AMPO).

1.5.1.1. All requests must be submitted to **AMC.A4MM.Fabrication@us.af.mil** with justification for the acquisition. Once approved, the Command Fabrication Superintendent will forward the request to AMPO at **aflcmc.ro.am@us.af.mil**

1.5.1.1.1. AM printers valued below $50K only require the immediate unit commander's written approval. AM printers valued above $50K require Air Force Life Cycle Management Center (AFLCMC) Rapid Sustainment Office (RSO) oversight and approval.

1.5.1.1.2. Specific information on the application and requirements of AM technologies to include Supersonic Particle Disposition, also referred to as Cold-Spray (CS), can be requested through the RSO/AMPO using the org box outlined above.

1.5.1.1.3. Account for all AM printers, cold spray, and directed energy deposition machines in the Defense Property Accountability System (DPAS).

1.5.1.2. Consumables, support items, and replacement parts may be purchased at any time without approval.

1.5.2. Guidance for the use of AM to build replacement parts is prescribed in AFI 63-101/20-101, *Integrated Life Cycle Management*.

1.5.3. Reference TO 34A-1-1, *Additive Manufacturing Qualification of Technicians, Machines and Facilities*, for AM methods and requirements for training, equipment, process controls and TO 34A-3-1, *Polymers Additive Manufacturing, General Procedures and Process Controls.*

1.5.3.1. Technician qualification is not required per TO 34A-1-1, *Additive Manufacturing Qualification of Technicians, Machines and Facilities*, for the purposes of producing tooling, fixtures, jigs, training aids, prototype parts, or non-aircraft, non-aerospace equipment related items.

1.5.3.2. Formal training is only required for each process and type of equipment utilized to produce airworthy components.

1.5.4. Additive manufactured aircraft parts require approval from the applicable Weapon System Program Office (SPO).

1.5.4.1. Approved aircraft parts will be listed in the weapon system's illustrated parts breakdown (IPB) as an alternate AM part number and appropriate Source Maintenance, and Recoverability (SMR) code (i.e., MFO or MOO), reference TO 00-25-195, *Source Maintenance, and Recoverability Coding of Air Force Weapons, Systems, and Equipment* and Table 4-3., *AF SMR Coding Matrix.*

1.5.4.2. A Technical Assistance Request (TAR) or -107 will provide authorization for limited use of non-listed substitutes (supplies, components, support equipment, etc.) to prevent work stoppages, IAW TO 00-25-107, *Maintenance Assistance*.

1.5.4.3. The Joint Engineering Data Management Information Control System (JEDMICS) is the current repository for Technical Data Packages (TDPs). Accessing **https://af-jedmics.navair.navy.mil** and entering the appropriate drawing number (i.e., 201874532) will download the complete TDP, including the embedded build file, required to additively manufacture the part.

1.6. Precision Cutting Tools.

1.6.1. Precision cutting tools (i.e., drill bits, reamers, taps, dies, end mills, etc.) are manufactured from high-speed steel (HSS), solid carbide or tool steel to achieve high hardness and wear resistance in accordance with TO 1-1A-9, *Engineering Series for Aircraft Repair Aerospace Metals - General Data and Usage Factors*. Manufacturer produced close tolerance cutting tools must adhere to National Aerospace Standards (NAS) (e.g., twist drills and reamers IAW Appendix C of TO 1-1A-1, *Engineering Handbook Series for Aircraft Repair, General Manual for Structural Repair*).

1.6.2. Manufacturer produced surface finishes are critical to the reduction of fatigue and stress. In accordance with TO 33B-1-1, *Non-Destructive Inspection Methods, Basic Theory*, any discontinuities marked into the tool (e.g., grinding, etching, stamping, etc.) will subject the tool to fatigue cracking and/or change tool run-out, resulting in premature tool failure, inaccurate airframe structure modifications, imprecise manufactured aircraft parts and/or damage to aircraft.

1.6.2.1. Unique or special circumstances apply to the management requirements of close tolerance, accurate, precision cutting tools, in accordance with DAFI 21-101, paragraphs 8.6.1.6 and 8.6.3.

1.6.2.2. Do not vibratory etch these tools as damage to the operator, tool, part, and/or aircraft may occur. Laser etching is appropriate; however, do not mark the shaft area of any arbor type tools as chuck slippage will remove the Equipment Identification Designator (EID). When laser etching is not practical, these tools will follow the marking and identification procedures in accordance with DAFI21-101, paragraph 8.3.6.6 and 8.6.4.1.

1.6.2.3. Non-dispatchable industrial shop machinery accessories and attachments are managed in accordance with DAFI21-101, paragraphs 8.3.7 and 8.3.8.2.

1.7. Equipment Inspections.

1.7.1. The Defense Property Accountable System program (DPAS) Maintenance and Utilization (M&U) is the system of record for all aircraft and weapon system SE or SE Maintenance Information System (SEMIS).

1.7.2. Fabrication flights will follow TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures* and TO 34-1-3, *Inspection and Maintenance - Machinery and Shop Equipment* for machinery and industrial equipment inspections.

1.7.3. Sections will utilize DPAS M&U for inspection and maintenance requirements of machinery and industrial equipment unless the lack of full implementation precludes adoption

of the Maintenance Information System (MIS). This includes machinery and industrial equipment with or without reoccurring inspection and maintenance requirements within their work center.

Chapter 2

NONDESTRUCTIVE INSPECTION PROGRAM (2A7X2)

2.1. MAJCOM/A4M Responsibilities.

2.1.1. The designated SNCO or designee will manage the NDI program and perform the following duties:

2.1.1.1. Manage the command NDI and Oil Analysis programs (OAP).

2.1.1.2. Develop and manage MAJCOM guidance and procedures for NDI and OAP functions.

2.1.1.3. Approve all intra-command NDI TDY manning assistance requests.

2.1.1.4. Coordinate inter/intra-command 2A7X2 equipment transfers.

2.1.1.5. Forecast and ensure scheduling of 2A7X2 supplemental training.

2.1.1.6. Coordinate and approve TO PCR and SMR code reviews applicable to the NDI community.

2.1.1.7. Support the Air Force NDI Office (AFNDIO) by participating in NDI equipment evaluations, field surveys, NDI IPT, NDI PIT, Air Force NDI managers' meetings/working groups, and advisory board meetings.

2.1.1.7.1. Disseminate all official AFNDIO messages to the field. AFNDIO messages can be found at the following: **https://usaf.dps.mil/teams/22399/sitepages/home.aspx**.

2.1.1.7.2. Depending on the criticality of the AFNDIO message, maintenance cross-tells may be utilized to ensure official routing through the Quality Assurance office to expedite compliance with any requirements outlined in the message.

2.1.1.8. The Command Fabrication Superintendent will serve as the MAJCOM voting authority during the 2A7X2 STRT and U&TW. May appoint a 2A7X2 Subject Matter Expert (SME) to accompany them as an advisor to ensure proper advocacy for field-level requirements.

2.1.1.9. Review the MAJCOM Routine Inspection List (RIL) for 2A7X2 and submit changes to the MAJCOM Quality Assurance Functional Manager.

2.1.1.9.1. The RIL should include Quality Verification Inspections (QVI) and Special Inspections (SI), encompassing NDI-specific processes (e.g., radiation safety, process control documentation, chemical concentration graphs, etc.).

2.1.1.9.2. A recommended RIL, special interest items (SII) listing, and supporting documents to aid non-NDI Quality Assurance (QA) Inspectors have been developed by AFNDIO and can be found at the following: **https://usaf.dps.mil/teams/22399/sitepages/home.aspx**.

2.1.1.10. Review NDI equipment evaluations and coordinate with AFNDIO to ensure accuracy during Program Objective Memorandum (POM) submissions.

2.1.2. Ensure civilian NDI technicians are National Aerospace Standard 410 (NAS 410) certified IAW DAFI 21-101, *Aircraft and Equipment Maintenance Management* and TO 33B-1-1, *Nondestructive Inspection Methods, Basic Theory*

2.2. Maintenance Squadron Commander (MXS/CC) Responsibilities.

2.2.1. Ensure only properly trained 2A7X2 personnel or NAS 410 certified civilian technicians operate NDI equipment and perform NDI IAW DAFI 21-101 and TO 33B-1-1.

2.2.2. Functional visits from the AFNDIO may be requested to assess the overall health of their NDI program and compliance with established standards.

2.2.3. Submit AFNDIO Functional visit requests through the MAJCOM NDI Functional Manager or designee to **aflcmc-ezpt-ndio@us.af.mil** using the approved request form located on the AF NDI Technical Community SharePoint: **https://usaf.dps.mil/teams/22399/SiteAssets/Forms/AllItems.aspx?id=%2Fteams%2F22399%2FSiteAssets%2FLinkable%20Files%2FAFNDIO%20Assessment%20Request%20Form%5F1Oct2023%2Epdf&parent=%2Fteams%2F22399%2FSiteAssets%2FLinkable%20Files**

2.3. Fabrication Flight Superintendent Responsibilities.

2.3.1. Ensure capabilities exist to perform NDI methods applicable to the assigned weapon system(s) and support equipment (SE).

2.3.2. Communicate lab conditions and unsatisfactory technical proficiency issues to the MAJCOM NDI Functional Manager or designee when lab conditions render unsatisfactory NDI performance and require immediate corrective action. Report loss of NDI capabilities within 48 hours after the loss has been identified via email to the following: **AMC.A4MM.Fabrication@us.af.mil**

2.3.3. Forecast funding for personnel to attend training courses and participate in applicable NDI Corporate Process Activities (CPA) and working groups.

2.4. Nondestructive Inspection (NDI) Section Chief Responsibilities.

2.4.1. Ensure machines and shop equipment are maintained and inspected in accordance with TO 33B-1-2, *Non-Destructive Inspection - General Procedures and Process Controls*.

2.4.2. Ensure NDI QA Augmentees are properly trained, documented and are current on all inspection methods IAW DAFI 21-101 and TO 33B-1-1.

2.4.2.1. Augmentees will conduct Personal Evaluations (PE) utilizing the PE Checklists located on the AFNDIO SharePoint.

2.4.2.2. Once the Evaluation is completed, augmentees are required to maintain these documents in the section. They will be maintained until the next PE is conducted on that specific method. **(T-2)**

2.4.3. Forecast funding for personnel to attend training courses and participate in applicable NDI Corporate Process Activities (CPA) and working groups.

2.4.4. Ensure the Radiation Safety Program requirements are in compliance with TO 33B-1-1, Air Force Manual (AFMAN) 48-148, *Ionizing Radiation Protection,* and DAFMAN 48-125, *Personnel Ionizing Radiation Dosimetry.*

2.5. Equipment Inspections.

2.5.1. The Defense Property Accountable System program (DPAS) Maintenance and Utilization (M&U) is the system of record for all aircraft and weapon system SE or SE Maintenance Information System (SEMIS).

2.5.2. Fabrication flights will follow TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures* and TO 34-1-3, *Inspection and Maintenance - Machinery and Shop Equipment* for machinery and industrial equipment inspections.

2.5.3. Sections will utilize DPAS M&U for inspection and maintenance requirements of machinery and industrial equipment unless the lack of full implementation precludes adoption of the MIS. This includes machinery and industrial equipment with or without reoccurring inspections and maintenance requirements within their work center. **Exception:** The NDI Process Control Program found in T.O. 33B-1-1, Section V & 33B-1-2 work package's 102 through 106 does not fall within the scope of Aviation Support Equipment maintenance (AvSE). Process Control Automated Management System (PCAMS) will remain authorized at this time for those who have established PCAMS as their Process Control Documentation Method per T.O. 33B-1-1, paragraph 1.5.4..

Chapter 3

AIRCRAFT STRUCTURAL MAINTENANCE AND CORROSION CONTROL PROGRAM (2A7X3)

3.1. MAJCOM/A4M Responsibilities. The designated SNCO or designee will manage the Aircraft Structural Maintenance (ASM) and Corrosion Control programs and perform the following duties:

3.1.1. Develop and manage command guidance and procedures for ASM and Corrosion Control functions.

3.1.2. Approve all intra-command ASM TDY manning assistance requests.

3.1.3. Coordinate inter/intra-command 2A7X3 equipment transfers.

3.1.4. Forecast and ensure scheduling of 2A7X3 supplemental training.

3.1.5. Represent command at 2A7X3 utilization and training workshops. Provide corrosion and structural input to career field managers in all maintenance Air Force Specialty Codes (AFSCs).

3.1.6. Coordinate and approve TO PCR and SMR code reviews applicable to the ASM community.

3.1.7. Support the Air Force Corrosion Prevention and Control Office (AFCPCO) by participating in equipment evaluations, field surveys, Integrated Process Teams (IPT), Product Improvement Teams (PIT), managers' meetings/working groups and advisory board meetings.

3.1.7.1. Disseminate all official AFCPCO correspondence to the field. AFCPCO messages can be found at the following: **https://dod.teams.microsoft.us/l/team/19%3adod%3acfcdeab8d43247d3906d3adc6cc7e60d%40thread.tacv2/conversations?groupId=d41fbdb9-4164-4bb5-8d9a-653e1290769b&tenantId=8331b18d-2d87-48ef-a35f-ac8818ebf9b4**

3.1.7.2. Depending on the criticality of the AFCPCO message, maintenance cross-tells may be utilized to ensure official routing through Quality Assurance office to expedite compliance with any requirements outlined within the message.

3.1.7.3. Coordinate with the AFCPCO in selection and accomplishment of command Corrosion Survey at a minimum of every 5 years.

3.1.8. The Command Fabrication Superintendent will serve as the MAJCOM voting authority during the 2A7X3 STRT and U&TW. May appoint a 2A7X3 Subject Matter Expert (SME) to accompany them as an advisor to ensure proper advocacy for field-level requirements.

3.1.9. Review the MAJCOM Routine Inspection List (RIL) for 2A7X3 and submit changes to the MAJCOM Quality Assurance Functional Manager.

3.1.10. Serve as the Command Corrosion Control Manager.

3.1.10.1. Represent command at assigned weapon systems Corrosion Prevention Advisory Boards (CPAB), AF/DoD corrosion conferences, and field surveys. Advocate AMC maintenance unit attendance and active participation at weapon system specific CPABs.

3.1.10.2. Support Air Force Corrosion Control Prevention Executive (CCPE) by participating in working groups, advisory boards and providing corrosion data for the annual corrosion report.

3.1.10.3. Ensure adequate corrosion control training is available and current for all aircraft and Aerospace Ground Equipment (AGE) maintenance personnel.

3.1.11. Review MAJCOM paint schemes at a minimum of bi-annually to ensure they meet mission requirements.

3.2. Wing Commander (WG/CC) Responsibilities. Approve all aircraft paint waivers, tail flashes, and nose art requests. Ensure all requests have been routed through local historian, Public Affairs, and wing corrosion manager. Submit all required documents to the HQ AMC/A4, Command Fabrication Superintendent/Corrosion Manager in accordance with **paragraph 4.8**.

3.3. Maintenance Group Commander (MXG/CC) Responsibilities.

3.3.1. Ensure adequate facilities, equipment, manpower, material, and funding are available to support a sound corrosion prevention and control program. The minimum requirements are:

3.3.1.1. Provide a year-round maintenance painting facility for assigned aircraft.

3.3.1.2. Facilities will meet Federal, State, and Local requirements. **(T-2)**

3.3.1.3. Ensure requirements outlined in DAFMAN 32-1084, *Standard Facility Requirements,* are met for SE and aircraft small parts. This capability can be incorporated in the aircraft corrosion control facility if space permits.

3.3.1.4. Ensure facility control technology meets local, state, and federal Environmental Protection Agency requirements in conjunction with current National Emission Standards for Hazardous Air Pollutants [Title 40, Code of Federal Regulations (CFR), Part 61 and 63].

3.3.2. Ensure adequate wash facilities are available on a year-round basis. This may be accomplished in any way deemed prudent for the locale and mission of the unit. This requirement may be met with one or more of the following:

3.3.2.1. A specially designed corrosion control facility completely enclosed, heated with environmentally controlled ventilation and waste disposal systems, and equipped with all utilities necessary for accomplishing all facets of aircraft corrosion control.

3.3.2.2. An environmentally compliant enclosed or covered wash rack.

3.3.2.3. An outside wash rack may be used on an interim basis when weather conditions permit and when approved by Base Civil Engineer.

3.3.3. Ensure frequency of wash/rinse cycles are maintained in accordance with TO 1-1-691, *Aircraft Weapons Systems - Cleaning and Corrosion Control and Prevention, Aerospace and Non-Aerospace Equipment,* and revised as necessary based on changes in mission and location.

3.3.3.1. For any aircraft overdue wash, request overfly approval from MAJCOM Corrosion Program Manager and Weapon Specific Systems Manager per TO 1-1-691, *Aircraft Weapons Systems - Cleaning and Corrosion Control and Prevention, Aerospace and Non-Aerospace Equipment*. Some airframes may require a submittal of a TAR/107.

3.3.3.2. Notification must include aircraft tail number(s), date of last wash, reason for overdue condition, and corrective action taken to prevent further occurrences. MAJCOM Corrosion Program Manager will ensure routing of waiver request to system program office (SPO) engineer and AFCPCO. The SPO engineer has final approval authority for waiver requests. **(T-2)**

3.3.4. Ensure Plans, Scheduling & Documentation section(s) schedule aircraft washes through applicable Maintenance Information System (MIS).

3.3.5. Ensure QA adequately evaluates corrosion control programs through inspection and maintenance follow-up evaluations.

3.3.6. Appoint a wing corrosion manager and aircraft wash facility manager, in writing, to provide continuity and ensure proper equipment and materials are maintained at the facility in accordance with DAFI 21-101.

3.3.7. Appoint personnel authorized to sign-off contract washes, as required.

3.4. Wing Corrosion Manager Responsibilities.

3.4.1. The wing corrosion program manager serves as the wing focal point for all aircraft and SE cleaning, corrosion and organic coatings related information and taskings. The wing corrosion program manager will organize, direct, and manage the wing/group corrosion management program according to: DAFI 21-101, DAFI 63-140, *Aircraft Structural Integrity Program and Air and Space Equipment Structural Management*, TO 1-1-691, TO 1-1-8, *Application and Removal of Organic Coatings, Aerospace and Non-Aerospace Equipment*, TO 1-1-689-3, *Cleaning and Corrosion Control Volume III Avionics and Electrics*, TO 35-1-3, *Corrosion Prevention and Control, Cleaning; Painting, and Marking of USAF Support Equipment (SE)*, applicable weapon system specific –3 (structural repair manual), -23 (corrosion prevention and control manual), and this instruction. **(T-2)**

3.4.2. Before reassignment or retirement, the wing corrosion manager will ensure their successor is appointed early enough to provide an effective turnover of the corrosion program. The outgoing corrosion manager must confer with the Fabrication Flight Superintendent and ASM supervisors to identify a replacement. A copy of the new appointment memo will be sent to HQ AMC/A4M, Command Fabrication Superintendent/Corrosion Manager, within 60 days of the appointment. **(T-2)**

3.4.3. Ensure corrosion inspections are accomplished during each phase/periodic/isochronal inspection for aircraft and equipment assigned, as required.

3.4.4. Ensure corrosion prevention and treatment procedures are performed within technical order requirements. In the event there are no weapons system specific post wash corrosion inspection requirements, the wing corrosion manager will coordinate with units to establish local requirements. **(T-2)**

3.4.5. Ensure only qualified product list (QPL) and/or the Qualified Product Database (QPD) authorized wash agents are utilized for overall and spot washes. Use of unapproved commercial or household/janitorial cleaners is strictly prohibited.

3.4.6. In conjunction with the local Supply/Hazmart pharmacy, ensure only products from QPLs/QPDs approved for aircraft/aerospace equipment are being used.

3.4.7. Develop and submit comments or recommendations for improvement of the corrosion control program to HQ AMC/A4M, Command Fabrication Superintendent/Corrosion Manager.

3.4.8. Establish and chair a local corrosion prevention working group to formalize the wing corrosion management program. Working groups may meet as frequently as necessary to maintain an effective program but will meet at least annually. This working group should meet approximately 90 days prior to the next scheduled applicable weapons system CPAB to formalize action items. Minutes will be published and are recommended to be maintained at least 3 calendar years for continuity purposes. **(T-2)**

3.4.8.1. As a minimum, membership will include the unit corrosion manager, flight line (owning unit) maintenance supervisors, Plans Scheduling and Documentation (PS&D) personnel, ASM supervisors, AGE supervisors, and appropriate QA representatives. **(T-2)**

3.4.8.2. Submit CPAB action items to the Command Fabrication Superintendent/Corrosion Manager. Action items may be submitted throughout the year and must focus on structural integrity, extended service life, and improved repair techniques for the weapon system. **(T-2)**

3.4.8.3. Forecast funding, plan, and attend assigned weapon system CPAB or send a qualified representative.

3.4.9. Serve as wing corrosion program Point of Contact (POC) for all outside agencies.

3.4.10. Forecast or Program Objective Memoranda (POM) for funding requirements to attend DoD, Air Force and AMC Corrosion Manager meetings and workshops.

3.4.11. Ensure unit's corrosion related training courses are administered as intended by the MAJCOM and AFI. An initial interactive course with location specific supplemental training and annual refresher training is the minimum. See **paragraph 3.15**.

3.4.12. Determine the adequacy of corrosion control work cards for assigned equipment based on mission and location.

3.4.13. At units utilizing wash contractors, the wing corrosion manager must be thoroughly familiar with contract specifications, applicable technical orders, and inspection/acceptance criteria. The wing corrosion manager will be included in the coordination process of all new/updated wash contracts. **(T-2)**

3.4.14. Maintain records of all approved requests for aircraft names, nose art, tail flashes, internal nose art, score sheets of maintained aircraft, and wing corrosion manager appointment letter. Maintain full length color photographs of all approved aircraft names and nose art, along with approval documentation. All documents will be uploaded to the following: **https://dod.teams.microsoft.us/l/team/19%3adod%3acfcdeab8d43247d3906d3adc6cc7e60d%40thread.tacv2/conversations?groupId=d41fbdb9-4164-4bb5-8d9a-653e1290769b&tenantId=8331b18d-2d87-48ef-a35f-ac8818ebf9b4**

3.5. Fabrication Flight Superintendent Responsibilities.

3.5.1. Recommend a wing corrosion manager to the MXG/CC. **(T-2)** Forecast funding for wing corrosion control manager attendance at Corrosion Control Working Groups, CPABs,

Aircraft Structural Integrity Programs (ASIPs), and other pertinent meetings as required. Ensure Fabrication representation for ASIP and CPAB conferences in person or via telecom.

3.5.2. Recommend a qualified 2A753 or above as the wash rack facility manager to ensure proper cleaning materials, equipment and supplies are maintained in accordance with applicable technical orders, DAFI 21-101 and MAJCOM supplements. Not required when utilizing contracted washes as this position is captured in the contract.

3.6. Aircraft Structural Maintenance (ASM) Section Chief Responsibilities.

3.6.1. Ensure machines and shop equipment are maintained and inspected in accordance with TO 34-1-3, *Inspection and Maintenance - Machinery and Shop Equipment* and hand/measuring tools are maintained in accordance with TO 32-1-101, *Use and Care of Hand Tools and Measuring Tools*.

3.6.2. Recommend a wing corrosion manager to the Fabrication Flight Superintendent.

3.6.3. Ensure a corrosion control facility housekeeping program is developed and followed in accordance with DAFI 21-101.

3.6.4. Serve as the ASM technical assistant to the MXG/CCs and Command Fabrication Superintendent/Corrosion Manager.

3.6.5. Request depot assistance in accordance with TO 00-25-107, *Maintenance Assistance*, through the MAJCOM Weapon System Manager (WSM) with an information copy to AMC/A4M, Command Fabrication Superintendent/Corrosion Manager, when corrosion treatment/repairs exceed TO limits.

3.7. Aircraft Cleaning.

3.7.1. A complete exterior and interior cleaning will be accomplished on all aircraft in accordance with TO 1-1-691 and weapon system specific technical data. This will be accomplished during scheduled wash cycles, before isochronal or phase inspections, and prior to refurbishments. **(T-2)**

3.7.1.1. The following forms entries, as a minimum, are required for an aircraft wash:

3.7.1.1.1. "Aircraft wash required." Enter this in the forms on a red dash. It is cleared by the owning unit aircraft wash supervisor.

3.7.1.1.2. "Aircraft taped and prepped for wash." Enter this in the forms on a red X prior to the wash. It is cleared by the appropriate inspector after the aircraft has been de-taped, all associated equipment (such as wheel covers) is removed and associated tasks are accomplished, and the cleanliness inspection has been completed and signed off.

3.7.1.1.3. "Aircraft post-wash cleanliness inspection due." Enter this in the forms on a red dash prior to the wash. It is cleared by the owning unit maintenance supervisor, production supervisor, or authorized contractor after completion of the cleanliness inspection. **Note:** Definition of clean: Surfaces must be deemed "clean" after satisfactory completion of the following method: Accomplish a close visual inspection to determine if all residue, oily film, and streaking has been removed. If cleanliness is questionable, a dry, lint free, white towel is wiped firmly across the various surfaces.

If excessive soiling of the towel occurs, the surface is not clean. Wheel wells, flap wells, and exterior surfaces should be inspected using this method. **(T-2)**

3.7.1.1.4. "Aircraft post-wash lubrication due." Enter this in the forms on a red dash. It is cleared by the appropriate maintenance person responsible for ensuring task completion.

3.7.1.1.4.1. Proper post-wash lubrication is vital in prevention of corrosion. Lubrication prevents water intrusion in bearing cavities and subsequent corrosion damage.

3.7.1.1.4.2. If technicians wash components between normal cleaning cycles (flight line or "spot" washes), re-lubrication of the affected components is required.

3.7.1.2. If organizations know in advance that their aircraft or SE is scheduled to deploy, they must ensure aircraft and equipment washes are considered prior to mission deployment. If a wash was recently accomplished, the owning organization maintenance supervision will determine whether another wash is necessary prior to deployment. **(T-2)**

3.7.1.2.1. When an aircraft flies over salt water below 3,000 feet, the aircrew debriefing record and AFTO Form 781A, *Maintenance Discrepancy and Work Document* will be annotated with a "NOTE". See TO 1-1-691 for complete guidance.

3.7.1.2.2. Aircraft properly rinsed in taxi-through, or "bird bath" type facilities, need not comply with this requirement. **(T-2)**

3.7.2. Aircraft latrine/urinal areas must be cleaned thoroughly to avoid corrosion damage due to effluent contamination. **(T-2)**

3.7.3. Interior areas will be dried after washing. Any method, such as low-pressure air, low temperature heat, or sponging/mopping, may be used. Standing water in any interior area of the aircraft must be removed. **(T-2)**

3.7.4. Pressurized water washing equipment, if authorized by the applicable system program office, may be used for aircraft washing in accordance with TO 1- 1-691 and manufacturer's instructions. However, all surfaces must be agitated with an authorized pad or other article. Pressure washing alone will not adequately remove contaminants from painted surfaces. **(T-2)**

3.7.4.1. Lubrication must be accomplished after all pressure washes in accordance with applicable technical data. **(T-2)**

3.7.4.2. All landing gear components will be hand washed and rinsed with low-pressure water. Refer to applicable landing gear technical orders for washing instructions. **(T-2)**

3.8. Maintenance Plans, Scheduling, and Documentation (PS&D).

3.8.1. Ensure frequency-of-cleaning/wash cycles are established for assigned aircraft to maximize corrosion prevention. Monitors aircraft wash schedules to eliminate overdue washes.

3.8.2. Unit wash cycles will not exceed the maximum wash cycles listed in TO 1-1-691, unless coordinated and approved in accordance with TO 00-25-107. **(T-2)**

3.9. Aircraft Maintenance Unit Responsibilities.

3.9.1. Owning activities must wash and clean their aircraft and SE. **(T-2)** Wing Corrosion Manager and/or ASM personnel will assist the owning activities in their corrosion prevention efforts by accomplishing scheduled corrosion inspections on aircraft, support, and test equipment. **(T-2)**

3.9.2. Only ASM personnel will perform aircraft inspection work cards specified for accomplishment by ASM in the -6 TO. All maintenance personnel, regardless of AFSC, must examine parts they remove for corrosion. **(T-2)**

3.9.3. Coordinate and schedule the use of wash rack facilities for other than isochronal/phase washes. For locations with contracted washes, aircraft maintenance responsibilities will be performed by the wash contractor in accordance with the wash contract. **(T-2)**

3.9.4. Appoint an experienced/qualified wash crew supervisor. This person will be trained according to **paragraph 3.9.7**. **(T-2)**

3.9.5. Ensure trained wash crew supervisors are present throughout the duration of aircraft washes.

3.9.6. Provide a task trained, appropriately equipped and qualified aircraft wash crew, to include as a minimum, a Dedicated Crew Chief (DCC) and/or Assistant Dedicated Crew Chief (ADCC) and personnel protective equipment within the work center.

3.9.7. The wing corrosion manager and owning unit supervisors/managers train and qualify personnel on aircraft washing and cleaning. Personnel assigned as wash supervisors, cleanliness inspectors, aircraft wash personnel and wash contractor quality assurance evaluators will complete the Aircraft Washing Procedures (Course C6ANU00TVT0001) video downloadable from **https://367trss.cce.af.mil/Courses/Airframe?weaID=General**. **(T-2)**

3.9.8. Ensure AMC Form 1017, *Aircraft Wash Supervisor and Employee's Certification* is completed once during the initial wash training process and when work processes equipment, materials, or conditions change.

3.9.9. Ensure a cleanliness inspection of aircraft is accomplished after completion of the aircraft wash. An owning work center supervisor (production superintendent or dock chief, as appropriate) will sign-off the cleanliness inspection. **(T-2)** The key is to have supervisory personnel or production inspectors that did not participate in the wash perform the cleanliness inspection. Local requirements may be added to the checklist to enhance the unit cleanliness program.

3.9.9.1. The isochronal/phase inspection dock supervisor may accomplish the cleanliness inspection for isochronal/phase aircraft washes only.

3.9.9.2. Refer to **paragraph 3.4.13** for contracted washes.

3.9.10. After the cleanliness inspection is completed, the inspector clears the AFTO Form 781A entry for "aircraft cleanliness inspection due after wash."

3.9.11. The wash supervisor ensures the facility and equipment is cleaned and properly stored at completion of each wash.

3.9.12. Maintenance personnel who remove/install aircraft panels and doors must ensure seals are serviceable and sealant applied to panels and fasteners as specified in applicable aircraft technical orders. **(T-2)**

3.9.13. Maintenance personnel must report all corrosion deficiencies through the applicable MIS in accordance with 00-20 series technical orders. Accurate documentation of maintenance actions in support of the corrosion control program is essential to support future manning, equipment requirements, training, and parts/material procurement requirements. **(T-2)**

3.9.13.1. Inspection, Crack/Corrosion and Repair Reporting (ICARR-3D) (C-130 users). NDI, ASM and QA personnel will use the ICARR-3D software to make inputs to the Automated Inspection, Repair, Corrosion, and Aircraft Tracking (AIRCAT) database for all NDI directed by technical orders; cracks and corrosion exceeding blending limits of Structural Repair Manual; and structural repairs in accordance with 1C-130A-6, *Aircraft Scheduled Inspection and Maintenance Requirements*/1C-130J-6, *Airplane Scheduled Inspection*. Corrosion within blending limits of the Structural Repair Manual will not be documented.

3.9.13.2. This is an Aircraft Structural Integrity Program (ASIP) requirement. See **https://c130aircat.robins.af.mil/** for program instructions and information on ICARR-3D. Report all C-130 discrepancies in ICARR-3D. **(T-2)**

3.10. Wash Rack Facility Manager Responsibilities.

3.10.1. Ensure fall protection equipment is available, used and maintained in accordance with DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, to allow coverage of all surface areas of aircraft during washing operations.

3.10.2. Ensure aircraft wash rack has qualified cleaners on hand as identified in weapon system specific technical data.

3.10.3. Ensure wash rack facility and surrounding area is kept clean and properly maintained.

3.10.4. Procure personal protective equipment used during wash process. Maintains wash rack facilities and equipment in serviceable condition (i.e., water hoses, pumps, air hoses, powered wash equipment, SE, Personal Protective Equipment (PPE), etc.). This may not apply to units utilizing wash contracts.

3.11. Wash Crew Supervisor Responsibilities.

3.11.1. Provide daily safety briefings explaining hazards associated with wash rack operations.

3.11.2. Ensure aircraft wash crews are task trained and qualified by reviewing the Aircraft Wash Procedures and Preventing Landing Gear Failure videos as a minimum (**https://usaf.dps.mil/teams/21080/Corrosion/Training/Forms/AllItems**) along with hands on training in accordance with TO 1-1-691. All training and qualifications must be documented in the personnel's training records. **(T-2)**

3.11.3. Ensure proper safety equipment, PPE and cleaning materials are serviceable and properly used in accordance with DAFMAN 91-203.

3.11.4. Enter the requirement for wash, signs the wash completion and enters the lubrication requirement in the AFTO Form 781A, *Maintenance Discrepancy and Work Document,* or other electronic form of documentation.

3.11.5. Ensure that fall protection is serviceable and inspected prior to use in accordance with DAFMAN 91-203.

3.11.6. Ensure aircraft are properly grounded as required in accordance with TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding,* and weapon system-specific technical data.

3.11.7. Inspect all wash rack equipment for serviceability (i.e. water hoses, pumps, air hoses, powered wash equipment, SE, etc.) prior to use.

3.11.8. Ensure wash rack facility, surrounding area and equipment is clean and equipment is properly stored before and after use.

3.12. Quality Assurance (QA) Responsibilities.

3.12.1. Evaluate at least 10% of all aircraft washes and at least 10% of all AGE washes for compliance with applicable technical data.

3.12.2. Evaluate the quality of 10% of all aircraft and equipment corrosion inspections.

3.12.3. Periodically review wash rack cleaning agents for QPL/QPD compliance.

3.12.4. Coordinate with the Wing Corrosion Manager to ensure an acceptance inspection is accomplished on all depots, Global Reach Improvement Program, and/or other off station paints upon return to home station. **(T-2)**

3.12.5. Ensure PPE is serviceable and properly utilized.

3.12.6. Contracting Officer Representative (COR) for aircraft washes will evaluate at least 10% of all aircraft washes. COR should maintain a file of discrepancies for consideration during contract rewrites. If a current contract specifies a different level of inspection than that specified herein, the contract will take precedence. Future contracts will incorporate the 10% inspection rate as a minimum. **(T-2)**

3.12.7. The COR will use locally developed aircraft wash cleanliness forms and checklists to evaluate contract wash compliance. **(T-2)**

3.12.8. Contract washes will be signed off by authorized personnel. **(T-2)**

3.13. Aerospace Ground Equipment (AGE) Flight Production Responsibilities.

3.13.1. Ensure AGE work center personnel attend corrosion training.

3.13.2. The Wing Corrosion Manager, in concert with the AGE supervisor and unit maintenance training manager, will develop a corrosion prevention and control training curriculum. The AF Corrosion Prevention and Control Computer Based Training (CBT) is available on MyLearning. **(T-2)** The corrosion manager, in conjunction with the AGE supervisor, will determine the training interval. The training interval must be at least annually. **(T-2)**

3.13.3. Establish and enforce an effective corrosion program on assigned AGE and SE.

3.13.4. ASM and AGE supervisors determine repainting requirements.

3.13.4.1. AGE technicians will score the corrosion condition during periodic scheduled maintenance inspections utilizing the SE scoring in TO 35-1-3, Table 3-2 and annotate in DPAS.

3.13.4.2. Complete over coating of equipment is accomplished on an as needed basis. AGE will not be over coated solely for cosmetic purposes unless the AGE Flight and Fabrication Flight Superintendent determine it is required.

3.13.4.3. Complete over coating of equipment may be accomplished to apply the new equipment standard color (26173 FED-STD-595, MIL-PRF-85285). However, this must be accomplished on the units' regular corrosion schedule and equipment will be aligned with the new scheme on an attrition basis.

3.13.5. Owning work center personnel may treat small chips in the paint with Corrosion Prevention Compounds (CPC) listed in TO 35-1-3. For more permanent repairs of small, chipped areas, use authorized coating systems that are contained in items such as but not limited to: Sempens, Preval compressed air spray packs, Clip-Pacs, Brush and Roller, or Akzo Nobel's Spray 2 Fix aerosol can. Larger areas will be treated by the aircraft structural maintenance work center or, if applicable, contracted sources. **(T-2)**

3.13.5.1. Units will familiarize themselves with AGE painting materials and processes in accordance with TO 35-1-3 prior to awarding off-base contracts to get AGE painted.

3.13.5.2. Units will verify specifications for primer and topcoat, and color number requirements and ensure that these are addressed in the contract. **(T-2)**

3.13.6. AGE SE will be painted in accordance with TO 35-1-3. **(T-2)**

3.13.7. Ensure an automated system is used to schedule and document AGE painting. A historical entry will be made into the automated system upon complete repainting of equipment. **(T-2)**

3.13.8. Enforce the proper use of approved cleaning compounds in accordance with TO 35-1-3 and the QPL or QPD.

3.14. Aerospace Coating and Paint Score Requirements. Coating System Scoring and Maintenance. All units will score aircraft coating systems to determine frequency of topcoat application. **(T-2)**

3.14.1. Scoring will be accomplished as required during each Isochronal Inspection (ISO), Home Station Check, A-Check, all transfers, and upon return from depot maintenance. **(T-2)**

3.14.2. The exterior of aircraft must be clean prior to paint scoring. Supervisors will use ratings to determine corrosion treatment/paint scheduling priority. **(T-2)**

3.14.3. Units will adopt maintenance-painting techniques (i.e., spot painting and sectionalized painting as stated in TO 1-1-8) to maintain aircraft corrosion protection and appearance between overcoats.

3.14.4. A locally developed tracking system will be utilized to annotate scores. Score sheets will be uploaded to the AMC Corrosion Prevention & Control team at: **https://dod.teams.microsoft.us/_#/files/General?threadId=19%3Adod%3Acfcdeab8d43247d3906d3adc6cc7e60d%40thread.tacv2&ctx=channel&context=Paint%2520Scores&**

rootfolder=%252Fteams%252FAMCCorrosionControlPrevention%252FShared%2520Documents%252FGeneral%252FPaint%2520Scores

3.15. Corrosion Prevention and Control Training.

3.15.1. All aircraft maintenance personnel will receive general corrosion prevention and identification refresher training at least annually, they will also receive local and unique corrosion awareness training. Ensure sufficient training opportunities are provided for classic associate unit personnel during Unit Training Assembly days. Training will be a combination of Interactive Multimedia Instruction (IMI) and local and unique corrosion awareness training will be developed by the Wing Corrosion Manager.

3.15.1.1. IMI Training will consist of the Corrosion Control Familiarization Course 1 downloadable from **https://www.youtube.com/watch?v=EHMW0_iKzPs**. Video can also be found on the Air Force Corrosion Prevention and Control Office (AFCPCO) website at **https://www.my.af.mil/gcss-af/USAF/ep/browse.do?programId=t88B4F00B441D422B014427477A10019B&channelPageId=s6925EC133EFE0FB5E044080020E329A9**.

3.15.1.2. AFSC 2A7X3 (ASM) personnel and/or equivalent are exempt from periodic corrosion familiarization training.

3.15.1.3. En-route personnel must accomplish the IMI but are exempt from the supplemental training. **(T-2)**

3.15.2. If group block training method is used, supplemental training is conducted by the Wing Corrosion Manager or designated representative holding a primary AFSC of 2A773 or 2A790. If block or refresher training is done on an individual basis, the supplemental training should be self-supporting, such as a short video, PowerPoint presentation, or other medium that the individual can review.

3.15.3. The Wing Corrosion Manager, in conjunction with the unit maintenance training manager, develops formal classroom training curriculum. As a minimum, the curriculum will include: **(T-2)**

3.15.3.1. Corrosion identification procedures and techniques using the most current available Air Force aircraft corrosion visual training aids and information.

3.15.3.2. Identification of corrosion prone areas on unit specific weapon systems and equipment.

3.15.3.3. Reporting and documentation procedures for identified corrosion.

3.15.3.4. Importance of proper selection and use of sealants, CPC, and lubricants.

3.15.3.5. Proper selection and use of all cleaning materials.

3.15.4. The Wing Corrosion Manager periodically updates training material and information with the assistance of the unit maintenance training manager and information gained from CPABs and corrosion manager’s conferences.

3.15.5. Periodic corrosion training does not replace normal on-the-job training requirements in any career field.

3.16. Equipment Inspections.

3.16.1. The Defense Property Accountable System program (DPAS) Maintenance and Utilization (M&U) is the system of record for all aircraft and weapon system SE or SE Maintenance Information System (SEMIS).

3.16.2. Fabrication flights will follow TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures* and TO 34-1-3, *Inspection and Maintenance - Machinery and Shop Equipment* for machinery and industrial equipment inspections.

3.16.3. Sections will utilize DPAS M&U for inspection and maintenance requirements of machinery and industrial equipment unless the lack of full implementation precludes adoption of the MIS. This includes machinery and industrial equipment with or without reoccurring inspections and maintenance requirements within their work center.

Chapter 4

AIRCRAFT MARKING GUIDANCE

4.1. Paint Schemes/Configurations and USAF Standard Markings. Paint schemes/configurations and USAF standard markings will be applied in accordance with the weapon system specific aircraft TO and aircraft drawings, TO 1-1-8 and this instruction. When a conflict exists between technical orders and instructions, the weapon system specific TO and aircraft drawings will take precedence.

4.2. Exterior Markings / Coatings.

4.2.1. All aircraft markings will be maintained intact, legible, and distinct in color (not faded). Command standardization of markings by Mission Design Series (MDS) is of primary concern. **(T-2)**

4.2.2. All exterior aircraft markings must match the gloss level of the basecoat. No approved diffuse clear coats are available; low-gloss materials must be used for all markings on aircraft with lusterless paint schemes. **(T-2)**

4.2.3. Operational markings and structural coating/corrosion maintenance will take precedence over cosmetic refinements. **(T-2)**

4.2.4. When large sections of an aircraft are painted, (i.e., entire wing, fuselage, or empennage) they will be documented in applicable MIS and the individual AFTO Form 95, *Significant Historical Data*. **(T-2)**

4.2.5. Review applicable weapon system technical data for Weight and Balance (W&B) requirements.

4.3. Interior Markings.

4.3.1. Aircraft interior markings are permitted to be displayed within the aircraft, including unit, wing, MAJCOM identifiers, aircraft tail/serial number, tail flash, DCC/ADCC, and U.S. Air Force markings.

4.3.2. Markings must not be visible from the aircraft's exterior when access/entry doors and/or cargo-passenger ramp is open.

4.3.3. Markings will be uniform in nature (i.e., all interior markings must be placed in a standardized location for all aircraft of the same MDS)

4.3.4. All levels of supervision have the responsibility to review the markings for tastefulness, appropriateness, and adherence to copyright laws.

4.4. Aircraft Mandatory Markings.

4.4.1. Mandatory Markings:

4.4.1.1. United States Flag.

4.4.1.2. National Star Insignia.

4.4.2. Mandatory Marking Application. Mandatory markings will be applied in accordance with applicable weapon system specific TO and drawings, TO 1-1-8, and the applicable table in this instruction. **Table A2.1** through **Table A2.6**. in **Attachment 2** lists the size, location,

and color of markings by aircraft type. For identification, placement, and color of mandatory markings other than those identified in this instruction, refer to the weapon system specific TO and drawings. **(T-2)**

4.4.3. US Flag. Paint may be used only when high-quality templates or silk-screen processes are used. Flag decals can be obtained by going online to the Defense Logistics Agency (DLA) Document Services website at **https://www.dla.mil/Document-Services/**. Customer support may be reached at 1-866-736-7010. Flag decals may be purchased with the International Merchant Purchasing Authorization Card. There is no form number or part number for flag decals; therefore a "short title" should be used. The short title is either "21-inch by 40-inch Matte Finish Flag Decal" or "24-inch by 48-inch Matte Finish Flag Decal," as applicable. Flag decals have a one-year shelf life. For best results, use 3M edge sealer part # 4150 (designed for polyester decal films).

4.4.4. National Star Insignia. The National Star Insignia will be applied in accordance with applicable weapon system specific TO and drawings, TO 1-1-8, and the applicable table in this instruction.

4.5. Heritage Aircraft Markings.

4.5.1. Heritage Aircraft. Each Wing is authorized the designation of one "heritage" aircraft per Mission Design Series (MDS) to be the wing pride aircraft; this aircraft is authorized the application of the legacy markings stated below. **Table A3.1** through **Table A3.6**. in **Attachment 3** lists the size, location, and color of markings by aircraft type. **Note:** All exterior markings not identified in **paragraph 4.4** are considered heritage markings.

4.5.1.1. Units are not required to remove current heritage markings. Removal of these markings will occur through the normal programmed depot maintenance of each assigned aircraft.

4.5.1.2. The Wing Corrosion Manager or designee will identify all heritage aircraft for each wing and submit to **AMC.A4MM.Fabrication@us.af.mil** for record keeping. Should the selected heritage aircraft change at any point in time, the Wing Corrosion Manager or designee will resubmit the required information to identify the newly selected aircraft. Submissions must contain the following:

4.5.1.2.1. MDS and aircraft Serial Number

4.5.1.2.2. Date identified as a heritage aircraft.

4.5.1.2.3. Digital color photographs, one of each side of aircraft. The use of a slide presentation format is allowed.

4.5.1.3. Nose Art. Nose art is not permitted on any aircraft flying missions where local populations may consider it sensitive or offensive. Art will reflect a theme of civic and community pride, be distinctive, symbolic, and designed and maintained to the highest quality standards. Positioning of nose art is at the discretion of the WG/CC; however, it must be forward of the wing leading edge and not interfere with any mandatory markings. Nose art should be approximately two-thirds the size of the fuselage national star insignia, not to exceed three feet in diameter. All nose art applied to wing aircraft will be of standard size and location. Nose art and tail flash design requests must follow the coordination process outlined in **paragraph 4.5.1.3.4** for approval prior to installation. **(T-2)**

4.5.1.3.1. Wing mascot/logo may be applied as nose art.

4.5.1.3.2. On aircraft with lusterless paint schemes, nose art must be applied using lusterless paint and/or decals. **(T-2)**

4.5.1.3.3. The AMC ethos statement may be applied to heritage aircraft only on the forward left fuselage area in vinyl or paint utilizing Helvetica Medium (not to exceed three feet in diameter). Please contact AMC Corrosion Program Manager for current AMC ethos statement. **(T-2)**

4.5.1.3.4. E-mail request with WG/CC approval, local Public Affairs and Wing Historian coordination using the AF Form 1768, *Staff Summary Sheet*, justification, design, photos, and serial number to **AMC.A4MM.Fabrication@us.af.mil** for first coordination with Command Fabrication Superintendent/Corrosion Manager. Once approved, the WG/CC will route an official request to AMC-Chief of Staff (AMC-CS) through Enterprise Task Management Software Solution (ETMS2), including all documents for final approval from AMC Directorate of Logistics, Engineering, and Force Protection (AMC/A4).

4.5.1.4. Temporary Nose Art. Award ceremony aircraft displays with temporary nose arts (Knuckle Buster, Wing awards, etc.) must follow the coordination process outlined in **paragraph 4.5.1.3.4** for approval. Aircraft with temporary markings will not fly until temporary markings have been removed. The duration of time an aircraft may display any temporary nose art will be determined by the Command Fabrication Superintendent/Corrosion Manager and the AMC/A4 Director based on the justification of the request. **Note:** This does not apply to aircraft that are identified as a heritage aircraft. **(T-2)**

4.5.1.5. Internal Nose Art. Requestors will follow the coordination process outlined in **paragraph 4.5.1.3.4** for approval. No alterations to the aircraft frame will be made to accommodate internal nose art. Examples of approved internal nose art consist of flags, family photos, paintings, rugs, latrine paint schemes, crew placards with nicknames. **Exception:** **paragraph 4.5.1.13.3** still stands as no external nicknames allowed. **(T-2)**

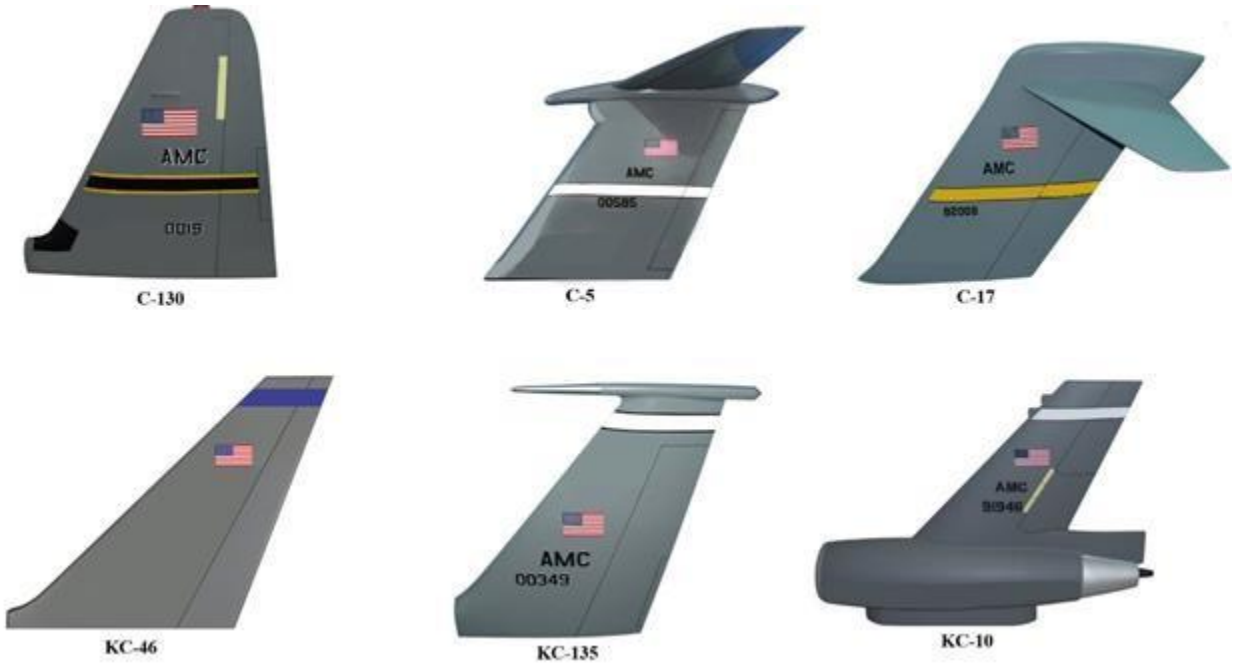
4.5.1.6. Tail Flash. Requestors must follow the coordination process outlined in **paragraph 4.5.1.3.4** for approval.

4.5.1.6.1. May contain colors/numbers of all squadrons assigned to the wing, however, must remain within the tail band stripes specified in the applicable table. Refer to section **4.2**. **(T-2)**

4.5.1.6.2. Wing/Squadron/Aircraft Maintenance Unit Colors. Each operational squadron may have its colors and/or logos applied within the boundaries of the tail stripes, or the entire wing may share one tail stripe design.

4.5.1.6.3. On aircraft with lusterless paint schemes, tail flash must be applied using lusterless paint and/or decals. **(T-2)**

Figure 4.1. Heritage AMC Tail Flash Configurations.

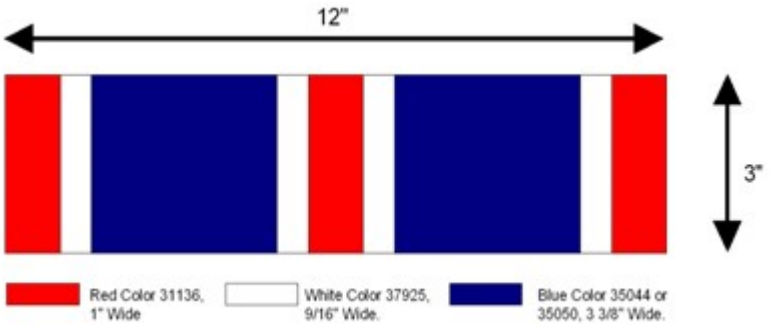


4.5.1.7. Letters and Numerals. These markings may be applied to heritage aircraft only using any style letter/numeral (font) deemed appropriate by the WG/CC. Size and location must remain standardized for all wing-assigned heritage aircraft. **(T-2)**

4.5.1.8. Aircraft Names. Aircraft Names are authorized only after approval by AMC/A4 and may be applied to heritage aircraft only. The proposed name must either have a national or military theme or honor a locale adjacent to an AMC base or aircraft manufacturing point. Route recommendations through your WG/CC to AMC-CS ETMS2; include the proposed name and detailed justification. If applied in addition to nose art, the aircraft name and nose art must be complementary; the font, size, and location may be changed to complement the nose art. **(T-2)**

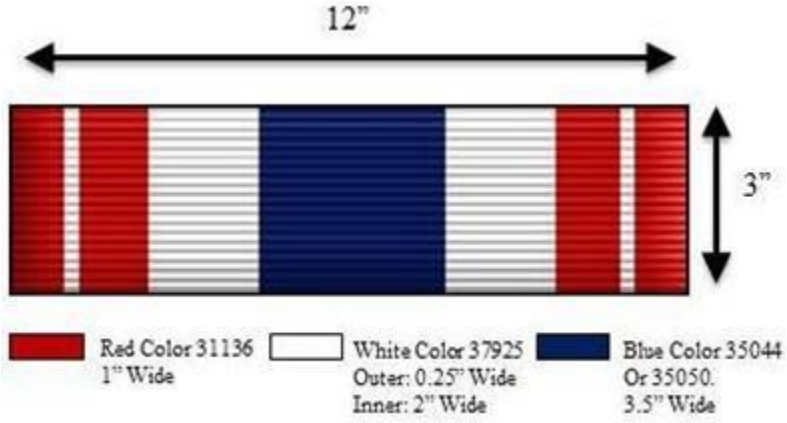
4.5.1.9. Air Force Outstanding Unit Award. The Air Force Outstanding Unit Award (AFOUA) may be applied to heritage aircraft only, if applicable. AFOUA decals, with and without oak leaf clusters, are available from **https://www.dla.mil/Document-Services/**.

Figure 4.2. Outstanding Unit Award.



4.5.1.10. Air Force Meritorious Unit Award (MUA) may be applied immediately adjacent to the AFOUA on heritage aircraft only, if applicable.

Figure 4.3. Meritorious Unit Award.



4.5.1.11. Boom Elevator Markings. Boom elevator markings may be applied to heritage aircraft only, in accordance with the appropriate table, weapon system specific TO, and/or weapon system drawings with the approval of the WG/CC.

4.5.1.12. WG/CC or WG/CV names and Group Commander's names (list all group commanders or none) may be used in place of the DCC names on heritage aircraft only. The wing designator may be included in the name block. Prior to deployment or flight into a combat zone (including transient aircraft), all names will be removed from the aircraft. **(T-2)**

4.5.1.13. DCC/ADCC. If elected, DCC and ADCC names will be applied in accordance with this instruction and placed on interior placards. Exterior application may be applied to heritage aircraft only. The preferred method is to apply and remove decals utilizing appropriate vinyl. This will allow all units to participate in the DCC program. See **Attachment 3**, **Table A3.1** through **Table A3.6**. Units will be consistent when selecting interior or exterior placards. Prior to deployment or flight into a combat zone (including transient aircraft), all names will be removed from the aircraft. **(T-2)**

4.5.1.13.1. Transient aircraft, as defined in TO 00-20-1 are not deployed and are not subject to the restrictions in paragraphs **4.5.1.12** and **4.5.1.13** so long as flights do not transition through a combat zone.

4.5.1.13.2. The name will consist of the abbreviated rank, first initial, and last name. The use of an individual's middle initial is optional. For extremely long names, it is permissible to use smaller letters to accommodate the entire name. **(T-2)**

4.5.1.13.3. Nicknames are not authorized. Size and font are at the MXG/CC's discretion; size not to exceed 2 ½ inches; standardized within the wing. Unit mascot graphics (i.e., razorback and eagle head [outlines or silhouettes]) may be used as the forward edge of the placard or crew chief block. For standardization purposes, either all or none of the heritage aircraft will bear the graphic. **(T-2)**

4.5.2. Approval Authority for Heritage Aircraft Markings. Final approval for all temporary or permanent heritage markings in **paragraph 4.5** will come from the Command Fabrication Superintendent/Corrosion Manager and AMC/A4 Director. All levels of supervision have the responsibility to review the markings for tastefulness, appropriateness, and adherence to copyright laws.

4.6. Competition Aircraft. Units participating in competitions will follow the guidelines established in competition rules for aircraft appearance. Competitions should be considered "come as you are" and no waivers will be granted. "Come as you are" is defined as no special effort, painting, or additional markings applied to enhance or improve the overall appearance of the aircraft. This includes polishing of metal surfaces, using commander type markings, etc. **(T-2)**

4.7. Aircraft Transfer. The following markings must be removed prior to formal transfer of aircraft to other units or MAJCOMs (aircraft retiring to Aerospace Maintenance and Regeneration Group need not have any markings removed). Deviations from transfer requirements are authorized provided the gaining and losing units reach a mutual agreement. **(T-3)**

4.7.1. Organizational insignias.

4.7.2. Unit identifier.

4.7.3. Tail stripe.

4.7.4. Aircrew and crew chief names.

4.7.5. Unit unique markings.

4.7.6. Nose art.

4.8. Waivers.

4.8.1. Waiver requests must be approved by WG/CC, local Public Affairs, and Wing Historian prior to submission. E-mail the request using the AF Form 1768, *Staff Summary Sheet*, justification, design, photos, and tail number to **AMC.A4MM.Fabrication@us.af.mil** for first coordination with the Command Fabrication Superintendent/Corrosion Manager. Once approved, the WG/CC will route official request to AMC-CS through ETMS2, including all documents for final approval from AMC/A4. Waivers that are in violation of aircraft technical data will not be accepted. Waiver requests must include the following:

4.8.1.1. Clear statement of present procedure/marking.

4.8.1.2. Clear statement of proposed change.

4.8.1.3. Justification to include historical significance, if applicable.

4.8.1.4. Digital color photographs, one of present marking and one of requested change. The use of a slide presentation format is allowed.

4.8.2. Deviations from standard markings are authorized for 89 Air Wing aircraft when approved by AMC/A4.

Chapter 5

LOCAL MANUFACTURE PROGRAM

5.1. Local Manufacture Coordination.

5.1.1. To process local manufacture and/or modification request (Tools, Equipment, Aircraft Parts), the requesting squadron must complete all information on a locally generated *Local Manufacture Coordination Sheet,* or digital equivalent such as local SharePoint, including all applicable data (drawings, samples, TO references, engineering disposition, etc.), and route to the applicable fabrication section for review.

5.1.2. The *Local Manufacture Coordination Sheet* or digital equivalent such as local SharePoint will be utilized to facilitate coordination for all local manufacturing requests.

5.1.3. Local manufacture request with a first and second position of the Source, Maintenance, and Recoverability (SMR) code identified as MO (an item to be manufactured or fabricated at the organizational maintenance level) or MF (An item to be manufactured or fabricated at the intermediate maintenance level) are, by technical order, authorized for local manufacture. SMR code applications and their definitions are outlined in TO 00-25-195, *Source Maintenance, and Recoverability Coding of Air Force Weapons, Systems, and Equipment*.

5.1.4. Parts SMR coded as procurable must be ordered through LRS/Materiel Management. However, should zero assets exist, and the item is deemed mission essential by MXG/CC or designated authority, and the fabricating section has the capability, the part may be manufactured. In that case, the requestor will contact the applicable engineering authority to obtain written authorization (e.g., memo for record, 202 or 107 approvals) to manufacture: Item Manager, System Program Office engineering.

5.2. Fabrication Flight Superintendent Responsibilities.

5.2.1. Must be designated approval authority per MXG/CC (Production Superintendent for off-shifts) to authorize manufacture and/or modification requests for aircraft, tools, and equipment items.

5.2.2. Act as final authority for manufacturing and/or modification requests supporting items that do not interfere with aircraft or equipment and are needed for internal maintenance.

5.3. Quality Assurance (QA) Responsibilities.

5.3.1. QA will be the final authority to authorize the use of manufactured and/or modified tools and equipment that interface with aircraft or equipment not identified or required by technical data. Coordination with QA must include a description of the item, pictures, drawings, samples (as needed), and/or engineering approval (if required).

5.3.2. Copies of all approved locally manufactured and/or modified tools and equipment requests will be maintained digitally by the QA office.

5.4. Requestor’s Responsibilities.

5.4.1. Determine the local manufacture coordination and authorization process.

5.4.2. Order all aircraft parts/nationally stocked (NSN) items through LRS/material management using AF Form 2005, *Issue/Turn-In Request*.

5.4.2.1. Complete and sign the DD Form 1348M, *DoD Single Line-Item Requisition System Document (Mechanical),* generated by LRS/Material Management.

5.4.2.2. Generate an automated AFTO Form 350, *Reparable Item Processing Tag* from AF FMxC2 (GO81), *Field Maintenance Command and Control* or complete and provide a manual AFTO Form 350 tag. Also include a screen print of screen 122 from GO81.

5.4.2.3. Complete locally generated, *Local Manufacture Coordination Sheet*.

5.4.2.4. Obtain and provide all applicable data (drawings, samples, TO references, engineering dispositions, AF Form 2005, DD Form 1348-6, *DoD Single Line-Item Requisition System Document*, 350 tag, etc.) and route to the applicable fabrication section for review.

5.4.2.5. Procure and deliver any/all required materials to the fabrication section to complete the request.

5.4.2.6. Process request for QA approval (as required) IAW **paragraph 5.3**.

5.4.2.7. The fabrication section will:

5.4.2.7.1. Evaluate all applicable data (drawings, technical data, samples) to verify manufacturing capability.

5.4.2.7.2. Provide a list of required materials on a locally generated *Local Manufacturing Coordination Sheet* or digital equivalent. The list will include any/all materials (tools, cutters, bits, consumables and/or expendables). Every effort will be made to utilize on-hand materials. Ordering of materials may be used to replenish stock. Assist with and provide procurement sources and costs for materials not available for acquisition through LRS.

5.4.2.7.3. Process the *Local Manufacture Coordination Sheet* or digital equivalent to the designated approval authority IAW **paragraph 5.2**.

5.4.2.7.4. Establish an estimated completion date according to assigned priorities. The completion date will be based on manufacturing time, availability of materials and/or estimated delivery of materials. The MXS Production Superintendent will establish the manufacturing priority for aircraft parts and tools.

5.4.2.7.5. Manufacturing and/or modification requests may be started immediately if all required materials are available. However, if the requestor must procure additional materials, the request will not be assigned or begin until all materials have been procured and delivered**.**

5.4.2.7.6. Track and coordinate actions required by additional work centers. Any additional maintenance action(s) conducted by additional work centers will be identified and documented on the locally generated *Local Manufacture Coordination Sheet* or digital equivalent. Throughout the process, the parts will be accompanied by all applicable data (drawings, samples, TO references, engineering dispositions, AF Form 2005, DD Form 1348-6, 350 tags, etc.)

5.4.2.7.7. Upon completion of the request, the primary work center assigned will ensure all maintenance actions for all work centers have been documented in the MIS (GO81).

5.4.2.7.8. Notify the requestor the requested item is complete and ready for pick-up.

Chapter 6

AIRCRAFT BATTLE DAMAGE REPAIR (ABDR)

6.1. Aircraft Battle Damage Repair (ABDR). ABDR is an effective force multiplier contributing to wartime sortie production by assessing and repairing battle damaged aircraft rapidly to support flying operations. ABDR repairs will be accomplished during contingency or wartime only. However, weapons system program managers may approve ABDR repairs during peacetime on a case-by-case basis using trained ABDR Technicians.

6.2. Responsibilities.

6.2.1. The Directorate of Logistics (AF/A4L) provides overall policy and guidance for the USAF ABDR Program

6.2.2. The Air Force Sustainment Center; Logistics, Directorate, Maintenance and Repair Requirements Branch (AFSC/LGPM) is the USAF ABDR Program Office and assumes management responsibility for USAF ABDR Programs. See DAFI 21-101_AFMCSUP, *Aircraft and Equipment Maintenance Management,* for guidance of Air Force Materiel Command (AFMC) responsibilities of the ABDR Program.

6.2.3. **MAJCOM/A4M Responsibilities.** Establish a command focal point to work ABDR issues with AFMC. The Command Fabrication Superintendent or designee will preside as the MAJCOM focal point for the ABDR program and perform the following duties:

6.2.3.1. Develop Command ABDR Concept of Operations (CONOPS) in coordination with AFMC and ABDR Technical Support Office (ABDR-TSO) to ensure the CONOPS addresses unit planning and readiness regarding the repair of battle/crash-damaged aircraft during combat operations.

6.2.3.2. Incorporate ABDR into Command war planning documentation.

6.2.3.3. Coordinate with AFMC for Unit Type Code (UTC) taskings in support of Operational Planning (OPLAN).

6.2.3.4. Address ABDR in mission need statements for new weapon systems that support or engage in combat operations.

6.2.3.5. Ensure ABDR bed down and integration requirements are outlined in the applicable Base Support Plan (BSP) IAW DAFI 10-404, *Base Support and Expeditionary (BAS&E) Site Planning.*

6.2.3.6. Provide unit level weapon-system-specific tools (other than common hand tools) and equipment needed to repair battle/crash damaged aircraft.

6.2.3.7. Provide technical support to the ABDR Technical Support Office for live fire or similar testing.

6.3. Maintenance Group Commander (MXG/CC) Responsibilities. Ensure a minimum of 25% of 7 skill level or above maintenance personnel is trained and qualified to perform the role of Aircraft Battle Damage Evaluator using a mixture of personnel from 2A AFSCs. **(T-3)**

6.4. Unit Responsibilities.

6.4.1. Utilize trained Aircraft Battle Damage Evaluators to evaluate aircraft battle damage and mishap damage sustained during combat or contingency operations. **(T-3)**

6.4.2. Ensure shelf-life items listed in TO 1-1H-39, *Aircraft Battle Damage Repair Manual – General,* and weapon system-specific –39 TOs are maintained at required levels to support ABDR requirements. **(T-3)**

6.4.3. Ensure aircraft battle damage is documented on an AFTO Form 97, *Aerospace Vehicle Battle Damage Incident Debrief/Assessment/Repair Record* or AFTO Form 97B, *Aircraft Battle Damage Evaluator Checklist* as required IAW TO 1- 1H-39. **(T-2)** Completed forms will be forwarded to the Aircraft Battle Damage Repair Program Office. **(T-2)** CLASSIFIED messages must be sent to SIPR: **usafsa.wright-patt.afsc-lg.mbx.afsc-lgpm-abdr-tso@mail.smil.mil** and UNCLASSIFIED messages must be sent to NIPR: **afsc.lgpm.abdrtso@us.af.mil** for filing in the historical archives. **(T-2)**

6.5. Aircraft Battle Damage Evaluator Qualification and Training.

6.5.1. Aircraft Battle Damage Evaluator training provides MXG/CC's with ABDR knowledgeable forces and prepares units to execute Air Tasking Orders in a denied airspace with potential heavy losses. Aircraft Battle Damage Evaluator roles and responsibilities are outlined in TO 1-1H-39.

6.5.2. Must possess a minimum 7 skill level in an approved aircraft maintenance AFSC.

6.5.3. Complete Aircraft Battle Damage Evaluator training course every 24 months. **(T-2)**

6.6. Aircraft Battle Damage Evaluator Responsibilities.

6.6.1. Conduct Unexploded Explosive Ordinance (UXO) sweeps of aircraft and/or support equipment.

6.6.2. Ensure aircraft is safe for maintenance.

6.6.3. Debrief aircrew.

6.6.4. Evaluate sustained damage.

6.6.5. Coordinate repair effort with local supervision and ABDR Program Office.

6.6.6. Ensure completion of AFTO Form 97B, *Aircraft Battle Damage Evaluator Checklist.*

6.6.7. Locate and assist movement of ABDR War Reserve Material (WRM) assets.

6.7. Aircraft Battle Damage Evaluator Trainer Responsibilities.

6.7.1. Aircraft Battle Damage Evaluator formal training will be IAW the approved ABDR course control documents. **(T-2)** Ensure ABDR formal training complies with ABDR-TSO approved curriculum for field-administered training.

6.7.2. Field level Maintenance Training Flights (MTFs) will maintain instructors by using train the trainer. In the event a MTF has no trained instructors contact the ABDR Program Office. **(T-3)**

6.7.3. Aircraft Battle Damage Evaluator instructor training material can be requested at **afsc.lgpm.abdrtso@us.af.mil**.

DAVID J. SANFORD, Major General, USAF
Director of Logistics, Engineering, and Force Protection

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

40 CFR, Part 61, *National Emission Standards for Hazardous Air Pollutants*

40 CFR, Part 63, *National Emission Standards for Hazardous Air Pollutants for Source Categories*

AFPD 21-1, *Maintenance of Military Materiel*, 01 August 2018

AFI 10-404, *Base Support and Expeditionary (BAS&E) Site Planning*, 24 July 2019

DAFI 21-101, *Aircraft and Equipment Maintenance Management*, 16 January 2020

DAFI 21-101_AFMCSUP, *Aircraft and Equipment Maintenance Management*, 8 November 2022

AFI 21-131, *Joint Oil Analysis Program*, 26 March 2014

AFI 33-322, *Records Management and Information Governance Program*, 23 March 2020

AFI 63-101/20-101, *Integrated Life Cycle Management*, 30 June 2020

DAFI 63-140, *Aircraft Structural Integrity Program and Air and Space Equipment Structural Management*, 6 August 2020

DAFI 90-160, *Publications and Forms Management*, 14 April 2022

AFMAN 48-148, *Ionizing Radiation Protection*, 20 July 2020

DAFMAN 32-1084, *Standard Facility Requirements*, 15 January 2020

DAFMAN 48-125, *Personnel Ionizing Radiation Dosimetry*, 27 October 2020

DAFMAN 90-161, *Publishing Processes and Procedures*, 18 October 2023

DAFMAN 91-203, *Air Force Occupational Safety, Fire, and Health Standards*, 25 March 2022

TO 00-20-1, *Aerospace Equipment Maintenance Inspection, Documentation, Policies, and Procedures*, 26 September 2022

TO 00-25-107, *Maintenance Assistance*, 15 August 2022

TO 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, 22 December 2023

TO 00-25-195, *Source Maintenance, and Recoverability Coding of Air Force Weapons, Systems, and Equipment*, 1 September 2023

TO 00-25-252, *Intermediate Maintenance and Depot Level Maintenance Instructions - Aeronautical Equipment Welding*, 29 September 2023

TO 1-1A-1, *Engineering Handbook Series for Aircraft Repair, General Manual for Structural Repair*, 15 January 2016

TO 1-1A-9, *Engineering Series for Aircraft Repair Aerospace Metals - General Data and Usage Factors*, 7 December 2023

TO 1-1-689-3, *Cleaning and Corrosion Control, Volume III Avionics and Electronics*, 15 January 2021

TO 1-1-691, *Aircraft Weapons Systems - Cleaning and Corrosion Control and Prevention, Aerospace and Non-Aerospace Equipment*, 22 July 2022

TO 1-1-8, *Application and Removal of Organic Coatings, Aerospace and Non-Aerospace Equipment*, 24 September 2023

TO 1-1H-39, *Aircraft Battle Damage Repair Manual – General*, 15 May 2023

TO 1C-130A-6, *Aircraft Scheduled Inspection and Maintenance Requirements*, 15 December 2023

TO 1C-130J-6, *Airplane Scheduled Inspection*, 12 December 2023

TO 1C-135-3-8, *Location and Application - Exterior Stencils*, 15 May 2023

TO 32-1-101, *Use and Care of Hand Tools and Measuring Tools*, 19 August 2023

TO 33B-1-1, *Non-Destructive Inspection Methods, Basic Theory*, 01 July 2022

TO 33B-1-2, *Non-Destructive Inspection - General Procedures and Process Controls*, 15 December 2023

TO 34-1-3, *Inspection and Maintenance - Machinery and Shop Equipment*, 23 August 2019

TO 34A-1-1, *Additive Manufacturing Qualification of Technicians, Machines and Facilities*, 20 December 2020

TO 34A-3-1, *Polymers Additive Manufacturing, General Procedures and Process Controls*, 30 December 2020

TO 35-1-3, *Corrosion Prevention and Control, Cleaning, Painting, and Marking of USAF Support Equipment (SE)*, 26 January 2022

Prescribed Forms

AMC Form 1017*, Aircraft Wash Supervisor and Employee's Certification*

Adopted Forms

DD Form 1348-6, *DoD Single Line-Item Requisition System Document*

DD Form 1348M, *DoD Single Line-Item Requisition System Document (Mechanical)*

DD Form 2757, *Welding Examination Record*

DAF Form 679, *Department of the Air Force Publication Compliance Item Waiver Request/Approval*

DAF Form 847, *Recommendation for Change of Publication*

AF Form 1768, *Staff Summary Sheet*

AF Form 2005, *Issue/Turn-in Request*

AFTO Form 1, *Welding Proficiency Log*

AFTO Form 95, *Significant Historical Data*

AFTO Form 97, *Aerospace Vehicle Battle Damage Incident Debrief/Assessment/Repair Record*

AFTO Form 97B, *Aircraft Battle Damage Evaluator Checklist*

AFTO Form 350, *Reparable Item Processing Tag*

AFTO Form 781A, *Maintenance Discrepancy and Work Document*

Abbreviations and Acronyms

ABDR—Aircraft Battle Damage Repair

ABDR-TSO—Aircraft Battle Damage Repair-Technical Support Office

ADCC—Assistant Dedicated Crew Chief

AFCPCO—Air Force Corrosion Prevention and Control Office

AFI—Air Force Instruction

AFLCMC—Air Force Life Cycle Management Center

AFMAN—Air Force Manual

AFMC—Air Force Materiel Command

AFNDIO—Air Force Nondestructive Inspection Office

AFOUA—Air Force Outstanding Unit Award

AFRC—Air Force Reserve Command

AFSC—Air Force Specialty Code

AGE—Aerospace Ground Equipment

AIRCAT—Automated Inspection, Repair, Corrosion, and Aircraft Tracking

ALC—Air Logistics Center or Air Logistics Complex

AM—Additive Manufacturing

AMPO—Additive Manufacturing Program Office

AMC—Air Mobility Command

AMT—Aircraft Metals Technology

ANG—Air National Guard

ARC—Air Reserve Component

ASIP—Aircraft Structural Integrity Program

ASM—Aircraft Structural Maintenance

AvSE—Aviation Support Equipment

BSP—Base Support Plan

CBT—Computer Based Training

CCPE—Corrosion Control Prevention Executive

CFR—Code of Federal Regulations

CONOPS—Concept of Operations

COR—Contracting Officer Representative

CPA—Corporate Process Activities

CPAB—Corrosion Prevention Advisory Board

CPC—Corrosion Preventative Compound

CS—Cold Spray

DAFI—Department of the Air Force Instruction

DAFMAN—Department of the Air Force Manual

DCC—Dedicated Crew Chief

DLA—Defense Logistics Agency

DPAS—Defense Property Accountability System

EID—Equipment Identification Designator

ETMS2—Enterprise Task Management Software Solution

FMxC2—Field Maintenance Command and Control

FRP—Fuselage Reference Plane

GMAW—Gas Metal Arc Welding

GTAW—Gas Tungsten Arc Welding

HSS—High-Speed Steel

IAW—In Accordance With

ICARR-3D—Inspection, Crack/Corrosion and Repair Reporting

IMI—Interactive Multimedia Instruction

IPB—Illustrated Parts Breakdown

IPT—Integrated Process Teams

ISO—Isochronal Inspection

JEDMICS—Joint Engineering Data Management Information and Control System

M&U—Maintenance and Utilization

MAJCOM—Major Command

MDS—Mission Design Series

MFTO—Metals Fabrication and Technology Office

MIS—Maintenance Information System

MTF—Maintenance Training Flight

MUA—Meritorious Unit Award

NAS—National Aerospace Standards

NAS 410—National Aerospace Standard Certification & Qualification of Nondestructive Test Personnel

NDI—Nondestructive Inspection

NLT—No Later Than

NSN—National Stock Number

OAP—Oil Analysis Program

OPLAN—Operational Planning

OPR—Office of Primary Responsibility

OWS—Outer Wing Station

PCAMS—Process Control Automated Management System

PCR—Publication Change Request

PCS—Permanent Change of Station

PE—Personal Evaluation

PIT—Product Improvement Team

POC—Point of Contact

POM—Program Objective Memoranda

PPE—Personal Protective Equipment

PS&D—Plans, Scheduling, and Documentation

QA—Quality Assurance

QPD—Qualified Product Database

QPL—Qualified Products Listings

QVI—Quality Verification Inspections

RIL—Routine Inspection Listing

RSO—Rapid Sustainment Office

RVSM—Reduced Vertical Separation Minimum

SE—Support Equipment

SEMIS—Support Equipment Maintenance Information System

SI—Special Inspections

SII—Special Interest Items

SMAW—Shielded Metal Arc Welding

SME—Subject Matter Expert

SMR—Source Maintenance, and Recoverability

SNCO—Senior Noncommissioned Officer

SPO—System Program Office

STRT—Specialty Training Requirements Team

TAR—Technical Assistance Request

TDP—Technical Data Package

TDY—Temporary Duty

TO—Technical Order

U&TW—Utilization and Training Workshop

UTC—Unit Type Code

UXO—Unexploded Explosive Ordinance

VSS—Vertical Stab Station

W&B—Weight and Balance

WRM—War Reserve Material

WSM—Weapon System Manager

Office Symbols

AF/A4L—The Directorate of Logistics

AFSC/LGPM—Air Force Sustainment Center; Logistics, Directorate, Maintenance and Repair Requirements Branch

AMC/A4—Air Mobility Command; Directorate of Logistics, Engineering, and Force Protection

AMC-CS—Air Mobility Command; Chief of Staff

AMC/A4M—Air Mobility Command; Maintenance Division

MXS/CC—Maintenance Squadron Commander

MXG/CC—Maintenance Group Commander

WG/CC—Wing Commander

Attachment 2

MARKING LOCATION BY AIRFRAME

Table A2.1. C-5 Markings.

Note: Reference Drawings 201211891 (exterior finishes) and 201211892 (exterior markings) for additional information.			
Marking	**Location**	**Size**	**Color/Finish**
United States Flag	Both sides of vertical stabilizer, bottom of flag on WL 626, top of flag horizontally centered between the 10 percent chord front beam and the 64 percent rear chord beam. (European One and White Cap; leave flag where currently positioned.)	Matte: 24 X 48 inches Gloss: 31.5 X 60 inches	Matte finish
National Star Insignia	Both sides of fuselage and upper left/lower right wing; see applicable USAF drawing.	50 inches off FS 1964 on WL 258.	36270

Table A2.2. C-17 Markings.

Note: Refer to USAF Paint Drawing			
Marking	**Location**	**Size**	**Color/Finish**
United States Flag	Bottom of flag is located 42 inches above top edge of the upper tail band stripe, with the top forward corner of the flag located 1 inch from the VOR/LOC-2 antenna, same location both sides of vertical stabilizer.	24 X 48 inches	Matte finish
National Star Insignia	Both sides of fuselage and upper left/lower right wing; see applicable USAF drawing.	30 inches	36270

Table A2.3. C-130J Markings.

Note: Refer to USAF Paint Drawing 201122423 and Exterior Markings Drawing # 201122424 for C-130J aircraft.			
Marking	**Location**	**Size**	**Color/Finish**
United States Flag	Both sides vertical stabilizer, top of flag located at vertical stab station (VSS) 178, 15 inches forward of the rudder.	24 X 48 inches	Matte finish
National Star Insignia	Both sides of fuselage and upper left/lower right wing; see applicable USAF drawing.	30 inches	36270

Table A2.4. KC-10 Markings.

Marking	**Location**	**Size**	**Color/Finish**
United States Flag	Both sides of vertical stabilizer, 100 inches up from ZID 92.5, grounded on aft spar. (White Cap paint scheme will leave existing painted-on flag in place.)	24 X 48 inches	Matte finish
National Star Insignia	Both sides of fuselage and upper left/lower right wing; see Douglas drawing (NXE6403).	30 inches	36270

Table A2.5. KC-135 Markings.

Marking	**Location**	**Size**	**Color/Finish**
United States Flag	Both sides of vertical stabilizer, bottom of flag on WL 447, centered between stabilizer leading and trailing edges, not including rudder.	21 X 40 inches	Matte finish
National Star Insignia	Both sides of fuselage and upper left/lower right wing according to TO 1C-135-3-8, *Location and Application - Exterior Stencils*	See TO 1C-135-3-8	36270

Table A2.6. KC-46 Markings.

Note: Aircraft specific TO/Commercial Manual for gray tail markings guidance will be followed. Only mandatory markings are approved, and all markings will stay as manufacture produced. Waivers, changes, or optional marking requests will not be approved. Internal Nose Art is authorized with proper routing, outlined in paragraph **4.5.1.5. Note:** Exterior markings applied to production aircraft prior to gray tail guidance change will be removed and not reapplied during normal PDM input.			
Marking	**Location**	**Size**	**Color/Finish**
United States Flag	See TO/ Commercial Manual	See TO/ Commercial Manual	Matte Finish
National Star Insignia	See TO/Commercial Manual	See TO/ Commercial Manual	36270

Attachment 3

LEGACY MARKING LOCATION BY AIRFRAME

Table A3.1. C-5 Markings.

Note: Reference Drawings 201211891 (exterior finishes) and 201211892 (exterior markings) for additional information.			
Marking	**Location**	**Size**	**Color/Finish**
United States Flag	Both sides of vertical stabilizer, bottom of flag on WL 626, top of flag horizontally centered between the 10 percent chord front beam and the 64 percent rear chord beam. (European One and White Cap; leave flag where currently positioned.)	Matte: 24 X 48 inches Gloss: 31.5 X 60 inches	Matte finish
"AMC" Tail Marking	Both sides of vertical stabilizer, top of letters 12 inches below bottom of flag. Top of letters will be horizontally centered between the 10 percent chord front beam and the 64 percent rear chord beam.	18 inches	37038
Tail Band Stripes	2-inch upper stripe located 12 inches below bottom of "AMC". 2-inch lower stripe located 18 inches down from bottom of upper stripe. Stripe will run horizontally from aft edge of the leading-edge seam, back to trailing edge of the rudder.	As required	37038
Radio Call Numbers	Both sides of vertical stabilizer, top of numbers located 12 inches below bottom of lower stripe. Top of numbers will be horizontally centered between the 10 percent chord front beam and the 64 percent rear chord beam.	18 inches	37038

Local Station Numbers (last 4 digits of aircraft serial number)	Both sides of fuselage, top of numbers grounded on stringer 12 on left side of stringer, 11 on right side of fuselage, forward edge of number 9 inches aft of nose seam.	12 inches	37038
Super Galaxy	C-5M only, Tail Stripes: 2-inch upper stripe located 12 inches below tail numbers; 2-inch lower stripe located 18 inches below upper stripe. Stripes run horizontally from leading edge seam to leading edge of the rudder center "Super Galaxy" between stripes.	2 inches (width)	37038
Air Mobility Command	Bottom of visor with "Y" in "mobility" centered above antenna.	10 inches	37038
Unit Identifier	Both sides of the fuselage, centered under identification number. Top of numbers and letters located 10 inches below bottom of identification numbers.	10 inches	37038
Associate Unit Identifiers	Both sides of the fuselage, centered under unit identifier. Top of letters and numbers located 6 inches below bottom of unit identifier.	10 inches	37038
Air Force Outstanding Unit Award	Centered on door, bottom of decal 3 inches above the crew entry door.	See **Figure 4.2**	See **Figure 4.2**
Crew Chief Block	Exterior: Left side of fuselage only, 6 inches below and centered on the command emblem.	MXG/CC discretion	37038

Aircraft Name	Left side of fuselage may be one or two lines. Vertical Position: Centered on AMC emblem. Horizontal Position: Beginning of first letter in line with the beginning of the "O" in U.S. Air Force.	10 inches	37038
Command Emblem	Both sides of fuselage, top of emblem placed 2 inches below clear view window, aft-most portion placed 2 inches forward of window centerline.	34 inches	As required
National Star Insignia Outline	Both sides of fuselage, centered 59 inches aft.	50 inches of FS 1964 on WL 258.	37038

Table A3.2. C-17 Markings.

Note: Refer to USAF Paint Drawing			
Marking	**Location**	**Size**	**Color/Finish**
United States Flag	Bottom of flag is located 42 inches above top edge of the upper tail band stripe, with the top forward corner of the flag located 1 inch from the VOR/LOC-2 antenna, same location both sides of vertical stabilizer.	24 x 48 inches	Matte Finish
"AMC" Tail Marking	Bottom of letters are located 12 inches above top edge of the top tail band stripe and centered on an (invisible) vertical line drawn parallel with vertical stabilizer trailing edge that intersects the center of the flag, same location both sides.	18 inches	37038

Tail Band Stripes	2-inch stripes, top of upper stripe located at vertical stabilizer coordinate ZV134. Top of lower stripe is located 18 inches below bottom of upper stripe. Stripes run horizontally from aft edge of leading-edge seam to trailing edge of rudder both sides.	As required	37038
Radio Call Numbers	Both sides of vertical stabilizer, top of numbers located 12 inches below bottom of lower tail band stripe, centered on an invisible vertical line drawn parallel with the vertical stabilizer trailing edge, intersecting center of the flag.	18 inches	37038
Unit Identifier	Both sides of fuselage, centered on the identification number, top of numbers 6 inches below bottom of the identification numbers.	10 inches	37038
Associate Unit Identifier	Both sides of the fuselage, centered on AMC unit identifier, top of numbers 6 inches below bottom of AMC unit designator.	10 inches	37038
Air Force Outstanding Unit Award	Centered 3 inches above crew entry door.	See **Figure 4.2**	See **Figure 4.2**
Command Emblem	Both sides of fuselage, center of emblem located 50 inches forward of STA 450.250 skin splice, top of emblem located 1.5 inches below longeron L-25 beauty strip.	34 inches	As required

Crew Chief Block	Left side of fuselage only. Centered between aft edge of crew entrance door and fuselage light hinge. Bottom of block located 6 inches above top of beef-up band	MXG/CC discretion	37038
Aircraft Name	Centered horizontally on the crew entry door. Bottom of marking 11 inches from top of door. Use Century Schoolbook font on two lines…arranged into a football shape.	Length of marking should be between 55 and 65 inches	37038
Local Station Numbers (last 4 digits of the aircraft serial number)	Both sides of fuselage, centered below the lower aft corner of the down view window, with the top of the numbers on fuselage coordinate Z-192.	18 inches	37038
National Star Insignia Outline (Fuselage)	Both sides of fuselage, centered on the centerline of the aft fuselage formation light, with the insignia leading edge located 6 inches aft of the light.	30 inches	37038
"U.S. Air Force" Marking	Both sides of fuselage, located 12 inches aft of fuselage station 227.500 and 35.38 inches above longeron 1-25.	24 inches	37038

Table A3.3. C-130J Markings.

Note: Refer to USAF Paint Drawing 201122423 and Exterior Markings Drawing #201122424 for C-130J aircraft.			
Marking	**Location**	**Size**	**Color/Finish**
United States Flag	Both sides vertical stabilizer, top of flag located at vertical stab station (VSS) 178, 15 inches forward of the rudder.	24 x 48 inches	Matte finish
"AMC" Tail Marking	Both sides of vertical stabilizer, top of letters located at VSS 142 and centered under flag.	12 inches	37038

Tail Band Stripes	2-inch upper stripe located 10 inches below bottom of "AMC", 2-inch lower stripe located 12 inches below bottom of upper stripe. Top horizontal stripe will run from 25 inches forward of leading-edge seam to trailing edge of rudder, not to extend onto rudder trim tabs; bottom stripe will run 27 inches forward of leading-edge seam to trailing edge of rudder.	As required	37038
Radio Call Numbers	Both sides of vertical stabilizers, top of numbers located 10 inches below bottom of lower tail band stripe, centered under flag.	15 inches	37038
Local Station Numbers (last 4 digits of aircraft serial number)	Placed on both sides of fuselage, 23 inches aft of pilot's kick windows. Bottom of marking parallel to bottom of pilot's kick window.	6 inches	37038
"U.S. Air Force" Marking	Both sides of forward fuselage, 14 inches aft of the window frame and horizontally level with the lower window.	15 inches	37038
Unit Identifier	Both sides of fuselage, 6 inches below local station numbers. Forward edge of unit identifier to be in line with first digit of local station numbers. **Note:** Ensure markings do not migrate into the Reduced Vertical Separation Minimum (RVSM) area.	6 inches	37038
Air Force Outstanding Unit Award	Centered 3 inches above crew entry door.	See **Figure 4.2**	See **Figure 4.2**
Crew Chief Block	Left side of fuselage only, 2 inches forward of crew entry door in line with top door seam.	MXG/CC discretion	37038

Command Emblem	Both sides of fuselage, top of emblem level and even with top edge of side hatch, center of patch is 128” forward of side hatch forward edge (approximately FS 277.0E). (Long J model only)	24 inches **Short Models no command emblem required**	As required
National Star Insignia Outline	Both sides of fuselage; see applicable USAF drawing.	30 inches	37038
Ice Detection Marking	Installed on both wing leading edges, beginning at Outer Wing Stations (OWS) 517.0 and extending outboard and ending at OWS 541.0. Chordwise dimension equals 12 inches on upper and lower surfaces of leading edge.	24 x 24 inches	37038
Armament Block	Located 6 inches aft of the crew entry door, 6 inches below upper crew door frame.	16 x 10 inches	37038

Table A3.4. KC-10 Markings.

Marking	Location	Size	Color/Finish
United States Flag	Both sides of vertical stabilizer, 100 inches up from ZID 92.5, grounded on aft spar. (White Cap paint scheme will leave existing painted-on flag in place.)	24 x 48 inches	Matte finish
“AMC” Tail Marking	Both sides of vertical stabilizer, top of letters 20 inches below bottom of flag, grounded on aft spar.	12 inches	37038
Tail Band Stripes	Top of upper 2-inch stripe will be 18 inches down and parallel to V476.250; top of lower 2-inch stripe will be located 12 inches below the bottom of the upper stripe.	As required	37038

Radio Call Numbers	Both sides of vertical stabilizers, top of numbers 20 inches below bottom of "AMC" tail marking grounded on aft spar plane.	12 inches	37038
Unit Identifier	Both sides of the fuselage 45 inches down and level from Fuselage Reference Plane (FRP), grounded at aft point of FS 392.	10 inches	37038
Associate Unit Identifier	Both sides of fuselage. Located 5 inches below and centered on AMC unit identifier.	10 inches	37038
Local Station Numbers (last 4 digits of aircraft serial number)	Centered on both sides of nose landing gear follow-up doors.	12 inches	37038
Air Force Outstanding Unit Award	Left forward side of fuselage, 5 inches up and level with FRP, grounded at aft point with FS 383.	See **Figure 4.2**	See **Figure 4.2**
Crew Chief Block	Left side of fuselage only, 12 inches aft of crew entry door, grounded 5 inches up from L27 (#2 skin longeron)	MXG/CC discretion	37038
Command Emblem	Both sides of fuselage, 12 inches aft of crew entry door, grounded 5 inches up from L27 (#2 skin longeron).	34 inches	As required
National Star Insignia Outline	Both sides of fuselage, See Douglas drawing (NXE6403)	30 inches	37038
Boom Elevators	Numeric designator of assigned unit centered on the underside of the left elevon and alpha designator (ARW, OPG, AFRC, etc.) centered on underside of right elevon.	30 inches	37038

Table A3.5. KC-135 Markings.

Marking	Location	Size	Color/Finish
United States Flag	Both sides of vertical stabilizer, bottom of flag on WL 447, centered between stabilizer leading and trailing edges, not including rudder.	21 x 40 inches	Matte finish
"AMC" Tail Marking	Both sides of vertical stabilizer, centered between stabilizer leading and trailing edges, not including rudder, 12 inches below US Flag.	12 inches	37038
Tail Band Stripes	2-inch upper stripe grounded at WL 568.90, top of the lower 2-inch stripe located 12 inches below the bottom of the upper stripe.	As required	37038
Radio Call Numbers	Both sides of vertical stabilizers. Top of numbers 12 inches below "AMC" tail marking, centered between stabilizer leading and trailing edges, not including rudder.	12 inches	37038
Unit Identifier	Both sides of the fuselage, centered, 6 inches under identification number.	6 inches	37038
Associate Unit Identifier	Both sides of fuselage. Located 6 inches below and centered on AMC unit identifier.	6 inches	37038
Local Station Numbers (last 4 digits of aircraft serial number)	Both sides of fuselage. Locate according to TO 1C-135-3-8.	6 inches	37038
Air Force Outstanding Unit Award	Centered 3 inches above crew entry door.	See **Figure 4.2**	See **Figure 4.2**
Crew Chief Block	Left side of fuselage only; 6 inches below and centered on the command emblem.	MXG/CC discretion	37038

Command Emblem	Both sides of fuselage, 16 inches aft of crew entry door, 6 inches below USAF markings. (Do not paint "US Air Force" on camouflage aircraft.)	34 inches	As required
National Star Insignia	Locate and size according to TO 1C-135-3-8, *Location and Application - Exterior Stencils*	See TO 1C-135-3-8	37038
Boom Elevators	Highest numeric designator of station assigned (22d, 458th, 905th, etc.) centered on the underside of the left ruddervator and alpha designator (ARW, OPG, AFRC, etc.) centered on underside of the right ruddervator.	10 inches	36622

Table A3.6. KC-46 Markings.

Note: Aircraft specific TO/Commercial Manual for gray tail markings guidance will be followed. Only mandatory markings are approved, and all markings will stay as manufacture produced. Waivers, changes, or optional marking requests will not be approved. Internal Nose Art is authorized with proper routing, outlined in **paragraph 4.5.1.5.**			
Marking	**Location**	**Size**	**Color/Finish**
United States Flag	See TO /Commercial Manual	See TO /Commercial Manual	See TO /Commercial Manual
Radio Call Numbers	See TO /Commercial Manual	See TO /Commercial Manual	See TO /Commercial Manual
"U.S. Air Force" Marking	See TO /Commercial Manual	See TO /Commercial Manual	See TO /Commercial Manual
National Star Insignia	See TO /Commercial Manual	See TO /Commercial Manual	See TO/Commercial Manual