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STATES AIR FORCES IN EUROPE AND
PACIFIC AIR FORCES COMMANDER**



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This instruction implements policy guidance in Air Force Policy Directive (AFPD) 21-1, *Managing Aerospace Equipment Maintenance*, and AFI 21-124, *Air Force Oil Analysis Program (OAP)*. This instruction provides guidance and direction necessary to develop an effective, Aircraft Metals Technology Program, Nondestructive Inspection (NDI) Program, Aircraft Structural Maintenance (ASM) Program, and Low Observable (LO) Aircraft Structural Maintenance Program. This instruction applies to ACC, PACAF, and USAFE. All tenant units assigned to either of these MAJCOMs will follow this instruction. It applies to Air National Guard (ANG) only upon mobilization and Classic Associate Total Force Integration (TFI) units. It applies to Air Force Reserve Command (AFRC) Classic Associate TFI units and AFRC CAF units during joint force deployments. **Attachment 3** of this instruction applies to all AFRC CAF units. All ACC, PACAF, USAFE Maintenance Squadrons (MXS) and Equipment Maintenance Squadrons (EMS) with Fabrication Flights or any of the sections in this instruction shall maintain a current copy of this instruction. Supplements will not lessen the requirements nor change the basic content or intent of this instruction. Process supplements in accordance with (IAW) AFI

33-360, *Publications and Forms Management*. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; Route AF Forms 847 from field through the appropriate functional chain of command to HQ ACC/A4M, 130 Douglas Street, Langley AFB VA 23665-2791. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with the Air Force Records Information Management (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/afirms/afirms/afirm/rims.cfm>. Contact supporting records managers as required. See **Attachment 1** for a glossary of references and supporting information.

(HOLLOMANAFBSUP) Combat Air Force Instruction (CAFI) 21-105, *Fabrication Program*, 5 September 2012, is supplemented as follows. This supplement establishes responsibilities and procedures for conducting an Aerospace Systems Corrosion Control Prevention and Paint Enhancement Program. It applies to all personnel in the 49th Maintenance Group (49 MXG) and 54th Fighter Group (54 FG). Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of IAW the Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.myaf.mil/afirms/afirms/afirms/rims.cfm>. Contact supporting records managers as required. Refer recommended changes and questions to the Office of Primary Responsibility (OPR) using AF Form 857, *Recommendation for Change of Publication*, to 49th Maintenance Group Quality Assurance (49 MXG/MXQ), 1091 Ninth Street, Building 572, Holloman AFB, NM 88330.

SUMMARY OF CHANGES

This document is substantially revised and must be completely reviewed. Major changes include: Significant changes were made to Aircraft Metals Technology, NDI, and Aircraft Structural Maintenance sections. Other major changes include adding PACAF and USAFE references to create a CAF Instruction. Also, the creation of the new 2A7X5 AFSC with the start-up of the LO ASM section along with the deletion of the 2A7X4 Survival Equipment. It outlines the criteria for applying combat markings on A-10, F-15, and F-16 aircraft at deployed locations along with criteria for applying markings on F-35, C-130, E-3, MQ-1, MQ-9 and RQ-4 aircraft. F-15 tail markings are standardized throughout the CAF. Additionally, changes were made to the Composite Listing of Distinctive Unit Aircraft Identification Markings. It further outlines the requirement to perform Signature Assessment System (SAS) process for the F-22 aircraft along with Outer Mold Line (OML) audits for the F-35 and F-22 aircraft.

(HOLLOMANAFBSUP) This supplement implements and extends the guidance of CAFI 21-105 for better flow of publications for aircraft structural maintenance sections, squadron maintenance officers, wash rack manager responsibilities, wash crew supervisor responsibilities, Aerospace Ground Equipment (AGE) Flight responsibilities, and aerospace vehicle marking requirements. This supplement must be reviewed in its entirety.

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Chapter 1

AIRCRAFT METALS TECHNOLOGY PROGRAM

1.1. Purpose of Aircraft Metals Technology (AFSC 2A7X1). Supports aircraft maintenance, aircraft support equipment maintenance through the manufacture and repair of aircraft components/parts and support equipment parts. Manufactures, reworks, welds, cuts, brazes, forges, solders, and assembles metals and machined parts in the fabrication of metal parts and components. Aircraft Metals Technology also supports aircraft maintenance by removing faulty hardware from aircraft and inspecting aircraft parts for wear using calipers, gauges and micrometers. Utilize blueprints to fabricate aircraft parts, tools, fixtures and miscellaneous items. The manufacturing and repairing is accomplished by forming raw stock using milling machines, lathes, tool and cutter grinder, drill presses, surface grinders, radial arm drill presses and various pneumatic hand tools. In addition to these processes, parts are manufactured and repaired using heat treatment along with fusion welding using tungsten inert gas, metallic inert gas, shield arc, oxy/acetylene and plasma arc cutting. Maintains shop equipment by performing preventative maintenance and other required maintenance on shop equipment.

1.2. MAJCOM/A4M Responsibilities.

1.2.1. Manages the command Aircraft Metals Technology Program.

1.2.2. Designates a senior NCO to manage the program and perform the following responsibilities:

1.2.2.1. Represent command at 2A7X1 utilization and training workshops.

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

1.2.2.3. Manages the welder certification program IAW T.O. 00-25-252, *Aeronautical Equipment Welding*, and this instruction.

1.2.2.4. Approves all intra-command Aircraft Metals Technology TDY manning assistance requests.

1.2.2.5. Develops and coordinates command policy and procedures for Aircraft Metals Technology functions.

1.3. Maintenance Group Commander Responsibilities.

1.3.1. Certifying official for unit level welding examination. May delegate responsibility according to T.O. 00-25-252.

1.4. Maintenance Squadron Commander Responsibilities.

1.4.1. Ensures funding is available for Aircraft Metals Technology personnel who will be certified at an Air Logistics Center (ALC) to perform welding operations.

1.5. Fabrication Flight Chief Responsibilities.

1.5.1. Ensures all journeyman, craftsman or civilian equivalent welders assigned to the Aircraft Metals Technology section are certified IAW T.O. 00-25-252 to perform welding operations in the following base metal groups: I (Carbon and Low Alloy Steel), II (Stainless

Steels), III (Nickel--Base Alloys), IV (Aluminum Base Alloys), V (Magnesium--Base Alloys), VI (Titanium--Base Alloys), VII (Cobalt--Base Alloys).

1.5.2. Determines if welders should be qualified by an ALC or locally. If this is going to be accomplished at an ALC, ensures funding is forecasted.

1.6. Aircraft Metals Technology Section Chief Responsibilities.

1.6.1. Ensures assigned Aircraft Metals Technology personnel maintain welding certifications outlined in [paragraph 1.5.1](#).

1.6.2. Coordinates requests for an ALC or other qualified organization to qualify welders. If qualification and certification is accomplished locally, coordinates the certification requirements with the nondestructive inspection (NDI) section to ensure x-ray capability exists.

1.6.2.1. (USAFE) RAF Lakenheath 48 EMS/MXMFN, is the regionalized USAFE weld certification x-ray facility.

1.6.3. On the DD Form 2757, *Welding Examination Record*, the Examining Official (not the NDI examiner) must be a 7-level Metals Technology technician or civilian equivalent welder and will sign and date block 18.

1.6.4. Journeyman will be certified NLT 12 months following award of 5-skill level.

Chapter 2

NONDESTRUCTIVE INSPECTION PROGRAM

2.1. Purpose of Nondestructive Inspection (NDI) and Oil Analysis Program (OAP) (AFSC 2A7X2).

2.1.1. NDI is a group of inspection methods used to investigate the quality, integrity, properties and dimensions of materials and components without damaging or impairing their serviceability. The primary inspection methods are fluorescent liquid penetrant, magnetic particle, eddy current, ultrasonic and radiographic. NDI extends the life of aircraft, engines and related support equipment by detecting defects, i.e., cracks, voids, delaminations and foreign objects.

2.1.2. The OAP is used to measure and evaluate internal engine wear metal by interpreting oil analysis results. The engine condition is assessed based on the diagnosis of the probable source of the wear metal. Based on this assessment, the OAP Laboratory makes a maintenance or operational recommendation to the user. The OAP is an essential part of aircraft maintenance because it helps determine the condition of aircraft engines.

2.1.2.1. Scanning Electron Microscope/Energy Dispersive X-Ray (SEM/EDX) analysis is used to analyze engine wear metal debris that accumulates on master/magnetic chip detectors. The size of this debris is too large to be detected by conventional oil analysis spectrometers in the OAP. SEM/EDX machines use software with an algorithm specific to the engine type under analysis to produce a maintenance or operational recommendation.

2.2. MAJCOM/A4M Responsibilities.

2.2.1. Manages the command NDI and Oil Analysis Program.

2.2.2. Designate a senior NCO to manage the program and perform the following responsibilities:

2.2.2.1. Represent command at 2A7X2 utilization and training workshops.

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

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

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

2.2.2.5. Develop and coordinate command policy and procedures for NDI and OAP functions.

2.3. Maintenance Group Commander Responsibilities.

2.3.1. Ensures an effective NDI and OAP is maintained.

2.4. Maintenance Squadron Commander Responsibilities.

2.4.1. Ensures only trained 2A7X2 personnel operate NDI equipment and perform NDI assessments.

2.4.2. Ensures visual inspections are not performed by NDI personnel unless specifically called for by technical orders.

2.5. NDI Section Chief Responsibilities.

2.5.1. Organizes, directs and manages the Wing NDI Program IAW T.O. 33B-1-1, *Nondestructive Inspection Methods, Basic Theory* and other applicable directives.

2.5.2. Ensures all NDI equipment required to perform NDI on assigned weapon systems and support equipment is authorized, available and operational.

2.5.3. Ensures NDI personnel do not make serviceability determinations of materials and components except when directed to do so by specific directives.

2.5.4. Ensures accurate oil analysis data is distributed to the central Air Force database weekly.

2.5.5. Ensures all deployable spectrometers are properly secured and protected before being deployed out of the OAP Laboratory.

2.5.6. Ensures all assigned spectrometers are left in standby mode when not being used except when unit is being prepared for deployment or other required movement outside the NDI/OAP facility and during transportation to new location.

2.5.7. Ensures all assigned oil analysis spectrometers are Joint Oil Analysis Program (JOAP) approved and certified IAW TO 33-1-37-1, *Joint Oil Analysis Program Manual*.

2.5.8. Requests contractor repair through the Air Force OAP Office whenever an oil analysis spectrometer cannot be repaired locally or is out of service due to maintenance for more than 24 hours.

2.5.9. Complies with contingency operations in TO 33-1-37-2, *Joint Oil Analysis Program Manual* when no back up oil analysis spectrometer is available locally.

2.5.10. Forecasts funding for personnel to attend training courses and participate in applicable NDI conferences or working groups.

2.5.11. Performs and documents supervisory review via OAP software daily. Ensures accuracy of lab recommendations, reasons for sample, oil added, tail number, etc.

2.5.12. Ensures quarterly SEM/EDX reports are submitted to Air Force OAP office.

2.5.13. Ensures no unauthorized modifications to USAF OAP or SEM/EDX (software/hardware) is conducted. Costs associated with repair of unauthorized modification will be levied on the owning unit.

2.5.14. Ensures a backup of internal and external Windows/DOS OILM and AETC software on a weekly basis.

Chapter 3

AIRCRAFT STRUCTURAL MAINTENANCE AND CORROSION CONTROL PROGRAM

3.1. Purpose of Aircraft Structural Maintenance (ASM) (AFSC 2A7X3). Supports aircraft structural maintenance and corrosion control program for aircraft, aerospace ground equipment (AGE), communications, electronics and meteorological (CEM) equipment and other end items relative to the functions of the command.

3.1.1. Aircraft Structural Maintenance incorporates design, repair and fabrication of metal, fiberglass, plastic and composite structures for aircraft. Corrosion identification, prevention and treatment procedures as well as removal and application of Radar Absorbing Material (RAM) are also integral components of ASM. All aspects of ASM are geared towards maintaining the structural integrity and corrosion control at the organizational and intermediate levels.

3.1.1.1. **(Added-HOLLOMANAFBSUP)** The 49 MXS operates Aircraft Structural Maintenance (ASM) and Corrosion Control work centers. ASM personnel, 2A7X3, are located in building 830 and Corrosion Control personnel, also 2A7X3, are located in building 898. ASM is the primary point of contact for issues pertaining to MQ-9 and F-16 aircraft and support equipment corrosion control. Unless specified, responsibility will apply to the work center responsible for the airframe in question.

3.1.2. Corrosion control programs shall be oriented towards the prevention and control of corrosion through frequent cleaning, corrosion inspection and early detection, application of proper treatment materials/procedures, and maintenance painting. Frequent cleaning has proven to be the most effective means of preventing corrosion. Maintenance painting is defined for field purposes as spot painting, sectionalized painting, and complete scuff sand and overcoat.

3.2. MAJCOM/A4M Responsibilities.

3.2.1. Manage the command's ASM and corrosion control program.

3.2.2. Designate a senior NCO to manage the program and perform the following responsibilities:

3.2.2.1. Manage the ASM career field for command.

3.2.2.2. Represent command at assigned weapon systems corrosion prevention advisory boards (CPAB), AF/DoD corrosion conferences and field surveys.

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

3.2.2.4. Develop and coordinates command policy and procedures for ASM functions.

3.2.2.5. Represent command at 2A7X3 utilization and training workshops.

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

3.2.2.7. MAJCOM Corrosion Program Manager will ensure routing of wash waiver requests to system program director (SPD) engineer. The SPD engineer has final approval authority for waiver requests.

3.3. Wing Commander Responsibilities.

3.3.1. Approves all aircraft paint waiver requests before submittal to ACC/A4M.

3.4. Maintenance Group Commander Responsibilities.

3.4.1. Establishes and maintains an effective corrosion prevention and control program.

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

3.4.2.1. Provide a facility for preparation and maintenance painting of assigned aircraft on a year round basis IAW Unified Facilities Criteria (UFC) 4-211-02NF, *Corrosion Control and Paint Finishing Hangars*.

3.4.2.2. Ensures requirements outlined in AFI 32-1024, *Standard Facility Requirements*, are met for support equipment (SE) and aircraft small parts. This capability can be incorporated in the aircraft corrosion control facility if space permits.

3.4.2.3. Ensures facility meets local, state, and federal Environmental Protection Agency requirements in conjunction with current National Emission Standards for Hazardous Air Pollutants (NESHAP).

3.4.3. Ensures adequate wash rack facilities are available to wash aircraft on a year round basis. This requirement can be satisfied with any one or more of the following:

3.4.3.1. 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.

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

3.4.4. Determines organization responsible for management of aircraft wash facility.

3.4.5. Ensures frequency of wash/rinse cycles are maintained IAW T.O. 1-1-691, *Cleaning And Corrosion Prevention And Control, Aerospace And Non-Aerospace Equipment*, and revised as necessary based on changes in mission and location.

3.4.5.1. Report any aircraft wash overdue with official memo to MAJCOM Corrosion Program Manager. Within this memo include aircraft tail number(s), date of last wash, reason for overdue condition, and corrective action taken to prevent further occurrences.

3.4.5.2. Ensures Plans, Scheduling & Documentation section(s) schedule aircraft washes through Integrated Maintenance Data System (IMDS) or by other automated means.

3.4.6. Ensures Quality Assurance (QA) adequately evaluates corrosion control programs through inspection and maintenance follow-up evaluations.

3.4.6.1. Ensures QA evaluates a minimum of 10% of all aircraft washes.

3.4.7. Appoints by letter, a Wing Corrosion Program Manager (2A773) to ensure all facets of corrosion prevention are being conducted throughout the wing.

3.5. Wing Corrosion Program Manager Responsibilities.

3.5.1. The wing corrosion program manager is the wing clearinghouse for all aircraft and support equipment cleaning, corrosion and organic coatings related information and taskings.

3.5.1.1. **(Added-HOLLOMANAFBSUP)** The 49th Wing Corrosion Program Manager (49 WG CPM) will attend the weekly host and tenant unit Shared Resource (scheduling) meetings.

3.5.2. Ensures creation of a wing supplement to this instruction to include, but not limited to the following:

3.5.2.1. Local corrosion prevention training requirements.

3.5.2.2. NAF, Wing, OG and Fighter/Bomber Squadron commander aircraft designation and marking requirements of identified aircraft.

3.5.2.2.1. **(Added-HOLLOMANAFBSUP)** MQ-9/F-16 markings: The ASM Section will be responsible for application of markings IAW applicable technical data and Air Force Instructions.

3.5.2.3. Local unit marking requirements e.g., tail stripes, crew names, etc.

3.5.2.4. Aircraft paint identification placard size, shape and information requirements.

3.5.3. Ensures corrosion inspections are accomplished during each phase/periodic inspection for aircraft and equipment assigned.

3.5.3.1. **(Added-HOLLOMANAFBSUP)** Inspect for residual cleaning agents, dirt, debris, entrapped water, plugged drain holes, landing gear fittings, access door hinges and other corrosion prone areas.

3.5.4. Ensures corrosion prevention and treatment procedures are performed within technical order requirements.

3.5.5. Ensures only authorized chemical cleaning materials and corrosion removal methods are used and Material Safety Data Sheets are available for each chemical used.

3.5.6. Ensures required equipment is obtained for an efficient and effective corrosion prevention and control program.

3.5.6.1. **(Added-HOLLOMANAFBSUP)** Ensures and coordinates with 49 WG Historian to create a 6 month rinse schedule of aircraft on static display in the air park.

3.5.7. Designates 7-level ASM/Low Observable (LO) ASM technician(s) to train aircraft maintenance (AMX) squadron wash crew supervisors in all aspects of aircraft wash and develop a local training checklist. A local course code will need to be established in IMDS or equivalent automated system to document personnel trained.

3.5.7.1. Personnel will be trained prior to them taking receipt/custody of wash rack facilities and equipment.

3.5.7.2. Due to the uniqueness of acft wash facilities and corrosion control programs at each base, training will be required for newly assigned personnel. Previous training from a losing base is not allowed to carry over.

3.5.7.3. **(Added-HOLLOMANAFBSUP)** Ensures a paint score is completed after every F-16 wash using the ASM Section's locally developed scoring sheet. The F-16 paint scores will be maintained by the 49 WG CPM.

3.5.8. Provides a current copy of the Qualified Products Listing (QPL) for Mil-Spec approved cleaners for assigned aircraft and equipment every six months to unit supervision, aircraft wash rack, support sections, EMS, CMS, MXS, and AMXS Flight Chiefs. The QPL or the Qualified Products Database (QPD) identifies qualified products within a particular Mil-Spec and are the only approved materials for use on Air Force aircraft, subsystems and support equipment. Products not listed on the QPL or QPD are unauthorized and will not be used unless specific guidance is given in weapon system specific technical data. Information and search capabilities for QPLs and QPD may be located at the Air Force Corrosion Prevention and Control Office web site: <https://www.my.af.mil/gcss-af/USAF/ep/globalTab.do?channelPageId=s6925EC133EFE0FB5E044080020E329A9&programId=t6925EC2E51B20FB5E044080020E329A9> or <https://assist.daps.dla.mil/quicksearch/>

3.5.9. Enforces the use of approved coating materials and cleaning compounds as determined by T.O., QPL or QPD.

3.5.10. Reports corrosion program deficiencies through proper channels, as required.

3.5.11. Ensures corrosion related training courses (initial and refresher) are administered as intended by the MAJCOM or AFI. Local corrosion training programs may be initiated as deemed necessary due to local corrosive environment, weapon system corrosion susceptibility and forward operating environments.

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

3.5.13. **(PACAF)** Actively participates in quarterly Corrosion Control Working Group (CCWG) meetings IAW HQ PACAF CCWG Charter.

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

3.6.1. Ensures no other maintenance is accomplished on the aircraft, equipment or within the environmentally controlled/cordon off areas during corrosion prevention treatment when hazardous/toxic materials are in use, which requires the use of specialized personal protective equipment.

3.6.1.1. **(Added-HOLLOMANAFBSUP)** Bioenvironmental personnel shall be granted access to maintenance areas, while ASM technicians are performing tasks on and off aircraft, to perform necessary surveys.

3.6.2. Forecasts funding to attend and participate in applicable Corrosion Prevention Advisory Board (CPAB) and other corrosion/structural related programs/meetings.

3.6.3. Submits CPAB agenda items to MAJCOM ASM Manager.

3.6.4. Serves as the ASM technical assistant to the Group Commanders and command ASM Manager.

3.6.5. Requests depot assistance IAW T.O. 00-25-107, *Maintenance Assistance*, through the MAJCOM weapon system manager with an information copy to MAJCOM/A4M when corrosion treatment/repairs exceed technical order limits.

3.6.6. **(Holloman AFB)** In coordination with flight and MXS supervision, maintain an ASM personnel rotation between 49 MMS (BEAR BASE) and 49 MXS. This helps maintain aircraft structural repair proficiency and upgrade training.

3.6.7. Ensures bioenvironmental conducts initial baseline comprehensive evaluations and provide annual follow-ups to determine adequacy of work center controls for occupational hazards. Briefs all structural personnel and maintains records of this survey in the work center.

3.6.8. Responsible for wash rack facilities: Appoints a qualified 2A753/2A755 or higher technician, or civilian equivalent, as the wash rack facility manager. This manager will ensure proper cleaning materials, equipment, and supplies are maintained in accordance with applicable technical orders, AFI 21-101 and MAJCOM supplements.

3.6.9. **(Added-HOLLOMANAFBSUP)** Apply MQ-9 and F-16 markings IAW applicable technical orders (TOs) and AFIs.

3.7. Maintenance Operations Officer Responsibilities.

3.7.1. Ensures frequency-of-cleaning/wash cycles are established for assigned aircraft to maximize corrosion prevention. Monitors aircraft wash schedules to eliminate overdue washes. In no case will unit wash cycles exceed the maximum wash cycles listed in T.O. 1-1-691.

3.7.2. Appoints an experienced/qualified wash crew supervisor, SSgt or above. This person will be trained according to [paragraph 3.5.7](#).

3.7.2.1. Ensures trained wash crew supervisors are present throughout the duration of aircraft washes.

3.7.3. Provides a task trained and qualified aircraft wash crew, to include as a minimum, a dedicated crew chief and/or assistant dedicated crew chief and ensures availability of personnel protective equipment within the work center.

3.8. Wash Rack Facility Manager Responsibilities.

3.8.1. Ensures the required number and size of fire extinguishers are available and serviceable.

3.8.2. Ensures grounding points are inspected and approved IAW T.O. 00-25-172.

3.8.3. Ensures fall protection equipment is used and maintained IAW AFOSH STD 91-100, to allow coverage of all surface areas of aircraft during washing operations.

3.8.4. Ensures aircraft wash rack has cleaners identified in weapon system specific technical data. When cleaning products are not listed in weapon system specific technical data, ensure at least two types of approved cleaners IAW T.O. 1-1-691 are properly used, to include proper mix ratio and the correct cleaner for each area cleaned.

3.8.5. Ensures wash rack facility and surrounding area is kept clean and properly maintained.

3.8.6. Maintains all wash rack equipment in serviceable condition, i.e., water hoses, pumps, air hoses, powered wash equipment, support equipment, etc.

3.8.7. **(Added-HOLLOMANAFBSUP)** Complete work orders through 49th Civil Engineer Squadron (49 CES) customer service to repair any wash rack facility discrepancies. The Wash Rack Facility Manager will ensure that all open work orders are coordinated with the 49 MXS Facility Manager.

3.9. Wash Crew Supervisor Responsibilities.

3.9.1. Provides daily safety briefings explaining hazards associated with wash rack operations.

3.9.1.1. **(Added-HOLLOMANAFBSUP)** F-16 WCS will administer the Wash Rack Safety Briefing ([Attachment 13](#)) to the wash crew and submit to the ASM Section Chief for filing. Ensure wash crew utilizes cleaners identified in weapon system specific technical data. When cleaning products are not listed in weapon system specific technical data, ensure at least two types of approved cleaners IAW T.O. 1-1-691 are properly used, to include proper mix ratio and the correct cleaner for each area cleaned.

3.9.2. Ensures wash crews are task trained.

3.9.3. Ensures proper safety equipment, personal protective equipment and cleaning materials are serviceable and properly used IAW AFOSH STDs 91-501 and 91-100.

3.9.4. Enters the requirement for wash, performs cleanliness inspection, 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.

3.9.5. Ensures fall protection is serviceable and inspected prior to use, reference AFOSH Stds 91-501 and 91-100.

3.9.6. Ensures aircraft are properly grounded IAW T.O. 00-25-172.

3.9.7. Inspects all wash rack equipment for serviceability, i.e., water hoses, pumps, air hoses, powered wash equipment, support equipment, etc prior to use.

3.9.8. Ensures wash rack area is clean after use.

3.9.8.1. **(Added-HOLLOMANAFBSUP)** WCS will perform a pre and post-wash facility inspections with either the Wash Rack Facility Manager, 49 WG CPM or ASM Shift lead.

3.9.9. **(Added-HOLLOMANAFBSUP)** Inspect for residual cleaning agents, dirt, debris, and entrapped water in drain holes, landing gear fittings, access door hinges and other corrosion prone areas.

3.9.10. **(Added-HOLLOMANAFBSUP)** Ensure all wash rack safety and wash equipment is inventoried and signed in prior to towing aircraft. WCS, 49 WG CPM, Corrosion Control Noncommissioned Officer in Charge (NCOIC) and/or ASM Shift Lead will accomplish wash equipment inventory jointly.

3.10. Quality Assurance Responsibilities.

3.10.1. Adequately evaluate at least 10% of wash rack operations through over-the-shoulder inspections and maintenance follow-up evaluations.

3.10.2. Monitors the use of approved coating materials and cleaning compounds as determined by T.O. and QPL or QPD for cleaning compounds and AFRL/MLSA for coating materials.

3.11. Aerospace Ground Equipment (AGE) Flight Chief Responsibilities.

3.11.1. Ensures an effective corrosion control program is established and enforced for assigned equipment.

3.11.1.1. **(Added-HOLLOMANAFBSUP)** The 49 MXS and the 54 MXS AGE Flights will be responsible for preparation and delivery of all AGE. Preparation will include removing external hoses, power cables, lights, and other items as required to ease the corrosion treatment process. Equipment will be delivered on the first day prior to the commencement of each scheduled corrosion treatment phase.

3.11.1.2. **(Added-HOLLOMANAFBSUP)** Owning AGE flights are responsible for applying identification markings.

3.11.2. Develops and implements a tracking system to prioritize complete paint for AGE equipment based on a “worst is first” principle.

3.11.2.1. **(Added-HOLLOMANAFBSUP)** Corrosion control and prevention inspections will be performed by qualified 2A6X2 personnel IAW T.O. 35-1-3, *Corrosion Prevention and Control, Cleaning, Painting, and Marking of USAF Support Equipment (SE)*, [paragraph 3.3.1.1](#). 2A6X2 Personnel will evaluate the severity of corrosion and condition of coating system IAW T.O. 35-1-3 and assign an overall paint category. Equipment with coating system degradation of up to 25% (Light) will be assigned Category 1. Coating system degradation from 25-75% (Moderate) will be assigned Category 2. Category 3 equipment will have coating system degradation exceeding 75% (Severe). Special consideration will be given to equipment undercarriage including, but not limited to, lower sub-frame, axles and wheel hub assemblies, emergency brake systems, and equipment towing attach points. Results will be documented on the units AFTO Form 244, *Industrial Support Equipment Record* and recorded in IMDS.

3.11.3. Ensures IMDS or Autonomic Logistics Information System (ALIS) is used to schedule and document AGE painting.

3.11.4. Ensures maintenance, servicing and inspection activity personnel are oriented to corrosion prevention and control.

3.11.5. Ensures powered and non-powered AGE is cleaned, thoroughly inspected, and touched-up as necessary during each periodic inspection with the appropriate, approved materials.

3.11.6. Enforces the proper use of approved cleaning compounds IAW T.O. 35-1-3 *Corrosion Prevention and Control, Cleaning, Painting and Marking of USAF Support Equipment (SE)*, and the QPL or QPD. Obtains QPLs from wing corrosion control manager every 6 months and uses them in conjunction with applicable T.O.s to verify all compounds on-hand are authorized for use on designated equipment.

3.11.7. Schedules work beyond AGE work center capability into the appropriate fabrication work center.

3.11.8. Ensures tone-down procedures are followed as described in paragraph 3.15.1. of this instruction.

3.12. Maintenance Training Flight Chief Responsibilities.

3.12.1. Provides all maintenance personnel that come in contact with aircraft and aerospace ground equipment, regardless of AFSC (excluding 2A7X3 and 2A7X5), with corrosion prevention/control initial and recurring training. Ensures newly assigned personnel receive initial corrosion prevention/control training during the maintenance orientation program . Ensures recurring training is conducted annually.

3.12.2. Units are encouraged to develop and implement unit specific corrosion prevention and control training program in addition to requirements outlined in paragraph 3.12.1. of this instruction. This program may be necessary due to local environmental severity, weapon system susceptibility and/or mission needs at other operating locations.

3.12.2.1. Training curriculum shall include but not be limited to:

3.12.2.1.1. Corrosion identification procedures and techniques.

3.12.2.1.2. Familiarization with aircraft/equipment corrosion prone areas.

3.12.2.1.3. Reporting and documentation procedures for identified corrosion.

3.12.2.1.4. Removal and treatment of minor corrosion.

3.12.2.1.5. Proper use of cleaning compounds.

3.13. Unit Corrosion Control Program Requirements.

3.13.1. Owning activities shall wash and clean their aircraft and support equipment.

3.13.2. Wing Corrosion Program 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.

3.13.3. Only Aircraft Structural Maintenance personnel shall perform aircraft inspection work cards specified for accomplishment by Aircraft Structural Maintenance in the -6 T.O. or within ALIS on the F-35. All maintenance personnel, regardless of Air Force Specialty Code (AFSC), shall examine each part removed and inspect the inside of all exposed areas for corrosion. Avionics maintenance personnel shall inspect the electrical connectors of avionics line replaceable units (LRUs), inside equipment drawers, and so forth, for corrosion. All deficiencies noted during these inspections will be appropriately documented. When corrosion discrepancies are discovered affecting aircraft structural integrity; safety of flight/operation or are beyond the using organization's capability to evaluate/repair, an aircraft structural maintenance specialist will be requested.

3.13.4. 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.

3.13.5. Maintenance personnel shall report all corrosion deficiencies through the IMDS IAW 00-20 series technical orders or ALIS. 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.

3.13.6. **(PACAF)** : Participate in HQ PACAF Corrosion Control Working Group (CCWG) as required.

3.13.7. **(Added-HOLLOMANAFBSUP)** Adequate protective measures shall be taken to prevent scratches or abrasions, which can result from placing parts, (i.e., containers, tools) on an aircraft fuselage, wings or other surfaces.

3.14. Aerospace Vehicle Coating and Marking Requirements. This section provides guidance for applying command approved, non-USAF standard aircraft coatings and markings as authorized in T.O. 1-1-8 *Application And Removal of Organic Coatings, Aerospace And Non-Aerospace Equipment*. Paint schemes/configurations and USAF standard aircraft markings will be applied in accordance with T.O. 1-1-8 and the applicable aircraft technical order.

3.14.1. Advanced Performance Coating (APC), is the preferred topcoat unless mandated otherwise IAW weapon system specific technical data. This preferred coating system includes the appropriate Mil-PRF-23377 primer for bare metal uncovered during preparation, non-chromated tie coat material and an approved APC topcoat.

3.14.2. **Coating System Scoring and Maintenance.** All units are required to score aircraft coating systems to determine frequency of topcoat application. Fighter units should plan to scuff sand and overcoat the entire aircraft between depot cycles as necessary. Fighter aircraft may require complete overcoat at 36 months or some may only require touch-up. All aircraft painting will be scheduled on a worst first basis to maintain coating system integrity and aircraft appearance. All aircraft coating systems except F-22, F-35, and RQ-4 will be evaluated/rated every 6 months for appearance/coating system integrity using applicable technical data or a locally developed system. The exterior of aircraft must be clean prior to paint scoring. Supervisors will use ratings to determine corrosion treatment/paint scheduling priority. Units are required to adopt maintenance-painting techniques (i.e., spot painting and sectionalized painting as stated in T.O. 1-1-8) to maintain aircraft corrosion protection and appearance between overcoats. Partial painting “sections” of the aircraft will help reduce the effects of mottling and mismatch. Units should rotate commander’s aircraft to prevent excessive paint build-up from too frequent over coating. Fully over coated aircraft will be documented in IMDS and the individual aircraft AFTO Form 95, *Significant Historical Data*, for tracking purposes. Large aircraft units should rely on spot maintenance painting and sectionalized painting between depot cycles to maintain the coating system integrity.

3.14.3. **Aircraft Markings.** Markings will be applied to aircraft as authorized by specific aircraft T.O.s, T.O. 1-1-8, and this instruction. Aircraft markings not previously approved, necessitates a waiver from HQ ACC/A4M. Aircraft contracted for repaint at depot facilities will be marked IAW specific aircraft T.O.s, T.O. 1-1-8, this instruction, and applicable waivers currently approved. MAJCOM/A4M is the point of contact for aircraft painting and markings. ACC/A4M is the point of contact for all AF Unit Identifier markings. This listing can be found in [Attachment 3](#) of this instruction. All aircraft markings and basic paint schemes will be maintained intact, legible and distinct in color. Command standardization of markings by mission design series (MDS) is of primary concern.

3.14.3.1. **Stenciling.** Markings may be applied using stencils. Refer to T.O. 1-1-8 to determine the compatibility of stenciling paints, paint finishes and decal applications.

3.14.3.2. **Command Insignia.** The application of the command insignia on aircraft is mandatory. The insignia will be applied to both sides of the vertical stabilizer unless otherwise specified. Fighter type aircraft will use either full color or subdued insignias as specified in [Attachment 2](#). Large aircraft (B-1, C-130, etc) will use subdued insignias unless otherwise specified in [Attachment 2](#). Size and location of command insignias by MDS are specified in [Attachment 2](#). For Total Force Integration (TFI) locations under classic association, the existing command insignia and location, used by the host active duty wing will remain on partnering ANG or AFRC designated aircraft.

3.14.3.3. **Organizational Insignia.** The application of wing insignia is mandatory. The insignia will be applied to both sides of the forward fuselage. The operational squadron insignia may be applied on the left side in place of the wing insignia. Wing and squadron insignias will be the same color scheme as the command insignia, i.e., subdued for large aircraft and full color or subdued for fighter aircraft unless otherwise specified in [Attachment 2](#). For TFI locations under classic association, the host active duty Wing Commander may authorize specific aircraft to have organization insignia changes. If active duty organizational insignias continue to be used on associate unit aircraft, the size and location may be altered from [Attachment 2](#).

3.14.3.4. **Distinctive Unit Identifier Marking .** The application of the unit identifier is mandatory for all CAF aircraft unless otherwise directed. ACC/A4M is the office of primary responsibility (OPR) for the assignment of unit designators. The primary factor used to determine appointment of unit identifier is the aircraft/unit assignment location. T.O. 1-1-8 or the applicable aircraft T.O. will provide color restrictions for the unit identifier. The unit identifier will be applied in accordance with guidelines in [Attachment 2](#) of this instruction. For Total Force Integration (TFI) locations under classic association, the existing distinctive unit identifier and location will remain on partnering ANG or AFRC designated aircraft.

3.14.3.5. **Tail Stripe .** Tail stripes are applied as a wing option, used to identify aircraft operation squadrons. Tail stripes on F-35 aircraft are not authorized. Each operations squadron will have a tail stripe unique to that squadron. The use of the same tail stripe by two or more squadrons within a wing is not permitted. The tail stripe will be applied at the upper portion of the vertical stabilizer, and must be in the form of a straight stripe. The width will not exceed 9 inches on fighter and small reconnaissance type aircraft, 15 inches on large aircraft. The stripe may be any color or pattern, and may contain a logo. On aircraft bearing the American Flag, the tail stripe must be solid in color and will not contain any logo, name, or lettering. On aircraft with multiple vertical stabilizers, the tail stripe may be of either a wrap-around style on both vertical stabilizers or applied to the outboard sides of each vertical stabilizer. Units will not repaint tail flashes/stripes during deployed operations. Once deployed, aircraft will retain their original paint configurations, unless otherwise directed by AFCENT/CC.

3.14.3.6. **Aircrew And Crew Chief Names .** Aircrew and crew chief/assistant names must be applied to all command aircraft, but must be removed prior to deployment from home station in direct combat zones or when participating in contingencies that may

subject aircraft to hostile fire abroad. Application of nicknames, punctuation, and/or call signs is not permitted. Style and size of letters are a unit option but will not exceed 3 inches in height. All aircraft in the wing will be standard with the exception of the designated Commander's aircraft, which may have different lettering but will not exceed 3 inches in height. A background block for pilot/crew chief names may be used. The block should be in contrasting color to the section of the aircraft where applied. To further an MDS theme, block may be preceded by a design depicting the MDS i.e., F-15 eagle head, F-16 falcon head, etc. The name block should give a subdued appearance and may be other than rectangular in shape.

3.14.3.6.1. **(Added-HOLLOMANAFBSUP)** 49 MXG and 54 FG MOFs will maintained and provide 49 MXS supervision and the 49 WG CPM with a memorandum listing the aircrew and Dedicated Crew Chiefs (DCC) assigned to each aircraft, and each wing's flagship aircraft. Name changes will be coordinated through the 49 MXG Plans, Scheduling and Documentation (PS&D) Section.

3.14.3.7. **Commander's Aircraft Markings** . Commander's aircraft referred to in this instruction are those designated as Numbered Air Force (NAF), Wing, OG and commanders of flying squadrons (Bomber/Fighter/Reconnaissance). The NAF Commander may select one wing within the command to have an aircraft specifically marked. It will be the only aircraft authorized so marked. Commanders are authorized to designate one aircraft each to be marked with standardized commander type markings, refer to [Attachment 2](#) for specific markings. Unit identifier and radio call numbers will remain on vertical stabilizers as depicted in applicable T.O. and this MAJCOM policy. For TFI locations under classic association, the host active duty Wing Commander may authorize specific aircraft to be identified as the associate ANG or AFRC Commander's aircraft. These changes are in support of ownership pride and esprit de corps between active duty, reserve, and guard partnering wings. Digital photographs must be provided to MAJCOM/A4M for review and file for all designated commander's aircraft. The following are markings authorized for use on commander's aircraft:

3.14.3.7.1. Wing and/or NAF insignias on the right forward fuselage and a collage of assigned flight/operations squadron insignias on the left forward fuselage.

3.14.3.7.2. Highlighting (shadowing) of unit identifier and standardized commander type markings on the tails. All highlighting will be done in contrasting gray, black or white as long as it meets primary basecoat gloss requirements e.g., gloss, camouflage or gunship.

3.14.3.7.3. Anniversary markings. This policy is provided to allow latitude for application of anniversary logo markings to Wing Commander aircraft only. When applied, anniversary markings will not interfere with required aircraft markings and must be removed immediately after the anniversary period (1-year maximum). Waivers are not required for unit unique markings, however, Wing Commanders must approve the markings, and photographs must be provided to MAJCOM/A4M for review and file. State flags and logos other than anniversary type are not considered unit unique markings and are not authorized.

3.14.3.7.4. Naming of aircraft. This policy is provided to allow for application of the unique aircraft naming on Wing Commander aircraft. This includes markings

previously considered unit unique and are community related/appreciation types such as “Spirit of,” “City of” and “State of.” Naming aircraft is a tradition designed to commemorate or honor individuals, geographic locations, or events either for the support provided the Air Force on a long-term basis, or because of its significance to Air Force history or heritage. Recommendations must include a proposed name, aircraft tail number, and detailed justification for the proposed design/name. Size of marking is limited to 24 sq inches for fighter type aircraft, 36 sq inches for large aircraft (C-130, B-1, etc). Subdued color needs to be considered for certain type and mission of aircraft. MAJCOM/PA are designated as the clearinghouse for all requests to name CAF aircraft and must ultimately be approved by AF/CV. Route requests through wing PA to MAJCOM/A4Ms. MAJCOM/A4M will coordinated with MAJCOM/PA before submitting to AF/CV. Contact your wing Public Affairs office for details.

3.14.3.8. Aircraft Travel Pods. Travel pods will be painted the same color and tone as the aircraft with no additional markings. Gloss paint may be used to aid in cleaning. Units with multicolor aircraft should select one primary color of the aircraft for the travel pod. Travel pods designated for commanders may be any color and may contain the position and name of the individual and appropriate insignia. Lettering may be of any color and style, but shall not exceed 6 inches in height. Demonstration teams have the option to paint travel pods gloss black and apply unique markings. The left side of pod will contain unit insignia and name and team emblem and name. The right side will contain the MAJCOM insignia, the words Air Combat Command Demonstration Team (or the words of owning MAJCOM) and NAF insignia, if warranted. Commander and demonstration team travel pod paint scheme, final marking sizes, and placements will be approved by the WG/CC and documented within local unit operating instruction.

3.14.3.9. External Fuel Tanks . External fuel tanks shall be painted the same color and tone as existing aircraft coating. A 2 inch marking (centered on lugs) is optional for tracking purposes.

3.14.3.10. Paint Identification Placard . The paint identification block is a mandatory marking. The block may be of a unique design, i.e., eagle head, falcon head, or state outline, but must not exceed 6 inches by 6 inches in size and will match the color of other markings on the aircraft. Waiver requests are not required for this item, however, Wing Commander approval is required, and photographs of the design must be provided to MAJCOM/A4M for review and file.

3.14.3.11. FAC Aircraft . Due to the nature of the Predator MQ-1 mission as a low level, hostile fire zone reconnaissance aircraft; the command/organizational/squadron insignia must be marked in toned down colors. Flat black silhouettes may be used to fulfill the subdued requirement.

3.14.3.12. Nose Numbers . Aircraft nose numbers shall be in block or Helvetica letters, not to exceed four digits. Specific location and size for each different type aircraft is contained in [Attachment 2](#). The paint material(s) used to apply nose numbers shall have the same gloss or subdued requirement as the base aircraft coating.

3.14.3.13. Bird Of Prey Silhouette. Bird of prey silhouettes are authorized on F-15 and F- 16 aircraft as a unit option, but must be standardized within a wing by MDS. No

waiver is required to apply bird of prey silhouettes, but a photograph must be submitted to MAJCOM/A4M for review and file. The following guidelines apply:

3.14.3.13.1. F-15 Aircraft. The silhouette will be placed on the insides of the vertical stabilizers. They will not exceed 24 inches in height and must be applied in a contrasting gray color.

3.14.3.13.2. F-16 Aircraft. The silhouette can be placed anywhere on the aircraft as long as it does not interfere with standard required markings. The silhouette will not exceed 18 inches in height and must be applied in a contrasting gray color.

3.14.3.14. **Gun Ports** . Gun ports on non-LO fighters will be painted in flat black paint.

3.14.3.15. **Aerial Victory Marking** . Fighter aircraft awarded a verified aerial victory are authorized to display a 6-inch green star with a 1/2 inch black border located just below and centered on the pilot's name block. The type of aircraft shot down shall be stenciled inside the star in 1/2 inch white lettering. For aircraft with multiple aerial victories, a star is authorized for each aircraft shot down. No other victory markings are authorized.

3.14.3.16. **Bomber Combat Marking** . Designated bomber aircraft with a successful weapons release in combat operations are authorized to display a conventional bomb and/or CALCM silhouette. These markings will be applied in contrasting shades conform to the basic aircraft camouflage requirements. B-1 combat marking configurations are located in [Attachment 2](#) of this instruction.

3.14.3.17. **Nose Art** . For purposes of clarification, "nose art" shall be the term used to identify specialized artwork applied to the aircraft. Placement of nose art is authorized on the left forward side of the aircraft only. Nose art is authorized only on -135, B-1 and -130 aircraft, limited to 3x3 foot in size. Waiver requests for other type aircraft other than what is described above, will not be entertained.

3.14.3.17.1. All nose art designs will be reviewed and approved by the Wing Commander prior to being applied to aircraft. Photographs of all applied art work will be submitted to MAJCOM/A4M for review and file. Authorized nose art shall be distinctive, symbolic, gender neutral, intended to enhance unit pride, and designed in good taste. World War II nose art meeting the above criteria may be used. Cartoon-type characters may be used; however, the unit will be responsible for all copyright requirements. It will match gloss requirements of the basic paint, i.e., aircraft with flat camouflage schemes require application of nose art in flat colors. Removal of nose art prior to deployment will be at the discretion of the Wing Commander.

3.14.3.17.1.1. **(Added-HOLLOMANAFBSUP) Door Art**. For purposes of clarification, "door art" shall be the term used to identify specialized artwork applied to the Ground Control Stations. Placement of door art is authorized on the left door of the long door side of the Ground Control Station only. Door art is limited to 24 x 24 inches in size. Waiver requests for other type aircraft other than what is described in this paragraph, will not be entertained.

3.14.3.17.2. In addition to Thunderbird and MAJCOM demonstration aircraft, Wing Commanders may designate one aircraft within the wing to apply the "Let's Roll" design. The aircraft selected is at the Wing Commander's discretion.

3.14.3.18. **Competition Aircraft** . Units participating in competitions such as William Tell, Gunsmoke, etc, 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 titanium, using commander type markings, etc.

3.14.3.19. **Aircraft Transfer** . The following markings must be removed prior to formal transfer of aircraft to other units or MAJCOMs (aircraft retiring to AMARC need not have any markings removed).

3.14.3.19.1. Organizational insignias.

3.14.3.19.2. Unit identifier.

3.14.3.19.3. Tail stripe.

3.14.3.19.4. Aircrew and crew chief names.

3.14.3.19.5. Unit unique markings.

3.14.3.19.6. Nose art may be retained if gaining unit agrees.

3.14.3.20. **Waivers** . Wing Commanders must submit waiver requests to MAJCOM/A4M for coordination to obtain approval/disapproval. Waivers in violation of aircraft technical data will not be accepted. Waiver requests must include the following:

3.14.3.20.1. Clear statement of present procedure/markings.

3.14.3.20.2. Clear statement of proposed change.

3.14.3.20.3. Justification to include historical significance, if applicable.

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

3.14.3.21. **Photo Requirements** . All units must submit one full length (landscape orientation) digital photo of the Wing Commander's aircraft each time a marking change occurs. The use of a slide presentation format is allowed. Send to MAJCOM/A4M for review and file. MAJCOM/A4M will request updated photos periodically.

3.14.3.21.1. Units shall provide photos of unique markings for all local option changes authorized by this instruction (i.e., tail stripe/name block design and/or color changes, paint data placard, bird of prey silhouettes, etc.) to MAJCOM/A4M for review and file.

3.14.3.22. **A-10, F-15, F-16 Combat Marking** . Deployed units supporting combat operations are authorized to place combat markings (bomb and 20/30MM ammunition) on aircraft operating at deployed locations using the following criteria. The combat markings will be placed inside the pilot/DCC name placard (name markings must be sanitized/removed during deployment) on A-10, F-15 and F-16 aircraft. The markings

will be displayed using contrasting shades conforming to the basic aircraft camouflage requirements. Cut the stencils out of a removable adhesive marking material. The bomb markings are intended to generically represent each general purpose conventional bomb (i.e., GBU-12/31/38s and MK-82s) dropped at a one-to-one ratio and each 20/30-mm ammo round silhouette represents 100 rounds, or one pass. The Air Expeditionary Wing is responsible for providing the stencil machine/materials and removing the combat markings prior to redeployment.

3.14.3.22.1. **(Added-HOLLOMANAFBSUP)** MQ-9 Combat Markings: Located on the right side of fuselage below upper radome. These markings will consist of a 3.5 inch Hellfire Missile or Guided Bomb Unit (GBU) silhouette applied in a row not to exceed 10 in each row. Once 10 silhouettes are achieved a single bomb silhouette with the number “10” will represent a row. These silhouettes will contain the combat operation acronym, for example “Operation Enduring Freedom (OEF)” embedded in the center of the marking.

3.14.3.23. **(PACAF)** : All aircraft marking not specified in [Attachment 2](#), will be black color 37038 for flat paint coatings, color 17038 for gloss paint coatings.

3.15. Tone Down.

3.15.1. **Aerospace Ground Equipment (AGE)** . Polyurethane paint system Mil-PRF-23377, Chromate Epoxy Primer, Tie Coat and Mil-C-85285 high solid, low VOC paint, color number 26173 is the approved topcoat paint system for AGE.

3.15.1.1. When feasible, equipment will be completely stripped and properly prepared IAW T.O.s 1-1-8 and 35-1-3 before applying polyurethane coatings.

3.15.1.2. Minimum reflectorizing requirements will be IAW T.O. 35-1-3. Black subdued reflectorized tape will be used in lieu of white when left optional by T.O. 35-1-3.

3.15.1.3. Safety/danger/warning markings will be nonreflective red.

3.15.1.4. Caution markings will be nonreflective black.

3.15.1.5. Informational markings will be nonreflective black and be kept to a minimum.

3.15.1.6. Dedicated squadron identification markings will not exceed a 2-inch by 6-inch area below two field numbers if the equipment area permits.

3.15.1.7. Fuel designation markings will be 1-inch nonreflective black letters on the filler cap or most conspicuous area adjacent to the filler cap.

3.15.1.8. Locally devised field numbers will be black.

3.15.1.9. Interior areas of AGE exposed during operation will be toned down to match exterior painted surfaces.

3.15.1.10. AGE arriving on base and requiring tone down will be painted within 60 days of receipt.

3.15.2. **Test equipment/composite tool kits (CTKs)** . Tone down of test equipment, CTKs and like equipment will be determined by the aircraft gloss requirement, i.e., unit with aircraft having gloss finishes may apply gloss finishes to their test equipment and CTKs. If

the aircraft assigned have a requirement for flat finishes, then all test equipment and CTKs designed for on-equipment application will be toned down in flat colors.

3.15.2.1. To prevent obscuring of instructions and possible damage to components, only exteriors of test equipment boxes will be toned down.

3.15.2.2. Test equipment and CTKs used outside the shop environment will be toned down, i.e., gray, olive drab, brown, black or forest green. A camouflage pattern incorporating a combination of these colors may be used.

3.15.2.3. Equipment not removed from back shops need not be toned down i.e., test equipment, test benches, and mockups.

3.15.2.4. **Warranted CTKs** . Name brand tool boxes received from base supply with corrosion service life warranties will not be painted solely to change color (this will void the manufacturer's warranty unnecessarily). The exception to this policy is if this equipment is deployed to support combat coded units with flat aircraft finishes.

3.15.3. Tactical Air Control System (TACS) Equipment Requirements . TACS shelters, vehicles, and support equipment will be camouflage pattern painted using chemical agent resistant coating IAW T.O. 36-1-171, *Painting Instruction for Army Material*.

3.15.3.1. TACS shelters, vehicles and support equipment will be pattern painted in a three-color camouflage scheme IAW T.O. 36-1-161, *Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment and Materials Handling Equipment* and authorized equipment specific technical guidance.

3.15.3.2. Reflective tape, signs, and decals will not be applied.

3.15.3.3. Fabric or inflatable shelters will not be painted in accordance with this instruction.

3.15.3.4. Mobilizers can be toned down in the solid complementary colors of desert sand or forest green.

3.15.4. Alternate Mission Equipment (AME) . AME will be painted IAW specific technical data. When such data does not exist, units will coordinate with the applicable item manager and MAJCOM/A4M before changing paint schemes.

3.16. Communications Activity Responsibilities.

3.16.1. Communications Squadron Commander Responsibilities .

3.16.1.1. Ensures a local Corrosion Prevention and Control Program (CPCP) is established for ground CEM equipment, stressing prevention and control of corrosion through equipment cleanliness, timely detection, and maintenance of protective finishes.

3.16.1.2. Appoints a member of Quality Assurance as the unit CPCP functional manager.

3.16.1.3. Ensures an adequate corrosion prevention and training program is in place for initial and recurring training.

3.16.1.4. Establishes support as necessary with host Maintenance Squadron and Base Civil Engineer (BCE).

3.16.2. CPCP Functional Manager Responsibilities .

3.16.2.1. Obtains corrosion control treatment beyond the unit's capability from the BCE, vehicle maintenance shop, maintenance organizations, avionics maintenance shop, or respective Air Logistics Center (ALC).

3.16.2.2. Ensures corrosion prevention or treatment actions are taken and documented on all equipment and systems under their control.

3.16.2.3. Procures needed materials for prevention and treatment of corrosion within each work center. A locally fabricated corrosion control kit may be used. The unit CPCP functional manager and work center supervisor can determine kit contents.

3.16.2.4. Ensures all maintenance personnel receive training on CPCP. The training depth will be based on the local environment and particular equipment involved.

3.16.2.5. Reports all unresolved problems, through channels, to MAJCOM/A4M for assistance. When project material is involved, send information copies to EID/ISQ.

3.16.2.6. Works closely with BCE for support of the unit CPCP. **Note:** Support coverage should consider Real Property Installed Equipment (RPIE), vehicles and sheltered equipment (including van interior and exteriors, undercarriages and mobilizers) and equipment in storage awaiting project installation.

3.16.2.7. Ensures each work center adequately adheres to and participates in the unit CPCP. Periodically evaluates the effectiveness of each work center's CPCP.

3.16.2.8. Ensures oil-based coating is applied to all ground connections not environmentally controlled IAW T.O. 1-1-689-3 *Cleaning and Corrosion Control Vol III* and T.O. 31-10-24, *Communication Systems Grounding, Bonding and Shielding* and MIL Std 188-124. This coating will not be applied on ground terminals of shelters and vans.

3.16.2.9. Ensures minimum quantities of reference publications are available to accommodate unit's needs.

3.16.3. **RPIE Requirements** . BCE has maintenance responsibility for all CE equipment categorized as RPIE IAW AFI 32-9005, *Real Property Accountability and Reporting*. The operation and maintenance of power plants by CE personnel include corrosion control painting IAW AFI 32-1062, *Electrical Power Plants and Generators*. Painting categorized as organizational level responsibility will be accomplished IAW local policy. Assistance should be from BCE when corrosion control maintenance exceeds the unit's capability.

3.16.4. **Corrosion Control Training Programs for Communication Systems** .

3.16.4.1. Qualification training.

3.16.4.1.1. Initial subject knowledge will cover background knowledge of the causes, removal, control, and prevention of corrosion. This training will be required upon initial assignment to the unit and refresher training every 2 years.

3.16.4.1.2. The unit CPCP functional manager may exempt work centers from using part or all of quality training packages (QTP) covering corrosion control and prevention where career development course material adequately covers all module subjects contained in the QTP.

3.16.4.2. Follow-on training will be conducted when new techniques are developed to identify, remove, or treat corrosion encountered by the unit. The unit CPCP functional manager, maintenance support personnel, and supervisors must be alert for applicable follow-on training subjects and cross feeds which may appear in technical orders, WR-ALC RP 400-1 (Corrosion Summary), or other publications procurable through the unit publications personnel.

3.16.4.3. Local job qualification standards will consist of performance tasks to identify, remove, and treat all types of corrosion encountered or anticipated by the work center.

Chapter 4

LOW OBSERVABLE AIRCRAFT STRUCTURAL MAINTENANCE PROGRAM

4.1. Purpose of Low Observable Aircraft Structural Maintenance (AFSC 2A7X5). Responsible for performing aircraft LO system and structural repairs using advanced techniques and materials. Designs, repairs, modifies, and fabricates repair parts and components. Identifies and applies preservative treatments, corrosion preventatives, and LO materials. Inspects and ensures structural and LO integrity. Ensures personnel identify and treat corrosion on aerospace ground equipment. Supervises fabrication and repair of tubing assemblies using applicable technical data and engineering drawings. Uses electronic maintenance information systems to train personnel and track, manage, and monitor aircraft maintenance.

4.2. MAJCOM /A4M Responsibilities.

- 4.2.1. Manage the command's LO ASM maintenance career field.
- 4.2.2. Coordinate all intra-command LO ASM TDY manning assistance requests.
- 4.2.3. Represent MAJCOM at 2A7X5 utilization and training workshops.
- 4.2.4. Represent MAJCOM for all applicable 2A7X5 issues at LO conferences and meetings.
- 4.2.5. Forecast and ensure scheduling of 2A7X5 supplemental training.

4.3. HQ ACC/A4V/A8F Responsibilities.

- 4.3.1. Manage the CAF LO system.
- 4.3.2. Establish an LO subject matter expert (SME) position for each weapon system team with an LO platform assigned.
- 4.3.3. Develop and coordinate CAF policy and procedures for LO functions.
- 4.3.4. Represent CAF at all applicable LO meetings and conferences.
- 4.3.5. Develop and maintain the CAF memorandum of agreement for F-22A Signature Management Program requirements. Provide the CAF with a list of dates available for the next fiscal year Signature Management Program flight test events no later than July of each year.

4.4. Wing Commander Responsibilities.

- 4.4.1. Ensures funding is available to support annual RCS flight test requirements.

4.5. Maintenance Group Commander Responsibilities.

- 4.5.1. Establish and maintain an effective low observables maintenance program.
- 4.5.2. Appoint an experienced 2A7X5 technician or civilian equivalent to QA who is solely focused on LO maintenance processes. Requirement is 1 per AMU.
- 4.5.3. Ensure Plans, Scheduling & Documentation sections schedule F-22 and F-35 annual aircraft audits.

4.5.4. Monitor annual LO F-22 and F-35 audit trends to ensure fleet LO mission capable status is accurately documented and reported.

4.5.5. Support radar cross section (RCS) test events with required aircraft and maintenance personnel. This includes Signature Management Program flight testing, Acceptance Test Facility (turntable) revisits and Repair Verification Radar testing.

4.5.5.1. Units must confirm aircraft will support SMP at least 90 days prior to event.

4.5.6. Establish a policy to limit use of LO aero only panel restoration. Aero only is only used for confidence flights and must be minimized to avoid an uncontrollable backlog.

4.5.7. Work closely with the OG/CC to balance flying requirements with maintenance capability to prevent an uncontrollable LO backlog.

4.5.8. Ensure all F-22 maintenance personnel complete required LO management training.

4.5.9. Ensure hot wash/lessons learned information is documented for each Theater Security Package (TSP) deployment and shared with CAF F-22 units/MAJCOMs.

4.6. Wing LO Survivability Superintendent Responsibilities (5th Generation Fighter Aircraft).

4.6.1. Serve as the LO SME responsible to the wing and ACC for 5th Generation Fighter Aircraft Signature Management Plan (SMP) and other RF diagnostic test events.

4.6.2. Interface with the MAJCOM LO SME on all Signature Management Program deployment scheduling requirements, to include dates, personnel, equipment, etc.

4.6.3. Interface with the ACC/A8 LO SME and Responsible Test Organization on all SMP deployment scheduling requirements, to include dates, personnel, equipment, etc.

4.6.4. Projects TDY budget to support wing F-22A SMP flights per the CAF MOA.

4.6.5. Coordinates local radar cross section site surveys for frequency/band width emissions licensing and ensures local compliance with all federal, state and local Operational Safety and Health Administration regulations during Radio Frequency measurements.

4.6.6. Participate in CAF, F-22A, and F-35 program LO working group meetings/conferences.

4.6.7. Perform periodic reviews of aircraft Maintenance Information Systems and Signature Assessment Systems to assess the integrity of F-22A LO mission capable status reporting.

4.6.8. Provides wing leadership with critical survivability and vulnerability assessments based on LO system health status and projected in-theater threats.

4.6.9. Produces statistical reports/trend analysis to facilitate radar cross section reduction analysis in order to better understand the impact of LO health on F-22A survivability and vulnerability.

4.7. Fabrication Flight Chief

4.7.1. Use LO FTD training availability/capacity at every opportunity to elevate capability over the long term and provide recommended changes as required.

4.7.2. Forecast funding to attend and participate in applicable LO meetings, CPABs and other structural related programs/meetings.

4.7.3. Ensure accuracy of LO mission capable status documentation and reporting. This includes establishment of a SAS data integrity team to ensure data is routinely cross checked for accuracy.

4.7.4. Manage the maintenance data collection process, review data for correctness and take necessary action to rectify incorrect reporting.

4.7.5. Appoint an LO production supervisor to manage scheduling and workload on each shift.

4.7.6. Ensure fast/accelerated LO cure processes are used to the maximum extent possible to reduce flow time and increase aircraft availability.

4.7.7. Ensure all personnel exposed to LO work environments comply with OSHA, AF, MAJCOM, and wing policies on hygiene standards and preventing contamination of common areas outside of the direct work environment.

4.7.8. Report fleet LO mission capable status ([Attachment 5](#)) to the applicable MAJCOM weapon system team on a daily basis. Fleet SAS average reported must not include non-possessed aircraft.

4.7.9. Ensure a corrosion control/restoration plan is established to maintain AGE, AME, and applicable static display aircraft.

4.7.9.1. (**Added-HOLLOMANAFBSUP**) Coordinates with 49 WG Historian to rinse static display aircraft in the Holloman AFB Air Park every six months.

4.8. LO ASM Section Supervisor Responsibilities.

4.8.1. Maintain a comprehensive training plan ensuring assigned personnel develop and maintain proficiency in all facets of LO finishes, metallic structures, composite repair, corrosion control, signature assessment, and electronic maintenance information system data entry commensurate with awarded skill level.

4.8.2. Ensure LO ASM personnel receive pre-placement, special purpose, periodic and termination occupational physicals as deemed necessary by local Medical Group Aero Medical Services IAW AFI 48-145, *Occupational And Environmental Health Program*.

4.8.3. Ensure LO ASM personnel provide updated information required to obtain and retain special program security access to the unit or group security manager in a timely manner.

4.8.4. Ensure an LO composite repair facility security training plan is developed with initial and annual training to be used for each individual working within the section.

4.8.5. Coordinate with maintenance supervision to group other maintenance actions with scheduled LO work (i.e., TCTOs, OTIs) on a non-intrusive basis to minimize aircraft downtime.

4.8.5.1. Work with AMUs to schedule aircraft downtime for LO reduction at the appropriate time based on overall fleet health and/or SAS damage priority screen. LO reduction time must be focused on reducing SAS margins. Other scheduled/unscheduled LO FOM/TCTOs/maintenance must be planned separately. Optional LO margin

maintenance reduction is 3 - 5 days and must focus on multiple discrepancies, longer-lasting repairs, and greater SAS margin buyback. A long-line reduction option (8 - 10 days) is preferred when aircraft availability permits.

4.8.6. Establish procedures for quick look LO inspections on all next day flyers to identify aircraft that will exceed 100% SAS margin and assess possible quick fix repair options.

4.8.6.1. Use expedient repairs for all damages negatively affecting aircraft mission capable status, e.g., fast cures, canopy film repair, etc.

4.8.7. Maximize use of spray facilities by limiting to spray restoration. Brush/roll application should be performed in other hangar locations.

4.8.8. Develop a dedicated LO OML inspection crew to maintain inspection consistency and inspector proficiency.

4.8.8.1. Establish an OML team rotation plan to ensure all LO personnel remain proficient.

4.8.9. Request depot assistance IAW T.O. 00-25-107 through the ACC weapon system manager.

4.8.10. Ensure no other maintenance is accomplished on the aircraft, equipment, or within the environmentally controlled/cordoned-off areas during corrosion prevention/treatment or coatings restoration when hazardous/toxic materials are in use requiring the use of specialized personal protective equipment.

4.8.11. Ensure deficiency reports (DR) are accomplished as necessary IAW T.O. 00-35D-54, *USAF Deficiency Reporting, Investigation, and Resolution*.

4.9. LO Quality Assurance Responsibilities.

4.9.1. Minimum experience requirements for evaluating LO maintenance include; completion of applicable LO TD courses and certified in core training tasks contained in [Attachment 3](#) of the 2A7X5 CFETP.

4.9.2. Establish a comprehensive inspection program assuring the integrity of LO maintenance and SAS documentation associated with mission capable status reporting. This includes frequent personal evaluations of aircraft OML inspections, SAS documentation and LO repair processes IAW established technical order guidance.

4.9.3. Identify/report all LO training and process deficiencies to the Fabrication Flight Chief.

4.9.4. Include periodic participation in annual aircraft LO audit inspections as part of Maintenance Standardization Evaluation Program.

4.10. Low Observable/Composite Repair Facility (LO/CRF) Manager.

4.10.1. Responsible for reporting facility operation deficiencies such as the Heating, Ventilation and Air Conditioning (HVAC) systems, compressed and breathing air systems, electrical systems, plumbing and drainage systems in the LO/CRF and on assigned real property of the LO/CRF.

4.10.2. Perform tasks related to the overall management and operations of the LO/CRF, including energy management and equipment inventory.

- 4.10.3. Perform facility inspections to determine repair and maintenance requirements. Ensure all measures are taken to maintain security accreditation of facility if required.
- 4.10.4. Submit facility work orders through Civil Engineer (CE) Customer Service. In cases of established/approved contract maintenance for facilities, contact contractor for emergency or out of cycle maintenance. This includes warranty repairs and maintenance required.
- 4.10.5. Prioritize and track the completion of work orders.
- 4.10.6. Maintain a record of all work performed by contractor and CE personnel to include response time and time required until satisfactory completion of work.
- 4.10.7. Perform facility and safety inspections as required by technical orders and Air Force instructions.
- 4.10.8. Maintain currency on Hangar Bay Door Operation and train employees and customers on hangar bay door operations.
- 4.10.9. Perform escort duties or provide escorts as needed for contract maintenance personnel within special access areas of the LO/CRF.

4.11. LO Support Section Responsibilities.

- 4.11.1. Stocks supplies, consumables, tools, and equipment to support LO aircraft inspection, maintenance, and surface treatment. Processes supply requests, maintains AF Form 2413, *Supply Control Log* (or operates remote devices), tracks MICAP due-outs, monitors bench stock, conducts bench stock and adjusted stock level reviews, and operates tool storage areas. In addition the Support Section NCOIC will ensure a section due-out release point and holding bins are established. Supports CTK/Special tools, E- tools and test equipment.
- 4.11.2. Maintain bench and operating stocks.
- 4.11.3. Control and maintain TMDE IAW TO 33-1-27, *Maintenance Support of Precision Measurement Equipment*. Comply with T.O. 33K-1-100-2-CD-1, *TMDE Calibration Interval Technical Order and Work Unit Code Reference Guide*; T.O. 00-20-14, and other applicable technical directives concerning the use, care, handling, transportation, and calibration of TMDE owned by the section.
- 4.11.4. Provide monthly critical support equipment status update to squadron supervision.
- 4.11.5. Maintain QRL as needed and provide it to technicians.
- 4.11.6. Track and process DIFM assets.
- 4.11.7. Manage reusable containers IAW AFI 24-203, *Preparation and Movement of Air Force Cargo*, and T.O. 00-20-3.
- 4.11.8. Manage section's hazardous material (HAZMAT) program.
 - 4.11.8.1. Organize and coordinate effective shipping and staging operation.
 - 4.11.8.2. Issue/turn in materials to/from workers using the tool accountability system (TAS).
 - 4.11.8.3. Maintain records and documentation actions to ensure compliance with applicable directives.

Mark A. Atkinson, Major General, USAF
Director of Logistics
(HOLLOMANAFB)

HOUSTON R. CANTWELL, Colonel, USAF
Commander, 49th Wing

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

In addition to required/recommended publications, each Section will maintain publications for possessed equipment IAW T.O. 00-5-1, *AF Technical Order System*.

AFI 21-101, *Aerospace Equipment Maintenance Management*, 26 Jul 2010

AFI 21-124, *Oil Analysis Program*, 8 Dec 2010

AFI 32-1024, *Standard Facility Requirements*, 14 Jul 2011

AFI 32-1062, *Electrical Power Plants and Generators*, 1 Jun 2005

AFI 20-114, *Air and Space Equipment Structural Maintenance*, 7 Jun 2011

AFI 48-145, *Occupational and Environmental Health Program*, 15 Sep 2011

AFI 91-202, *The US Air Force Mishap Prevention Program*, 5 Aug 2011

(Added-HOLLOMANAFBSUP) AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, 15 June 2012

AFI 91-302, *Air Force Occupational and Environmental Safety, Fire Protection, And Health (AFOSH) Standard*, 18 Apr 1994

AFI 21-101, CAF Sup, *Aircraft and Equipment Maintenance Management*, 26 July 2010

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

AFOSH Std 48-137, *Respiratory Protection Program*, 10 Feb 2005

AFOSH Std 91-17, *Interior Spray Finishing*, 1 Sept 1997

AFOSH STD 91-66, *General Industrial Operations*, 1 Oct 1997

AFOSH Std 91-100, *Aircraft Flightline Ground Operations and Activities*, 1 May 1998

AFOSH Std 91-110, *Nondestructive Inspection and Oil Analysis Program*, 1 Jul 1997

AFOSH Std 91-501, *Air Force Consolidated Occupational Safety Standard*, 7 Jul 2004

(Added-HOLLOMANAFBSUP) AETCI 21-106, *Corrosion Control*, 04 June 2014

(Added-HOLLOMANAFBSUP) CAFI 21-105, *Fabrication Program*, 5 September 2012

UFC 4-211-02NF, *Corrosion Control and Paint Finishing Hangars*, 10 Jan 2005

(Added-HOLLOMANAFBSUP) T.O. 1-1-691, *Aircraft Weapons Systems--Cleaning and Corrosion Control and Control Aerospace and Non-Aerospace Equipment*, 20 February 2016

(Added-HOLLOMANAFBSUP) T.O. 1-1-8, *Application and Removal of Organic Coatings Aerospace and Non-Aerospace*, 12 August 2016

(Added-HOLLOMANAFBSUP) T.O. 35-1-3, *Corrosion Prevention and Control, Cleaning, Painting, and Marking of USAF Support Equipment (SE)*, 23 July 2016

T.O. 00-25-107, *Maintenance Assistance*, 15 July 09

T.O. 00-25-172, *Ground Servicing of Aircraft and Static Grounding/Bonding*, 10 Nov 09

T.O. 00-25-252, *Intermediate and Depot Level Maintenance Instructions Aeronautical Equipment Welding*, 30 Sept 08

T.O. 00-35D-54, *USAF Deficiency Reporting and Investigating System*, 1 Oct 09

T.O. 1-1-8, *Application and Removal of Organic Coatings, Aerospace and Non-Aerospace Equipment*, 12 Jan 2010

T.O. 1-1-689-3, *Cleaning and Corrosion Control Volume III Avionics and Electronics*, 15 Jul 2008

T.O. 1-1-691, *Cleaning and Corrosion Prevention And Control, Aerospace And Non-Aerospace Equipment*, 19 Oct 07

T.O. 31-10-24, *Installation Practices - Communication Systems Grounding, Bonding and Shielding*, 15 Nov 2011

T.O. 33B-1-1, *Nondestructive Inspection Methods*, 15 Oct 07

T.O. 33-1-37-1 through -3, *Joint Oil Analysis Program Manual Volumes I – III*, 12 Sept 08

T.O. 35-1-3, *Corrosion Prevention, Painting and Marking USAF Equipment*, 6 Aug 09

T.O. 35E4-1-162, *Field and Depot Maintenance Instruction Tactical Shelters, Foam Beam, Honeycomb*, 11 Jun 2008

T.O. 36-1-161, *Color, Marking, and Camouflage Painting of Military Vehicles, Construction Equipment and Materials Handling Equipment*, 7 May 1991

Adopted Forms

DD Form 2757, *Welding Examination Record*

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

AFTO Form 95, *Significant Historical Data*

AF Form 1800, *Operator's Inspection Guide and Trouble Report*

AF Form 847, *Recommendation for Change of Publication*

(Added-HOLLOMANAFBSUP) AF 1297, *Temporary Issue Receipt*

(Added-HOLLOMANAFBSUP) AFTO Form 244, *Industrial/Support Equipment Record*

Abbreviations and Acronyms

ACC— Air Combat Command

(Added-HOLLOMANAFBSUP)ADCC—Assistant Dedicated Crew Chief

(Added-HOLLOMANAFBSUP)AETC—Air Education and Training Command

(Added-HOLLOMANAFBSUP)AFFF—Aqueous Film Forming Foam

(Added-HOLLOMANAFBSUP)AFMC—Air Force Material Command

AGE—Aerospace Ground Equipment

AFCENT—Air Force Central Command
AFI— Air Force Instruction
AFMAN—Air Force Manual
AFOSH—Air Force Occupational Safety and Health
AFPD— Air Force Policy Directive
AFRC—Air Force Reserve Command
AFRIMS—Air Force Records Information Management System
AFRL—Air Force Research Laboratory
AFSC—Air Force Specialty Code
ALIS— Autonomic Logistics Information System
ALC—Air Logistics Center
AME—Alternate Mission Equipment
AMU—Aircraft Maintenance Unit
AMX—Aircraft Maintenance
AMXS—Aircraft Maintenance Squadron
ANG— Air National Guard
APC—Advance Performance Coatings
ARC— Air Reserve Component
ASM—Aircraft Structural Maintenance
BCE—Base Civil Engineer
(Added-HOLLOMANAFBSUP)BE—Bioenvironmental Engineering
CAF—Combat Air Force
(Added-HOLLOMANAFBSUP)CAFI—Combat Air Force Instruction
CC—Commander
CE—Civil Engineering
CEM -Communications-Electronics—Meteorological
(Added-HOLLOMANAFBSUP)CES—Civil Engineer Squadron
CMS—Component Maintenance Squadron
CPAB—Corrosion Prevention Advisory Board
CPCP—Corrosion Prevention and Control Program
CTK—Composite Tool Kit
(Added-HOLLOMANAFBSUP)DCC—Dedicated Crew Chief

DoD—Department of Defense

DR—Deficiency Reports

(Added-HOLLOMANAFBSUP)ELT—Extended Life Topcoat

EMS—Equipment Maintenance Squadron

ESA—Electrical Surge Arrestor

FAC—Forward Air Control

(Added-HOLLOMANAFBSUP)FG—Fighter Group

FTD—Field Training Detachment

(Added-HOLLOMANAFBSUP)GCS—Ground Control Station

HAZMART— Hazardous Material

HQ—Headquarters

HVAC—Heating, Ventilation and Air Conditioning

IAW— In Accordance With

IC—Interim Change

ICBM—Intercontinental Ballistic Missile

IMIS— Integrated Maintenance Information System

IMDS—Integrated Maintenance Data System

IPT—Integrated Process Teams

JOAP—Joint Oil Analysis Program

LO— Low Observable

LOCRF— Low Observable/Composite Repair Facility

LRU—Line Replaceable Units

MAJCOM— Major Command

MDS—Mission Design Series

MOA—Memorandum of Agreement

(Added-HOLLOMANAFBSUP)MOF—Maintenance Operation Flight

MSDS—Material Safety Data Sheet

(Added-HOLLOMANAFBSUP)MXG—Maintenance Group

(Added-HOLLOMANAFBSUP)MXS—Maintenance Squadron

(Added-HOLLOMANAFBSUP)MXS/MXMF—Maintenance Squadron Fabrication Flight

NAF—Numbered Air Force

NCO—Noncommissioned Officer

(Added-HOLLOMANAFBSUP)NCOIC—Non-Commissioned Officer In Charge

NDI –Non—Destructive Inspection

NESHAP—National Emission Standards for Hazardous Air Pollutants

OAP—Oil Analysis Program

(Added-HOLLOMANAFBSUP)OEF—Operation Enduring Freedom

OPR— Office of Primary Responsibility

(Added-HOLLOMANAFBSUP)PEE—Personal Protective Equipment

PGM— Product Group Manager

PIT—Product Improvement Team

PR—Personnel Recovery

(Added-HOLLOMANAFBSUP)PS&D—Plans, Scheduling & Documentation

QA—Quality Assurance

QPD—Qualified Product Database

QPL— Qualified Products Listings

QPT—Quality Training Package

QTP—Quality Training Package

RAM—Radar Absorbing Material

RCS—Radar Cross Section

RDS—Records Disposition Schedule

RDTE— Research, Development, Test and Evaluation

RPIE—Real Property Installed Equipment

RTO— Responsible Test Organization

SAS—Signature Assessment System

SE—Support Equipment

(Added-HOLLOMANAFBSUP)SE—Systems Expert

SEM/EDX - Scanning Electron Microscope/Energy Dispersive X—Ray

SMD— Structural Management Director

SME—Subject Matter Expert

SMP—Signature Management Program

(Added-HOLLOMANAFBSUP)SO—Sensor Operator

SPD—System Program Directorate

SPM— System Program Manager

STD—Standard

TACS—Tactical Air Control System

TMDE—Test, Measurement and Diagnostic Equipment

TDY—Temporary Duty

TFI—Total Force Integration

(Added-HOLLOMANAFBSUP)TG—Test Group

(Added-HOLLOMANAFBSUP)TOs—Technical Orders

T.O—Technical Order

UFC—Unified Facilities Criteria

USAF— United States Air Force

(Added-HOLLOMANAFBSUP)WCS—Wash Crew Supervisor

(Added-HOLLOMANAFBSUP)WG—Wing

(Added-HOLLOMANAFBSUP)WG CPM—Wing Corrosion Program Manager

Attachment 2**AIRCRAFT MARKING SPECIFICATIONS**

(Not all inclusive, refer to specific weapon system T.O. or drawings for further guidance)

A/OA-10A/C

(Non-combat coded)

COMMAND INSIGNIA: 18 inches (full color)

Vertical: 10 inches below bottom edge of rudder cap left and right.

ORGANIZATIONAL INSIGNIA: 18 inches (full color)

Left side: Above panel F-18 and aft of panel F-44.

Right side: Above panel F-79 and aft of panel F-105.

UNIT IDENTIFIER: 12 inches

Vertical: Lower edge 3 inches above tail numbers. Horizontal: Centered on vertical stabilizer.

PILOT AND CREW CHIEF NAMES:

Pilot on left side under windscreen beginning at FS 188.92.

Crew chief just under pilot's name. Assistant crew chief name just under crew chief name.

NOSE NUMBER: 6 inches (gray color number 36375)

Last three/four digits of tail number on both sides of aircraft nose.

(Combat Coded)

COMMAND INSIGNIA: 18 inches (subdued) (PACAF: 10 inch black silhouette)

Vertical: 10 inches below bottom edge of rudder cap left and right.

Horizontal: Centered above unit designator.

ORGANIZATIONAL INSIGNIA: 18 inches (subdued) (PACAF: 10 inch black silhouette)

Left side: Above panel F-18 and aft of panel F-44.

Right side: Above panel F-79 and panel F-105.

UNIT IDENTIFIER: 12 inches (PACAF: 10 inch black silhouette)

Vertical: Lower edge 3 inches above tail numbers.

Horizontal: Centered on vertical stabilizer.

PILOT AND CREW CHIEF NAMES:

Pilot on left under windscreen beginning at FS 188.92.

Crew chief just under pilot's name.

Assistant crew chief name under crew chief name.

NOSE NUMBER: 6 inches (black)

Three digits of tail number on both sides of the aircraft nose.

UNIQUE MARKINGS:

476 FG Moody AFB (AFRC):

"FT" will remain as the Distinctive Unit Identifier, and the ACC command patch will remain on the tail.

476 FG will replace 23 WG on the aircraft tail.

23 WG patch will remain on the aircraft fuselage and be relocated so that the edge of the patch is 1 inch aft of panel F-44, above panel F-18. The 476th Group patch will be 21 inches aft of panel F-44, above panel F-18, approximately 2 inches past the WG patch.

76 FS Reserve unit insignia will be placed on the left side of the aircraft centered aft of panel F-105, above panel F-79.

25 FS (Osan) Mustang silhouette on tail, tail stripe will be yellow and green checkerboard

B-1

COMMAND INSIGNIA: 24 inches (subdued)

Located 11 inches down from the tail stripe, top of patch 38 inches in from tail leading edge and 36 inches in from leading edge of rudder on both sides.

ORGANIZATIONAL INSIGNIA: 24 inches (subdued)

Located 6 inches below and centered on the OSO/DSO windows.

UNIT IDENTIFIER: 30 inches

Located 7 inches down from command insignia. On right side of tail, trailing edge of first letter will lay along a vertical line from center of sword in command insignia. On left side of tail, trailing edge of second letter in unit designator will lay along a vertical line from center of sword in command insignia.

PILOT/AIRCREW/CREW CHIEF NAMES:

Pilot/aircrew: Centered on forward escape hatch side window.

Crew chief/assistant: Left nose gear door, centered.

NOSE NUMBERS:

Last three/four digits of tail number, 3 inches in height, on nose gear strut, both sides.

UNIQUE COMBAT MARKINGS:

Bomb markings will be located on the right portion of the left nose gear door exterior. These markings will consist of a 5-inch bomb silhouette applied in a row not to exceed 10 in each row. Once 10 silhouettes are achieved a single bomb silhouette with the number "10" will represent a row.

C/HC/MC-130

(PACAF): This specific guidance is non-applicable, follow current guidance for markings of MAF aircraft.

COMMAND INSIGNIA: 30 inches (subdued)

Vertical: Bottom of command insignia is located at vertical stabilizer station 111.0

Horizontal: Centered on FS 1090.0

ORGANIZATIONAL INSIGNIA: 30 inches (subdued)

Vertical: Insignia is placed on the fuselage; the bottom of the insignia will be centered on WL 190.0

(HC-130J): Due to the luminescent light mounted on fuselage, move insignia so bottom tip is three inches above top edge of light.

Horizontal: The insignia will be centered on FS 270.0

UNIT IDENTIFIER: 36 inches

Vertical: Bottom of unit identifier is located at vertical stabilizer station 63.0

Horizontal: Centered between FS 1068.0 and 1122.0

PILOT AND CREW CHIEF/ASSISTANT NAMES:

Vertical: Bottom of crew box on WL 175.0

Horizontal: Between FS 175.0 and 210.0

(HC-130J): Move name block forward on fuselage between FS 165.0 and 200.00

NOSE NUMBERS: 6 inches (subdued)

Last four digits of tail number, positioned on both sides of forward fuselage

RADIO CALL NUMBERS: 15 inches

Vertical: Bottom of radio call number is located at vertical stabilizer station 36.0

Horizontal: Centered between FS 1068.0 and 1122.0

UNIQUE PAINT:

All PR C-130 wheels shall be black (37038)

EC/TC-130

(See EC/TC-130 engineer drawings for further guidance specific to each MDS)

COMMAND INSIGNIA: 30 inches (subdued)

Vertical: Bottom of command insignia is located at vertical stabilizer station 111.0

Horizontal: Centered on FS 1090.0

ORGANIZATIONAL INSIGNIA: 30 inches (subdued)

Vertical: Insignia is placed on the fuselage; the bottom of the insignia will be centered on WL 190.0

Horizontal: The insignia will be centered on FS 270.0

UNIT IDENTIFIER: 36 inches

Vertical: Bottom of unit identifier is located at vertical stabilizer station 63.0

Horizontal: Centered between FS 1068.0 and 1122.0

PILOT AND CREW CHIEF/ASSISTANT NAMES: (subdued)

Vertical: Top of crew box 8.5 inches below WL 200.0. Bottom of crew block 18.5 inches below WL 200.0

Horizontal: Between FS 167.0 and FS 202.0

(Refer to EC/TC-130 engineer drawings for further guidance on crew block dimensions)

NOSE NUMBERS: 6 inches (subdued)

Last four digits of tail number, positioned on both sides of forward fuselage

(Refer to EC/TC-130 engineer drawings for further guidance on nose number locations)

RADIO CALL NUMBERS: 15 inches

Vertical: Bottom of radio call number is located at vertical stabilizer station 36.0

Horizontal: Centered between FS 1068.0 and 1122.0

UNIQUE PAINT:

All MLG wheels, NLG wheels, and hubcaps shall be painted black 37038

EC/RC/WC/OC-135

COMMAND INSIGNIA: 24 inches (Full Color)

Vertical: 1 inch forward of center of pilot/copilot #2 window

Horizontal: 11 inches below lowest part of sill

ORGANIZATIONAL INSIGNIA: 18 inches (Full color)

Left side of forward fuselage, 2 inches above the crew chief block, centered on the crew chief block

UNIT IDENTIFIER: 36 inches

Left Side: Designator will begin 20 inches in from leading edge

Right Side: Designator will end 20 inches in from leading edge

PILOT AND CREW CHIEF/ASSISTANT NAMES:

Flight crew names: 2 inches below blue stripe, beginning straight below the lower forward corner of the left and right #3 windows. 2-inch Helvetica medium, 30-degree forward slant on left side, 30-degree aft slant on right side. The words "AIRCRAFT COMMANDER" with the

individuals name centered below it on the left side, and the word "PILOT" with the individuals name centered below it on the right side. Optional below the Pilot name the word "NAVIGATOR" with individual's name centered below it.

Crew chief/assistant names in 18-inch by 36-inch block, 10 inches aft of crew entry door, top of block flush with top of door.

NOSE NUMBER: Last four digits of tail number

EC-135: 8 inch white letters

Left side: Located 7 inches forward and 8 inches above the crew entry door

Right side: Located resting on WL 208.5 beginning at FS 225

RC-135: 8 inch white letters

Left side: Located 8 inches above and centered on crew entry chute

Right side: Located resting on WL 208, centered on FS 287

E-3

COMMAND INSIGNIA: 18 inches (full color) (PACAF: black silhouette)

Centered 12 inches fwd Sta 259.5. Top of insignia 40 inches above Stringer 19 on co-pilot's side

WING ORGANIZATIONAL INSIGNIA: 18 inches (full color) (PACAF: black silhouette)

Centered 12 inches fwd Sta 259.5. Top of insignia 40 inches above Stringer 19 on pilot's side

RESERVE COMMAND INSIGNIA: 18 inches (full color)--COMACC waiver (PACAF: black silhouette)

Centered 30 inches fwd of Sta 259.5. Lower point resting on Stringer 19 on co-pilot's side

RESERVE ORGANIZATIONAL INSIGNIA: 18 inches (full color)--COMACC waiver

Centered 30 inches fwd of Sta 259.5. Lower point resting on Stringer 19 on pilot's side

OPERATIONAL SQUADRON INSIGNIA: Approved to be placed on the pilot side of the fuselage, above and aft of the wing insignia when each AMU supports more than one flying squadron.

UNIT IDENTIFIER: 24 inches (Gloss Black)

Left side: Located 7 inches above the radio call number with the top corner of the first letter at the leading edge seam

Right side: Located 7 inches above the radio call number with the top corner of the last letter at the leading edge seam

PILOT AND CREW CHIEF/ASSISTANT NAMES:

Pilot/Mission Crew Commander and Dedicated Crew Chief/Assistant Dedicated Crew Chief Names. In a 1/4" black bordered, 30 1/2" by 11 1/2" box, just below the commander's window on the left side of the aircraft with the upper edge of the box 40" plus or minus 0.50" above the edge of the skin stringer 19, running from body station 227.8 to 203.8 will be the words "ACFT

Commander" in Helvetica medium with 1.13" lettering with the individuals name centered below it in Brush Script with 1.695" lettering. Below the ACFT Commander's name will be the words "Dedicated Crew Chief" in Helvetica medium in 1.13" lettering with the individuals name centered below it in Brush Script in 1.695" lettering. The stencil will be placed 1/4" below seam and 1/2" forward of window beef up plate (all lettering will be black).

In a 1/4" black bordered, 30 1/2" by 11 1/2" box just below the Pilots window on the right side of the aircraft, with the upper edge of the box 40" plus or minus .50" above the skin stringer 19, running from body station 227.8 to 203.8 will be the words "MCC" in Helvetica medium with 1.13" lettering with the individuals name centered below it in Brush Script with 1.695" lettering. Below the MCCs' name will be the word "ADCC" in Helvetica medium with 1.13" lettering with the individuals name centered below it in Brush Script with 1.695" lettering. The stencil will be placed 1/4" below seam and 1/2" forward of window beef up plate (All lettering will be black).

NOSE NUMBERS: 6-inch (Gloss Black)

Last four digits of tail number on left and right nose gear door

AMERICAN FLAG: 31.5 inches high by 60 inches long

Applied to both sides of the vertical stabilizer. The top of the American flag is located at Fin Station 210.15 with the forward top corner of each flag resting on the vertical stabilizer leading edge seam.

UNIQUE MARKINGS:

961ST ACSS (Kadena): "Shogun" silhouette on tail, orange tail stripe

962ND ACSS (Elmendorf): "Eagle" silhouette on tail, green tail stripe

E-4B

Due to the mission of the E-4B, no command markings will be applied to the aircraft.

E-9A

COMMAND INSIGNIA: 18 inches (full color)

Vertical: Top of Insignia 7.5 inches below Red "TEAM TARGET" Stripe Horizontal: Centered on the Horizontal Alignment (see drawings)

ORGANIZATIONAL INSIGNIA: 18 inches (full color)

Vertical: RT side, aligned with FWD fuselage antenna support strap, FWD edge.

Horizontal: Centered between Top of copilot side window and "US AIR FORCE" stencil.

SQUADRON INSIGNIA: 18 inches (full color)

Vertical: Lt side, centered between top of pilot side window and passenger door.

Horizontal: Lt side, centered between pilots side window and passenger door.

UNIT IDENTIFIER: 20 Inches

“TD” (Gloss Black) both sides of vertical stabilizer, center aft side of “D” aligned with horizontal alignment line.

Vertical: To the Left and Right of the Horizontal Alignment

Horizontal: Top is 76.5 inches below the Horizontal Stabilizer, centered on vertical stabilizer (rudder seal not included).

CREW NAMES:

Pilots Name: Left side-centered below side window - 2.5 inches below seal.

Co-pilots Name: Right side, centered below side window - 2.5 inches below window seal.

RADIO CALL NUMBERS: AF - 6 inch block letters over 6 inch numbers (year designator) with 3 inch space between. The call numbers will be 15 inch block letters aft of year designator – 3 digit number, last number perpendicular with Horizontal Alignment line.

NATIONAL STAR: 20 inch diameter star size IAW 1-1-8 Fig B-2 (Full Color)

Fuselage placement: Left & Right side of the aft section of the fuselage, 3.5 inches aft tail seam - center of aft FTS Antenna fairing - center rivet line, 48 inches above bottom center tail section lap joint.

Wing Placement: Top left wing and bottom right wing. Center cord line, 12 feet from wing tip. Parallel to fwd leading edge of wing.

UNIQUE PAINT SCHEME: Gulf White – Commercial grade

F-15

COMMAND INSIGNIA: 18 inches, (Black)

Vertical: Bottom of insignia 18 inches above unit designator

Horizontal: Aft edge of insignia of FS 806.5

ORGANIZATIONAL INSIGNIA: 18 inches, (Black)

Vertical: Bottom of insignia on WL 100.0

Horizontal: Forward edge of insignia on FS 458.0

UNIT IDENTIFIER: 24 inches (Black)

Vertical: Top of letters even with top of rudder

Horizontal: Leading edge of first letter on FS 760.0

Commander’s Flagships: Unit Identifier will be 20 inches (Black) with 1 inch shadowing. Top of letters will be moved up 6 inches from top of rudder line.

RADIO CALL NUMBERS ON TAILS: 15 Inches (Black)

Follow specific -23 T.O. reference for location.

Commander’s Flagship: Shadowing of tail numbers is not authorized.

PILOT AND CREW CHIEF NAMES:

Pilot centered below left windscreen frame and crew chief and assistant crew chief names centered below right windscreen frame.

NOSE NUMBER: 4 inches

Last three/four digits of tail number vertically on left and right side of the nose gear door or on the aircraft nose 1 inch below the EWWS antenna with the last number ending 1 inch from radome.

UNIQUE MARKINGS:

Commander's Flagship: Authorized 15 inch (Black) Commander designation (ie: 18^{WG}, 366^{FW}, 48^{OG}, 391^{FS}, etc) centered vertically between unit identifier and radio call numbers, centered horizontally between leading edge of stabilizer and leading edge of rudder. Subscript letters (ie: FW, OG, FS, etc) will be 7 inches (Black) with ¼ inch shadowing. No "th" subscript authorized.

366 FW (Mt Home): Authorized to paint the eagle blocks black with a white shadow on the wing/squadron flagships.

44TH FS, 67TH FS (Kadena): On all assigned F-15 aircraft, "Shogun" silhouette will be moved from outboard of vertical stabilizer to the inboard, applied to same vertical position, centered between fwd and aft vertical edges of stabilizer. Shogun silhouette will take the place of F-15 bird of prey design.

NOTE: For F-15 CAF uniformity purposes, all changes to aircraft markings will be done on attritional basis only, regardless for flagship or normal aircraft. Units can utilize depot or field level program maintenance for marking alterations. All uniformity changes will be completed by 1 Oct 2015.

F-16

COMMAND INSIGNIA: 18 inches (full color) (PACAF: 10-inch contrasting gray silhouette) (USAFE: subdued)

Vertical: 7 inches below tail stripe

Horizontal: Centered on vertical stab, excluding rudder measurement

ORGANIZATIONAL INSIGNIA: 10 inches (full color) (PACAF: 10-inch contrasting gray silhouette) (USAFE: subdued)

Vertical: Top of insignia 11 inches below fuselage/intake splitter vane

Horizontal: Leading edge 52 inches aft of intake duct lip

UNIT IDENTIFIER: 18 inches (PACAF: 10-inch contrasting gray silhouette)

Vertical: Bottom of letters at WL 158.0

Horizontal: Leading edge of first letter on FS 482.07

PILOT AND CREW CHIEF NAMES:

Pilot name on left canopy rail

Crew chief name on right canopy rail

Assistant crew chief name on inside of nose gear door

NOSE NUMBER: 4 inches

Last three/four digits of tail number on both sides of nose gear door or centered below teardrop EWWS antenna on each side of aircraft nose

TFI MARKINGS:

419 FW Hill AFB (AFRC):

“HL” will remain as the Unit Identifier, and ACC patch will remain as the command insignia on the tail

"419 FW" will replace "388 FW" on the aircraft tail

388 FW Organizational Insignia (patch) will remain on the aircraft inlet and be relocated so that the aft edge of the patch is 50 inches aft of the intake duct lip

419 FW Reserve Unit's Organizational Insignia (patch) will be located 52 inches aft of the intake duct lip, 2 inches aft of 388 FW patch

419 FW tail stripe colors (black and yellow) across the top of the vertical stabilizer

UNIQUE MARKINGS:

18TH FS (Eielson): "Combat Fox" silhouette on tail, blue tail stripe

36TH FS (Osan): "Mustang" silhouette on tail, red and black checkerboard tail stripe

35TH FS (Kunsan): "Wolf Head" silhouette on tail, blue tail stripe

80TH FS (Kunsan): "Wolf Head" silhouette on tail, gold tail stripe

13TH FS (Misawa): "Panther" silhouette on tail, red stripe

14TH FS (Misawa): "Samurai" silhouette on tail, gold tail stripe

PACAF: Use contrasting gray markings. Gray 36118 markings will be used on gray 36270 surface areas. Gray 36270 markings will be used on 36118 surface areas, dark gray 36176 on medium surface areas. Black color 37038 will be used for additional markings.

F-22A

COMMAND INSIGNIA: 18 inches (silhouette – contrasting shade of gray)

Vertical: Top of insignia applied 50.3 inches below top of vertical stabilizer

Horizontal: Centered on trailing edge aft unit designator letter

WING INSIGNIA: 18 inches (silhouette – contrasting shade of gray)

Vertical: Centered between chine and bottom of the intake

Horizontal: Centered between leading edge of right intake lip and right weapons bay

SQUADRON INSIGNIA: 18 inches (silhouette – contrasting shade of gray)

Vertical: Centered between chine and bottom of the intake

Horizontal: Centered between leading edge of left intake lip and left weapons bay

UNIT IDENTIFIER: 24 inches

NOTE: Unit designator and tail numbers will be applied in a contrasting shade of gray

Vertical: Bottom of letters applied 96.1 inches below top of vertical stabilizer

Horizontal: Bottom leading edge of first letter is applied 28.8 inches aft of vertical stabilizer leading edge

PILOT AND CREW CHIEF NAMES: 1.75 inches, utilizing Gerber mask (contrasting shades of gray)

Pilot: Justified to forward edge of left nose landing gear door

Crew Chief: Justified to forward edge of right nose landing gear door

NOTE: During exercises, the AMU puts a write-up in the forms (IMIS) and is signed off as "Exercise, pilot and crew chiefs names simulated, removed IAW 1-1-8, re-apply names after combat deployment."

NOSE NUMBER: 4 inches (contrasting shade of gray)

Last three/four digits applied vertically above left and right avionics bay panels (4135 & 4165). The number will begin three inches in front of the forward most portion of the formation light and centered vertically with the formation light.

TAIL STRIPE: 6 inches in width

Any design applied in contrasting shades of gray applied to the upper most elements on both sides of the vertical stabilizers.

F-35

COMMAND INSIGNIA: Overall height is 12 inches (silhouette - contrasting shade of gray); bottom of the insignia will be centered 47 inches above the bottom edge of the blackboard and centered fore to aft in the vertical stabilizer blackboard area.

WING INSIGNIA: Overall height is 12 inches (silhouette - contrasting shade of gray); insignia will be centered within the blackboard area on the right side inlet below the chine and formation light.

SQUADRON INSIGNIA: Overall height is 12 inches (silhouette - contrasting shade of gray); insignia will be centered within the blackboard area on the left side inlet below the chine and formation light.

UNIT IDENTIFIER: Overall height is 12 inches (silhouette - contrasting shade of gray); bottom of the designator will be centered 25 inches above the bottom edge of the vertical stabilizer blackboard.

TAIL STRIPE: Not authorized for F-35 aircraft.

TAIL NUMBERS: Overall height is 6 inches (silhouette - contrasting shade of gray); bottom of the tail number will be centered 2 inches above the bottom edge and 2.6 inches from the inner most trailing edge corner of the vertical blackboard area.

NAF, WG, OP GP, OP SQ, TAIL IDENTIFIER: (Used only on flagship aircraft) Overall height is 6 inches (silhouette - contrasting shade of gray); bottom of the identifier will be 14 inches above the bottom edge of blackboard area, centered between forward and aft blackboard edges.

PILOT AND CREW CHIEF NAMES: Two inches in height; Pilot: End of name will be located two inches forward of inboard aft apex (BL 0) and two inches from BL 0 door edge (left NLG door); Crew Chief: Beginning of name/rank will be located two inches forward of inboard aft apex (BL 0) and two inches from BL 0 edge (right NLG door).

NOSE NUMBERS: Overall height is 4 inches (contrasting shade of gray); nose numbers will be located four inches from the inboard door forward apex (BL 0) and two inches from BL 0 door edge.

NOTE: All lettering/numbering applied to F-35 blackboard areas will meet vertical block type/style font/lettering and Arabic numerals as specified in Technical Order 1-1-8, Appendix B, Figure B-3 (Form of Letters and Numerals) or similar computer generated font.

HH-60

COMMAND INSIGNIA: 10 inches (subdued)

Left side: 11 inches below WL 319.633 centered

Right side: 7 inches below WL 319.633 centered

ORGANIZATIONAL INSIGNIA: 10 inches (subdued)

Wing: On right cargo door 8 inches below forward window, centered

Squadron: On left cargo door, 8 inches below forward window, centered

UNIT IDENTIFIER: 9 inches

Left side: Positioned 21.5 inches below WL 319.633, centered

Right side: Positioned 19 inches below WL 319.633, centered

PILOT/AIRCREW/CREW CHIEF NAMES:

Pilot: Right door, 2.5 inches below window, centered

Copilot: Left door, 2.5 inches below window, centered

Crew chief/assistant: Crew chief, right cargo door, 3.1 inches below and centered on forward window

Assistant: Left cargo door, 3.1 inches below and centered on forward window

UNIQUE COMMAND COLOR SCHEME: Gray only

HELICOPTER ROTOR MARKINGS: All helicopter rotor markings will be in accordance with T.O. 1-1-8 and applicable weapons system technical data.

KC-135

(PACAF): This specific guidance is non-applicable, follow current guidance for markings of MAF aircraft.

COMMAND INSIGNIA: 24 inches (subdued)

On both sides of tail, command insignia will be located 24 inches below tail stripe and 17 inches in from leading edge of tail

ORGANIZATIONAL INSIGNIA: 24 inches (subdued)

Left side of forward fuselage: 2 inches above the crew chief block, centered on the crew chief block

UNIT IDENTIFIER: 36 inches

Left Side: Located 24 inches down from bottom of command insignia. Last letter of designator will end 17 inches in from leading edge of tail

Right Side: Located 24 inches down from bottom of command insignia. Last letter of designator will end 17 inches in from leading edge of tail.

PILOT AND CREW CHIEF NAMES:

Pilot/aircrew: Centered under the pilots side window

Crew chief/assistant names in 18 inch by 36 inch block, 6-10 inches aft of crew entry door, top of block flush with top of door

NOSE NUMBERS: 6 inches

Last three/four digits of tail number. Left side fuselage, located starting at station 277.0 and at WL 200.0. Right side fuselage, located starting on station 203.6 and WL 200.0

MC-12

COMMAND INSIGNIA: 8 inches (flat black)

Top of insignia located 10 inches below the bottom of tail stripe, centered between leading edge vertical fairing seam and rudder leading edge.

ORGANIZATIONAL INSIGNIA: 12 inches (flat black)

Wing patch will be centered 6 inches below front right corner and front left corner cockpit windows.

UNIT IDENTIFIER: 10 inches (flat black)

Located 21 inches below the command insignia, centered between leading edge vertical fairing seam and rudder leading edge.

PILOT AND CREW NAMES: 1.5 inches (flat black)

Aircraft Commander, Pilot, and Crew names will be located on the left fuselage, left side of the crew door centered between bottom and top of the door opening. All names will be standard military block.

NOSE NUMBERS: 4 inches (flat black)

Not to exceed last four digits of tail number horizontally centered on forward edge of left and right nose gear door

MQ-1

COMMAND INSIGNIA: 10 inches (subdued).

Vertical: Top of insignia 6-inches below top-edge of tail plane exterior surface

Horizontal: Centered between tail plane leading and trailing edges perpendicular to tail plane trailing edge

ORGANIZATIONAL INSIGNIA: 10 inches (subdued)

Vertical: Bottom edge of insignia 4.5 inches above chine line right side of fwd fuselage

Horizontal: Centered between leading edge of wing and aft edge of front avionics bay access hatch

SQUADRON INSIGNIA/PATCH: 10 inches (subdued)

Vertical: Bottom edge of insignia 4.5 inches above chine line left side of fwd fuselage

Horizontal: Centered between leading edge of wing and aft edge of forward avionics bay access hatch

UNIT IDENTIFIER: 10 inches (flat black)

Centered vertical and horizontal on tail planes outboard surfaces leveled perpendicular to tail plane trailing edge.

CREW NAMES: 1.75-inch block letters (flat black)

PILOT: Located on left side of forward fuselage

Vertical: 1 inch below front avionics bay access hatch

Horizontal: Centered between aft and forward edges of front avionics bay access hatch

Example: PILOT CAPT JOHN SMITH

SENSOR OPERATOR NAME (SO): Located on left side of forward fuselage

Vertical: 3.25 inches below front avionics bay access hatch (0.5 inch below pilot name).

Horizontal: Left edge aligned with left edge of pilot name or centered under pilot name, which ever presents the most professional appearance based on individual name lengths

Example: SO SSGT JANE DOE

DEDICATED CREW CHIEF (DCC): Located on right side of forward fuselage

Vertical: 1 inch below front avionics bay access hatch

Horizontal: Centered between aft and forward edges of front avionics bay access hatch

Example: DCC SSGT JOHN SMITH

ASSISTANT DEDICATED CREW CHIEF (ADCC): Located on right side of forward fuselage

Vertical: 3.25 inches below front avionics bay access hatch (0.5 inch below DCC name)

Horizontal: Left edge aligned with left edge of DCC name or centered under DCC name, which ever presents the most professional appearance based on individual name lengths

Example: ADCC SRA JANE DOE

RADIO CALL NUMBERS: 1.6 inch block letters AF over 1.6 inch numbers (year designator) followed by 4 inch numbers (last three numbers in aircraft serial number) (Flat black)

Located on the left and right sides of the aft fuselage

Left side vertical: 2 inches below upper edge of rear avionics bay access hatch

Left side horizontal: 1 inch forward of engine air inlet

Right side vertical: 1 inch above network junction access hatch

Right side horizontal: 4 inches forward of lower engine cowlings

Alignment: Parallel to the fuselage chime line

NATIONAL STAR INSIGNIA: 8 inches (subdued)

Fuselage placement: Located on left and right sides of aft fuselage

Vertical: 6 inches above chine line

Horizontal: 54 inches forward of tail plane leading edge

Wing placement: Located on top of left wing and bottom of right wing

Placement: Centered on chord line 8 feet from wing tip

Alignment: Parallel to the main wing spar line

PROPELLER TIP BLADE: 4-inch band around blade tip (flat yellow)

MQ-9

COMMAND INSIGNIA: 10 inches (subdued).

Vertical: Top of insignia 12-inches below bottom-edge of tail stripe on upper tails

Horizontal: Centered between leading and trailing edges of upper tails with top edge parallel to tail stripe

ORGANIZATIONAL INSIGNIA: 10 inches (subdued)

Vertical: Bottom edge of insignia 4 inches above chine line right side of fwd fuselage

Horizontal: Centered between leading edge of wing and aft edge of radome cover

SQUADRON INSIGNIA: 10 inches (subdued)

Vertical: Bottom edge of insignia 4 inches above chine line left side of fwd fuselage.

Horizontal: Centered between leading edge of wing and aft edge of radome cover.

UNIT IDENTIFIER: 10 inches (flat black)

Vertical: Bottom edge of unit designator 44" from base of upper tails

Horizontal: Centered between leading and trailing edge surfaces on upper vertical tail leveled parallel with tail stripe

PILOT NAMES: 1.75-inch block letters (flat black)

Located on left side of forward fuselage

Vertical: 2 inches below chine line

Horizontal: Starting at aft edge of lower radome cover justified forward

Example: PILOT CAPT JOHN SMITH

SENSOR OPERATOR (SO) NAME:

Vertical: 0.5 inches below pilot name

Horizontal: Starting at aft edge of lower radome cover justified forward

Example: SO SSGT JANE DOE

GROUND CREW NAMES: 1.75-inch block letters (flat black)

DEDICATED CREW CHIEF (DCC): Located on right side of forward fuselage

Vertical: 2 inches below chine line

Horizontal: End of name starting at aft edge of lower radome cover with left edge aligned with left edge of ADCC name. DCC and ADCC names justified aft as a group.

Example: DCC SSGT JOHN SMITH

ASSISTANT DEDICATED CREW CHIEF (ADCC):

Vertical: 0.5 inches below DCC name

Horizontal: End of name starting at aft edge of lower radome cover with left edge aligned with left edge of DCC name. DCC and ADCC names justified aft as a group.

Example: ADCC SRA JANE DOE

NATIONAL STAR INSIGNIA: 10 inches (subdued)

Fuselage placement: Located on left and right sides of aft fuselage

Vertical: 4 inches above chine line

Horizontal: 23 inches forward of upper vertical tail leading edge to end of decal

Wing placement: Located on top of left wing and bottom of right wing

Placement: Centered on chord line 12 feet from wing tip to outer edge of decal

Alignment: Parallel to the main wing spar line

RADIO CALL NUMBERS: 3.5 inch block letters, AF over 3.5 inch numbers (year designator) followed by 8 inch numbers (last three numbers in aircraft serial number) (Flat black)

Horizontal: Located on the left and right sides of the lower tail leveled 4 inches below fuselage

Alignment: Centered between leading and trailing edge of rudder

PROPELLER BLADE TIPS: 4-inch band around blade tips (flat yellow)

QF-4E (Unrestricted Manned flyers only)

COMMAND INSIGNIA: 15 inches (full color)

Alignment: ½ inch from bottom of bellows ram air inlet panel, centered on weld

ORGANIZATIONAL INSIGNIA/PATCH: 18 inches (full color)

53 WEG patch Located on right intake

SQUADRON INSIGNIA/PATCH: 18 inches (full color)

82 ATRS patch Located on left intake

UNIT IDENTIFIER: (TD or HD) 24 inches (gloss black or gloss white)

Alignment: 4 inches from tail stripe, 10 inches from leading edge

NOSE NUMBER: 6 inches (semi-gloss black)

AF then 3 digit drone production number on left and right ram air intakes

UNIQUE INSIGNIA/PATCH: 18 inches (full color)

Located on left intake in place of squadron insignia/patch

RADIO CALL NUMBERS: 1.6 inch block letters AF over 1.6 inch numbers (year designator) followed by 4 inch numbers (last three numbers in aircraft serial number) (semi-gloss black)

NATIONAL STAR:

Both sides of fuselage 30 inch star, under surface right, top surface left wing 45 inch star

USAF: 25 inches under surface left, top surface right wing

U.S. AIR FORCE: 12 inches both sides of fuselage

UNIQUE PAINT SCHEME:

Aircraft painted in semi-gloss schemes representative of the evolution of the Phantom.

1960s painted in the Southeast Asia paint scheme

1970s painted the modified Southeast Asia wrap-around camouflage paint scheme

1980s painted in the European paint scheme

1990s painted Ghost gray to represent the Wild Weasel mission

UNIQUE MARKINGS: Shark teeth representing 23 FG

RQ-4

COMMAND INSIGNIA: 16 inches (flat black)

Placement: Outboard side of both vertical stabilizers

Vertical: Centered between the top of the unit designator and the bottom of the tail flash

Horizontal: Centered between the stabilizer leading edge and the rudder leading edge

ORGANIZATIONAL INSIGNIA:

No organizational insignia will be placed on the RQ-4 aircraft

UNIT IDENTIFIER: 15 inches (flat black)

Placement: Outboard side of both vertical stabilizers

Vertical: Located 59 inches below the tail flash

Horizontal: Centered between the stabilizer leading edge and the rudder leading edge

PILOT AND CREW CHIEF NAMES (if applied): 1.75 inches (flat black)

Pilot name centered right side main landing gear door 4 inches aft of nose numbers.

Crew chief names centered left side main landing gear door 4 inches aft of nose numbers

NOSE NUMBERS: 3 inches (flat black)

Last four digits on leading edge of both nose landing gear doors

RADIO CALL NUMBERS: 8 inches (flat black) Last two of year and last four of serial number

Placement: Outboard side of both vertical stabilizers

Vertical: Bottom edges of numbers are 25.5 inches at forward edge, 20.25 inches at trailing above lower stabilizer attach joint

Horizontal: 1.75 inches aft of leading edge to 2" forward of rudder attach point

NATIONAL STAR INSIGNIA: 18 inches (flat black)

Fuselage placement: Located on left and right sides of aft fuselage

Vertical: Centered on the engine cowling door

Horizontal: Centered on the engine cowling door

Wing placement: Located on top of left wing and bottom of right wing

Placement: Centered on the outboard aileron

Alignment: Parallel to the main wing spar line

T-38

COMMAND INSIGNIA: 10 inches (full color)

Vertical: Top of insignia 4 inches below anti-collision light

Horizontal: Centered on line with trailing edge of anti-collision light

ORGANIZATIONAL INSIGNIA: 10 inches (subdued/CTP, full color AT-38)

Vertical: Centered on 3 o'clock position (left) and 9 o'clock position (right)

Horizontal: Center of insignia 24 inches aft of intake lower opening

UNIT IDENTIFIER: 12 inches

Vertical: 4 inches below command insignia

Horizontal: Leading edge of first letter centered on command insignia

PILOT AND CREW CHIEF NAMES:

Pilot: Name centered on left forward canopy rail

Crew Chief: Name centered on left aft canopy rail

Assistant Crew Chief centered on right aft canopy rail.

NOSE NUMBER: 4 inches

Last three/four digits of the tail number horizontally on both sides of nose gear door

UNIQUE PAINT SCHEME:

Companion Trainer Program T-38 aircraft are authorized a gloss gray paint scheme, federal stock code number 16099.

U-2

COMMAND INSIGNIA: 15 inches (flat red silhouette)

Top of insignia located 14 inches below the bottom of the tail stripe, the trailing edge of the insignia 11 inches in from the leading edge of the rudder.

ORGANIZATIONAL INSIGNIA:

No organizational insignia will be placed on the U-2 aircraft.

UNIT IDENTIFIER: 15 inches (flat red)

Located 14 inches below the command insignia. On the right side of the tail, the unit designator will start 7 inches in from the leading edge of the rudder. On the left side of the tail, the unit designator will end 7 inches from the leading edge of the rudder.

PILOT AND CREW CHIEF NAMES:

Pilot, Crew chief and assistant names centered below the right canopy frame.

NOSE NUMBERS: 6 inches (flat red)

Last three digits centered on main landing gear door in front of the door composite area.

Note: National star markings are not applied due to geopolitical reasons per ACC/A4CQ. Command insignias and unit designators shall be removed from all U-2 aircraft prior to transfer to 1st Expeditionary Reconnaissance Squadron (1ERS).

Attachment 2 (HOLLOMANAFBSUP)**AIRCRAFT/GROUND CONTROL STATION (GCS) MARKING SPECIFICATIONS****MQ-9**

COMMAND INSIGNIA: 10 inches (subdued).

Vertical: Top of insignia 12-inches below bottom edge of tail stripe on upper tails.

Horizontal: Centered between leading and trailing edges of upper tails with top edge parallel to tail stripe.

ORGANIZATIONAL INSIGNIA: 10 inches (subdued).

Vertical: Bottom edge of insignia 4 inches above chine line on right side of forward fuselage.

Horizontal: Centered between leading edge of wing and aft edge of radome cover.

SQUADRON INSIGNIA: 10 inches (subdued).

Vertical: Bottom edge of insignia 4 inches above chine line on left side of fwd fuselage.

Horizontal: Centered between leading edge of wing and aft edge of radome cover.

Vertical: Bottom edge of unit designator 44" from base of upper tails.

Horizontal: Centered between leading and trailing edge surfaces on upper vertical tail leveled parallel with tail stripe.

PILOT AND CREW NAMES: 1.75-inch block letters (flat black).

PILOT NAMES: Located on left side of forward fuselage.

Vertical: 2 inches below chine line.

Horizontal: Starting at aft edge of lower fwd fuselage chine line.

Example: PILOT CAPT JOHN SMITH

SENSOR OPERATOR (SO) NAME:

Vertical: 0.5 inches below pilot name.

Horizontal: Starting at aft edge of lower radome cover justified forward.

Example: SO SSGT JANE DOE

GROUND CREW NAMES: 1.75-inch block letters (flat black).

DEDICATED CREW CHIEF (DCC): Located on right side of forward fuselage.

Vertical: 2 inches below chine line.

Horizontal: End of name starting at aft edge of lower radome cover with left edge aligned with left edge of ADCC name. DCC and ADCC names justified aft as a group.

Example: DCC SSGT JOHN SMITH

ASSISTANT DEDICATED CREW CHIEF (ADCC):

Vertical: 0.5 inches below DCC name.

Horizontal: End of name starting at aft edge of lower radome cover with left edge aligned with left edge of DCC name. DCC and ADCC names justified aft as a group.

Example: ADCC SRA JANE DOE

NATIONAL STAR INSIGNIA: 10 inches (subdued).

Fuselage placement: Located on left and right sides aft fuselage.

Vertical: 4 inches above chine line.

Horizontal: 23 inches forward of upper vertical tail leading edge to end of decal.

Wing placement: Located on top of left wing and bottom of right wing.

Placement: Centered on chord line 12 feet from wing tip to outer edge of decal.

Alignment: Parallel to the main wing spar line

RADIO CALL NUMBERS: 3.5 inch block letters, AF over 3.5 inch numbers (year designator) followed by 8 inch numbers (last three numbers in aircraft serial number) (flat black).

Horizontal: Located on the left and right sides of the lower tail leveled 4 inches below fuselage.

Alignment: Centered between leading and trailing edge of rudder.

PROPELLER BLADE TIP: 4-inch band around blade tip (flat yellow).

GROUND CONTROL STATION (GCS): Standard aircraft markings will apply (flat black).

COMMAND INSIGNIA, WING, AND SQUADRON PATCHES (long side with door as viewed in A14.1): 6 inches tall. Long side placement (as viewed in [Figure A14.1](#)): 5 inches from left door frame to edge of first patch, 18 inches from top of door frame to top of patches, 5.5 inches between edges of patch to next patch.

CREW NAMES: 1.75 inches tall. Aligned with edge of MAJCOM patch 2 inches below bottom edge of MAJCOM and Wing patches.

NATIONAL STAR INSIGNIA (long side with door as viewed in A13.1): 6 inches tall, 11 inches long. AF+Year: 1.75 inches tall. AF+Year and tail number; 5 inches from right door frame to edge of National Star Insignia, 18 inches from top of door frame to top of National Star Insignia.

NATIONAL STAR INSIGNIA (front and back of GCS as viewed in A13.2): Forward and aft end placement: 18.5 inches from top of GCS to top of national star insignia, while looking at GCS end 14.25 inches from right side to left side of numbers.

TAIL NUMBER (front and back of GCS as viewed in A13.2): 4 inches tall, placed 18.25 inches from the top of the GCS. 14.25 inches from right side of GCS to the aft edge of tail number.

F-16: See AETCI 21-106 for AETC specific markings.

COMMAND INSIGNIA: Will be applied onto both sides of the vertical stabilizer, properly center between the leading edge and trailing edge of the vertical stabilizer. The patch will be 18 inches in height, will be in color and located evenly with the tops of panel 4495 and 4496.

FIGHTER WING/UNIT INSIGNIA: Will be applied to the side of forward fuselage along the intake area. The wing patch will be placed on panel 3302 and squadron patch on 3301. They will be applied approximately 2 inches from the top and 2 inches from the front of the panel seam.

Patches will be 10 inch in height and in color. The flagship will have the group patch on panel 3301, instead of a squadron patch. See Attachment 12.2 for patch design.

UNIT DESIGNATOR: Will be applied in 24 inch single stroke, gothic vertical lettering, and will be applied to both sides of the vertical stabilizer, approximately 5 inches above the aircraft tail numbers and center between the leading and trailing edge of the vertical box structure. The stencil will be contrasting dark grey (36118) color.

NOSE NUMBERS: Will be applied in 4 inch single stroke, gothic vertical lettering, and a four digit aircraft serial number will be standard. Placement of stencil is centered 2 inches below the threat warning (teardrop) antennas on both sides of the fuselage. The stencil will be contrasting dark grey (36118) color.

NAMES: Names applied to wing aircraft will be in Claredon medium font. Font color is at the discretion of the unit. Nickname, if used, will be enclosed in quotation marks. Names for canopy frames will be 3 inches in height and not exceed 36 inches in overall length. Names for the nose gear door will be 1 1/2" in height and will not exceed 21 inches in overall length. Other fonts and sizes are prohibited. The Aircraft Maintenance Unit (AMU) can use locally procured "Gerber" vinyl decal machine/computer systems for decal replacement. Pilot, crew chief, and assistant crew chief names can be removed and replaced at AMU discretion. AMU will ensure all approval procedures are followed prior to placement on the aircraft. Assistant crew chief names may be added to the aft portion of the right side canopy frame on two seat aircraft. For single seat aircraft place the assistant crew chief's name on the interior of the nose gear door.

Attachment 3

DISTINCTIVE UNIT IDENTIFIER REGISTRY

A3.1. Majority of MAJCOMs require assigned aircraft to hold unit identifiers as depicted in T.O. 1-1-8, *Application and Removal of Organic Coatings, Aerospace and Non-Aerospace Equipment*. The composite listing of distinctive unit identifiers (**Table A3.1**), shows past and current Air Force aircraft tail unit identifiers. The responsibility for keeping the registry current falls on ACC/A4M.

Table A3.1. COMPOSITE LISTING OF DISTINCTIVE UNIT IDENTIFIERS.

CODE	AIRCRAFT	UNIT/ LOCATION/ COMMAND
AC	F-16C/D	177 FW Atlantic City, NJ (ANG)
AF	T-41D, TG-10B/C, TG-14A, TG-15A/B, UV-18B	306 FTG USAF Academy, CO (AETC)
AK	F-16C/D	354 FW Eielson AFB, AK (PACAF)
	KC-135R	168 ARW Eielson AFB, AK (ANG)
	E-3B/C, F-22A, C-12F	3 WG Elmendorf AFB, AK (PACAF)
	F-22A	477 FG Elmendorf AFB, AK (AFRC)
	C-17, C-130, HH-60	146 AW Elmendorf, AK (ANG)
AL	F-16C/D	187 FW Montgomery Regional Apt, AL (ANG)
AP	T-1A, T-6	479 FTG Pensacola NAS, FL (AETC)
AT	F-16C/D	ANG/AFR Test Center (AATC) Tucson ANGB, AZ (ANG)
AV	F-16C/D	31 FW Aviano AB, Italy (USAFE)
AZ	F-16C/D	149 FW Tucson IAP, AZ (ANG)
BB	U-2S, TU-2S, T-38A, RQ-4, MC-12	9 RW Beale AFB, CA (ACC)
	RQ-4	9 RW, 69 RG Grand Forks, ND (ACC)
	RQ-4	9 RW, Det 3, Anderson AB, Guam (ACC)
	RQ-4	9 RW, Det 4, Sigonella NAS, Italy (ACC)
BC	C-21	110 AW Battle Creek, MI (ANG)
BD	A-10C, B-52H	917 WG Barksdale AFB, LA (AFRC)
CA	MQ-1	163 RQS March ARB, CA (ANG)
	F-16C/D	144 FW Fresno Apt, CA (ANG)
	MC-130, HH-60	129 RQW Moffett Field, CA (ANG)
CB	T-1A, T-6, T-38C	14 FTW Columbus AFB, MS (AETC)
CH	MQ-1, MQ-9	432 WG Creech AFB, NV (ACC)
CI *	C-130J	146 AW (AMC)
CO	F-16C/D	140 FW Buckley ANGB, CO (ANG)
CT	C-21/C-27J	103 AW Bradley IAP, CT (ANG)
D	KC-135	100 AW RAF Mildenhall, England (USAFE)
DC	F-16C/D	113 FW Andrews AFB, MD (ANG)
DE *	C-130H	166 AW New Castle, DE (ANG)
DM	A/OA-10A/C	355 WG Davis-Monthan AFB, AZ (ACC)

CODE	AIRCRAFT	UNIT/ LOCATION/ COMMAND
	EC-130H	55 WG Davis-Monthan AFB, AZ (ACC)
DR	HH-60G	943 RQS Davis-Monthan AFB, AZ (AFRC)
DY	B-1B	7 BW Dyess AFB, TX (ACC)
ED	Various	412 TW Edwards AFB, CA (AFMC)
EF	MQ-1	147 RQS Ellington Field, TX (ANG)
EG	F-35	33 FW Eglin AFB, FL (AETC)
EL	B-1B	28 BW Ellsworth AFB, SD (ACC)
EN	T-6, T-37B, T-38C	80 FTW Sheppard AFB, TX (AETC)
ET	F-15A/B/C/D/E, F-16A/B/C/D, A-10C, UH-1N	46 TW Eglin AFB, FL (AFMC)
FC	UH-1N	58 SOW, Fairchild AFB, WA (AETC)
FE	UH-1N	90 SPW F.E. Warren AFB, WY (AFSPC)
FF	F-15C/D, F-22A	1 FW Langley AFB, VA (ACC)
	F-22A	192 FW Langley AFB, VA (ANG)
FL	HC-130P/N, HH-60G	920 RQG Patrick AFB, FL (AFRC)
FM	F-16C/D	482 FW Homestead ARS, FL (AFRC)
FR	TH-1H	58 SOW, 23 FTS Fork Rucker, AL (AETC)
FS	A-10C	188 FW Fort Smith MAP, AR (ANG)
FT	HC-130P/N/J, HH-60G	23 WG Davis-Monthan AFB, AZ (ACC)
	A-10C, HC-130P/N/J, HH-60G	23 WG Moody AFB, GA (ACC)
	HH-60G	23 WG Nellis AFB, NV (ACC)
GA	E-8C	116 ACW Robins AFB, GA (ANG)
	E-8C	461 ACW Robins AFB, GA (ACC)
	C-130	165 AW Savannah Hilton Head Aprt, GA (ANG)
HA *	KC-135	185 ARW Sioux City, IA (ANG)
HD	QF-4	53 WEG, 82 ATRS Holloman AFB, NM
HH	KC-135R, F-22A	154 WG Hickam AFB, HI (ANG)
	C-17A, F-22A	15 AW Hickam AFB, HI (PACAF)
HL	F-16C/D	388 FW Hill AFB, UT (ACC)
	F-16C/D	419 FG Hill AFB, UT (AFRC)
HO	F-22A, T-38A , MQ-1, MQ-9	49 FW Holloman AFB, NM (ACC)
	F-22A	44 FG Holloman AFB, NM (AFRC)
	F-4E	Luftwaffe RTU Holloman AFB, NM
HT	AT-38B; C-12J; F-15	46 TG Holloman AFB, NM (AFMC)
HV	UH-1N	30 SPW Vandenberg AFB, CA (AFSPC)
IA	F-16C/D	132 FW Des Moines, IA (ANG)
ID	A-10C	124 FW Boise Air Term, ID (ANG)
IL *	C-130	182 AW Peoria, IL (ANG)
IN	A-10C	122 FW Fort Wayne, IN (ANG)
JZ	F-15C/D	159 FW NAS JRB New Orleans, LA (ANG)
KC	A-10C	442 FW Whiteman AFB, MO (AFRC)
KS	C-21A	314 AW Keesler AFB, MI (AETC)

CODE	AIRCRAFT	UNIT/ LOCATION/ COMMAND
LA	B-52H	2 BW Barksdale AFB, LA (ACC)
LD	Various	IAAFA, Lackland AFB, TX (AETC)
LF	F-16C/D	56 FW Luke AFB, AZ (AETC)
LI	HC-130P/N; HH-60G	106 RQS F.S. Gabreski Airport, NY (ANG)
LN	F-15C/D/E, HH-60	48 FW RAF Lakenheath, UK (USAFE)
MA	F-15C/D	104 FW Barnes MAP, MA (ANG)
MD	A-10C, C-27J	175 WG Martin State Aprt, MD (ANG)
MI	A-10C	127 WG Selfridge ANGB, MI (ANG)
MM	UH-1N	341 SPW Malmstrom AFB, MT (AFSPC)
MN	C-130H	133 AW Minneapolis-St. Paul IAP/ARS, MN (ANG)
	F-16C/D	148 FW Duluth IAP, MN (ANG)
MO	F-15C/D/E	366 FW Mountain Home AFB, ID (ACC)
MT	B-52H	5 BW Minot AFB, ND (ACC);
	UH-1N	91 SPW Minot AFB, ND (AFSPC)
NC *	C-130	145 AW Charlotte, NC (ANG)
NM	F-16C/D	150 FW Kirtland AFB, NM (ANG)
NV *	C-130	152 AW Reno, NV (ANG)
NY	MQ-9	174 FW Hancock Field, NY (ANG)
OF	OC/RC/TC/WC-135, E-4B	55 WG Offutt AFB, NE (ACC)
OH		178 FW Springfield-Beckley MAP, OH (ANG)
	C-27J	179 AW Mansfield Airport, OH (ANG)
	F-16C/D	180 FW Toledo Express Airport, OH (ANG)
OK	E-3B/C, TC-18E	552 ACW Tinker AFB, OK (ACC)
	F-16C/D	138 FW Tulsa Aprt, OK (ANG)
	KC-135	137 ARW Tinker AFB, OK (ANG)
	E-3B/C	513 ACG Tinker AFB, OK (AFRC)
OS	A-10C, F-16C/D, HH-60G, U-2	51 FW Osan AB, South Korea (PACAF)
OT	F-15C/D/E, F-16C/D	53 WG – 85 TES Eglin AFB, FL (ACC)
	A-10C, F-15C/D/E, F-16C/D, F-22A	53 WG – 422 TES Nellis AFB, NV (ACC)
	B-1B	53 TEG – 337 TES Dyess AFB, TX (ACC)
	B-52 H	53 WG – 49 TES Barksdale AFB, LA (ACC)
PR *	C-130	156 AW San Juan, Puerto Rico (ANG)
RA	T-1A, T-6, T-37B, T-38C, AT-38B, T-43A	12 FTW Randolph AFB, TX (AETC)
RI *	C-130	143 AW Quonset State Airport, RI (ANG)
SA	F-16C/D	149 FW Lackland AFB, TX (ANG)
SC	F-16C/D	169 FW McEntire ANGB, SC (ANG)
SD	F-16C/D	114 FW Joe Foss Field, SD (ANG)
SI		183 FW Abraham Lincoln Capital Aprt, IL (ANG)
SJ	F-15E	4 FW Seymour Johnson AFB, NC (ACC)

CODE	AIRCRAFT	UNIT/ LOCATION/ COMMAND
SP	A-10C, F-16C/D	52 FW Spangdahlem AB, Germany (USAFE)
ST	Various	82 TW Sheppard AFB, TX (AETC)
SW	F-16C/D	20 FW Shaw AFB, SC (ACC)
TD	QF-4, E-9A	53 WEG, 82 ATS Tyndall AFB, FL (ACC)
TX	MQ-1	147 RQS Ellington Field, TX (ANG)
	F-16C	301 FW NAS Fort Worth JRB Carswell Field, TX (AFRC)
TX *	C -130	136 AW Fort Worth, TX (ANG)
TY	F-22A	325 FW Tyndall AFB, FL (AETC)
VN	T-1A, T-6, T-38C	71 FTW Vance AFB, OK (AETC)
VT	F-16C/D	158 FW Burlington IAP, VT (ANG)
WA	A-10C, F-15C/D/E, F-16C/D, F-22A	57 WG Nellis AFB, NV (ACC)
WI	F-16C/D	115 FW Truax Field, WI (ANG)
WM	B-2A, T-38A	509 BW Whiteman AFB, MO (ACC)
WP	F-16C/D	8 FW Kunsan AB, South Korea (PACAF)
WR	E-8C, TE-8A	93 ACW Robins AFB, GA (ACC)
WV *	C-130H	130 AW Charleston, WV (ANG)
WW	F-16C/D	35 FW Misawa AB, Japan (PACAF)
WY *	C-130	153 AW Cheyenne, WY (ANG)
XL	T-1A, T-6, T-38C	47 FTW Laughlin AFB, TX (AETC)
XP *	C-130	139 AW Rosecrans ANG, St Joseph, MO (ANG)
YJ	C-12J, C-130H, UH-1N	374 AW Yokota AB, Japan (PACAF)
ZZ	F-15C/D, E-3B/C, KC-135R/T, HH-60G	18 WG Kadena AB, Japan (PACAF)
* = Unit Identifier not currently used.		

Table A3.1. (HOLLOMANAFBSUP) Composite Listing of Distinctive Unit Aircraft Identification Markings.

CODE	AIRCRAFT	UNIT/ LOCATION/ COMMAND
HO	F-16C/D	56 FW Luke AFB, AZ (AETC)
HO	T-38A, MQ-9, QF-16	49 WG Holloman AFB, NM (ACC)
HT	AT-38B; C-12J	96 TG Holloman AFB, NM (AFMC)

Attachment 4**F-22 OUTER MOLD LINE AUDIT**

A4.1. The Low Observables Section is responsible to perform a Signature Assessment System (SAS) and aircraft Outer Mold Line (OML) audit on each assigned aircraft annually. The audit is used to confirm that damage defects entered in the SAS during daily OML inspections or damages removed from SAS during routine maintenance provide for an accurate representation of the LO system health. This can only be performed by physically matching aircraft damages with the entries in SAS. Errors identified during the audit must be recorded in the audit historical file and corrected in the SAS immediately. Any aircraft audit that results in a +15% or -15% SAS margin deviation indicates a potential deficiency with the OML inspection process. Maintenance supervisors with direct oversight of LO processes must ensure significant variances are understood and corrective actions, e.g., training, additional QA oversight, process changes, etc. immediately follow. Internal root cause analysis and corrective actions must be documented for historical purposes any time an audit exceeds the margin percentages outlined above. Units must also establish a local SAS management policy outlining the frequency of QA evaluations to ensure SAS data for each aircraft is accurate. Note: There is an unacceptable risk to aircraft radar cross section and aircraft survivability due to substandard maintenance practices or inaccurate maintenance documentation into the SAS. Aircraft scheduled for an audit should be identified during the monthly/weekly shared resources meeting.

A4.1.1. All aircraft scheduled to support a Theater Security Package/contingency deployment must not have an audit due within 30 days of arriving at the deployed location.

A4.2. The following equipment is required to perform SAS margin audit:

A4.2.1. Miltope or Portable Maintenance Aid (PMA)

A4.2.2. Black marker

A4.2.3. Pen or pencil

A4.2.4. Fuselage station butt line chart

A4.2.5. Roll of tape (blue 3M 2090)

A4.2.6. Booties

A4.3. The SAS and OML audit historical files: The SAS and OML audit files will be maintained for 5 years. Each audit file will include at a minimum:

A4.3.1. Name of person/s performing the audit

A4.3.2. Date of audit

A4.3.3. Pre-audit SAS margin percentage using sector with the highest number

A4.3.4. Post-audit SAS margin percentage using sector with greatest change, except in the case where a decrease in margin is greater than an increase in any sector. Sector increases are always more critical than sector decreases

A4.3.5. Number of new damages identified

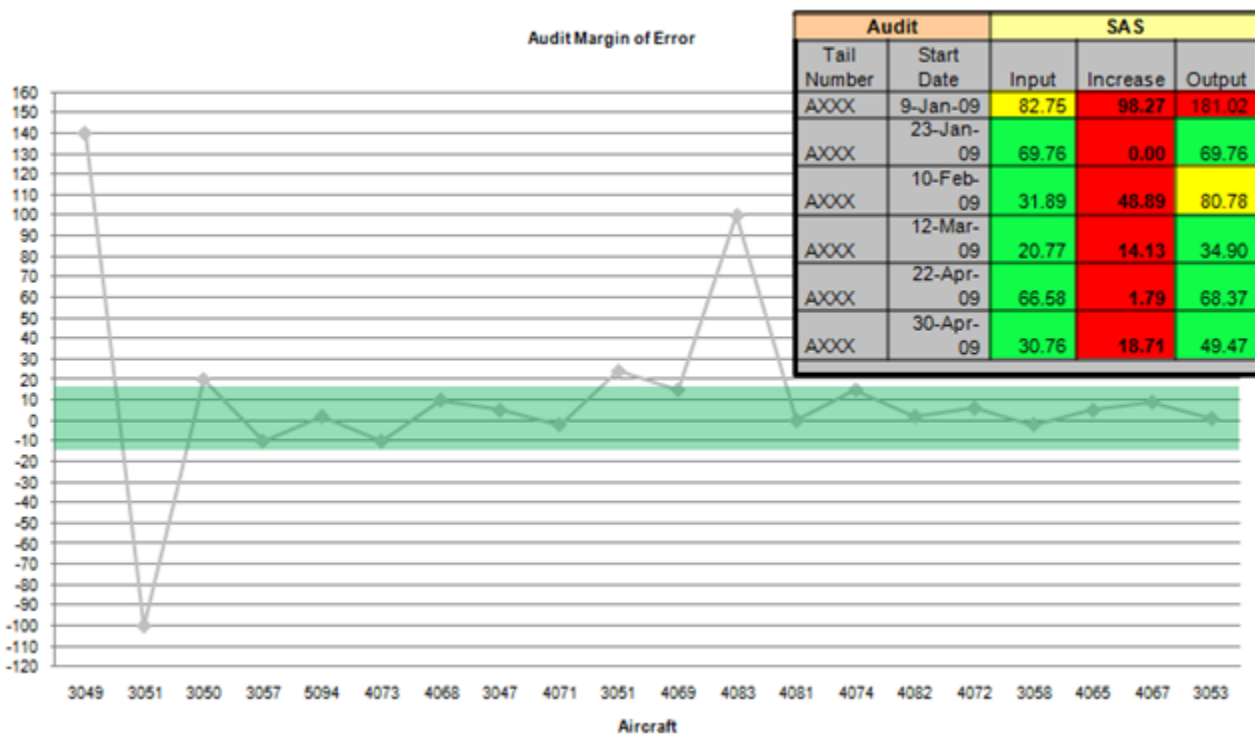
A4.3.6. Number of previously repaired damages not removed from SAS

A4.3.7. Number of duplicate entries identified

A4.3.8. Root cause and corrective action when post audit results in a +15% or -15% change

A4.3.9. An Audit Metric ([Figure A4.1](#)) will be created and used to monitor OML inspection compliance.

Figure A4.1. F-22 OUTER MOLD LINE AUDIT.

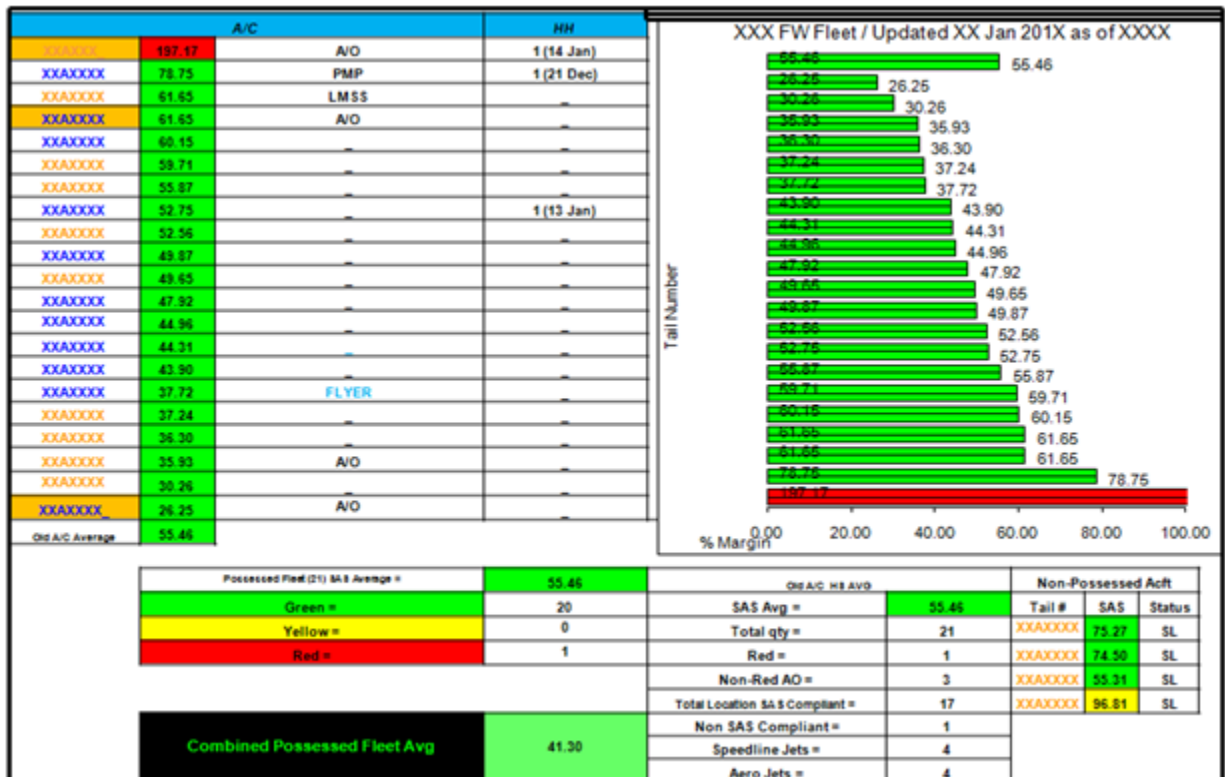


Attachment 5

DAILY SAS REPORTING METRICS

A5.1. Fleet SAS margin numbers must be documented in a format similar to the chart below (**Figure A5.1**). Key information includes SAS margin number for each aircraft, fleet SAS average and number of aero only panels. Fleet SAS average reported must not include non-possessed aircraft. This information must be disseminated within the wing MXG as required and MAJCOM F-22 Weapon System Team at least weekly.

Figure A5.1. Daily SAS Reporting Metrics.

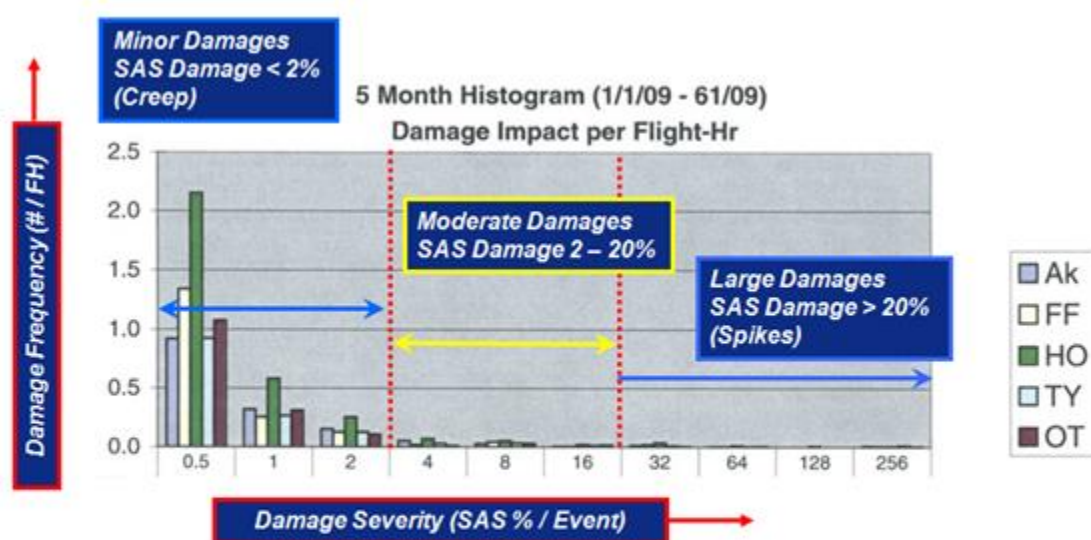


ATTACHMENT 6

SAS CREEP DESCRIPTION

A6.1. The chart below (**Figure A6.1**) shows a categorization approach to optimize maintenance activities. It outlines three categories of damages, those with an impact greater than 20% (major “spikes”), those between 2% and 20% (moderate “routine”) and those less than 2% (minor “creep”). Post flight OML inspections accomplished by the crew chief and/or LO personnel must identify any LO spike damages as soon as possible after flight if the aircraft is on the next day flying schedule.

Figure A6.1. SAS Creep Description.



Note: Actual chart includes all data (including SAS creep rate) by base

SAS Creep = LO Damages 2% or Less

A6.1.1. The damage definition/SAS creep metric must be used to establish a battle rhythm for managing LO maintenance. Minor damages are repaired through scheduled SAS redux. Moderate damages should primarily be worked in groups in conjunction with other scheduled maintenance, e.g., Packaged Maintenance Plans, TCTOs, and panel removals to facilitate other maintenance. Any existing moderate damages should be the priority when performing scheduled SAS reduction efforts. Large damages driving significant increases in SAS must be fixed as soon as possible to manage SAS growth. In some cases it may be prudent to define large damages as >10 percent to effectively control SAS margins. This more aggressive approach is particularly beneficial prior to major deployments. Units have the option to define spikes as >10% if necessary to control spike growth, but the SAS creep definition provided above must be used in all cases.

A6.1.2. Use wing analysis and scheduling experts to help balance flying operations and LO maintenance events/downtime to best manage LO fleet health. Failure to effectively balance flying and LO maintenance requirements could lead to an uncontrollable LO backlog.

CANOPY TRANSPARENCY COATING TRACKING

A7.1. Units will track canopy coating data in a format similar to the chart below (**Figure A7.1**). The tracking sheet must also include transparency manufacture and damage information by placing a flag note in each block used to track canopy hours. This data is tracked to help units predict reliability. Canopy data must be disseminated to MXG supervisors, MAJCOM weapon system team and the LM canopy IPT at least weekly.

Figure A7.1. Canopy Transparency Coating Tracking.

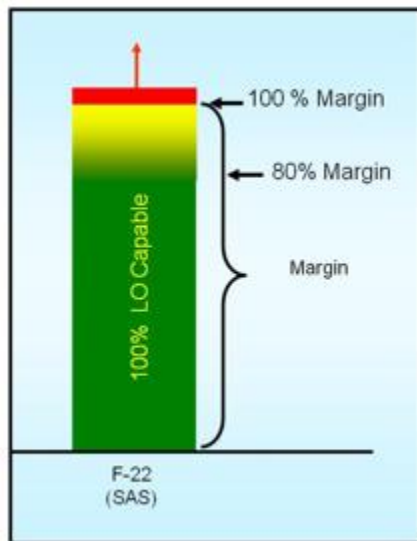
A/C	CANOPY HOURS	Visual Status	A/C	CANOPY HOURS	Visual Status	A/C	CANOPY HOURS	Visual Status	A/C	CANOPY HOURS	Visual Status
05-090	260.7	8	06-118	154.3	9	07-131	92.7		07-142	193	20
05-102	95.7		06-119	8.5	1	07-133	49.4		07-143	143	4
05-103	3.6		06-121	184.5	6	07-134	62.4		07-144	147.9	3
06-108	273	3	06-122	397		07-135	158		07-145	108.7	
06-110	73.5	2	06-123	192.9	12	07-136	85		07-146	214.1	6
06-112	76.3					07-137	23.8		07-147	293.1	15
06-113	189.1	4	06-126	148.7	2	07-138	179.4	2	07-148	283.8	10
06-114	380.3	10	06-127	112	5	07-139	75.7		07-149	139.8	2
06-115	152.6		06-129	114.5		07-140	167.7	25	07-150	96.7	2
06-117	111.3	1	06-130	58.8	1	07-141	119.4	6	07-151	173.7	31
Canopy Hours			Visual Status								
1-99.9 Hours			Major Visual Anomalies								
100 - 199.9 Hours			Minor Visual Anomalies								
200+ - Hours			No Visual Anomalies								
			Number Inserted In Box = Repairs In Zone 1								

Attachment 8

SAS MARGIN DEFINITION

A8.1. The graphic below ([Figure A8.1](#)) depicts the SAS margin scale used to determine mission capable status for the F-22 LO system.

Figure A8.1. SAS Margin Definition.



A8.1.1. The LO margin for each aircraft is determined via OML inspection and use of SAS. An aircraft is fully mission capable for the LO system when the SAS margin is less than or equal to 100 percent. LO restoration is required when 100 percent SAS margin exceeded.

A8.1.2. Manage fleet LO by taking advantage of opportunistic downtime or scheduling LO restoration time when RCS margin approaches unit determined threshold (typically around 80%). Fleet SAS margin averages should be maintained at or below 60 percent during peace time operations to effectively manage SAS margin growth. Utilize a SAS top 5/10 priority list or SAS priority screen to schedule LO maintenance events. Any top 5/10 priority list must be kept current for other opportunities such as FOM work, aero-coated panel restoration if aircraft is down, complete concurrent spike and moderate damage repairs.

A8.1.3. SAS does not rank-order aircraft in terms of RCS.

A8.1.4. SAS number does not correlate to an RCS pattern.

A8.1.5. SAS is not a mission planning tool.

Attachment 9

HOLLOMAN AFB PAINT DATA PLACARD

Figure A9.1. Holloman AFB Paint Data Placard (SIZE = 4" X 4").

NAME: DATE: PR: T/C:
Holloman AFB New Mexico ★

Table A9.1. Paint Facility/Finish Identification Block (TO 1-1-8 para 827).

The name of the activity, plus the Commercial and Government Entity (CAGE) code
- Date of completion (DD, MMM, YY)
- Identification by specification of all coatings used
- For non-standard or unique coatings, such as Advance Performance Coating (APC)/Extended Life
- Topcoat (Extended Life Topcoat [ELT]), add manufacture product code and CAGE code

Attachment 10

ACC AND 49 WG SUBDUED PATCHES

Figure A10.1. ACC Subdued MAJCOM Patch.



Figure A10.2. 49 WG Subdued Wing Patch.



Attachment 11

MQ-9 SQUADRON PATCHES

Figure A11.1. 6th Attack Squadron Patch.



Figure A11.2. 29th Attack Squadron Patch.



Figure A11.3. 9th Attack Squadron Patch.



Attachment 12

MQ-9 TAIL MARKINGS AND MQ-9 COMMANDER'S TAIL FLASH

Figure A12.1. 29 ATKS Tail Flash.

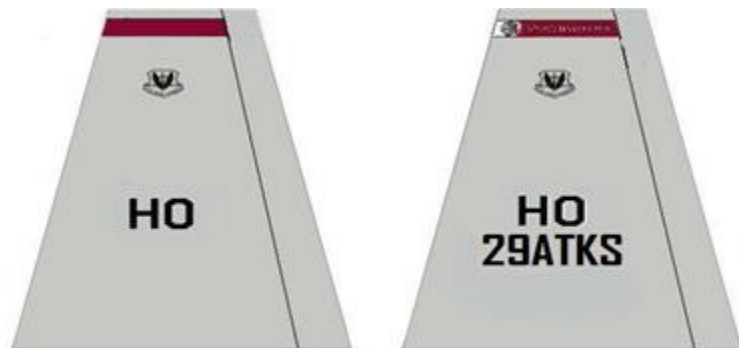


Figure A12.2. 6 ATKS Tail Flash.

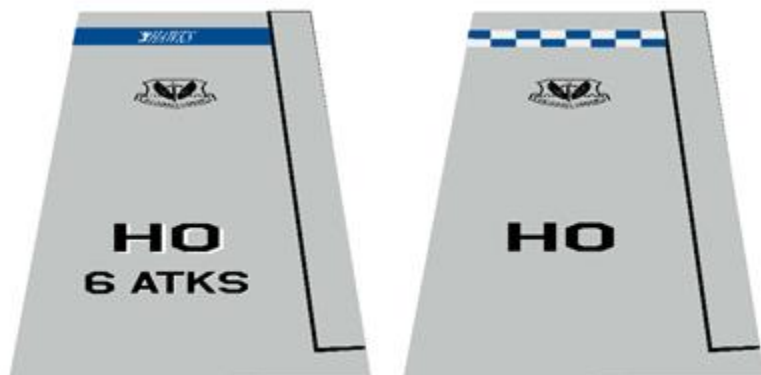
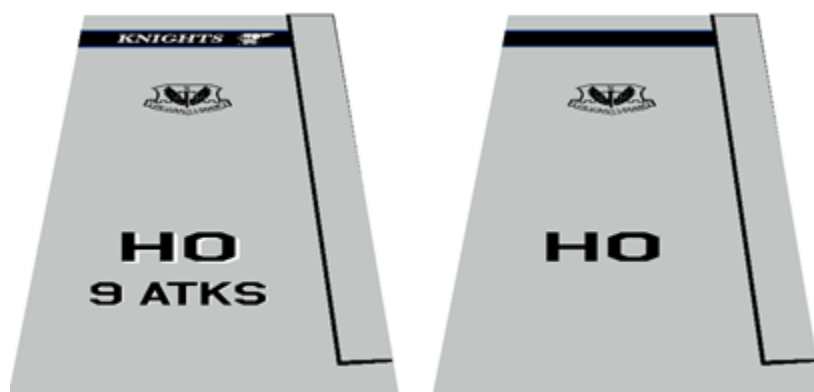


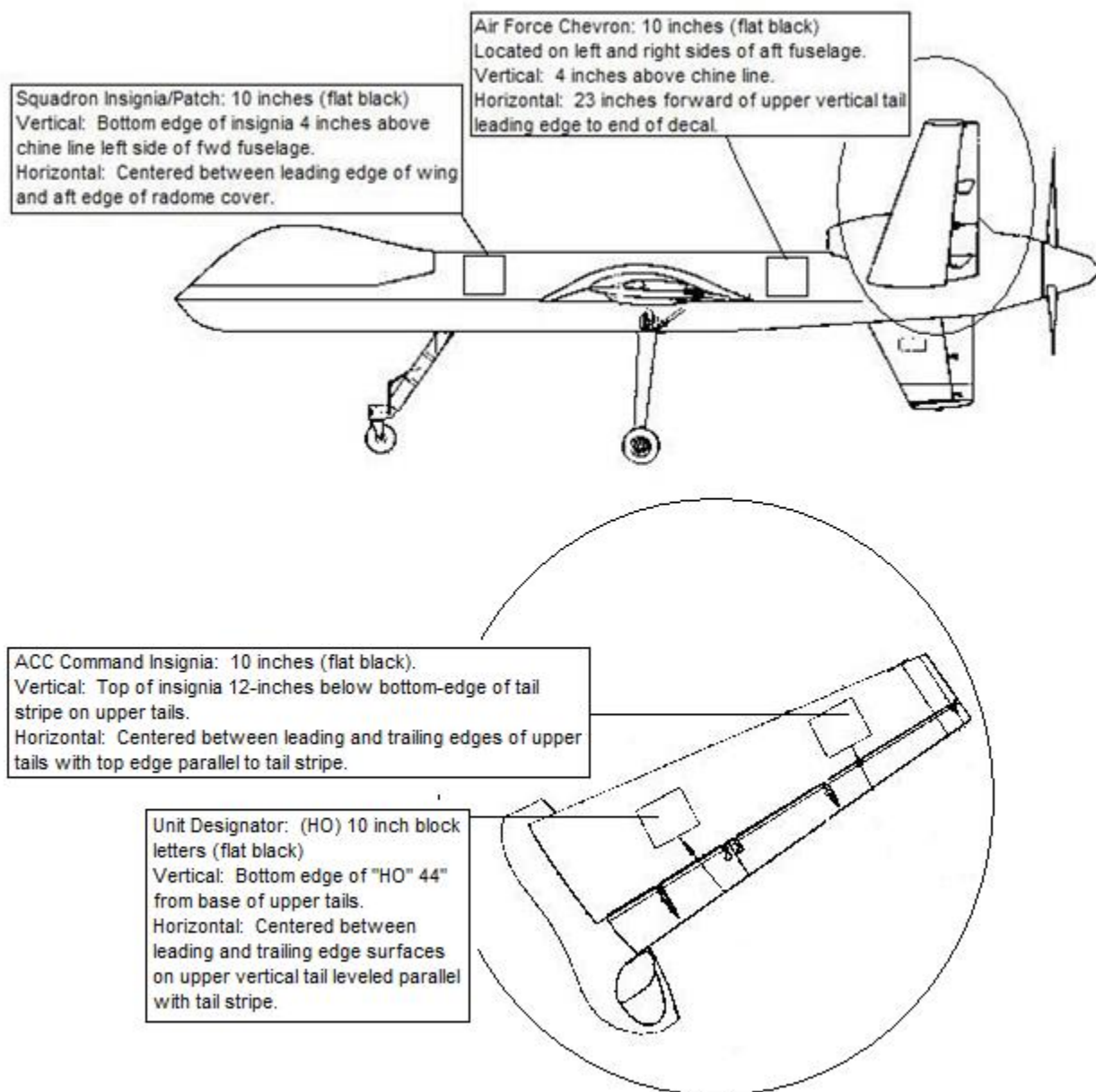
Figure A12.3. 9 ATKS Tail Flash.



Attachment 13

MQ-9 STENCIL LOCATIONS

Figure A13.1. MQ-9 Stencil Locations.



Attachment 14

GCS UNIT MARKINGS

Figure A14.1. GCS Unit Long Side with Doors.

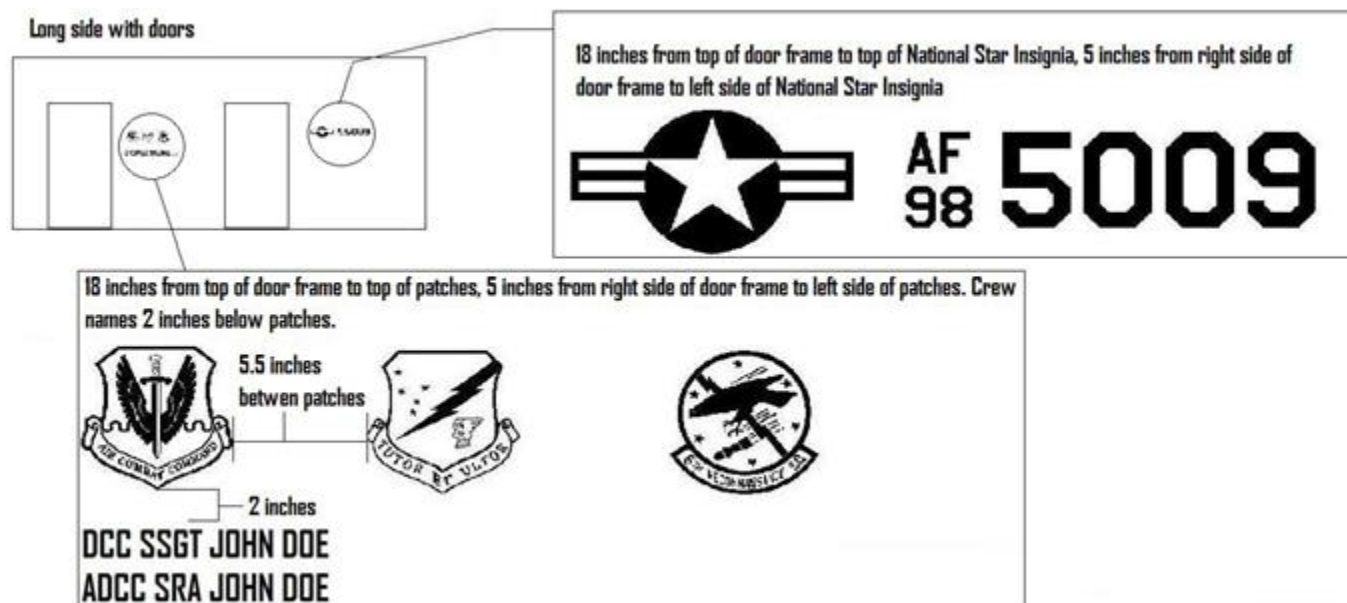
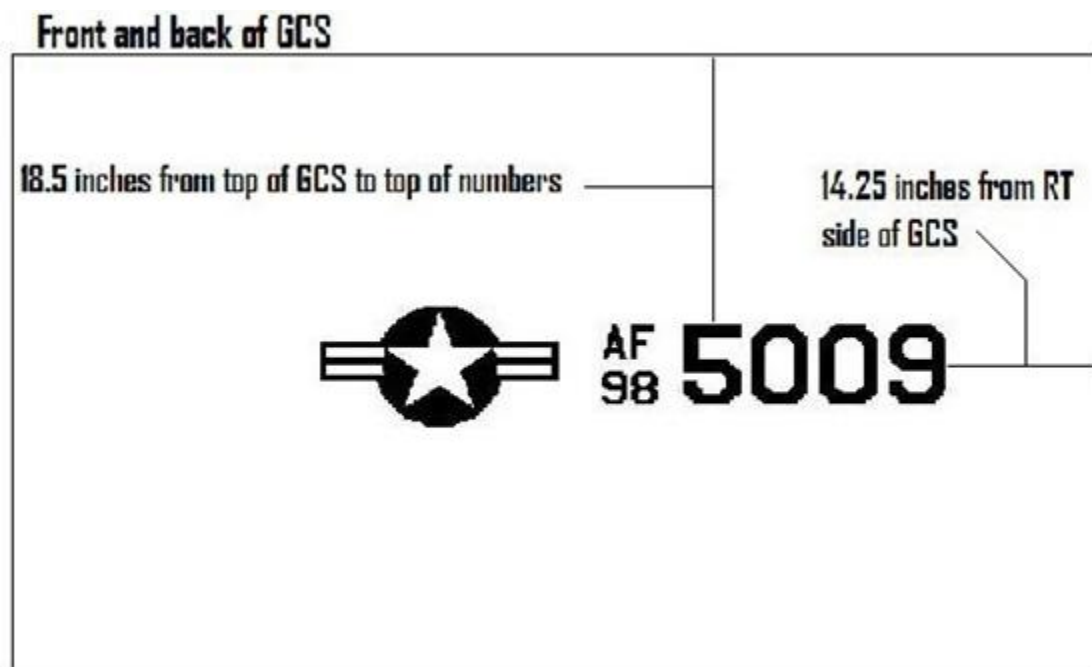


Figure A14.2. GCS Unit Front and Back.



Attachment 15

56 FW/AETC PATCH

Figure A15.1. 56 FW Patch.



Figure A15.2. AETC Patch.



Attachment 16

F-16 SQUADRON PATCHES

Figure A16.1. 311 Fighter Squadron Patch.



Figure A16.2. 314th Fighter Squadron Patch.



Figure A16.3. 8th Fighter Squadron Patch.



Attachment 17

F-16 TAIL FLASHES

Figure A17.1. 314 Fighter Squadron Tail Flash.



Figure A17.2. 311 Fighter Squadron Tail Flash.



Figure A17.3. 8 Fighter Squadron Tail Flash.



Attachment 18

A18.1. 54 FG PATCH/54 FG TAIL FLASH.

Figure A18.1. 54 FG Patch.



Figure A18.2. 54 FG Tail Flash.



Attachment 19**49MXS WASH RACK INSTRUCTIONS/SAFETY BRIEFING**

A19.1. All personnel tasked to wash any type of aircraft in Building 898 will read and sign these instructions BEFORE washing.

A19.2. Apply all masking and protective coverings prior to starting the wash IAW applicable Technical Data and AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*.

A19.3. All aircraft will be washed IAW T.O. 1-1-691, *Cleaning and Corrosion Prevention and Control, Aerospace and Non-Aerospace Equipment*.

A19.4. Thoroughly inspect Personal Protective Equipment (PPE) prior to use. Any defective equipment will be immediately turned in to the Wash Rack Manager for replacement. Washing operations will not be conducted unless PPE is available and in serviceable condition. **Note:** If an item is not available for replacement, adjust preprinted AF 1297, *Temporary Issue Receipt*, (in ink).

A19.5. Required PPE during aircraft wash is as follows: Eye protection (Goggles and/or face shield), rubber gloves, wet weather pants, jacket, and water resistant boots.

A19.6. IAW AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, Safety harness will be worn when washing the top of aircraft. Personnel WILL NOT walk on top of aircraft during wash without safety harness

A19.7. Wash supplies are provided. The Wash Rack Manager is authorized to confiscate any non-standard washing materials (examples: GREEN and RED Scrubby pads, Formula 409/Simple Green type solvents).

A19.8. ABSOLUTELEY NO HORSEPLAY. Shoving, pushing, chasing another person/intentionally spraying, splashing, throwing any liquid or objects at each other will not be tolerated.

A19.9. Aqueous Film Forming Foam (AFFF) Fire Suppression System Awareness: The current AFFF system in the wash rack is VERY sensitive to vibration at the fire alarm boxes/pull stations. Do not hang items on them, do not spray them with water, and do not go near these alarm boxes unless there is an actual fire.

A19.10. ANY INJURY sustained while in the wash rack will be immediately reported to Wash Crew Supervisor (WCS) and Wash Rack Manager/ASM Shift Lead so that medical treatment can be obtained and incident report started.

A19.11. ANY DAMAGE to aircraft, equipment or facility will be reported to Wash Rack Manager/ASM Shift Lead as soon as possible.

A19.12. Wash operations will be stopped if an unsafe act or condition is detected. MXS and AMU Production Superintendents will be notified of any safety concerns or noncompliance issues. Wash operations will not resume until problem is corrected.

A19.13. After wash completion, the wash crew is responsible for ensuring that all covers have been properly stored. All used masking materials are discarded in waste containers. All foreign objects in the wash bay (area of responsibility) and PPE/equipment cage are discarded in waste

