

**BY ORDER OF THE COMMANDER
AIR COMBAT COMMAND UNITED
STATES AIR FORCES IN EUROPE AND
PACIFIC AIR FORCES**

Air Force Instruction 21-123

**COMBAT AIR FORCES
Supplement**

21 MARCH 2013

Maintenance

**AIR FORCE REPAIR ENHANCEMENT
PROGRAM (AFREP)**



COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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AFI 21-123, is supplemented as follows. This supplement prescribes policies and procedures governing aerospace equipment maintenance management for Air Combat Command (ACC), Pacific Air Forces (PACAF) and United States Air Forces in Europe (USAFE). It applies to all ACC, USAFE and PACAF bases except Yokota, Hickam, Ramstein, RAF Mildenhall and Mobility Air Force (MAF) units at Kadena and Elmendorf. It applies to these organizations and personnel that maintain aircraft, aircraft systems, equipment, support equipment, and components regardless of Air Force Specialty Code (AFSC). It provides a broad management framework for the Wing/Unit AFREP Managers to adjust procedures to compensate for mission, facility, and geographic differences of the units. This supplement does not apply to the Air National Guard (ANG) or Air Force Reserve Command (AFRC); however, ANG/AFRC personnel assigned to Classic Associate Units supporting CAF units will comply with the guidance provided within this supplement. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with (IAW) Air Force Manual 33-363, *Management of Records*, and disposed of IAW Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <http://www.my.af.mil/afirms/afirms/afirms/rims.cfm>. Contact supporting records managers as required. Send comments, questions, and suggested improvements to this publication on AF Form 847, *Recommendation for Change of Publication*, through channels to HQ ACC/A4QM,

130 Douglas Street, Suite 210, Langley AFB, VA 23665-2791. See Attachment 1 for a glossary of references and supporting information.

3.4.2.1. Note: Status of approved written authorization will be maintained as Source(s) of Approved Repair (SAR) letters

3.5.1.4. **(Added)** Ensure Project Fund Management Record (PFMR) account is established for financial accountability. All credit earned will be carefully managed and applied to mission-related requirements.

3.5.1.5. **(Added)** MXG/CC or equivalent will request the MSG/CC to assign an AFREP liaison within LRS (e.g., Flight Service Center).

3.6.1.2. CAF Form 45, *AFREP Source of Approved Repair Request & Reply* is the standard format used to approve contractors. Note: Items contract repaired prior to SAR requirement implementation are not subject to recall.

3.6.4. See [Attachment 4](#) for sample AFREP End of Fiscal Year Report.

3.6.10. **(Added)** Develop local awareness program to inform base populace of AFREP and to advocate local self sustaining repair philosophy.

3.6.11. **(Added)** Certify the part is beyond repair from all applicable maintenance work centers prior to accepting the part for AFREP. Certification must be documented (email, log book, etc.). Parts coded Direct NRTS are exempt from this requirement.

3.6.12. **(Added)** Process all items to and from a local AFREP tracking database. Note: Financial tracking of avoidance, credits and operating costs as well as data on each item repaired will be collected.

3.6.13. **(Added)** DIFM Status Code ZCP is reserved for AFREP DIFM items IAW AFMAN23-110. **Note:** ZCP coded items are NOT to exceed 270 total DIFM days.

3.6.14. **(Added)** Ensure supply system demand requirement exists prior to repairing DIFM items.

3.6.15. **(Added)** Ensure DIFM item repairs do not exceed the Economic Retention Level within the local supply system per AFMAN 23-110. **Note:** Continued repairs on items with ample stock can negatively impact the supply cycle.

3.6.16. **(Added)** Assist work center technicians to obtain required technical data, equipment and/or parts. **Note:** Depot-level TOs may be requisitioned and used to develop local repair procedures IAW 00-5-1, *AF Technical Order System* but must be approved by the appropriate PO.

3.6.17. **(Added)** Recommend process improvements to the Wing/Unit and/or Lead Command AFREP Manager.

3.6.18. **(Added)** Ensure items repaired by SAR contractors are identified and displayed on all tags prior to returning to the supply system.

3.6.19. **(Added)** Screen asset availability through DRMO IAW AFM 23-110.

3.6.20. **(Added)** Wing/Unit AFREP Manager may also fulfill the duties of a Circuit Card Repair (CCR) Technician. These duties are described in the following paragraphs.

3.7. (Added) Circuit Card Repair (CCR) Technician.

3.7.1. **(Added)** Comply with maintenance policies and procedures outlined within AFI 21-101 and this AFI.

3.7.2. **(Added)** Evaluate potential AFREP initiatives and determines if repair of item is feasible and/or economical.

3.7.3. **(Added)** Notify AFREP Manager of recommendation to continue/discontinue repair.

3.7.4. **(Added)** Maintain soldering certification to Miniature or Depot standards of electronic re-work per [Attachment 4](#) and [Attachment 5](#).

3.7.5. **(Added)** Maintain soldering certification to Micro-Miniature (2M) standards of electronic re-work per [Attachment 6](#) and [Attachment 7](#) as required.

3.7.6. **(Added)** Complete standardized Module Test and Repair (MTR) E5AZN2P051-000 (or equivalent) users development training course.

3.7.7. **(Added)** Utilize standard CCR equipment as issued by Naval Gold Disk Program and complete development training course per NAVSEA TE000- AA- MAN- 010/2M as required.

MARK A. ATKINSON, Maj Gen, USAF
Director of Logistics

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

00-5-1, *AF Technical Order System*, 1 May 2011

Prescribed Forms

CAF Form 45, *AFREP Source of Approved Repair Request & Reply*

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

Abbreviations and Acronyms

CCR—Circuit Card Repair

PFMR—Project Fund Management Record

SAR—Source of Approved Repair

2M—Micro-Miniature

Terms

Cost Avoidance— A calculated value for a local AFREP repair when credit is not generated within the supply system. “Avoidance” is calculated based on time and cost of procuring a new item. (e.g., Ground intercommunications cord repairs, NDI equipment repairs)

Credit— Monetary value awarded to an established PFMR account by the supply system. Based upon local demand, serviceable items returned to supply may generate credit.

Economic Retention Level— The quantity of an item that exceed AAO and are determined to be more economical to retain for future peacetime issues than to dispose. To warrant economic retention, an item must have a reasonably predictable demand rate.

Operating Costs— Costs or expenses to administer a given program. Operating include training, equipment, tools, software and administrative supplies. Base level and contracting repairs costs should be tracked individually.

Attachment 3 (Added)

XX MXG/BASE NAME

Table A3.1. AFREP End of Fiscal Year Report -- FY 12

MICAP Avoided	0	
MICAP Fills	0	
SARs Approved	0	
SARs Disapproved	0	
Number of Base Level Repairs	0	
Number of Contract Repairs	0	
Number of Non-Repairs	0	
Base Level Repair Costs	\$0.00	
Contract Repair Costs	\$0.00	
Operating Costs	\$0.00	
Gross Avoidance	\$0.00	
Gross Credits	\$0.00	
Number of Personnel	Grade	AFSC
1	MSgt	2A373B
1	TSgt	2A071M
2	SSgt	2A354B
“	“	“
Personnel trained this FY – 2ea		
- Type (initial/refresher) & Location		
2M initial & MTR at DM AFB		
Miniature only at DM AFB		
Success Stories		
- Use bullet format		

//Signed, jjd, xx Sep 2012//
JOHN J. DOE, MSgt, USAF
XX MXG AFREP Manager

Attachment 4 (Added)**AFREP CCR MINIATURE SOLDERING CERTIFICATION PLAN****A4.1. Certification of CCR miniature electronic technicians.**

A4.1.1. Initial certification for technicians will be awarded upon successful completion of CCR training through either the AETC - J4AMF/ASF/AST30000-110, *Miniature Electronics Repair*, course or US Navy equivalent course.

A4.1.2. Technicians certified in the minimum requirements for CCR are authorized to repair single and double-sided circuit card assemblies (CCAs) and other electronic assemblies, up to and including the removal and installation of discrete and multi-lead components. Authorized repairs include surface repair of CCA laminate, removal and application of conformal coatings, removal and replacement of damaged conductors and installation of wires to terminals.

A4.1.3. Minimum requirements for miniature CCR certification.

A4.1.3.1. Proficiency Tasks. CCR technicians will learn introduction to soldering, including electrostatic discharge precautions; identification and removal of conformal coatings; removal, preparation and installation of discrete components; laminate repair; repair of printed circuit conductors; wire preparation and installation on terminals; removal and installation of multi-lead components; and inspection and analysis of work.

A4.1.3.2. Knowledge Tasks. CCR technicians will learn safety precautions; use and maintenance of tools and equipment; conformal coating reapplication; laminate repair of delaminated, warped, cracked, and through the board defects; wire splicing; and limitations of the miniature CCR technician.

A4.1.4. Technicians must complete all tasks to the satisfaction of the certifying official. Technicians must recertify per [Attachment 5](#) 18 months from last training/completion date and ensure 372 TRS/DET 11 at Davis-Monthan AFB updates certification tracking database.

Attachment 5 (Added)**AFREP CCR MINIATURE SOLDERING RECERTIFICATION PLAN****A5.1. Recertification of CCR miniature technicians.**

A5.1.1. CCR technicians will be recertified by the end of the eighteenth month after their initial certification or last recertification date by AETC or US Navy equivalent designated recertifying officials.

A5.1.2. The designated certifying official or representative will ensure the technician demonstrates the ability to perform the following tasks: Identify types of conformal coatings and remove coating without circuit card damage; perform selected wire projects on turret or hook terminals; connector pin solder connection and pad replacement conductor repair with a flat-set eyelet; install a flush mount, full clinch, axial lead component on double-sided circuit card; and remove and replace a dual in-line package and a flat pack.

A5.1.3. Technicians must complete all tasks to the satisfaction of the recertifying official. If a CCR technician fails to successfully recertify, then initial certification training is required. Technicians must recertify per this attachment 18 months from last training/completion date and ensure 372 TRS/DET 11 at Davis-Monthan AFB updates certification tracking database.

Attachment 6 (Added)**AFREP CCR MICRO-MINIATURE SOLDERING CERTIFICATION PLAN****A6.1. Certification of CCR micro-miniature (2M) electronic technicians.**

A6.1.1. When entering initial 2M training, technicians must hold current certification in miniature CCR. Initial certification for technicians will be awarded upon successful completion of 2M CCR training from either AETC - J4AMF/ASF/AST30000-113, *Micro-Miniature Electronics Repair* course or US Navy equivalent course.

A6.1.2. Technicians certified as 2M technicians are authorized to perform additional repair tasks beyond those taught to miniature repair technicians. Authorized repairs include high-density component packaging, multilayer conductor repair, flex print repair, and edge lighted panel repair and removal/replacement of surface mount devices (SMD).

A6.1.3. Minimum requirements for 2M CCR certification.

A6.1.3.1. Proficiency Tasks. CCR technicians will learn flexible laminate and conductor repair; multilayer laminate and conductor repair; removal and replacement of specialized components: i.e. metalized electrode face (MELF), chip resistor/capacitors, small outlined transistor/integrated circuits (SOT/SOIC), plastic quad flat pack (PQFP), and plastic leaded chip carrier (PLCC); and inspection and analysis of work

A6.1.3.2. Knowledge Tasks. CCR technicians will learn safety precautions; use and maintenance of tools and equipment; conformal coating reapplication; and limitations of the 2M CCR technician.

A6.1.4. Technicians must complete all tasks to the satisfaction of the certifying official. Technicians must recertify per **Attachment 7** 18 months from last training/completion date and ensure 372 TRS/DET 11 at Davis-Monthan AFB updates certification tracking database.

Attachment 7 (Added)**AFREP CCR MICRO-MINIATURE SOLDERING RECERTIFICATION PLAN****A7.1. Recertification of CCR micro-miniature (2M) technicians.**

A7.1.1. CCR technicians will be recertified by the end of the eighteenth month after their initial certification or last recertification date by the 372 TRS/DET 11 recertifying official or US Navy designated recertifying officials.

A7.1.2. The 372 TRS/DET 11 certifying official or representative will ensure the technician demonstrates the ability to perform the following tasks: Identify types of conformal coatings and remove coating without circuit card damage; perform selected wire projects on turret or hook terminals; remove and replace a dual in-line package; repair flexible laminate and conductor or plastic panel defective bulb replacement; repair multilayer circuit card laminate and conductor replacement; remove and replace a metalized electrode face (MELF) or small outlined integrated circuit (SOIC) or small outlined transistor (SOT); and remove and replace plastic quad flat pack (PQFP), plastic leaded chip carrier (PLCC).

A7.1.3. Technicians must complete all tasks to the satisfaction of the recertifying official. If a CCR technician fails to successfully recertify, then initial certification training is required. Technicians must recertify per this attachment 18 months from last training/completion date and ensure 372 TRS/DET 11 at Davis-Monthan AFB updates certification tracking database.

Note: 2M technicians can be downgraded to miniature certification if recertification at 2M level is unsatisfactory and technician completes miniature recertification requirements.