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**ELECTROMAGNETIC WARFARE
INTEGRATED REPROGRAMMING**

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This Department of the Air Force Manual (DAFMAN) implements Department of the Air Force Policy Directive (DAFPD) 10-7, *Information Operations*, and provides guidance and procedures for the Electromagnetic Warfare Integrated Reprogramming (EWIR) program. This publication applies to the United States Space Force (USSF), Regular Air Force, the Air Force Reserve, and the Air National Guard. This publication does not apply to the Civil Air Patrol. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and disposed of in accordance with Air Force Records Information Management System Records Disposition Schedule. Compliance with the attachments in this publication is mandatory. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate functional chain of command then send to

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(51FW) DAFMAN 10-703, *Electromagnetic Warfare Integrated Reprogramming*, 2 June 2021, is supplemented as follows: This supplement establishes procedures for a timely and orderly response to the Electromagnetic Warfare Integrated Reprogramming (EWIR) process. All references to the wing Electronic Warfare Officer (EWO) refer to the 51st Fighter Wing Electronic Combat Pilot (ECP) or designated alternate (selected 51st Operations Support Squadron (51 OSS) Weapons and Tactics Flight (OSK) personnel or squadron ECPs). It applies to all 51 FW units. Tenant units stationed at Osan AB have separate procedures. Ensure all records generated as a result of processes prescribed in this publication adhere to Air Force Instruction (AFI) 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the OPR using the DAF Form 847, *Recommendation for Change of Publication*; route DAF Forms 847 from the field through the appropriate functional chain of command.

SUMMARY OF CHANGES

This document has been substantially revised and needs to be completely reviewed. This instruction reflects updated information based on portions of the Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3212.02E, *Performing Electronic Attack in the United States and Canada for Tests, Training, and Exercises*; Joint Publication (JP) 3-85, *Joint Electromagnetic Spectrum Operations*, Air Force Doctrine Annex 3-51, *Electromagnetic Warfare and Electromagnetic Spectrum Operations*; and Air Force Manual (AFMAN) 16-101, *Security Cooperation (SC) and Security Assistance (SA) Management*. Major changes include (1) replacing many acronyms with correct terms to improve readability, (2) consolidating sections on process, terminology and organizational functions to provide a single chapter on EWIR fundamentals, and (3) updating office symbols throughout the text, acronym listing and EWIR committee membership matrix. Additionally, organizational changes within the Department of the Air Force (DAF) are on-going. At the time of publication, the USSF is still developing its headquarters organizational structure with associated roles and responsibilities. The USSF will leverage Air Force structure and capability until the USSF further defines its organizational structure, roles, and responsibilities. The Air Staff will coordinate with equivalents on the Office of the Chief of Space Operations (informally Space Staff), as necessary. Upon activation of the 350th Spectrum Warfare Wing, EWIR processes with respect to air and space platforms will be defined and revised, as necessary.

(51FW) This document has been revised, and a complete review of its contents is necessary. It supplements the DAFMAN10-703, and supersedes DAFMAN10-703_51FWSUP, 25 May 2022.

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Chapter 1

PURPOSE, PROCESS AND ORGANIZATIONAL FUNCTIONS

1.1. Purpose. The purpose of EWIR is to provide a capability to characterize adversary, friendly, and third-party electromagnetic emissions, understand their impact on operations, and to optimize friendly system capability.

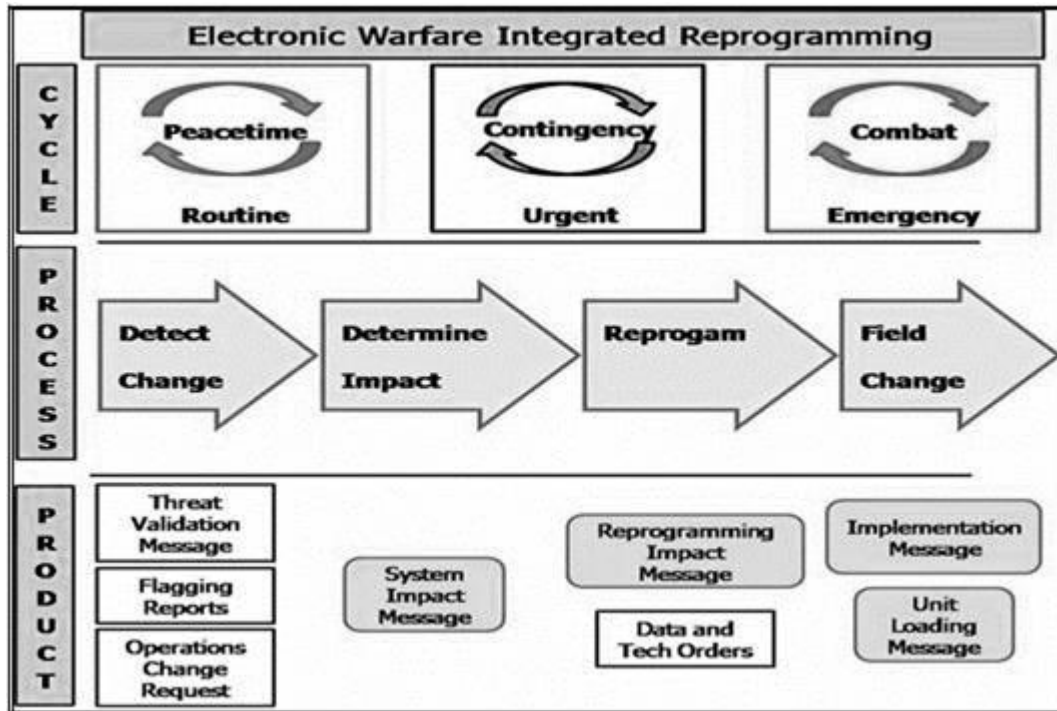
1.1. (51FW) Purpose. The EWIR process reprograms Electronic Warfare (EW) systems rapidly and efficiently to meet changing threats. The 51 FW systems affected are the ALR-56M Radar Warning Receivers (RWR), the ALQ-184 Electronic Countermeasures (ECM) Pod, the ALE-47 Countermeasures Dispenser System (CMDS), and the ALE-50 Advanced Airborne Expendable Decoy (AAED). This instruction only applies to the 51FW. Tenant units stationed at Osan AB have separate procedures.

1.1.1. Operations in the electromagnetic spectrum (EMS) are characterized by friendly, neutral, and hostile threat systems that use the EMS. EWIR is an integrated, structured set of processes and associated technologies designed to enable friendly forces to attack, maneuver, and exploit the EMS to achieve mission success.

1.1.2. EWIR optimization includes (but is not limited to) the capability to rapidly detect, accurately identify, and respond appropriately. EWIR functions are foundational to successful Electromagnetic Spectrum Operations and Electromagnetic Warfare (EW).

1.2. EWIR Process. The EWIR process consists of four processes (See [Figure 1.1](#) below). These interconnected processes are: 1) Change Detection Process; 2) Impact Determination Process; 3) Reprogramming Process; and 4) Change Delivery Process. The overall combination of processes is referred to by the unclassified code name PACER WARE. PACER WARE includes mission data changes, missionware changes, operational flight program (OFP) changes, or minor hardware changes that comply with the guidance in AFI 63-101/20-101, *Integrated Life Cycle Management*, concerning modifications. These changes are categorized into 3 priority levels: routine, urgent, and emergency. These levels are described in [paragraph 1.2.1.4.3](#). Throughout the PACER WARE process, requests, information, and direction are provided using a series of messages presented starting on [paragraph 1.2.1.3](#). **Note:** At the time of publication of this document, EWIR process roles and responsibilities for USSF organizations such as field commands (FLDCOMs), deltas and garrisons have not been fully defined. DAF staffs continue an on-going effort to define these roles and responsibilities. As a result, the EWIR process is evolving to incorporate, as appropriate, organizational changes and to support the attainment of EMS superiority as presented in JP 3-85.

Figure 1.1. EWIR Process.



1.2.1. Change Detection Process:

1.2.1.1. The US intelligence community collects and evaluates, using multiple sources, a wide variety of data on foreign systems and makes these data available in databases accessible by the reprogramming centers and other agencies. Functional responsibilities of reprogramming centers are provided in paragraphs 2.5 and 2.6. Of the potential sources for intelligence, electronic intelligence, imagery intelligence, foreign materiel exploitation, and open source intelligence are the most commonly used to identify electromagnetic characteristics of enemy systems. **Note:** This data is referred to as RED (adversary) and GRAY (other foreign military) data. Other data sources may include data acquired via testing and evaluation of exported (GRAY) systems. **Table A3.1.** in **Attachment 3** provides definitions of each color code. **Table A3.2** defines US, non-US military, hostile, and non-hostile users. **Table A3.3** consolidates information from the previous two tables into a single matrix to explain the characteristics of each color code.

1.2.1.2. In the future, the onboard digital recording and processing capabilities will provide increasingly robust operational reconnaissance (OPS RECCE) capability. OPS RECCE data will supplement traditional sources of data collection supporting change detection.

1.2.1.3. Along with the RED and GRAY data provided by the intelligence community, other types of data are essential to programming electromagnetic warfare (EW) systems to correctly identify and respond to detected signals. These other types of data include characteristics of US military systems (BLUE data) and commercial systems (WHITE data). The purpose of BLUE and WHITE data is similar to that of RED and GRAY data--to accurately identify systems operating in the electromagnetic environment. BLUE and WHITE data are produced, databased, and used in reprogramming updates. All these data

types are provided to reprogramming centers via the EWIR database (EWIRDB) and other sources, and are used to program EW systems to correctly identify systems by their electromagnetic characteristics. See [Attachment 3](#) for more information on data types. Signal information on Department of the Air Force (DAF) platforms, and target or environment information obtained to support DAF platforms, is shared through the AF EWIR process. **Note:** Electromagnetic spectrum data is shared in accordance with Department of Defense Instruction (DoDI) 8320.05, *Electromagnetic Spectrum Data Sharing*.

1.2.1.4. Intelligence and OPS RECCE data is filtered manually or through computer flagging models to detect what threats or signals have changed. Periodic data review identifies required changes. Refer to Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3320.01D *Joint Electromagnetic Spectrum Operations (JEMSO)*, for additional guidance. All-source validation assessments by intelligence or service production centers and observed signals validation assessments by the National Security Agency (NSA) of signal changes are recommended to assist in the determination that actual electromagnetic parameter changes have occurred in a given emitter.

1.2.1.4.1. Threat Change Validation Request. The threat change validation request is a request to the intelligence community to provide validation assessments to the reprogramming centers. The assessments contribute to the knowledge base from which reprogramming decisions are made. Reprogramming centers have the capability to send a threat change validation request using the threat change messaging portal to the appropriate service production center and the recognized national signals intelligence (SIGINT) authority regarding collected parameters that indicate a change to the reprogramming information for a threat system. This message contains information concerning the system and parameters in question and a statement of what validation assessments are needed.

1.2.1.4.2. Threat Change Validation Message. The analysts at the service production center or national SIGINT authority assess whether the parameters in question are a true capability or mode of the threat system, and also determine whether the threat change is valid. Then, using the threat change messaging portal, the analysts send the determination via a threat change validation message. Timing of the threat change validation assessment will be based upon the priority of the required reprogramming action (routine, urgent or emergency) and coordinated with the appropriate reprogramming center. Reprogramming centers do not await a validation assessment and threat change validation message before beginning a reprogramming action.

1.2.1.5. Operational Change Request. In addition to intelligence community activity, electromagnetic equipment deficiencies reported by aircrew in post mission reports or a joint spectrum interference resolution report may also start the EWIR process. These deficiencies may come from: (1) new threats; (2) changed parameters of existing threats; (3) aircrew or maintenance personnel interested in improving system operation including support equipment or requests for specific mission data updates; (4) changes in operational environment, or (5) changes in the intended use of the EW equipment. Organizations and individuals performing EWIR must identify EW deficiencies via the operational change request message. Operational change request message templates are located in EWIR_OPS_PW_MSG_Templates library on the Multi-Service Data Distribution System.

1.2.1.5.1. Distribution. Operational change requests are typically issued by wing or group combat systems officer, EW officer or electronic combat pilots to their major command (MAJCOM) or EW cell with an informational copy to the appropriate operational reprogramming center. The operational reprogramming centers can send an operational change request message to their MAJCOM with an informational copy to the appropriate wing, or group combat systems officer, EW officer or electronic combat pilot. When requesting specific mission data updates, units shall send the operational change request message to the operational reprogramming center with a copy to the MAJCOM.

1.2.1.5.2. Validation. The MAJCOM or EW cell validates the request and tasks the appropriate reprogramming center with developing corrective action. Air Combat Command (ACC), as the combat air forces lead, validates and prioritizes, as necessary, all combat air forces operational change requests [except for Air Force Global Strike Command (AFGSC) bomber aircraft or systems]. AFGSC validates and prioritizes, as necessary, all AFGSC operational change requests for AFGSC assets. Air Mobility Command (AMC), as the mobility air forces lead, validates all mobility air forces operational change requests. Air Force Special Operations Command (AFSOC), as the Air Force special operations lead, validates and prioritizes, as necessary, all Air Force special operations operational change requests.

1.2.1.5.3. Prioritization. The MAJCOM or EW cell and reprogramming center prioritize and evaluate the operational change request and suggest methods for implementation. Originators submit an operational change request message with either an emergency, urgent, or routine priority. The priority of the operational change request message will be included in the text of the message.

1.2.1.5.3.1. Reprogramming centers will work on emergency changes, to the exclusion of all other activities, on a 24-hour basis until complete. **(T-3)**. Originators submit an emergency operational change request message (1) to change operational characteristics that might seriously threaten national security; (2) when a condition exists preventing an adequate response to a threat, and the situation warrants immediate action; (3) to change operational characteristics that might result in fatal or serious injury or extensive equipment damage or destruction.

1.2.1.5.3.2. An urgent operational change request message shall be submitted with a “need” date, and actual timelines and level of effort are determined by negotiation between the submitting MAJCOM and the reprogramming center. **(T-3)**. Urgent changes shall reach the field within 72 hours, with the goal of having the reprogramming center release the required change within 72 hours after a required change has been validated. **(T-3)**. These changes normally take precedence over any other activity except emergency changes. Originators submit an urgent operational change request message (1) to change operational characteristics that might seriously threaten mission effectiveness; (2) when a condition exists preventing an adequate response to a threat-associated system, and the situation is normal but warrants immediate action; (3) to change operational characteristics that might result in injury or equipment change.

1.2.1.5.3.3. Routine operational change requests are normally scheduled and included in block cycle updates for the affected EW equipment. Originators submit a routine operational change request message when (1) the system has a high probability of correctly responding to a threat or can compensate for threat and friendly emitter changes, but minor deficiencies exist that may show an error; (2) the situation is normal and does not warrant immediate action; (3) the deficiencies or errors are not a hazard to personnel or equipment; (4) changes in training mission data are desired.

1.2.1.6. Software Change Message. The operational reprogramming center must send a software change message to the supporting reprogramming center when the operational change request affects the operational flight program, EW system hardware, etc. **(T-3)**.

1.2.1.7. Additionally, EW software reprogramming updates are consolidated and produced to correct deficiencies or to make improvements in system performance. Typically, these software changes are handled as routine updates, but in some cases these changes become more pressing if the operational situation dictates. Reprogramming centers maintain close coordination with affected MAJCOMs and remain flexible to meet fielding requirements.

1.2.2. Impact Determination Process:

1.2.2.1. Reprogramming centers continue the process of assessing the threat change impact on an EW system by performing engineering analysis, as well as laboratory tests. RC's also identify areas where they do not possess sufficient data to render a judgement.

1.2.2.2. The reprogramming center, in coordination with the affected MAJCOMs or commander, Air Force forces (usually the joint or combined force air component commander's EW cell as described in JP 3-85), determines how to respond to the threat change. The response will be to:

1.2.2.2.1. Take no action. **(T-3)**.

1.2.2.2.2. Change existing tactics. **(T-3)**.

1.2.2.2.3. Reprogram mission data or operational flight program system software. **(T-3)**.

1.2.2.2.4. Change existing hardware. **(T-3)**.

1.2.2.2.5. Acquire new hardware. **(T-3)**.

1.2.2.3. System Impact Message. The reprogramming center will report the impact of the threat change, the effect on the EW system, an interim course of action, and recommended course of action to the affected units, the MAJCOM and joint or combined force air component commander in a system impact message. **(T-3)**. The appropriate reprogramming center sends the system impact message to the units and MAJCOM or EW cell. Critical messages will require verbal contact with the units, MAJCOM or EW cell to facilitate "pulling" these system impact messages (and other reprogramming messages) from the Multi-Service Data Distribution System. **(T-3)**. This message:

1.2.2.3.1. Describes the impact of threat changes on an EW system.

1.2.2.3.2. Discusses system deficiencies.

1.2.2.3.3. Recommends interim corrections. Examples of these corrections include interim tactics and recommended employment options.

1.2.2.4. The receipt of a system impact message may be the first indication a unit receives for a threat change. A unit will receive one system impact message followed shortly by the reprogramming impact message, maintenance instruction message or time compliance technical order, and implementation message for a particular EW system. A unit may also receive a number of system impact messages affecting a particular EW system, over a period of time, before the reprogramming impact message, maintenance instruction message or time compliance technical order, and implementation message for that system is received.

1.2.3. Reprogramming Centers will:

1.2.3.1. Notify affected MAJCOM(s) of intent to develop the software or mission data change. **(T-3)**.

1.2.3.2. Test the change in the laboratory (hardware-in-the-loop, computer simulation, or critical analysis). **(T-3)**.

1.2.3.3. Determine mission data or system software compatibility with applicable field loading equipment, such as: program loader verifiers; memory loader verifiers; Enhanced Diagnostic Aide; common aircraft portable reprogramming equipment and applicable O-level support equipment, such as USM-670, USM- 464, PLM-4, APM-427; or enhanced automated special test equipment. **(T-3)**. Tests to determine mission data compatibility will be performed prior to fielding routine and urgent changes. **(T-3)**. Operational flight program changes will always be tested against support equipment. **(T-3)**. Emergency mission data changes will be fielded prior to the tests being performed. **(T-3)**. If the support equipment indicates a previously undetected failure with the changed mission data or the operational flight program, and the mission data or operational flight program is determined to be the cause of the fault, the following actions shall occur:

1.2.3.3.1. Describe the failure in the maintenance instruction message or reprogramming impact message, as well as the appropriate actions or workarounds that shall be taken. For example, ignore--does not indicate a true failure mode. **(T-3)**.

1.2.3.3.2. Contact the support reprogramming center and request a change to the support equipment software to eliminate the false failure. **(T-3)**.

1.2.3.4. Flight test the change, if required. **(T-3)**. EW systems that transmit electromagnetic energy for testing, training and exercises in the US and Canada must comply with electromagnetic spectrum use policy in accordance with AFI 17-220, *Spectrum Management*, and CJCSM 3212.02E. **(T-0)**. The Air Force Spectrum Management Office is the focal point for frequency spectrum_management in support of EW within the US and US Territories.

1.2.3.5. The reprogramming center making software change takes overall lead to coordinate with support reprogramming centers and platform program managers. This process is critical to facilitate long lead efforts, such as time compliance technical order development, validation and verification, scheduling, etc.

1.2.3.6. Program managers take appropriate steps to ensure MAJCOM A3 directed timelines and guidance are adhered to during the implementation process. Program managers are responsible to identify and ensure all actions necessary are accomplished for their mission design series. **(T-3)**. Program managers evaluate all software prior to MAJCOM implementation decision and notify the MAJCOM if flight or ground testing is required. **(T-3)**.

1.2.3.7. Recommend fielding of the software or mission data or missionware change to the MAJCOM or the EW cell. If software affects multiple aircraft, such as different mission design series with same EW system installed, the reprogramming center will coordinate with the program managers prior to making the fielding recommendation to MAJCOM. **(T-3)**. Fielding recommendations imply that both the reprogramming center developing the software and the program manager responsible for aircraft configuration have completed all necessary actions, such as ground, flight or system integration lab testing, or technical order documentation prior to recommending to MAJCOM or EW cell the software is ready to install.

1.2.3.8. The appropriate reprogramming center will send the reprogramming impact message to units and MAJCOM or EW cell. **(T-3)**. This message:

1.2.3.8.1. Describes in detail how an EWIR change affects an EW system.

1.2.3.8.2. States the impact of implementing or not implementing the change.

1.2.3.8.3. Helps aircrews and commanders decide when or whether to implement a change.

1.2.3.9. Maintenance Instruction Message. The appropriate reprogramming center will send the maintenance instruction message, which provides maintenance uploading instructions, to units along with the changes for an EW system. **(T-3)**.

1.2.3.10. The appropriate air logistics complex in most cases, the Air Force Life Cycle Management Center, Electronic Warfare/Avionics System Program Office (AFLCMC/WNY) sends the time compliance technical order to units. This message includes information on:

1.2.3.10.1. New block cycle or operational flight program.

1.2.3.10.2. Changes to system handbooks or mission guides.

1.2.3.10.3. Changes to mission data.

1.2.3.10.4. Implementation instructions.

1.2.4. Change Delivery Process:

1.2.4.1. After coordinating with the MAJCOM or EW cell, the reprogramming centers distribute the software changes to operational units and to platform program managers electronically through classified organizational PACER WARE SECRET Internet Protocol Router Network (SIPRNet) email accounts as well as posting it on the Multi-Service Data Distribution System. **(T-3)**. (This system is accessible via the SIPRNet at Detachment 1 492d Special Operations Wing (Det 1, 492 SOW) homepage <http://ecsf.afsoc.af.smil.mil> or the EW Toolbox-- <http://ewtoolbox.eplin.af.smil.mil> and via direct secure communications equipment connection). Operational unit commanders will implement changes based on the guidance in this instruction. **(T-3)**.

1.2.4.2. Operational flight program software updates are normally implemented through the computer program identification number distribution process. Computer program identification number revisions are automatically distributed through technical order distribution office accounts. New computer program identification number versions need a time compliance technical order to identify the new computer program identification number and to inform the technical order distribution officer to establish the identification number. Current computer program identification number versions are listed in platform manuals for reference by maintenance personnel. The time compliance technical order process is temporary and is not be used for long term sustainment of configuration items. Program managers will staff time compliance technical orders through appropriate MAJCOM A3/A4 offices for approval to release operational flight program software. **(T-3)**.

1.2.4.3. Mission data software is typically implemented by PACER WARE message, upon MAJCOM A3 approval. If both mission data and operational flight program software are changed, they will be implemented together via time compliance technical order. However, when operational flight programs are changed in time critical circumstances (urgent or emergency) the program managers must coordinate with the reprogramming centers and release the time compliance technical order in conjunction with approved PACER WARE messages within MAJCOM directed timelines. **(T-3)**. Upon approval to implement or release software for fielding, the software will be distributed to EW maintenance shops via the Multi-Service Data Distribution System. Installation instructions for mission data and mission data bundled with an operational flight program are typically in the form of a maintenance instruction message or embedded in a reprogramming impact message. Mission data only changes are not considered an aircraft or system modification as described in AFI 63-101/20-101; therefore an AF Form 1067, *Modification Proposal*, is not required. If technical orders are impacted by mission data change (occurs if changes impact test or walk-around procedures), the Air Force Life Cycle Management Center (AFLCMC/WNY) or platform program manager will update the technical data and release the update in an interim operational supplement.

1.2.4.4. The MAJCOM or EW cell uses the reprogramming impact message, along with previous coordination with reprogramming centers, to determine whether to install the new software in their units' EW equipment and the priority used to implement the change. If the MAJCOM A3 (or designated authority) or EW cell decide to install the software, they authorize the installation using an implementation message (see PACER WARE Database Users Guide <https://wwwmil.53wg.eplin.af.mil/pacerware>.)

1.2.4.5. The implementation message is authorization, not direction, to load software. This message will also include timing criteria and notification instructions. The implementation message is also sent to the reprogramming centers to notify them of the status of the change. During emergency or high priority software changes, the unit can expect to receive the implementation message at nearly the same time as, or shortly after, the above messages. For routine changes, the timing of implementation message release may vary widely. MAJCOMs may choose to issue a standing implementation message that authorizes loading based on reprogramming impact message, maintenance instruction message or time compliance technical order messages.

1.2.4.6. After coordination with the joint EW cell command EW officer, joint force air component commander EW cell or air mobility division tactics section (for mobility air forces), the wing or group EW officer recommends software to load for the commander's decision, as required. The MAJCOM, wing or group EW officer advises the commander who makes the final decision on which software to load. When directed by the appropriate authority, units load software reprogramming changes to combat coded aircraft. With wing commander (or designated representative) approval, units schedule and upload software changes on training and test coded aircraft as soon as possible, on a non-interference basis with programmed training and testing.

1.2.4.7. Unit Loading Message. Once units have installed the software or mission data in its EW systems, the unit will report this to its MAJCOM, EW cell, and the appropriate reprogramming centers using the unit loading message within 72 hours (3 duty days) of completion. **(T-3)**. The unit loading message includes implementation status and issues affecting 100% aircraft upload (actual); or when the number of systems has been uploaded as instructed by the implementing authority (exercise). Instructions and contact information for unit loading message reporting are outlined in previous applicable PACER WARE messages.

1.2.4.8. Units report the following information to the MAJCOM, EW cell, reprogramming centers and other appropriate addressees. **(T-3)**. **Note:** Actual addressees are normally identified by the MAJCOM in their implementation message for each software change; classification of unit loading messages is in accordance with individual system or aircraft classification guide; addressees for unit loading messages are normally provided by the implementation authority in the implementation message(s). Templates are located in EWIR_OPS_PW_MSG_Templates library on the Multi-Service Data Distribution System.

1.2.4.8.1. A synopsis of reprogramming changes, including start and stop times for each reprogramming action. **(T-3)**.

1.2.4.8.2. Any problems a unit encountered. **(T-3)**.

1.2.4.8.3. Any MAJCOM specific instructions. **(T-3)**.

1.2.4.9. Status Message. The status message is sent by the reprogramming centers to the units, MAJCOMs, the EW cell, and any other interested parties, during periods of heightened activity or exercises. This message provides updates of current reprogramming actions, to include estimated time of completion. The reprogramming centers will send the status message every 72 hours, or as requested by the lead MAJCOM, throughout the period of activity or exercise. **(T-3)**.

1.2.4.10. EWIR messages and data are normally sent in the order listed above. However, many factors can affect when an agency or unit receives these messages and in what order they are received. These factors include, but are not limited to, priority of the change(s), location of the originator, common-user messaging system traffic congestion, unit distribution policies, and whether or not the unit has Multi-Service Data Distribution System capability.

1.3. Timeliness of Reprogramming Actions. All reprogramming (PACER WARE) messages will include either a “ROUTINE”, “URGENT” or “EMERGENCY” precedence in the subject line. **(T-3).** Recipients (service production centers, reprogramming centers, MAJCOMs and flying units) of reprogramming messages perform reprogramming actions, if required, based upon the precedence of the message. **Note:** Precedence may change if a crisis occurs, or ends, in the middle of specific reprogramming action. Use the following criteria when performing reprogramming actions:

1.3.1. EMERGENCY. Emergency changes, initiated during combat operations, will necessitate reprogramming centers conduct 24-hour operations, with the goal of having the reprogramming center release the required change within 24 hours after a required change has been validated, depending on the complexity of the change. **(T-3).** Flying units will immediately perform reprogramming actions as required by the reprogramming message. **(T-3).** Flying unit commanders will determine if training or operational missions can or cannot be flown without reprogramming actions being performed. **(T-3).** **Note:** During all exercises, MAJCOM or Inspector General timelines are used to determine the flying unit’s success in meeting emergency timeliness.

1.3.2. URGENT. Typically accomplished during crisis periods, reprogramming centers and flying units will accomplish urgent changes during normal duty hours, but urgent changes will take precedence over other activities until complete. **(T-3).** After a required change has been validated, the reprogramming center’s goal is to release the required change and be received by flying units within 72 hours. However, acceptable timelines for urgent changes are negotiated between the applicable MAJCOM and reprogramming center, depending on the complexity of the change.

1.3.3. ROUTINE. Considered normal day-to-day operations. Flying units will schedule around the daily training or maintenance schedule. **(T-3).** **Note:** A no-later-than date for completion will be given by the implementation authority.

1.3.3. **(51) FW)** Timeliness is a critical element of EWIR. The 51 FW standard is to have all impacted aircraft and equipment fully reprogrammed and fielded no later than 120 days after any “ROUTINE” Reprogramming Impact Message (RIM) is posted on the Multi-Service Data Distribution System (MSDDS).

1.4. Organizational Functions. The following are those organizations with primary EWIR responsibilities within the DAF:

1.4.1. 53d Electronic Warfare Group (53 EWG), 53d Wing, Eglin AFB, FL. The 53 EWG is an operational reprogramming center. The 53 EWG develops, modifies, and tests mission data for combat air forces and combat search and rescue aircraft and selected foreign military sales-supported aircraft. The 53 EWG maintains engineering, operational, and intelligence expertise and provide technical support for operational flight program updates and testing, fielding of new EW systems, EW-related training, EW system configuration control, and other EW and EWIR issues.

1.4.2. The 453d Electronic Warfare Squadron (453 EWS), Joint Base San Antonio-Lackland, TX is part of the 53 EWG.

1.4.2.1. The 453 EWS develops and operates analytic capabilities necessary for the support of EW mission planning, threat assessments, acquisition, and training. Their expertise includes the fields of intelligence analysis (especially SIGINT), engineering analysis, data production, modeling and simulation and distributed mission operations.

1.4.2.2. The 453 EWS conducts parametric and model-based threat change detection (referred to as "flagging") of SIGINT data to identify new or modified threat emitters.

1.4.3. Air Force Life Cycle Management Center, Electronic Warfare/Avionics System Program Office (AFLCMC/WNY), Air Force Materiel Command (AFMC), Robins Air Force Base (AFB), GA.

1.4.3.1. AFLCMC/WNY is a support reprogramming center. It develops, modifies, and tests operational flight programs for most fighter, bomber, mobility and special operations aircraft (except those whose operational flight program development is contracted out). It maintains engineering and intelligence expertise for most AF systems. It supports the operational reprogramming centers during the building and testing of mission data changes.

1.4.3.2. The International Programs Branch (AFLCMC/WNYI) acts as an operational flight program, mission data and test support reprogramming center for foreign military sales. It conducts reprogramming of certain foreign military sales EW systems and acts as an operational reprogramming center in this capacity. Also, it acts as a support reprogramming center in support of other foreign military sales systems and processes. This squadron is responsible for some foreign military sales mission data development as agreed to with Det 1 492 SOW, Robins AFB, GA, and the 53 EWG.

1.4.4. Det 1 492 SOW is Air Force Special Operations Command's and Air Mobility Command's operational reprogramming center whose primary mission is to develop, modify, test and maintain mission data for assigned special operations forces and mobility air forces aircraft. Det 1 492 SOW maintains engineering, operational, and intelligence expertise and provides technical support for operational flight program updates and testing, acquisition and fielding of new EW systems, EW-related training, EW system modification and configuration control, and other EW and EWIR issues.

1.4.5. National Air and Space Intelligence Center (NASIC) EWIRDB technical manager, Wright-Patterson AFB, OH. The EWIRDB office is responsible for hosting and disseminating the EWIRDB. NASIC is also the Air Force technical electronic intelligence technical manager and airborne technical electronic intelligence processing center.

1.4.6. The Missile and Space Intelligence Center (MSIC), as a field production activity under the Defense Intelligence Agency (DIA) Directorate for Analysis, is responsible for program management of the EWIRDB. The program management office is DIA MSIC/MSD-4.

1.4.7. The 57th Intelligence Squadron (57 IS), Joint Base San Antonio-Lackland, TX is part of the Sixteenth Air Force (16 AF), 363d Intelligence, Surveillance and Reconnaissance Wing (363 ISRW) and the 365th Intelligence, Surveillance and Reconnaissance Group (365 ISRG). The 57 IS researches, analyzes, stores, and distributes intelligence mission data, consisting of threat data, as well as US and friendly parametric and signature data.

1.4.7.1. The 57 IS produces data on BLUE, BLUE+GRAY, such as BLUE gone GRAY, specifically US systems sold to other countries through foreign military sales or similar processes and WHITE systems, or emitters assigned by the Joint EW Center. As the US Electromagnetic Systems database technical manager, the 57 IS stores BLUE data provided by other military services. This data is stored and distributed in the US Electromagnetic Systems database with portions electronically forwarded for input into the EWIRDB.

1.4.7.2. The 57 IS maintains and archives data on aircraft radar cross sections, electro-optical signatures, infrared signatures and antenna patterns in the Blue Airborne Target Signatures database.

1.4.7.3. The 57 IS is the principal agent and a data producer for the Combat Support database which combines threat system (RED) parameters, as well as BLUE and GRAY aircraft signatures into an engineered product specifically formulated for use by mission planning systems.

1.4.8. Air Mobility Command Operating Location A (AMC OL-A), Robins AFB GA, is the EW reprogramming center for the KC-46 Tactical Situation Awareness System and the ALR-69A. AMC OL-A provides technical and engineering assessments as requested by AMC, as well as overall software management of the ALR-69A and the KC-46 Radio Frequency Self Defense System Tactical Situation Awareness System. The unit develops, integrates, and fields mission data files for these systems. Additionally, the unit provides reprogramming support during SERENE BYTE exercises and PACER WARE operations.

1.5. Required Coordination. The primary means by which EWIR delivers capability is through the production and delivery of software and hardware changes to electronic equipment used by combat air forces, mobility air forces, special operations forces, and foreign military sales customers. These software and hardware changes will be used in coordination with changes in tactics, techniques and procedures, equipment employment guidance, aircrew training and training devices, such as threat simulators and threat emitters and other support systems. Also, EWIR requires close coordination with the spectrum management and intelligence community to:

1.5.1. Employ an intelligence capability that rapidly collects, identifies compares, analyzes, and distributes all-source intelligence information in support of EW reprogramming during peacetime and all phases of conflict.

1.5.2. Employ order of battle and other databases that provide an "electronic fit" (EW- system-to-weapon-system-platform correlation) of threats to generate regional mission data. The DAF works with the intelligence community to ensure order of battle and related databases meet EWIR requirements.

1.5.3. Sustain a modernized integrated set of databases to include the EWIRDB and others to provide an accurate, timely, and worldwide-accessible observed and assessed parametric data (measured to meet power, pattern, and polarization [P-cubed] requirements), electromagnetic attack data, communications externals data, platform-emitter fit, characteristics and performance data (including engine data), signatures data (antenna pattern data, radar cross section, and electro-optic and infrared signatures), specific emitter identification related data, and additional data as requirements evolve for use in the reprogramming of onboard EW and electromagnetic sensor systems.

1.5.4. Support joint applications and joint and combined interoperability by disseminating worldwide EW-related data in formats usable by operations and mission planning tools and systems. Develop processes and tools for the evaluation of theater and unit EW operations, as well as sufficient analytic capability to plan, monitor, and assess EW operations and the impact of EW on operations.

1.5.5. Develop, acquire and sustain facilities, equipment, personnel and resources to gather and interpret the required parametric and characteristics and performance data for US military and foreign military sales systems. **(T-0)**. Refer to CJCSI 3320.01D, CJCSI 3210.04A, *Joint Electronic Warfare Reprogramming Policy*, (Secret) and this instruction for additional guidance. **(T-0)**.

1.5.6. Develop, acquire, and sustain EWIR support structures and processes that include doctrine, tactics, techniques and procedures, employment guidance, and EWIR training at all command levels.

1.5.7. Develop, acquire, and sustain EWIR reach back procedures and mechanisms.

1.5.8. Develop, acquire, and sustain research, development, test, and evaluation resources to improve EW reprogramming to ensure effectiveness in an evolving electromagnetic environment.

1.5.9. Develop, acquire, and sustain facilities, equipment, personnel and procedures to create, test, and distribute EW software and hardware changes to provide the capability to detect and identify friendly, neutral, and adversary electromagnetic signals to improve warfighter response and survivability against hostile threat systems that use the electromagnetic spectrum.

1.5.10. Develop, acquire, and sustain timely, worldwide secure, and survivable means to send and receive reprogramming change information.

1.6. (Added-51FW) 51 FW EWIR Flow. The EWIR:

1.6.1. **(Added-51FW)** An EWIR event begins with the arrival of a classified Serene Byte (SB) or Pacer Ware (PW) message sent to the 51 FW EWIR action team and the 51FW Command Post. The 51FW/CP account is monitored by the Command Post 24hrs. The 51FW/CP will contact the 51 FW ECP after normal duty hours (0700-1700 M-F) if a high priority “EMERGENCY” or “URGENT” message is received, and when ANY message is received during contingencies / exercises. If the 51 FW ECP is unavailable, the 51 FW/CP will contact the next person on the 51FW EWIR Event Coordinator Checklist. The contacted individual will then assume event coordinator responsibilities. PW messages are posted by 53EWG to MSDDS (monitored by the 51 FW ECP, the Wing Avionics Manager (WAM), and the FS ECPs).

1.6.1.1. **(Added-51FW)** System Impact Message (SIM): EWIR message that describes parametric changes to threats and details what effect the changes will have on a particular aircraft EW system. Maintenance organizations should prepare to reprogram the identified EW systems by gathering the required equipment and ensuring they have access to Secret Internet Protocol Router Network (SIPRNet) and the MSDDS.

1.6.1.2. **(Added-51FW)** Reprogramming Impact Message (RIM): EWIR message that normally follows a SIM that details how the Reprogramming Center (RC) plans to compensate for the change in the threat and how the reprogramming actions affect a particular EW system. A Time Compliance Technical Order (TCTO) or Maintenance Instruction Message (MIM) may also arrive to provide detailed reprogramming procedures for maintenance personnel. Maintenance organizations should follow the procedures contained in the MIM (if applicable) and load the software identified in the RIM, MIM, and TCTO into their reprogramming equipment.

1.6.1.3. **(Added-51FW)** Implementation Message (IMP): EWIR message providing authorization from higher headquarters to reprogram the affected EW systems. However, maintenance organizations will not reprogram aircraft and / or ECM pods until the 51FW ECP or alternate event coordinator receives approval from the 51OG/CC, 51OG/CD or Mission Director. The 51FW ECP or alternate event coordinator will brief the 51OG/CC, 51OG/CD or Mission Director on the effect of the EWIR. Approval will be disseminated by the event coordinator.

1.6.2. **(Added-51FW)** The event coordinator will monitor the reprogramming process. All 51 FW EWIR organizations will follow instructions given by the event coordinator and applicable EWIR messages provided to them. Verbal instructions from the event coordinator are all that are required to perform steps in the EWIR process.

1.6.3. **(Added-51FW)** The 51FW EWIR process is designed to be flexible and survivable, and maintenance organizations will be prepared to aid other sections with their reprogramming activity by providing extra equipment and personnel that are trained and compatible with the affected EW system.

1.6.4. **(Added-51FW)** All units will compile their reprogramming times, pertinent actions, and problems encountered when reprogramming ceases and pass this information to the 51 FW ECP, the WAM, and Maintenance Operations Center (MOC) as soon as possible. The 51 FW Form 101, *Pacerware Loading Tracker* will be used to annotate this data and is available at the Air Force e-Publishing website: <http://www.e-Publishing.af.mil>. This form is unclassified.

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. Headquarters Air Force (HAF).

2.1.1. Air Force Director of Electromagnetic Spectrum Superiority (AF/A5L) ensures DAF-sponsored Joint Capabilities Integration and Development System documents describing systems that transmit electromagnetic energy include provisions for delivering and updating system technical data (BLUE data) in the proper format for inclusion into EWIR process databases. Refer to Department of Defense Directive (DoDD) 5250.01, *Management of Intelligence Mission Data (IMD) in DoD Acquisition*, CJCSI 3320.01D, and CJCSI 3210.04A for additional guidance. **(T-0)**. Ensure documents clearly identify how BLUE data will be provided to the 57 IS for incorporation into US Electromagnetic Systems or BLUE Airborne Targeting Signature databases, as appropriate. **(T-0)**. Ensure documents include details on review and update of system data at least once every three years.

2.1.2. AF/A5L manages all aspects of EWIR for the DAF. In this capacity, AF/A5L will:

2.1.2.1. Chair the EWIR oversight committee and participate in the subcommittees. **Table A2.1** shows the EWIR committee and subcommittee membership.

2.1.2.1.1. Use the committee to establish the common vision and goals for DAF reprogramming, exchange information among reprogramming functions, and resolve inter-agency disconnects.

2.1.2.1.2. Convene the committee as necessary to address EWIR issues.

2.1.2.2. Represent and provide advocacy for EWIR requirements in DAF weapon systems acquisitions. Ensure the DAF EW reprogramming enterprise requirements are adequately resourced for prioritized systems. This includes manpower, specialized mission data laboratory equipment, threat replicators, EW system components and associated aircraft subsystems required to produce and validate defensive system software designed for use in contested airspace.

2.1.2.3. Represent and provide advocacy for development and sustainment of EWIR capabilities and facilities. When EWIR capabilities require the development of automatic test systems, those requirements will be coordinated with the AF Automatic Test Systems Product Group Manager (AFLCMC/WNA) to ensure compliance with DoDI 5000.85 *Major Capability Acquisition*. **(T-0)**.

2.1.2.4. Act as liaison with AF/A2/6, Air Force Intelligence, Surveillance, Reconnaissance and Cyber Effects Operations and the various intelligence agencies to advocate for AF EWIR foreign data collection, production, and EWIRDB requirements.

2.1.2.5. Assist MAJCOMs, FLDCOMs, and combatant commands in documenting and forwarding their operational EWIR data requirements to the appropriate agencies. Also, in conjunction with AF/A2/6 staff, act as an advocate for their completion (see **paragraph 2.1.2.4**). Facilitate availability of emitter data on commercial and foreign military sales systems for inclusion into the AF EWIRDB and associated databases.

2.1.2.6. Ensure the DAF regularly trains, exercises, and evaluates all phases of the EWIR process. To the maximum extent possible, reprogramming exercises shall be conducted as part of a major joint exercise, allowing joint and service components together to exercise the reprogramming process. However, this requirement may be satisfied by a major real-world PACER WARE action involving DAF EW systems.

2.1.2.6.1. Coordinate with the Joint Staff on the inclusion of emergency reprogramming objectives in joint task force level exercises.

2.1.2.6.2. Select and task the participating MAJCOM to function as the DAF lead to plan, implement, and manage the reprogramming process.

2.1.2.7. Serve as the DAF OPR for planning, coordination, and execution of AF involvement in joint and coalition reprogramming activities.

2.1.2.8. Represent DAF EWIR interests in release of information or equipment to foreign nations or international organizations to include those governed by foreign military sales.

2.1.2.8.1. Work with the Deputy Undersecretary of the Air Force, International Affairs, Weapons Division (SAF/IAPW), on foreign military sales EW policies and procedures for transferring DAF EW capabilities to allied and friendly nations.

2.1.2.8.2. Ensure that the capabilities of all foreign military sales systems or programs are captured for inclusion in EWIR and related databases. **(T-0)**. Once the foreign military sales system is outside of US control, coordinate transition of system data responsibilities with 57 IS, AF/A2/6, DIA and NSA. **(T-0)**.

2.1.2.8.3. Oversee, along with SAF/IAPW, foreign military sales EWIR as described in **Chapter 4**.

2.1.2.8.4. Serve as office of corollary responsibility for coordinating emergency reprogramming change releases to support foreign military sales customers.

2.1.2.9. Represent DAF interests in EWIR-related testing and analysis to include establishing priorities and ensuring timely dissemination of exploitation results. Organizations and agencies to coordinate with include the service production centers, AF/TE, SAF/IAPW, 453 EWS, 57 IS, the Joint Staff and NSA.

2.1.2.10. Represent DAF EWIR interests in developing procedures, processes, and systems to ensure rapid reporting and validation of threat changes.

2.1.2.11. Contact AF/A4 when a requirement exists to replace legacy support equipment supporting the EWIR program.

2.1.2.12. Ensure applicable Joint Capability Integration Development System documents for systems that transmit or receive electromagnetic energy include both electromagnetic spectrum and EWIRDB data requirements. **(T-0)**. Refer to DoDI 8320.05 for further guidance. **(T-0)**.

2.1.3. Deputy Chief of Staff for Intelligence, Surveillance and Reconnaissance and Cyber Effects Operations (AF/A2/6) will:

- 2.1.3.1. In conjunction with DIA, ensure adequate resources are available at NASIC for EWIRDB production and maintenance and for support to the EW reprogramming process. **(T-0)**. Refer to CJCSI 3210.04A for additional guidance.
 - 2.1.3.2. Advocate to NSA for SIGINT capabilities on behalf of DAF EWIR community (reference paragraphs [2.1.2.4](#) and [2.1.2.5](#)).
 - 2.1.3.3. Act as liaison with AF/A5L and the various intelligence agencies to advocate for DAF EWIR foreign data collection, production, analysis, and EWIRDB requirements. Work with AF/A5L, NSA and DIA to ensure identification of EWIR data requirements and timely resolution of deficiencies.
 - 2.1.3.4. Act as liaison with the Under Secretary of Defense for Intelligence and ensure applicable Joint Capability Integration Development System documents include provisions for delivering and updating electromagnetic signature data requirements (including BLUE data). **(T-0)**. Refer to DoDD 5250.01 for additional guidance. **(T-0)**.
 - 2.1.3.5. Provide technical assistance on all EWIR communications-computer requirements.
 - 2.1.3.6. Assist MAJCOMs and reprogramming centers in developing and maintaining a comprehensive EWIR communications plan outlining current and future connectivity to common-user, base-level, and long-haul communications systems.
 - 2.1.3.7. Coordinate with AF/A5L on communications issues unique to EWIR.
 - 2.1.3.8. Provide spectrum management subject matter expertise and advice to EWIR developers and operators. Also, assist MAJCOMs, FLDCOMs, and EWIR developers in meeting compliance with applicable electromagnetic and EW policies and procedures.
 - 2.1.3.9. Participate, as requested, in HAF-directed EWIR exercises to provide spectrum and cyberspace support.
- 2.1.4. Deputy Chief of Staff for Logistics, Engineering and Force Protection (AF/A4) will:
- 2.1.4.1. Establish logistical policy to support and sustain DAF EWIR equipment.
 - 2.1.4.2. Assist in the identification, definition, and integration of the users' operational and technical requirements of EWIR automated test system support tools for system software and mission data.
 - 2.1.4.3. Ensure user needs (reliability, maintainability, reprogrammability, supportability, and deployability) are addressed in the development and acquisition of EWIR-related automated test systems.
 - 2.1.4.4. Advocate and ensure users' EWIR supportability and sustainment needs are addressed in the action and processes of the Central Automated Test System Product Group Management Office (AFLCMC/WNA, Robins AFB, GA).
 - 2.1.4.5. Assist in resolution of EWIR-related automated test system logistics and sustainability issues.

2.1.4.6. Support AF/A5L in providing advocacy for EWIR requirements in DAF weapon systems acquisitions, acquisition of data on US emitters and systems for inclusion in the EWIR and related databases, and facilitating availability of emitter data on commercial and foreign military sales systems for inclusion into the EWIRDB and related databases.

2.1.5. Deputy Chief Information Officer (SAF/CN). Deputy Chief Information Officer is responsible the standards, interoperability, architecture, and cybersecurity of enterprise information technology and national security systems to meet the DAF mission requirements. As well, SAF/CN leads the governance of enterprise information technology, provides direction, oversight and guidance for management of DAF unclassified and classified Information Technology (IT) Special Access Programs (SAP) network infrastructures, provides portfolio management and information technology investment review, and enforces information compliance laws.

2.1.6. Director, Test and Evaluation (AF/TE) will:

2.1.6.1. Ensure DAF test and evaluation infrastructure and facilities are adequate to support EWIR test and evaluation activities. This includes industrial laboratory space sufficient to accommodate rigorous software validation and verification testing of all DAF EW systems.

2.1.6.2. Ensure EWIR requirements are appropriately considered in foreign materiel program acquisition and exploitation project prioritization deliberations.

2.1.6.3. Facilitate the reprogramming centers' participation in foreign materiel exploitation and foreign materiel revisit testing when required.

2.1.7. Deputy Under Secretary of the Air Force, International Affairs, Weapons Division (SAF/IAPW) will:

2.1.7.1. Act as the focal point for the sale of US EW systems and supporting foreign military sales EWIRDB systems and products to allied and friendly nations.

2.1.7.2. Inform the Joint Staff, appropriate HAF elements, Air Combat Command (ACC) (to include 53 EWG), Air Mobility Command (AMC), Air Force Special Operations Command (AFSOC) (to include Det 1 492 SOW), AFMC (to include AFLCMC/WNY), and unified commanders of proposed and actual sales of systems that transmit or receive electromagnetic radiation (to include hardware and software configurations and technical data) to allied and friendly nations. **(T-0)**.

2.1.7.3. Act as the office of primary responsibility for transferring military information and releasing DAF technology to partner nations. Manage policies and procedures for transfer of DAF EW capabilities.

2.1.7.4. Provide oversight, with AF/A5L, to the international EWIR process as described in [Chapter 4](#).

2.1.7.5. In coordination with other services, formulate and staff DAF EW policy in support of foreign military sales.

2.1.8. Assistant Secretary of the Air Force for Acquisition, Technology and Logistics (SAF/AQ) will execute all service acquisition executive (referred to in DoD policy as Component Acquisition Executive) and senior procurement executive responsibilities and authorities outlined (reference DAFPD 63-1/20-1 and AFI 63-101/20-101). **(T-0)**.

2.2. MAJCOMs, FLDCOMs, and Subordinate Units. MAJCOMs and FLDCOMs with EW responsibilities include Air Combat Command (ACC), Air Education and Training Command (AETC), Air Force Global Strike Command (AFGSC), Air Force Materiel Command (AFMC), Air Force Reserve Command (AFRC), Air Force Special Operations Command (AFSOC), Air Mobility Command (AMC), Air National Guard (ANG), Pacific Air Forces, Space Operations Command (SpOC), Space Systems Command (once established as a FLDCOM), Space Training and Readiness Command (once established as FLDCOM), and US Air Forces Europe. The Air Force Operational Test and Evaluation Center (AFOTEC) and Sixteenth Air Force (16 AF) also retain MAJCOM equivalent responsibilities as designated within this section. These organizations must work together to incorporate, as appropriate, USSF organizational roles and responsibilities into the EWIR process.

2.2.1. MAJCOMs, and subordinate units will:

2.2.1.1. Plan and program for support of peacetime, wartime, contingency, and exercise EWIR requirements as required. **(T-3)**.

2.2.1.2. Advise AF/A5L when EWIR and related database capabilities do not meet DAF system specific requirements. **(T-3)**.

2.2.1.3. Work with the reprogramming centers to identify initial and upgrade requirements and funding for reprogramming facilities, equipment, and manpower support for EW systems currently fielded or under development. **(T-3)**.

2.2.1.3.1. Work with the reprogramming centers to ensure changes to fielded EW systems, support equipment, and new systems are compatible with EWIR requirements and associated communications support systems. **(T-3)**. Work with the reprogramming centers to prioritize routine actions based on MAJCOM requirements and actual reprogramming center resources and capabilities. **(T-3)**.

2.2.1.3.2. Ensure reprogramming facilities, equipment, and staffing for these changes are current, adequate, and funded. **(T-3)**.

2.2.1.3.3. Support force development evaluation required to fully evaluate all EW software or mission data changes. **(T-3)**.

2.2.1.3.4. If the operational flight program and hardware updates directly impact the form, fit, function and interfaces; initiate and submit the AF Form 1067, in accordance with AFI 63-101/20-101 prior to the start of a program or as soon as impact is determined in a program already in execution. **(T-3)**.

2.2.1.4. Ensure operational plans, contingency plans, and strategic war plans adequately address EWIR in order to achieve effective rapid reprogramming of EW systems and to achieve mutual joint service support. **(T-3)**. Refer to JP 3-85 for additional guidance.

2.2.1.5. Plan, implement, and manage EWIR reprogramming exercises. **(T-3)**. This responsibility may be delegated to the combatant numbered air force participating as the AF component during joint exercises. Units will:

- 2.2.1.5.1. Conduct exercise planning conferences and EWIR conferences, as required. **(T-3).**
- 2.2.1.5.2. Develop the reprogramming goals and objectives for the DAF components. **(T-3).**
- 2.2.1.5.3. Coordinate with 53 EWG for exercise planning and logistical support. **(T-3).**
- 2.2.1.5.4. Ensure exercise participants identify, collect, and report critical EWIR elements. **(T-3).**
- 2.2.1.5.5. Consolidate major findings and lessons learned. Using the DAF Joint Lessons Learned Information System, report findings and lessons learned as part of the overall DAF or Joint exercise report. **(T-3).**
- 2.2.1.5.6. Identify areas for improvement and submit to the EWIR Oversight Committee. **(T-3).**
- 2.2.1.5.7. Identify EW systems and units requiring reprogramming exercises and coordinate this information with 53 EWG and the reprogramming centers. **(T-3).**
- 2.2.1.6. Provide, in cooperation with reprogramming centers, guidance and tasking to 53 EWG in formulating flagging tools (ACC, AFGSC, and AFSOC only). **(T-3).**
- 2.2.1.7. Train appropriate operations, intelligence, maintenance, and communications personnel on EWIR processes and procedures on a recurring basis consistent with mission readiness. **(T-3).**
- 2.2.1.8. Develop EWIR hardware, software, personnel and infrastructure requirements and coordinate them with other MAJCOMs and AF/A5L. **(T-3).** These requirements include data automation, test capabilities, communication connectivity, support equipment, and data distribution systems.
- 2.2.1.9. Ensure urgent or emergency PACER WARE changes are given the highest possible priority when scheduling range time. **(T-3).**
- 2.2.1.10. Provide operational requirements for and oversight in the development, test, distribution, and loading of mission data and system software changes. **(T-3).**
- 2.2.1.11. Work with the reprogramming centers to prioritize and address operational change requests generated in their organization (see section 1.2.1.4.) **(T-3).** Also, ensure operational units are aware of and follow the proper content, format, and routing of operational change requests to effect changes in EW equipment. **(T-3).**
- 2.2.1.12. Provide oversight of fielded EW systems to ensure that those systems meet the hardware, software, and mission data configuration standards set by the reprogramming centers. **(T-3).**
- 2.2.1.13. Develop requirements and advocate for foreign material acquisition based on need for information impacting EWIR. **(T-3).** Provide EWIR-related requirements to foreign materiel exploitation projects. **(T-3).** Provide requested support to reprogramming centers for their participation in foreign materiel exploitation. **(T-3).**
- 2.2.1.14. Support international EWIR as detailed in **Chapter 4** of this instruction. **(T-3).**

2.2.1.15. Monitor EW operational and support equipment to ensure units have adequate EWIR logistics support. **(T-3)**.

2.2.1.16. Coordinate with platform program managers to ensure technical order changes caused by PACER WARE updates are being accomplished. **(T-3)**.

2.2.1.17. Identify and coordinate operational test and evaluation requirements with AFOTEC or the appropriate operational test organization for EW system acquisition and modification programs. **(T-3)**.

2.2.1.18. Ensure data on emitters and systems used by MAJCOM organizations is included in EWIRDB and associated databases. **(T-3)**. Refer to DoDI 8320.05, CJCSI 3320.01D, and CJCSI 3210.04A for additional guidance.

2.2.2. MAJCOM Operations Directorate (A3) or equivalent or designee will:

2.2.2.1. Oversee EW reprogramming within the MAJCOM.

2.2.2.2. Approve software changes for all EW systems fielded in their area of responsibility. AETC and Air Reserve Component units will follow guidance of applicable lead MAJCOM (ACC, AFGSC, AFSOC, and AMC).

2.2.2.3. Send implementation messages to applicable units, with informational copies to other MAJCOM, and EW cell staffs, and the reprogramming centers. ANG and AFRC do not have implementation authority. ANG and AFRC units will act on implementation messages sent by their gaining MAJCOM, or EW cell. AETC units (and AETC-gained ANG or AFRC units) will follow guidance of applicable major weapon system or EW system lead MAJCOM (ACC, AFSOC, AFGSC, and AMC) or EW cell. Coordination with other MAJCOM directorates prior to sending an implementation message will be accomplished to ensure maintenance technical data changes are available, if applicable. MAJCOMs will send an implementation message to their subordinate units only, unless previously agreed to otherwise by coordination with the other affected MAJCOMs, EW cells, or agencies, such as through memorandum of agreement or email coordination.

2.2.2.4. Upgrade EW software flight-testing priorities during wartime and contingency operations.

2.2.2.5. Provide reprogramming centers information on employment of assets within anticipated theaters of operations to allow tailoring of support (except AETC).

2.2.2.6. Support the conduct and management of all mission data optimization and force development evaluation required to fully evaluate all EW mission data and operational flight program changes.

2.2.2.7. Notify 53 EWG to provide 24-hour emergency flagging analysis operations when required.

2.2.3. MAJCOM Intelligence Directorate (A2) or equivalent will:

2.2.3.1. Ensure resources and personnel are programmed to support MAJCOM EWIR intelligence requirements.

- 2.2.3.2. Ensure the reprogramming centers document their operational EWIR intelligence production requirements and forward them to the appropriate intelligence agency for action.
- 2.2.4. MAJCOM Maintenance and Logistics Directorate (A4) or equivalent will ensure field units receive and maintain adequate EW support equipment.
- 2.2.5. MAJCOM Communications Directorate (A6) or equivalent will advise AF/A5L on MAJCOM-specific EWIR communication requiring appropriate action or attention.
- 2.2.6. MAJCOM Requirements and Acquisition Directorate (A5) or equivalent will:
- 2.2.6.1. Coordinate EW system requirements with applicable reprogramming centers.
 - 2.2.6.2. Ensure applicable Joint Capability Integrated Development System documents on systems that transmit electromagnetic energy (with MAJCOM/FLDCOM equity) include provisions for delivering and updating system technical data (BLUE data) in the proper format for inclusion into EWIR process databases. **(T-0)**. Provide data to 57 IS for incorporation into US Electromagnetic Systems or Blue Airborne Target Signatures databases, as appropriate. **(T-0)**. Review and update system data at least once every three years. **(T-0)**. Refer to DoDD 5250.01, CJCSI 3320.01D, and CJCSI 3210.04A for additional guidance. **(T-0)**.
 - 2.2.6.3. Ensure EW systems reprogramming training for operations, maintenance and communications personnel is provided for new systems acquisitions.
 - 2.2.6.4. Ensure facilities, equipment, personnel and resources are programmed to develop the required parametric, characteristics and performance, signatures and fit data for US military (BLUE) and foreign military sales (GRAY) systems. See CJCSI 3320.01D and CJCSI 3210.04A for additional guidance.
- 2.2.7. 53 EWG, 453 EWS will:
- 2.2.7.1. Conduct the DAF EWIR flagging program based on requirements for the reprogramming centers, MAJCOMs, service production centers and EW cells, as required, to support peacetime, exercise, contingency, and wartime operations. **(T-3)**. In doing so, the 453 EWS will:
 - 2.2.7.1.1. Develop flagging tools to perform parametric and model-based flagging based on customer requirements. **(T-3)**.
 - 2.2.7.1.2. Identify emissions whose parameters fall outside of known limits and flag them for further analysis. **(T-3)**.
 - 2.2.7.1.3. Identify previously unknown threat emitters for further analysis. **(T-3)**.
 - 2.2.7.1.4. Design, develop, maintain, and distribute the flagged-signals database to identify locations of changed emitters as well as the new emitter operating parameters. **(T-3)**.
 - 2.2.7.1.5. Provide data for validation of threats for possible inclusion in the EWIRDB. **(T-3)**.

- 2.2.7.1.6. Develop and maintain plans and manning to operate 24-hour emergency flagging analysis operations in support of contingencies and combat operations or as directed by MAJCOMs or the theater commanders. **(T-3)**.
- 2.2.7.1.7. Develop and maintain a contingency plan, location, and manning to support 24-hour Emergency or normal flagging analysis operations to ensure uninterrupted support. **(T-3)**.
- 2.2.7.1.8. Coordinate with the service production centers for analysis of aircrew and electromagnetic support inputs on threat parameter changes and new threats if reported parameters are outside EWIRDB assessed limits. **(T-3)**.
- 2.2.7.1.9. Send flagging reports to the reprogramming centers, MAJCOMs, EW cells, and other agencies when requested via SIPRNet. **(T-3)**.
- 2.2.7.2. Develop and sustain an analysis capability to support EW operations, acquisition and training. **(T-3)**.
 - 2.2.7.2.1. Design, develop and manage or acquire tools, processes, models and simulations as necessary for MAJCOM, EW cell, and unit EW support. **(T-3)**.
 - 2.2.7.2.2. Provide expertise to MAJCOMs for the operational impact of EW technologies, capabilities, and tactics on operational plans, mission planning, and current operations. **(T-3)**.

2.3. Air Components to Geographic Combatant Commands.

- 2.3.1. Monitor their area of responsibility to identify and assess changes in the EW environment. In doing so, air components will review and forward aircrew and electromagnetic support inputs on parameter changes and new threats in their area of responsibility to notify appropriate MAJCOM, reprogramming centers, and 453 EWS for further review and analysis. **(T-3)**.
- 2.3.2. Support implementation of:
 - 2.3.2.1. Software changes.
 - 2.3.2.2. Equipment settings.
 - 2.3.2.3. Aircrew tactics changes.
- 2.3.3. Verify subordinate units receive all applicable EWIR messages.
- 2.3.4. Ensure appropriate plans, instructions, and responsibilities for EW reprogramming are disseminated at the appropriate levels.
- 2.3.5. Participate in and support reprogramming exercises as directed by MAJCOM.

2.4. Wings or Groups with Reprogrammable EW Systems.

- 2.4.1. These units will:
 - 2.4.1.1. Assign a primary and alternate EW point of contact (POC) to coordinate EWIR activities. **(T-3)**. The EW POC must be the wing or group combat systems officer, wing or group EW officer or wing or group electronic combat pilot. **(T-3)**. An alternate POC may be any other member of the EWIR action team.

2.4.1.2. Establish an EWIR action team consisting of operations, maintenance, intelligence, and communications personnel as required. **(T-3)**. The EWIR action team will:

2.4.1.2. **(51)** FW) The primary event coordinator for all 51 FW EWIR is the Wing ECP. The Wing ECP's office is 51 OSS/OSK, Wing Weapons and Tactics. Alternate event coordinators are designated by the Wing ECP and are normally members of 51 OSS/OSK, the 36 FS/ECP, the 35 FS/ECP, or the 51 MXG EW Program Manager (Wing Avionics Manager – 51MXQ/QA). The event coordinator is authorized to coordinate directly with all affected base organizations to facilitate an efficient and effective EWIR process. See **Attachment 4** for a phone contact list.

2.4.1.2.1. Develop plans and instructions to implement reprogramming tasks. **(T-3)**.

2.4.1.2.2. Coordinate procedures with appropriate communications offices for receiving, sending and distributing EWIR messages both at home station and deployed locations. **(T-3)**.

2.4.1.2.2.1. Ensure access to the Multi-Service Data Distribution System and to the PACER WARE Database (<https://wwwmil.53wg.eglin.af.mil/pacerware>) **(T-3)**.

2.4.1.2.2.2. Ensure a PACER WARE message organizational account (classified and unclassified) is established for the wing or group. **(T-3)**. Ensure this account is transferred upon change of the EW POC. **(T-3)**.

2.4.1.2.2.3. Provide EW POC information to applicable reprogramming center, including functional electronic mail (E-mail) message addresses for members of EWIR action team and 24-hour POC information. **(T-3)**. Immediately advise reprogramming centers of changes in POC information due to permanent change of station, reassignment, deployment, or contingency operations. **(T-3)**.

2.4.1.2.3. Immediately report any errors in reprogramming procedures to the MAJCOM and reprogramming center representatives. **(T-3)**.

2.4.1.2.4. Produce and staff operational change requests in accordance with **paragraph 1.2.1.4** to enhance or correct system operations. **(T-3)**.

2.4.1.2.5. Participate in reprogramming exercises as directed and report reprogramming exercise results in accordance with **Chapter 3**. **(T-3)**.

2.4.2. Wing or group EW POC will:

2.4.2.1. Direct the EWIR action team. **(T-3)**.

2.4.2.2. Review applicable intelligence and system anomaly reports, recommend actions to the commander, and if necessary, prepare an operational change request when system performance discrepancies are found. **(T-3)**.

2.4.2.3. Ensure aircrews are informed of current EW equipment capabilities. **(T-3)**. Use the following:

2.4.2.3.1. Test results.

2.4.2.3.2. PACER WARE Messages.

2.4.2.3.3. System handbooks or mission guides.

- 2.4.2.3.4. Air Force Tactics Techniques and Procedures (AFTTP) 3-1, *General Planning and Employment Considerations*.
- 2.4.2.4. Maintain currency of an organizational E-mail account (classified and unclassified, as required) for the wing or group. **(T-3)**. Notify parent MAJCOM and reprogramming centers of changes in connectivity and EW POC. **(T-3)**.
- 2.4.2.4.1. For combat air forces, notify ACC/A3/2/6KL and ACC.A326KL.EWBranch@us.af.mil and 53 PW Admin: 53wg.erepw.test@us.af.mil
- 2.4.2.4.2. For mobility air forces, notify AMC/A3DT: amc.a3tw.ew@us.af.mil
- 2.4.2.4.3. For AFSOC, notify Det 1 492 SOW: ecsf.pw.admin@us.af.mil
- 2.4.2.4.4. For AFGSC, notify AFGSC/A3T: afgsc.a3t.workflow.1@us.af.mil.
- 2.4.2.5. Notify the wing or group EWIR action team when EWIR messages have been received. **(T-3)**.
- 2.4.2.6. Work with the operations group and maintenance group (or equivalents) to implement EW equipment software or hardware changes. **(T-3)**.
- 2.4.2.7. Send all required EWIR reports and messages to higher headquarters and subordinate organizations in accordance with reporting guidance provided in applicable PACER WARE messages. **(T-3)**.
- 2.4.2.8. Maintain a current listing of operational and training software for each of the wing or group's EW systems. **(T-3)**.
- 2.4.3. Maintenance group and applicable maintenance squadrons with EW systems will:
- 2.4.3.1. Ensure required EW reprogramming equipment, such as secure communications equipment, program loader verifier, memory loader verifier, or common aircraft portable reprogramming equipment is available and operational to support reprogramming at home station and deployed locations. **(T-3)**. Notify the wing or group EW POC of shortfalls. **(T-3)**.
- 2.4.3.2. Ensure adequate personnel have access to the Multi-Service Data Distribution System to conduct actual and exercise reprogramming actions both at home station and deployed locations. **(T-3)**.
- 2.4.3.3. Implement EWIR changes only after wing or group EW POC's approval and keep the wing or group EW POC informed of changes, as required. **(T-3)**.
- 2.4.3.4. Participate in the EWIR action team. **(T-3)**.
- 2.4.3.5. **(Added-51FW)** Maintain a working Secret Internet Protocol Router Network (SIPRNet) connection for use in the EWIR process. This terminal must be enabled to write classified (SIPRNet) information to removable media for cross-loading to reprogramming equipment (hereafter referred to as "removable media privileges"). This connection does not need to be dedicated only to EWIR but must be made immediately available upon request.
- 2.4.3.6. **(Added-51FW)** Coordinate SIPRNet access for a minimum of three FGS personnel in both the 35 FGS and 36 FGS.

- 2.4.3.7. **(Added-51FW)** Coordinate and train a minimum of three FGS personnel in both the 35 FGS and 36 FGS with removable media privileges in the use of the MSDDS.
- 2.4.3.8. **(Added-51FW)** Ensure access to a working secure telephone that is available for use in EWIR.
- 2.4.3.9. **(Added-51FW)** Design shift schedules that allows for a minimum of one individual per shift (including contingency operations) to have MSDDS access, as well as removable media privileges.
- 2.4.3.10. **(Added-51FW)** Turn in the 51 FW Form 101 to the MOC, the WAM and the 51 FW ECP after completing all PW/SB updates.
- 2.4.3.11. **(Added-51FW)** Report reprogramming equipment deficiencies to the 51MXG EW Program Manager (Wing Avionics Manager, 51MXQ/QA).
- 2.4.4. Wing, delta or group intelligence will:
- 2.4.4.1. Notify the wing, delta or group EW POC of threat changes that will impact EW systems. Include this information, along with PACER WARE messages, in aircrew mission briefings. **(T-3)**.
- 2.4.4.2. Review aircrew debriefings and mission reports for EW equipment anomalies. Report these findings to the wing or group EW POC for determination of possible threat parameter changes and action, if necessary. **(T-3)**. Unusual findings will be reported in aircrew mission reports and Joint Spectrum Interference Resolution messages. **(T-3)**.
- 2.4.4.3. Assist the wing or group EW POC prepare operational change requests. **(T-3)**.
- 2.4.4.4. Participate in the EWIR action team. **(T-3)**.
- 2.4.5. The base or wing communications squadron will:
- 2.4.5.1. Ensure base communications centers and network control centers understand the importance of EWIR and facilitate the flow and proper handling of EW messages and data. **(T-3)**.
- 2.4.5.2. Participate in the EWIR action team. **(T-3)**.
- 2.4.5.3. Immediately notify the wing or group EW POC of communications deficiencies affecting EWIR capability. **(T-3)**.
- 2.4.6. **(Added-51FW)** The 51FW ECP will:
- 2.4.6.1. **(Added-51FW)** Ensure alternate event coordinators have access to MSDDS and 51FW PW classified and unclassified e-mail accounts.
- 2.4.6.2. **(Added-51FW)** Maintain a current contact list of all organizations involved in EWIR and provide changes as applicable to all 51 FW EWIR participants.
- 2.4.6.3. **(Added-51FW)** Maintain the 51 OSS/OSK Pacerware/Serenebyte SIPR webpage with all applicable files and messages for all EW systems named in [paragraph 1.1](#).
- 2.4.7. **(Added-51FW)** Fighter Squadrons will:

2.4.7.1. **(Added-51FW)** Designate at least one pilot per shift to perform ECP duties during exercise or contingency operations.

2.4.7.2. **(Added-51FW)** Maintain at least one assigned pilot as a graduate of the Electronic Warfare Officers Course (EWOC) as the Squadron ECP. In the absence of EWOC graduates, Fighter Squadrons will designate the most qualified individual. See DAFMAN 11-415, *Weapons and Tactics Programs*.

2.4.8. **(Added-51FW)** Fighter Squadron ECP will:

2.4.8.1. **(Added-51FW)** Maintain a list of current PW messages for all EW systems used by their squadron.

2.4.8.2. **(Added-51FW)** Brief squadron aircrew on EWIR actions and ramifications.

2.4.8.3. **(Added-51FW)** Work with associated Fighter Generation Squadron (FGS) specialist sections to reprogram EW systems.

2.4.8.4. **(Added-51FW)** Maintain a current SIPRNet account and the ability to download software changes from the MSDDS.

2.4.8.5. **(Added-51FW)** Designate an alternate event coordinator and perform duties listed in [paragraph 1.6](#).

2.4.9. **(Added-51FW)** MOC (51 MXG/MXOC) will:

2.4.9.1. **(Added-51FW)** Provide a notification network to aid the event coordinator in the EWIR notification process utilizing Emergency Checklist 115.

2.4.9.2. **(Added-51FW)** Inform 51 MXG/CC of EWIR action affecting wing assets.

2.4.9.3. **(Added-51FW)** Record times and report EWIR start time to the WAM.

2.4.10. **(Added-51FW)** 51 MXG EW Program Manager (Wing Avionics Manager – 51 MXG/QA) will:

2.4.10.1. **(Added-51FW)** Act as primary maintenance liaison for EWIR.

2.4.10.2. **(Added-51FW)** Be designated as an alternate event coordinator and will perform duties listed in [paragraph 1.6](#), if necessary

2.4.10.3. **(Added-51FW)** Identify maintenance EWIR related deficiencies to the Wing ECP.

2.4.11. **(Added-51FW)** 51 MXS/Electronic Warfare Section (51 MXS/MXMVP) will:

2.4.11.1. **(Added-51FW)** Maintain a working SIPRNet connection with removable media privileges for use in the EWIR process.

2.4.11.2. **(Added-51FW)** Coordinate SIPRNet access and removable media privileges for a minimum of six individuals.

2.4.11.3. **(Added-51FW)** Coordinate and train a minimum of six individuals in the use of the MSDDS.

2.4.11.4. **(Added-51FW)** Maintain a working secure telephone that is available for use in EWIR.

2.4.11.5. **(Added-51FW)** Design shift schedules that allow for a minimum of two individuals per shift that have MSDDS access and removable media privileges.

2.4.11.6. **(Added-51FW)** Help the FGSs with reprogramming actions based on availability and equipment.

2.4.11.7. **(Added-51FW)** Turn in the 51 FW Form 101 to the MOC, the WAM and 51 FW ECP after completing all PW/SB updates.

2.4.11.8. **(Added-51FW)** Report reprogramming equipment deficiencies to the 51 MXG EW Program Manager (Wing Avionics Manager – 51 MXQ/QA).

2.4.12. **(Added-51FW)** 51 FW Command Post (51FW/CP) will:

2.4.12.1. **(Added-51FW)** Monitor the 51FW/CP classified and unclassified e-mail accounts. Eglin's 53 EWG will post PW/SB messages to the 51FW/CP inbox to ensure the Command Post receives the message. 51 FW/CP does **NOT** need to notify the Wing ECP or alternate event coordinators for "**ROUTINE**" messages received during normal duty hours (0700-1700 M-F). During **OR** after normal duty hours (0700-1700 M-F), the 51 FW/CP will inform the Wing ECP or alternate event coordinators when high priority ("**EMERGENCY**" and "**URGENT**") messages are received. After normal duty hours, the 51FW/CP will utilize the 51 OSS/OSK stand-by recall letter provided by the Wing ECP.

2.4.12.2. **(Added-51FW)** During contingencies and exercises 51FW/CP will inform Wing ECP when **ANY** messages are received, using the EWIR Phone List (Attachment 4) or 51 FW Event Coordinator Checklist, if necessary.

2.4.12.3. **(Added-51FW)** If not utilizing a secure communications medium, only the unclassified subject line will be passed to the event coordinator upon initial contact.

2.4.13. **(Added-51FW)** Alternate Event Coordinators will:

2.4.13.1. **(Added-51FW)** Maintain access to and proficiency on MSDDS, organizational e-mail inboxes, and EWIR procedures.

2.4.13.2. **(Added-51FW)** Perform EWIR actions until the Wing ECP can be contacted and the EWIR responsibilities are handed off.

2.5. Operational Reprogramming Centers (53 EWG, Det 1 492 SOW, AMC/OL-A and AFLCMC/WNYI [for some foreign military sales]). Reprogramming Centers will:

2.5.1. Develop, produce, test and distribute all mission data. **(T-3)**. Delegate as required. **(T-3)**. **Exception:** Mission data development for foreign military sales EWIR customers shall be accomplished according to **Chapter 4** of this instruction and the *Memorandum of Agreement on 53 EWG and AFLCMC/WNYI Foreign Military Sales Mission Data Programming*, dated 13 Jun 1997.

2.5.2. Provide guidance and technical help with developing intelligence, logistics, and communications systems in support of EWIR. **(T-3)**.

2.5.3. Evaluate EW mission data and support documentation to maintain configuration control. **(T-3)**.

2.5.4. Support operational testing required to fully evaluate all EW software or mission data changes. **(T-3)**.

- 2.5.5. Create training mission data for EW systems, as necessary. **(T-3)**.
- 2.5.6. Identify formal intelligence requirements and submit to parent MAJCOM/FLDCOM intelligence directorate. **(T-3)**.
- 2.5.7. Maintain a data distribution system as a means of distributing reprogramming data. **(T-3)** Maintain the EW Tool Box SIPRNet web page <http://ewtoolbox.eplin.af.smil.mil> to ensure required EW reprogramming software configuration, status, and information is available to support reprogramming at home and deployed locations. **(T-3)**.
- 2.5.8. Provide field units the latest information on EWIR process, mission data releases, and platform specific issues with systems experts. **(T-3)**.
- 2.5.9. Support EW force development evaluations to determine EW systems' performance and identify specific EW system deficiencies. **(T-3)**.
- 2.5.10. Prepare and distribute system impact messages when changes in the threat environment might affect EW systems in the theater. **(T-3)**.
- 2.5.11. Prepare and distribute reprogramming impact messages to indicate impact of reprogramming actions on EW systems. **(T-3)**.
- 2.5.12. Evaluate field operational change requests and make recommendations to MAJCOM on resolution. **(T-3)**.
- 2.5.13. Produce or coordinate maintenance instruction message distribution when appropriate. **(T-3)**.
- 2.5.14. Develop requirements and oversee facility design and provide construction or renovation oversight for program office-funded EWIR facilities and manage facilities and personnel to analyze, develop, and test changes to mission data. **(T-3)**.
- 2.5.15. Develop system handbooks or mission guides for each assigned EW system. **(T-3)**. 53 EWG, Det 1 492 SOW and AMC/OL-A will update and distribute the handbooks or mission guides when required or concurrently with each mission data update. **(T-3)**.
- 2.5.16. Assist in planning for and participate in reprogramming exercises. **(T-3)**.
- 2.5.17. Provide engineering support and tactical expertise to international EWIR as defined in **Chapter 4**. **(T-3)**.
- 2.5.18. Submit threat change validation request messages to the appropriate service production centers or the applicable national SIGINT authority for threat validation, and to NSA for collection verification. **(T-0)**. It is recommended these threat change validation requests be submitted on the MSIC-sponsored EWIR portal on the SIPRNet at <http://www.msic.dia.smil.mil/tcmp>. Threat validation must be considered during reprogramming actions. **(T-3)**. Coordination with the appropriate service production center or SIGINT authority will occur to ensure reprogramming priority timelines are met. **(T-3)**. However, timeliness of reprogramming actions will be based upon reprogramming priority (routine, urgent or emergency) and will not be delayed for threat validation. **(T-3)**.
- 2.5.19. Conduct the EW portion of foreign materiel revisit testing and foreign materiel exploitation when required, and reprogram EW systems, as needed, based on the results. **(T-3)**.

2.5.20. Develop and maintain plans and manning to operate 24-hour emergency reprogramming centers in support of contingencies and combat operations or as directed by MAJCOMs or the theater commanders. **(T-3)**.

2.5.21. Inform MAJCOM A3 and A4, or their equivalents, of technical data change requirements caused by upcoming PACER WARE updates as soon as practical. **(T-3)**.

2.5.22. Provide to 453 EWS:

2.5.22.1. List of prioritized threats for flagging. **(T-3)**.

2.5.22.2. Current mission data for any flagging models desired to be kept current. **(T-3)**.

2.5.23. Submit EWIRDB problem reports using the EWIRDB Problem Reports link on NASIC's EWIRDB website. **(T-3)**.

2.5.24. Provide assistance to parent MAJCOM in developing guidance and tasking to 453 EWS for formulating flagging tools. **(T-3)**.

2.6. Support Reprogramming Center (AFLCMC/WNY). Support Reprogramming Centers will:

2.6.1. Develop, produce, conduct developmental tests, and distributes all operational flight programs for all fielded EW systems or delegate these tasks to other agencies, as required **(T-3)**. Also ensures:

2.6.1.1. Users receive fully developed and tested EW systems and EWIR improvements with the operational capabilities specified by the Center. **(T-3)**.

2.6.1.2. Operational reprogramming centers are equipped with mission data generators to rapidly reprogram all EW systems. Address and correct any reprogramming center-identified mission data generator deficiencies that prevent the user from accomplishing rapid mission data reprogramming. **(T-3)**.

2.6.1.3. Each EW system engineering plan shall be a derivative from each system's appropriate acquisition documentation (for legacy systems refer to the Single Acquisition Management Plan). **(T-3)**. Each EW system engineering plan includes provisions for these fully tested items, both at the reprogramming center and in the field as required, at delivery of the first asset:

2.6.1.3.1. Reprogramming support tools including mission data generators, hot bench mock-ups, emulators, support computers, and coordinate necessary line replaceable units with the Air Force Sustainment Center.

2.6.1.3.2. Data transfer equipment, such as memory loader verifiers, common aircraft portable reprogramming equipment, and enhanced diagnostic aid.

2.6.1.3.3. Support equipment (field and depot-level).

2.6.1.3.4. All aspects of software reprogramming and support facilities.

2.6.1.4. Prior to the start of an operational flight program, assess to determine if form, fit, function, and interfaces will be directly impacted, in accordance with AFI 63-101/20-101. **(T-3)**.

- 2.6.1.4.1. Coordinate as required with platform program managers when the operational flight program or hardware change impacts fit, function, and interfaces. Follow AFI 63-101/20-101 AF Form 1067 procedures prior to the start of the program. **(T-3)**.
- 2.6.1.4.2. If, while executing an operational flight program update, it is determined that fit, function, and interfaces is impacted, the program will be suspended until the requirements of AFI 63-101/20-101 can be satisfied. **(T-3)**. Support reprogramming centers will ensure timely completion of AF Forms 1067 related to operational flight program software updates. **(T-3)**.
- 2.6.1.4.3. If fit, function, and interfaces is not impacted, the operational flight program change is distributed through the computer program identification number revision process. **(T-3)**.
- 2.6.1.4.4. When the software is fielded, a description of the operational impact of the software change on the EW system is sent to the MAJCOM and commander air force forces or joint force air component commander's EW cell and field units in a reprogramming impact message. **(T-3)**.
- 2.6.1.5. Adequate coordination with using command, program managers, and other agencies as required, to facilitate funding for and to ensure timely completion and fielding of technical data associated with operational flight program software updates. **(T-3)**.
- 2.6.2. Support planning, integration, and acquisition of new EWIR systems. **(T-3)**.
- 2.6.3. Identify opportunities for acquiring joint systems. **(T-3)**.
- 2.6.4. Use the EWIRDB as the primary source for reprogramming actions for the EW systems for which the AFLCMC/WNY is responsible. **(T-3)**. (This includes all EW systems supported via international agreements). If there are information gaps in EWIRDB, other reprogramming center-approved information sources will be used to support reprogramming actions, as required. **(T-3)**.
- 2.6.5. Provide logistics and engineering support for the hardware and software elements of EW systems and their associated support, training, and range simulator equipment. **(T-3)**.
- 2.6.6. Establish and manage facilities and personnel to analyze, develop, and test changes to:
- 2.6.6.1. Operational flight program. **(T-3)**.
 - 2.6.6.2. EW system support tools. **(T-3)**.
 - 2.6.6.3. Support equipment software. **(T-3)**.
- 2.6.7. Maintain facilities for complete EW system laboratory testing. **(T-3)**.
- 2.6.8. Maintain equipment to use the Multi-Service Data Distribution System to transmit EW software changes to units worldwide. **(T-3)**.
- 2.6.9. Provide mission data support when requested by the operational reprogramming center. **(T-3)**.
- 2.6.10. Identify, obtain, develop, and maintain EW systems software reprogramming tools. **(T-3)**.

2.6.11. Provide data necessary (including parametric, characteristics and performance data, and signatures data) for 57 IS to maintain accurate databases and for the 453 EWS to develop flagging tools on systems AFMC manages. **(T-3)**.

2.6.12. Provide assistance to parent MAJCOM in developing guidance and tasking to 453 EWS for formulating flagging tools. **(T-3)**.

2.6.13. Provide EW engineering and logistics support to allied and friendly nations through International EWIR, as detailed in **Chapter 4**. **(T-3)**.

2.6.14. Notify AF/A5L and the appropriate MAJCOM, joint or combined air component commander, and NASIC of foreign military sales of EW equipment (including software updates) that AFMC manages or develops. **(T-0)**.

2.6.15. Coordinate the foreign release of capabilities or data (including software) with all affected MAJCOMs/FLDCOMs and agencies. **(T-3)**.

2.7. Air Force Operational Test and Evaluation Center (AFOTEC). AFOTEC works closely with MAJCOMs, FLDCOMs, program offices, intelligence support organizations and reprogramming support organizations when conducting operational test and evaluation on EW systems and associated reprogramming support equipment. AFOTEC will:

2.7.1. Coordinate operational test and evaluation reprogramming requirements with MAJCOMs and the program offices. **(T-3)**.

2.7.2. Participate in the EWIR oversight process. **(T-3)**.

2.8. Air Force Intelligence Mission Data (IMD) Producers.

2.8.1. 16 AF will:

2.8.1.1. Ensure EWIR function owners understand the contribution of intelligence collection assets to the EWIR process.

2.8.1.2. Work with AF/A5L, NSA, and DIA to ensure supporting intelligence or service production centers:

2.8.1.2.1. Review national SIGINT requirements process intelligence need statements and DIA Community On-Line Intelligence System for End-Users and Managers production requirements and requests for information for compilation of requirements regarding AF EWIR and EWIR-related database efforts.

2.8.1.2.2. Assess technical and operational SIGINT for validation and reporting (using available intelligence products) to the reprogramming center, agencies, and MAJCOM A2.

2.8.1.2.3. Advocate to NSA and DIA to ensure collection and production methods exist to provide timely assessments of technical and operational SIGINT.

2.8.1.2.4. Ensure theater and tactical collection assets provide SIGINT intercept and other intelligence data to the reprogramming center and to the appropriate EWIRDB production centers for timely engineering assessment of threat system capabilities.

2.8.2. 57 IS will:

2.8.2.1. Produce data on DAF-owned systems. These systems include BLUE, BLUE+GRAY, such as BLUE gone GRAY, specifically US systems sold to other countries through foreign military sales, or similar processes and domestic commercial (WHITE) systems or emitters assigned by the Joint EW Center. The data produced will include radio frequency parametric data, platform data with-emitter fit, characteristics and performance (including engine, radar cross section and electro-optical or infrared signature), antenna pattern, and additional data as requirements dictate. **(T-3)**.

2.8.2.2. Store BLUE data provided by other military services as the US Electromagnetic Systems Database technical manager. **(T-0)**. This data is stored and distributed in the US Electromagnetic Systems Database with portions electronically forwarded for input into the EWIRDB.

2.8.2.3. Maintain and archive data on aircraft radar cross sections and electro-optical or infrared signatures and antenna patterns in the Blue Airborne Target Signatures database. **(T-3)**.

2.8.2.4. Act as the principal agent and a data producer for the Combat Support Database which combines threat system (RED) parameters and BLUE and GRAY aircraft signatures into an engineered product specifically formulated for use by mission planning systems. **(T-3)**.

2.8.2.5. Maintain the data storage capability of these databases, as necessary. **(T-3)**.

2.8.2.6. Provide access to the 53 EWG and coordinate with the 53 EWG regarding updates to database formatting or any other changes that affect the 53 WG. **(T-3)**.

2.8.2.7. Use its designated flagging billets, matching billet rank requirements, to support the 453 EWS with respect to its flagging mission. **(T-3)**.

2.8.2.8. List prioritized requirements for BLUE, GRAY and WHITE data to meet mission needs. **(T-3)**.

2.8.3. National Air and Space Intelligence Center (NASIC) will:

2.8.3.1. Serve as DoD technical manager for the EWIRDB, as required by DIA. **(T-0)**. As such, serve as the focal point for all EWIRDB technical database and data quality issues. **(T-0)**.

2.8.3.2. Produce the EWIRDB product by merging data from NASIC analysis with data from other EWIRDB production organizations and 57 IS (for US and friendly- foreign data). **(T-0)**. NASIC is the AF technical manager for technical electronic intelligence and all processing of AF airborne technical electronic intelligence processing in support of EW. Additionally, NASIC will coordinate with all production centers and ensure the EWIRDB is updated online with validated threat changes. **(T-0)**.

2.8.3.3. Distribute and provide web access to the EWIRDB. **(T-0)**.

2.8.3.4. Perform administrative checks on the EWIRDB inputs to ensure the data is correctly formatted. **(T-3)**.

2.8.3.5. Produce and update parametric and signature data information. **(T-3)**. This information includes electromagnetic parametric data, platform-emitter fit, characteristics and performance, antenna pattern, signature related data and additional data as

requirements dictate. **(T-3)**. Production is on foreign (RED) and friendly foreign (GRAY) assigned foreign aerospace threat systems, ground-based early warning, acquisition, target tracking radar threats, and hostile command and control, or information operations systems and include in the EWIRDB. **(T-3)**. Additionally, provide threat change validation assessments, consistent with the production center roles and responsibilities, as required by the reprogramming center. **(T-3)**. Timeliness of threat change validation assessments will be based upon reprogramming priority (routine, urgent or emergency) and available intelligence. **(T-3)**. Coordinate with the appropriate reprogramming center will occur to ensure reprogramming priority timelines are met and intelligence limitations are communicated. **(T-3)**. Following threat change validation, EWIRDB shall be updated online in accordance with reprogramming priority timelines (routine, urgent or emergency). **(T-3)**.

2.8.3.6. Provide consumers with EWIRDB data for reprogramming during exercises, contingencies, and wartime operations. **(T-3)**.

2.8.3.7. Coordinate with AF/TE, SAF/AQ, and AFMC, among others, to provide equipment and support for ground and airborne testing against foreign assets. **(T-3)**.

2.8.3.8. Assist the reprogramming center's participation in foreign materiel exploitation. **(T-3)**.

2.8.3.9. Produce tailored EWIRDB products to support foreign military sales data requirements at the direction of SAF/IAPW. **(T-3)**.

2.8.3.10. Participate in the DAF EWIR oversight process. **(T-3)**.

2.8.3.11. Ensure AF intelligence surveillance and reconnaissance asset collected data is made available to the reprogramming centers and 453 EWS. **(T-3)**.

2.8.3.12. Produce and maintain the official DoD "electronic fit list" of threat airborne platforms. **(T-3)**.

2.9. Air Operations Center's Electromagnetic Warfare Cell. These procedures apply to the AF component of the joint or combined forces air component command. The air operations center is the operations center of the commander of combat or mobility air forces. Within the air operations center, threat evaluation and identification of changing target or mission requirements are continuous and time-critical functions. AF units under control of joint or combined forces will follow joint or combined forces procedures if the publication procedures conflict with the Joint or Combined Forces procedures. **(T-3)**. The EW cell and/or air mobility division tactics section for mobility air forces aircraft will be the POCs within the air operations center for all EW coordination. **(T-3)**. The air operations center's EW cell or air mobility division tactics will:

2.9.1. Monitor the EW environment in the area of responsibility. **(T-3)**.

2.9.2. Perform preliminary operational deficiency analysis, as needed, generate, and submit field operational change requests to the MAJCOMs and reprogramming centers. **(T-3)**.

2.9.3. Disseminate threat changes and advise action to minimize the impact of threat changes to increase aircraft survivability. **(T-3)**. These actions include, but are not limited to:

2.9.3.1. Reviewing system impact messages for potential degradation to EW system capabilities.

- 2.9.3.2. Notifying aircrews of loss or degradation of EW capability.
- 2.9.3.3. Notifying aircrews on use of new EW tactics.
- 2.9.3.4. Recommending threat area avoidance tactics.
- 2.9.3.5. Recommending alternate targets based on updated threat assessments.
- 2.9.3.6. Advising use of suppression of enemy air defense assets.
- 2.9.4. Distribute reprogramming change information to joint and combined organizations to ensure interoperability and avoid EW frequency conflicts. **(T-3)**.
- 2.9.5. Report friendly force anomalies which lead to false identifications or inappropriate responses and requests. **(T-3)**. Reports go to supporting production centers, reprogramming centers, and national SIGINT authorities to perform validation assessments of the identified anomalies. **(T-3)**.
- 2.9.6. Review operational reports, mission reports, EWIR messages and flight reports. **(T-3)**. Ensure applicable theater mission reports and joint spectrum interference resolution messages are sent to supporting reprogramming centers and 453 EWS. **(T-3)**. Analyze these reports and messages to find:
 - 2.9.6.1. Unusual EW equipment operation. **(T-3)**.
 - 2.9.6.2. Changes in engagement tactics. **(T-3)**.
 - 2.9.6.3. Changes in successful engagement rates. **(T-3)**.
- 2.9.7. Request 24-hour emergency flagging analysis from the 453 EWS and reprogramming from the 53 EWG, as required. **(T-3)**.
- 2.9.8. Ensure units deployed to their theater have the capability to quickly receive and upload reprogramming data. **(T-3)**.
- 2.9.9. Ensure deployed units have all required equipment to perform rapid reprogramming, to include EW support equipment including program loader verifiers, memory loader verifiers, common aircraft portable reprogramming equipment, enhanced diagnostic aid, secure communications devices, mission support facilities, etc. **(T-3)**.
- 2.9.10. As delegated by the joint or combined air component commander, assess the need for and, if deemed necessary, coordinate and implement software changes from the reprogramming centers for its combat units. **(T-3)**. Factors to consider in determining whether to implement a change include:
 - 2.9.10.1. Nature and lethality of the threat change within the joint or combined air component commander area of responsibility.
 - 2.9.10.2. Planned force movement.
 - 2.9.10.3. Critical timing.

2.10. EWIR Committee and Subcommittees.

- 2.10.1. Oversight Committee. This committee provides a forum for the key functions and organizations within the EWIR community to exchange information and take action to improve EWIR. The committee reviews subcommittee actions and mediates solutions to unresolved

problems. It advocates EWIR requirements within the DoD and works with other services to seek areas of commonality, ensure interoperability, share best practices, and minimize duplication. The Oversight Committee will:

2.10.1.1. Convene meetings as necessary in person or through virtual collaboration.

2.10.1.2. Detail Committee membership in the EWIR membership matrix in [Attachment 2](#). Other AF, joint, DoD, and service organizations will be invited to attend as required.

2.10.2. EWIR Subcommittees. EWIR subcommittees focus on an aspect of EWIR needing greater attention than the oversight committee can provide. The Oversight committee will review action items, including recommendations, and approve or disapprove for implementation or closure. **(T-3)**.

2.11. Program Managers of EW Systems or Systems Conducting EW. Program managers of EW systems will:

2.11.1. Develop, conduct developmental testing for, produce, and distribute initial operational flight programs for all EW systems under development or modification; or delegate these tasks to the support reprogramming centers (AFLCMC/WNY), if required. **(T-3)**. Program managers of EW systems will ensure:

2.11.1.1. Users receive fully developed and tested EW systems including system software and mission data meeting the operational capabilities that have been specified based on operational need. **(T-3)**.

2.11.1.2. Systems in development or under contract that have not been transferred to a reprogramming center for operational flight program and mission data support, must follow the same reprogramming center procedures described in this instruction unless a waiver is obtained through the listed tier waiver authority or AF/A5L. **(T-3)**.

2.11.1.3. The appropriate reprogramming center is equipped with mission data generators to rapidly reprogram the new or modified system prior to developmental or operational test and evaluation. **(T-3)**. Tools which are common across the EW system portfolio will be given precedence in the selection process. **(T-3)**.

2.11.1.4. Acquisition planning documents include provisions for the following fully tested items, both at the reprogramming center and in the field as required, prior to initial operational capability. **(T-3)**. Provisions include:

2.11.1.4.1. Reprogramming support tools (including mission data generators, hot bench mock-ups, emulators, support computers, and necessary line replaceable units and shop replaceable units). Tools which are common across the EW system portfolio will be given precedence in the selection process. **(T-3)**.

- 2.11.1.4.2. Data transfer and loading equipment and any necessary aircraft adapter group components. **(T-3)**. (As of this writing, common aircraft portable reprogramming equipment is the AF standard support equipment for this function). Host platform single point reprogramming of installed EW systems shall be used when possible. **(T-3)**.
- 2.11.1.4.3. Support equipment (field and depot-level) and all aspects of software reprogramming and support facilities. **(T-3)**. End-to-end testing of installed and integrated systems including all sensors, receivers, data buses, transmitters, dispensers and displays shall be used whenever possible to test the system's capability to detect and react to the threat. **(T-3)**.
- 2.11.1.4.4. Software reprogrammable blanking systems must be included in the platform integration and in the support centers. **(T-3)**. A blanking system suppresses the transmission or reception of electromagnetic signals in order to permit the simultaneous operation of two or more pieces of electronic equipment without interference. These systems serve to deconflict EW systems and other onboard receiver or transmitter systems. Blanking directly impacts system performance and blanking strategies must balance safety and performance impacts on all affected aircraft systems. **(T-3)**. Any software or hardware changes to aircraft systems that impact transmitted outputs from EW or other platform avionics must be evaluated for blanking impacts and any required blanking setting changes must be tested and fielded concurrently with the system changes. **(T-3)**.
- 2.11.2. Plan, integrate, and acquire new EWIR systems to support the new or modified EW system. **(T-3)**.
- 2.11.3. Monitor joint systems to identify acquisition opportunities in order to fulfill AF operational needs. **(T-3)**.
- 2.11.4. Use the EWIRDB as the primary source for EW systems mission data development, including for EW systems supported via international agreements. **(T-3)**. If there are information gaps in the EWIRDB, coordinate with the appropriate reprogramming center to identify approved information sources to be used to support the development of mission data for the new or modified EW system. **(T-3)**.
- 2.11.5. Provide logistics and engineering support for hardware and software elements of new or modified EW system and its associated support, training, and range simulator equipment. **(T-3)**.
- 2.11.6. Work with the support reprogramming center (AFLCMC/WNY) and applicable operational reprogramming center to designate facilities and personnel to analyze, develop, and test changes to:
- 2.11.6.1. Operational flight program. **(T-3)**.
 - 2.11.6.2. EW system support tools. **(T-3)**.
 - 2.11.6.3. Support equipment software. **(T-3)**.
- 2.11.7. Maintain facilities for complete EW system laboratory testing. **(T-3)**.
- 2.11.8. Maintain equipment used to transmit EW software changes to units worldwide, such as Multi-Service Data Distribution System. **(T-3)**.

- 2.11.9. Provide mission data support when requested by the reprogramming center which is developing the mission data for test and evaluation of the new or modified EW system. **(T-3)**.
- 2.11.10. Identify, obtain or develop EW systems software reprogramming tools and blanker reprogramming tools in coordination with the support reprogramming centers (AFLCMC/WNY). **(T-3)**. Tools which are common across the EW system portfolio will be given precedence in the selection process. **(T-3)**.
- 2.11.11. Provide data necessary (including parametric and characteristics and performance data) for the 57 IS to maintain accurate databases and for the 453 EWS to develop flagging tools. **(T-3)**.
- 2.11.12. Provide assistance to the parent MAJCOM in developing guidance and tasking to the 453 EWS for formulating flagging tools. **(T-3)**.
- 2.11.13. Derive performance plans from a new or modified system's appropriate acquisition documentation. **(T-3)**. These plans will be used to ensure a new or modified system performs, as stated, in acquisition documents. **(T-3)**.
- 2.11.14. If applicable, provide EW engineering and logistics support to allied and friendly nations through international EWIR, as detailed in [Chapter 4](#). **(T-3)**.
- 2.11.15. Notify AF/A5L and the appropriate MAJCOM, FLDCOM, joint or combined air forces component commander, and NASIC of foreign military sales of new or modified EW equipment (including software updates). **(T-3)**.
- 2.11.16. Coordinate the foreign release of capabilities or data (including software) with SAF/IA and other affected MAJCOMs, FLDCOMs and agencies. **(T-3)**.
- 2.11.17. For systems that transmit electromagnetic energy, ensure program planning documents, budgets and schedules include provisions for development of BLUE, GRAY and WHITE data, as applicable in accordance with DoDD 5250.01, CJCSI 3320.01D, and CJCSI 3210.04A. **(T-0)** Provide data to the 57 IS for incorporation into the US Electromagnetic Systems and the Blue Airborne Target Signatures databases, as appropriate. Review and update system data at least once every three years. **(T-3)**.
- 2.11.18. For systems that transmit or receive electromagnetic energy, document EWIR data requirements (including RED, GRAY, BLUE or WHITE data) through development of a Life-Cycle Mission Data Plan in accordance with DoDD 5250.01. **(T-0)**.
- 2.11.19. For systems that involve modeling and simulation of the transmission or reception of adversary electromagnetic energy, coordinate with the Intelligence Community to assess the need and determine the most appropriate method to obtain EWIR data for modeling and simulation. **(T-3)**.

Chapter 3

EXERCISES AND EVALUATION PROGRAMS

3.1. General.

3.1.1. The DAF conducts exercises periodically to validate the production and delivery of software and hardware changes to electronic equipment used to provide an awareness and response capability within the electromagnetic environment. These exercises are referred to by the name SERENE BYTE. SERENE BYTE exercises will be incorporated into large force exercises and be conducted in conjunction with the electronic warfare analysis program in accordance with DAFI 10-706, *Electromagnetic Warfare*. SERENE BYTE exercises are intended to:

- 3.1.1.1. Identify problem areas.
- 3.1.1.2. Gain confidence in the process.
- 3.1.1.3. Ensure a smooth flow of information during a crisis.
- 3.1.1.4. Ensure readiness in response to threat parameter changes.
- 3.1.1.5. Train operations, intelligence, communications, and maintenance personnel.

3.1.2. Joint Exercises. Exercises shall be conducted as joint events to the maximum extent possible. Joint exercises expose all levels of the EWIR process to communications limitations inherent in large scale exercises, and the exercises also test joint coordination and cooperation between the services. Joint exercises may include foreign military sales participation.

3.1.3. Exercise Categories. Exercises fall into three categories:

- 3.1.3.1. HAF directed.
- 3.1.3.2. MAJCOM directed.
- 3.1.3.3. Wing or group directed.

3.2. HAF Directed Exercises.

3.2.1. Are directed by the Deputy Chief of Staff, Air Force Futures (AF/A5/7).

3.2.2. Normally cover the entire EWIR process.

3.2.3. Duplicate, to the largest extent possible, real world operations. Reduce artificiality of the exercise to the absolute minimum.

3.2.4. May include foreign military sales participants.

3.2.5. Document the capabilities and limitations of all major components of reprogramming, including:

- 3.2.5.1. Collecting, validating, and distributing intelligence information.
- 3.2.5.2. Evaluating signals.
- 3.2.5.3. Creating and testing changes.
- 3.2.5.4. Distributing changes.

3.2.5.5. Implementing changes.

3.2.5.6. Validating equipment changes in combat units.

3.3. MAJCOM Directed Exercises. MAJCOM directed exercise goals include:

3.3.1. Validating the procedures for distributing emergency reprogramming data to units.

3.3.2. Identifying shortcomings in communications and support equipment.

3.3.3. Unit Participation. Periodic exercise participation is at the unit commander's discretion. If the unit commander chooses not to participate, report reason for non-participation through the command chain to the MAJCOM. Reasons must include: unit deployment, Inspector General visit, unit stand-down, or other mission exigency.

3.4. Wing or Group Directed Exercise Goals Include:

3.4.1. For these exercises:

3.4.1.1. Opportunity for personnel to practice reprogramming.

3.4.1.2. Opportunity to correct or improve reprogramming capabilities based on previous exercise results.

3.4.2. A wing or group shall coordinate with its MAJCOM and appropriate reprogramming center for availability of exercise data and messages. **(T-3)**. SERENE BYTE request forms are available on the PACER WARE Database and the Multi-Service Data Distribution System.

3.4.3. EWIR messages and data will be sent to the unit via an appropriately classified email or be made available on the Multi-Service Data Distribution System, as time and tasking permits.

Chapter 4

INTERNATIONAL EWIR PROGRAM

4.1. Purpose. The International EWIR program supports building EW capacity for partner air forces. Its purpose is to foster interoperability for future coalitions and to strengthen partner countries' defensive posture. This program provides acquisition, logistics, technical engineering, and system familiarization services to ensure the effectiveness of EW systems sold to partner nations. This support program is designed to provide for the standardization and reliability required to field effective EW systems.

4.2. Scope. There are three basic areas of the international EWIR program: (1) international agreements; (2) foreign military sales cases; and (3) US government support for direct commercial sales.

4.2.1. International Agreements. Agreements, such as cooperative research or data exchange, joint development programs or joint exercises will require foreign military sales EWIR support to enhance or maintain their effectiveness between partners. In accordance with AFI 51-403, *International Agreements*, AF personnel must obtain written approval from a competent authority before initiating, negotiating, or concluding an international agreement. **(T-0)**. See DoDI 5530.03, *International Agreements*, para 5.2.b.(6), for more information.

4.2.2. Foreign Military Sales Cases. The majority of international EWIR programs are accomplished using US Government contracts (foreign military sales cases).

4.2.3. US Government support to direct commercial sales programs will encompass EW management or oversight of EW sales by US industry. **(T-3)**. EWIRDB support for direct commercial sales programs must be provided under a foreign military sales case. **(T-3)**.

4.3. Approach. The international EWIR program follows the AF EWIR process except for additional foreign disclosure reviews. Procedures and organizational responsibilities outlined in **Chapter 2**, and modified in this chapter form the basis for the international EWIR program. Hardware and software support shall mirror the AF support processes where feasible. International EWIR program support is developed in accordance with AF policies for security cooperation, foreign disclosure and technology transfer as well as specific foreign partner requirements set for in the terms of each foreign military sales case. The key administering agencies are the Foreign Disclosure Division (SAF/IAPD), the Weapons Division (SAF/IAPW), AF/A5L, ACC Security Assistance Branch (ACC/IAS), the Air Force Security Assistance and Cooperation Directorate, and the Air Force Security Assistance Training Squadron. The foreign military sales EWIR implementing agencies are NASIC, AFLCMC/WNYI, and the 53 EWG.

4.4. Special Factors. Transferring capabilities through international EWIR programs involves several factors. Program changes requiring supporting documentation, such as memoranda of understanding, foreign military sales cases, bilateral or multilateral agreements will require the purchaser's agreement before the program can move forward. **(T-0)**. The purchaser must fund the international EWIR program while EWIR activities, such as range testing, will be funded jointly through international agreements. **(T-0)**. EWIRDB support requirements for mission data file development to support foreign military sales cases must be approved in principle as described in **paragraph 4.9** before appropriate hardware or software sales are completed through foreign military sales or direct commercial sales programs. **(T-0)**.

4.5. International EWIR Program Disclosure. Transfer of US EW capabilities to international customers occur in accordance with applicable AF, DoD and national policies and procedures. EW military capabilities can include: deliverable hardware or software, technical orders, operating manuals, employment considerations, training, and databases for mission data file development, deliverable mission data, and applicable documentation (handbooks or annexes).

4.6. EW Systems Support.

4.6.1. US Systems:

4.6.1.1. Responsibility for mission data file development resides with 53 EWG, AMC/OL-A, Det 1 492 SOW, and AFLCMC/WNYI. The 53 EWG will develop mission data files for fighters, bombers, and Airborne Warning and Control System platforms. **(T-3)**. Det 1 492 SOW is responsible for mission data file development for special operations forces and common EW systems on mobility air forces platforms. **(T-3)**. AMC/OL-A will conduct overall software management of the ALR-69A and the KC-46 radio frequency self-defense system, the Tactical Situation Awareness System. **(T-3)**. AFLCMC/WNYI will develop mission data files in accordance with memoranda of agreement with the 53 EWG or Det 1 492 SOW. **(T-3)**. Organizations responsible for developing mission data files shall coordinate with appropriate agencies for technical order development. **(T-3)**. Under emergency or urgent reprogramming conditions, the responsible organization will coordinate a concurrent delivery with other applicable organizations. **(T-3)** Combatant commanders and the EW cell will be notified of all emergency reprogramming activities accomplished for nations in their respective area of responsibility. **(T-3)**.

4.6.1.2. US EW systems installed on non-US platforms or integrated with other non-US systems are supported on a case-by-case basis.

4.6.1.3. The international EWIR program will support EW systems retired from the AF inventory to the maximum extent feasible based on available hardware, software and engineering expertise.

4.6.1.4. Mission data file development under direct commercial sales programs requires proper manpower, reprogramming tools, test support equipment, and database support.

4.6.2. Non-US Systems. EW systems of foreign origin are generally not supported. Contact SAF/IAPW for guidance on exceptions to this policy.

4.7. Functional Responsibilities. These specific responsibilities are in addition to those found in **Chapter 2** and cover the International EWIR program.

4.7.1. Department of the Air Force Secretariat:

4.7.1.1. The Assistant Secretary of the Air Force for Acquisition, Technology and Logistics (SAF/AQ) is responsible for acquisition policy, program management, and execution of all AF foreign military sales acquisition cases and will work with SAF/IA and AFMC headquarters to accomplish necessary tasks (AFI 63-101/20-101). Within SAF/AQ, the Capabilities Division (SAF/AQPC) oversees EW system acquisitions.

4.7.1.2. The Deputy Under Secretary of the Air Force for International Affairs (SAF/IA) manages security assistance policies and foreign military sales program execution.

- 4.7.1.2.1. The Armaments Cooperation Division (SAF/IAPC) negotiates non-foreign military sales agreements, such as cooperative developments or data exchanges.
- 4.7.1.2.2. The Foreign Disclosure Division (SAF/IAPD) provides oversight management for the international EWIR program and its associated disclosure.
- 4.7.1.2.3. The Weapons Division (SAF/IAPW) provides oversight management for the international EWIR program, authors the AF EW Export Baseline, manages requests for the foreign military sales EWIR databases and participates in appropriate international EWIR meetings.
- 4.7.2. Air Force Air Staff. The Air Staff will coordinate with Space Staff equivalents, as necessary.
- 4.7.2.1. The Deputy Chief of Staff, Air Force Futures (AF/A5/7) oversees EW. The Electromagnetic Spectrum Superiority Directorate (AF/A5L) in coordination with SAF/IAPW manages the international EWIR program. AF/A5L responsibilities include coordinating on the release of EW systems, reviewing the operational impact and sensitivity of EW programs, and transfer of information and technology. AF/A5L provides recommendations on foreign military sales program implementation addressing protection of US operational capabilities, vulnerabilities, limitations, and ensuring interoperability. **(T-0)**. Also, AF/A5L is responsible for resolving foreign military sales or direct commercial sales memoranda of agreement issues in conjunction with SAF/IAPW. **(T-0)**. AF/A5L functions as the OPR for the release of PACER WARE and SERENE BYTE (refer to [Chapter 3](#)) mission data. Plus, AF/A5L extends invitations and approves foreign participation in SERENE BYTE.
- 4.7.2.2. AF/A2/6 reviews intelligence impacts on foreign military sales EW programs, participates in related meetings, and advocates foreign military sales programs to other organizations of the US intelligence community. AF/A2/6 also acts as signatory for selected international intelligence arrangements involving the EWIRDB.
- 4.7.3. Air Combat Command:
- 4.7.3.1. The Air Combat Command, Director of Operations (ACC/A3) manages joint operations and security assistance programs.
- 4.7.3.1.1. ACC Security Assistance Branch (ACC/IAS) monitors foreign military sales EW programs, performs ACC foreign disclosure duties, monitors international participation in SERENE BYTE exercises, acts as the ACC focal point for international programs, and tasks ACC subordinate units to support foreign military sales cases.
- 4.7.3.1.2. The 53 EWG is the AF foreign military sales reprogramming center responsible for operational mission data for fighter, bomber, and Airborne Warning and Control System platforms to the extent specified in memoranda of agreement. 53 EWG will coordinate with the appropriate agencies to ensure prompt mission data support, resolve mission data problems, conduct force development evaluations, and provides EW system expertise. **(T-3)**.
- 4.7.3.1.3. The 57 IS will provide US systems data to NASIC for EWIRDB production and provides support to AF/A5L for developing operational assessments in support of EW capability disclosure. **(T-3)**.

4.7.3.2. The National Air and Space Intelligence Center (NASIC) provides foreign capabilities information to SAF/IA in support of disclosure decisions. NASIC acts as technical manager for production and distribution of EWIRDB, and establishes initial and follow-on price and availability data for database support.

4.7.4. Air Force Materiel Command:

4.7.4.1. Provides AF EW capability planning and weapons system expertise and develops, transitions and acquires EW systems.

4.7.4.2. Develops, acquires, and sustains aerial targets and range instrumentation and their related EW payload systems to test and evaluate weapon systems and conduct realistic operational training. AFMC operates the Multi-Spectral Test and Training Environment range at Eglin AFB and provides development testing to allied and foreign nations. AFMC is responsible for acquisition of Air Combat Training Systems and associated threat simulator interoperability.

4.7.4.3. Programs aircrew training and range simulators for AF and foreign military sales customers. Unit training devices are reprogrammed by the responsible air logistics center.

4.7.4.4. Programs the E-3 Electronic Support Measures System using 53 EWG- developed E-3 Electronic Database mission data.

4.7.4.5. The Air Force Security Assistance Center (AFSAC) will manage a broad array of foreign military sales cases that include EW system acquisition and logistics support. AFSAC is also responsible for funding oversight and case closure. AFSAC/XPJ will be AFMC's disclosure authority for the release of military information to foreign nations. **(T-3).**

4.7.4.6. AFLCMC/WNY supports EW planning, development, acquisition, production, and integration of EW systems; and provides system management and logistics support for most AF EW systems. AFLCMC/WNY is AFMC's single manager for providing system management and logistics support for assigned EW systems, including software and hardware. The Electronic Warfare Avionics Integration Support Facility (EWASIF) manages assigned EW foreign military sales programs. The AFLCMC/WNYI is an AF foreign military sales reprogramming center with the following development and sustainment responsibilities: Operational flight program, mission data as defined by memorandum of agreement, reprogramming tools, test software, hardware and software configuration control for systems managed by EWASIF, setting up communication links, block cycle or software changes coordination, EW products distribution for supported systems, initial price and availability from all applicable organizations, reprogramming exercise participation, and country specific system security classification guides.

4.7.5. National Air and Space Intelligence Center (NASIC) will:

4.7.5.1. Provide foreign capabilities information to SAF/IA in support of disclosure decisions. **(T-3).**

4.7.5.2. Act as technical manager for production and distribution of EWIRDB, and establishes initial and follow-on price and availability data for database support. **(T-3).**

4.8. Foreign Military Sales Policy. SAF/IAPW and AF/A5L recommend policy changes and develop guidance and procedures for Secretariat, Air Staff, or Space Staff approval and incorporation into DAF instructions for the purpose of advocating and overseeing the export of US EW systems and system support.

4.9. Database Support for EW Reprogramming. The EWIRDB support program is designed for EW systems sold through DoD Security Cooperation. This program provides appropriate data for all EW-related systems requiring intelligence-based information for mission data programming. Direct commercial sales programs will obtain this support, if required and approved, through a related foreign military sales case. Foreign EW systems are not supported under this program.

4.9.1. Foreign Military Sales vs. Direct Commercial Sales Support. EW database support is only provided through a foreign military sales case. SAF/IAPD and SAF/IAPW can assist countries to determine their data requirements, once a letter of offer and acceptance is signed. Of note, contractors cannot provide EWIRDB support. **(T-0)**. Direct commercial sales licenses shall stipulate that if a country requires intelligence-related products for its EW system, the country will work with the SAF/IAR desk officer for guidance in possibly obtaining the required support through a foreign military sales case. **(T-0)**.

4.9.2. Foreign Military Sales EWIRDB Products. There are two types of foreign military sales EWIRDB products. Depending on a country's requirements and National Disclosure Policy, the EWIRDB release will either be direct or indirect. **(T-0)**. SAF/IAPW manages, develops, orders production, and requests dissemination of approved components of the EWIRDB for DAF foreign military sales. **(T-0)**.

4.9.2.1. Direct EWIRDB. The direct EWIRDB is a SECRET (REL XXX) product delivered "directly" to an international customer. This product is developed to meet requirements of an international customer that maintains an in-country reprogramming capability. It is only disseminated to countries approved by the US Government to accomplish in-country reprogramming on EW systems sold through foreign military sales or direct commercial sales. A direct commercial sales program that requires support for in-country reprogramming activities must have an associated foreign military sales case to obtain the direct EWIRDB.

4.9.2.2. Indirect EWIRDB. The indirect EWIRDB is a SECRET NOFORN product distributed only to US EW programming facilities (US government and/or US contractor). Other releases will be staffed through appropriate government agencies. **(T-0)**.

4.9.3. Database Release Authority. The US intelligence community and the military services maintain the contents of the EWIRDB and are the release authorities. SAF/IAPW coordinates EWIRDB specific customer requirements and obtains required intelligence community or military service approval for EWIRDB products.

4.9.4. Justification for Database Dissemination to International Customers. SAF/IAPW develops the required justification for the release of EWIRDB products based on a clear understanding of the purpose for the release of data. Advance notice of pending EW systems sales to SAF/IAPW is the most effective way to ensure required foreign military sales data products are developed, produced, and distributed to the appropriate EW reprogramming centers.

4.9.4.1. Direct Commercial Sales Program Justification. US Government intelligence-based data products will be used only under a foreign military sales case to support EW system sales. **(T-0)**. SAF/IAPW begins the development of a database support program for a specific country after a SAF/IA country desk officer develops the appropriate justification for such support and a foreign military sales case is established or an existing one is adjusted. To ensure support is available on a regular basis, SAF/IAPD is alerted to direct commercial sales licenses that offer EW-type systems.

4.9.4.2. Special Justification Requirements. Unless by exception, SAF/IAPD or SAF/IAPW will require additional information from a theater command staff or country team to justify establishing a country-specific database support program. **(T-0)**. This special justification could apply to either a foreign military sales case or direct commercial sales license. Failure to gain the required justification from a theater command staff and country team will result in selective denial of database support for the foreign military sales or direct commercial sales program. This could result in a loss of EW system reprogramming data.

4.9.5. Database Support Development, Release Process for Foreign Military Sales and Direct Commercial Sales Programs. A development and release process is maintained to ensure that correct database products are developed, produced and disseminated to meet foreign military sales or direct commercial sales requirements. **(T-0)**. The process is divided into three phases: Phase I – Release in Principle, Phase II – Development of Database Requirements; and Phase III – Release in Specific. **(T-0)**. The phases are aligned with standard Letter of Offer and Acceptance (LOA) development for foreign military sales cases, but the phases can also be used to support Technical Assistance Agreement/DSP-5 for direct commercial sales programs. **(T-0)**.

4.9.5.1. Phase I – Release in Principle. The Release in Principle is the first phase in development, production and dissemination of foreign military sales EW database products to meet stated EW system requirements. **(T-0)**. An approved Release in Principle stipulates that some degree of support for the country's requirements will be available if and when a foreign military sales case is signed. **(T-0)**.

4.9.5.2. Phase II – Development of Database Requirements. Upon official signature of the foreign military sales case, the second phase begins by accomplishing an analysis of the appropriate area of interest and developing a concise list of radar emitters for that area of interest. **(T-0)**. This list will be SAF/IAPW's recommendation to country representatives during a technical coordination meeting. **(T-0)**. If an adequate list is not developed during or shortly after the technical coordination meeting, there may be a delay in delivery of the database product to the EW reprogramming center. **(T-0)**. After technical coordination meeting completion, the final radar emitter list will be validated against US Government disclosure guidelines prior to phase III initiation. **(T-0)**.

4.9.5.3. Phase III – Release in Specific. The Release in Specific begins immediately after the final radar emitter list is validated. **(T-0)**. This phase establishes a specific release authority from appropriate DoD organizations for parametric data on selected radar emitters. **(T-0)**. SAF/IAPW directs production of the country-specific database once Release in Specific approval is received from appropriate DoD organization. **(T-0)**.

4.9.5.4. Follow-on Data Support. The follow-on database support program complements initial database support and ensures regular updates of data for changing area of interest or requirements. In all cases, the process used, the funding required and the database provided will be the same, as long as guidance and funding is provided in a foreign military sales case. The preferred database support program would be defined as initial plus two follow-on databases with 24-month intervals between the deliveries of the three products.

4.10. Communications.

4.10.1. Foreign military sales EWIR reprogramming centers will maintain a secure communications capability with US government personnel in country or direct to customer points of contact. **(T-3)** These links can provide the necessary connectivity for transmitting text and binary data between the reprogramming center and international customers.

4.10.2. Security of International Transmissions. DoD ensures the establishment of secure transmission channels for the physical transfer of documents, software and data. Electronic transmission is the desired method of transfer. US government personnel supporting international partners will receive and transmit reprogramming software and messages via the SIPRNet or secure communications equipment.

4.11. Foreign Military Sales EWIR Training and Exercise Support.

4.11.1. Foreign military sales EWIR operational and technical training and logistics support is provided from the following organizations:

4.11.1.1. SAF/IAPW provides familiarization on the overall foreign military sales EWIR process and its components.

4.11.1.2. 53 EWG will provide mission data familiarization and operational considerations for international customer use of AF EW equipment. **(T-3)**.

4.11.1.3. Det 1 492 SOW will provide mission data and operations considerations for systems similar to special operations forces and mobility air forces-configured EW equipment. **(T-3)**.

4.11.1.4. AFLCMC/WNY will provide hardware and software familiarization support for assigned systems. **(T-3)**.

4.11.1.5. ACC mobile training teams are available on request of the foreign government (non-interference basis) for in-country instruction on EW subjects, EW systems' operations, and operational considerations.

4.11.1.6. SAF/IAPW, in conjunction with NASIC, provides EWIRDB training support.

4.11.1.7. DAF security assistance training develops and provides foreign military sales training plans.

4.11.2. DAF directed EW reprogramming exercises may include allied and friendly nations to demonstrate AF support and provide training.

S. CLINTON HINOTE, Lt Gen, USAF
DCS, Strategy, Integration, and Requirements

(51FW)

RYAN B. LEY, Colonel, USAF
Commander

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

DoD Directive 5250.01, *Management of Intelligence Mission Data (IMD) in DoD Acquisition*, 22 January 2013

DoD Instruction 5000.85, *Major Capability Acquisition*, 6 August 2020

DoD Instruction 5530.03, *International Agreements*, 4 December 2019

DoD Instruction 8320.05, *Electromagnetic Spectrum Data Sharing*, 18 August 2011

CJCSI 3210.04A, *Joint Electronic Warfare Reprogramming Policy*, 10 February 2011

CJCSI 3320.01D, *Joint Electromagnetic Spectrum Operations (JEMSO)*, 21 January 2013

CJCSM 3212.02E, *Performing Electronic Attack in the United States and Canada for Tests, Training, and Exercises*, 17 June 2019

Joint Publication 3-85, *Joint Electromagnetic Spectrum Operations*, 22 May 2020

DAFPD 10-7, *Information Operations*, 4 August 2014

DAFPD 63-1/20-1, *Integrated Life Cycle Management*, 7 August 2018

AFI 10-706, *Electronic Warfare (EW)*, 14 May 2014

AFI 17-220, *Spectrum Management*, 16 March 2017

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

AFI 51-403, *International Agreements*, 8 February 2019

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

(Added-51FW) DAFMAN 11-415, *Weapons and Tactics Programs*, 1 August 2023

(Added-51FW) DAFMAN10-703, *Electromagnetic Warfare Integrated Reprogramming*, 2 June 2021

DAFI 33-360, *Publications and Forms Management*, 7 August 2020

AFMAN 16-101, *Security Cooperation (SC) and Security Assistance (SA) Management*, 2 August 2018

AF Doctrine Annex 3-51, *Electromagnetic Warfare and Electromagnetic Spectrum Operations*, 30 July 2019

Memorandum of Agreement on 53 EWG and AFLCMC/WNYI Foreign Military Sales Mission Data Programming, 13 June 1997

Prescribed Forms

(Added-51FW) 51FW Form 101, *Pacerware Loading Tracker*

None

Adopted Forms

AF Form 847, *Recommendation for Change of Publication*

AF Form 1067, *Modification Proposal*

Abbreviations and Acronyms

(Added-51FW) 51 OSS—51st Operations Support Squadron

(Added-51FW) AAED—Advanced Airborne Expendable Decoy

ACC—Air Combat Command

AETC—Air Education and Training Command

AFGSC—Air Force Global Strike Command

AFI—Air Force Instruction

AFLCMC—Air Force Life Cycle Management Center

(Added-51FW) AFMAN—Air Force Manual

AFMC—Air Force Materiel Command

AFOTEC—Air Force Operational Test and Evaluation Center

AFRC—Air Force Reserve Command

AFSAC—Air Force Security Assistance Center

AFSOC—Air Force Special Operations Command

AMC—Air Mobility Command

AMC/OL-A—Air Mobility Command EW reprogramming center

ANG—Air National Guard

CJCSI—Chairman of the Joint Chiefs of Staff instruction

CJCSM—Chairman of the Joint Chiefs of Staff manual

(Added-51FW) CMDS—Countermeasures Dispenser System

DAF—Department of the Air Force

DAFMAN—Department of the Air Force Manual

DIA—Defense Intelligence Agency

DoD—Department of Defense

DoDD—Department of Defense Directive

DoDI—Department of Defense Instruction

(Added-51FW) ECM—Electronic Countermeasures

(Added-51FW) ECP—Electronic Combat Pilot

EMS—Electromagnetic Spectrum

EW—electromagnetic warfare
EWASIF—Electronic Warfare Avionics Integration Support Facility
EWIR—electromagnetic warfare integrated reprogramming
EWIRDB—electronic warfare integrated reprogramming database
(Added-51FW) EWO—Electromagnetic Warfare Officer
(Added-51FW) EWOC—Electronic Warfare Officers Course
(Added-51FW) FGS—Fighter Generation Squadron
FLDCOM—field command
HAF—Headquarters Air Force
HQ—headquarters
IMD—intelligence mission data
(Added-51FW) IMP—Implementation Message
JP—joint publication
MAJCOM—major command
(Added-51FW) MIM—Maintenance Instruction Message
(Added-51FW) MOC—Maintenance Operations Center
(Added-51FW) MSDDS—Multi-Service Data Distribution System
MSIC—Missile and Space Intelligence Center
NASIC—National Air and Space Intelligence Center
NSA—National Security Agency
OFP—operational flight program
OPR—office of primary responsibility
POC—point of contact
(Added-51FW) PW—Pacer Ware
(Added-51FW) RC—Reprogramming Center
RF—Radio Frequency
(Added-51FW) RIM—Reprogramming Impact Message
(Added-51FW) RWR—Radar Warning Receivers
SA—security assistance
SAF—Secretary of the Air Force
(Added-51FW) SB—Serene Byte
SC—security cooperation
SIGINT—signals intelligence

(Added-51FW) **SIM**—System Impact Message

SIPRNet—SECRET Internet Protocol Router Network

SpOC—Space Operations Command

(Added-51FW) **TCTO**—Time Compliance Technical Order

USSF—United States Space Force

(Added-51FW) **WAM**—Wing Avionics Manager

Terms

Block Cycle—In this process the reprogramming center receives software change requests from the user, and other change requests from organizations, which are associated with the software process. The reprogramming center evaluates these requests and identifies potential solutions. When the user determines that sufficient changes have been identified to justify the expense of an update, the reprogramming center implements the software changes. Changes are scheduled based on the criticality of the requirement, with routine updates generally occurring approximately every 18 months for operational flight programs and mission data.

BLUE—Term used to describe the platforms, systems or the electromagnetic characteristics of systems associated with US military users (see [Attachment 3](#) for complete description).

Characteristics and Performance Data—Developed from parametric data and detailed analysis of all-source intelligence, characteristics and performance data provide descriptive characteristics used to define the system, its capabilities, and its behaviors. Examples of characteristics and performance data include antenna patterns, radio frequency, electro-optical or infrared signatures, electromagnetic protection capabilities, and maximum detection range.

All—source derived assessments of foreign military system capabilities and physical attributes. (DoDD 5250.01)

Community On—Line Intelligence System for End-Users and Managers—The Defense Intelligence Agency (DIA) on-line production and requirements management system. It provides the mechanism for registering and validating requirements, deconflicting requirements, and assigning and scheduling production within production centers under the purview of DIA. It provides the ability to track and manage production activities across operational and national planners and consumers. Production requirements and requests for information are used in Community On-Line Intelligence System for End-Users and Managers to register the intelligence product or service requirement and to assign the requirement to the appropriate production center(s).

Electromagnetic Environment—The resulting product of the power and time distribution, in various frequency ranges, of the radiated or conducted electromagnetic emission levels encountered by a military force, system, or platform when performing its assigned mission in its intended operational environment.

Electromagnetic Warfare (EW)—Any military action involving the use of electromagnetic and directed energy (DE) to control the electromagnetic spectrum or to attack the enemy. The three major subdivisions within EW are: electromagnetic attack, electromagnetic protection, and electromagnetic warfare support.

Electromagnetic Warfare Integrated Reprogramming (EWIR)—The process that fully integrates operations, intelligence, communications, logistics, and other support functions to provide changes to reprogrammable electronic warfare equipment hardware and software, tactics, and equipment settings. EWIR gives the Department of the Air Force a clear and comprehensive picture of tasks, data, staffing, and the interrelationships between the agencies that reprogram EW equipment. This process forms the basis for developing Air Force procedures, organizations, facilities, and expertise to ensure responsive EW reprogramming during peacetime, wartime, and contingencies.

Electronic Warfare Integrated Reprogramming Data Base (EWIRDB)—The EWIRDB is a database that contains parametric and select characteristics and performance data describing EW systems. It is the primary source for mission and reprogramming data. It is the primary DoD approved source for technical parametric and performance data on non-communications electronic emitters and associated systems. Scientific and technical intelligence and other centers (including NASIC, National Ground Intelligence Center, National Maritime Intelligence Center, MSIC, 453 EWS, 57 IS and NSA) provide the data to NASIC for inclusion in the database. The EWIRDB includes threat, neutral military, and friendly and commercial system mission data.

EWIR Data—All-source derived data describing observed and assessed radio frequency parametric data.

Fit Data—Information about the internal and external equipment associated with a particular platform. For example, knowledge of a specific grouping of aircraft avionics hardware and software and how the components work together, provides the avionics fit for that platform. Knowing the grouping (configuration) of the hardware and software helps to make the fit. Similarly, having knowledge of the different possible weapon, launcher or fuel tank load combinations on an aircraft contributes to the weapons fit for that platform.

Flagging—The process of identifying emissions whose parameters are outside of prescribed limits. There are two methods: parametric-based flagging or model-based flagging. Parametric-based flagging consists of comparing observed parametric data to the database of known emitter parameters. Model-based flagging consists of using software-based models to analyze an EW system's response to observed parametric data. 453 EWS maintains automated flagging tools for both methods.

GRAY—Term used to describe the platforms, systems or the electromagnetic characteristics of systems associated with non-US, non-hostile military users (see [Attachment 3](#) for complete description). Examples:

Countries or coalitions traditionally identified as US allies (UK, CAN, AUS, NATO, etc.). Countries or coalitions identified as neutral or unknown in their alliance with US. US systems sold to other countries through foreign military sales or similar processes. Different organizations may be assigned different parts of GRAY to comply with existing laws and DoD, joint or service policies.

Implementation Message—MAJCOM, joint forces air and space component commander, combined forces air and space component commander, or air operations center approval to load a change that the reprogramming centers have made to electromagnetic warfare systems and sent to the units.

Intelligence Community—The term "intelligence community" includes the following:

- (A) The Office of the Director of National Intelligence.
- (B) The Central Intelligence Agency.
- (C) The National Security Agency.
- (D) The Defense Intelligence Agency.
- (E) The National Geospatial-Intelligence Agency.
- (F) The National Reconnaissance Office.
- (G) Other offices within the Department of Defense for the collection of specialized national intelligence through reconnaissance programs.
- (H) The intelligence elements of the Army, the Navy, the Air Force, the Marine Corps, the Coast Guard, the Federal Bureau of Investigation, the Drug Enforcement Administration, and the Department of Energy.
- (I) The Bureau of Intelligence and Research of the Department of State.
- (J) The Office of Intelligence and Analysis of the Department of the Treasury.
- (K) The Office of Intelligence and Analysis of the Department of Homeland Security.
- (L) Such other elements of any department or agency as may be designated by the President, or designated jointly by the Director of National Intelligence and the head of the department or agency concerned, as an element of the intelligence community.

International Agreement—As used in this instruction, the term International Agreement has the same meaning as defined in Attachment 1 of AFI 51-403.

Mission Data—Elements or files a processor employs to perform signal discrimination, threat warning, target a threat, or elicit countermeasure responses, such as jamming or expendables, which are selectable, adaptable, or changeable by the using command with the exception being foreign military sales customers. Mission data is also called emitter identification data, mission data file, pre-flight message, code form message, or other related names that vary in function according to the system using them.

Missionware—A combination of software applications and tailored mission data intended to generate effects within a given mission or series of missions. Missionware possesses properties of both traditional mission data and OFPs. For example, Mission data supporting MW may be written in various languages and consist of diverse data sets. Some data sets may be specific to a given application and some may be shared across different applications. It may be applied across multiple hardware sets and is not tightly tied to any one particular hardware system at the pre-mission planning level although it may require manipulation at some point to account and correct for unique RF chain configurations and sensitivities.

Multi-Service Data Distribution System—The Multi-Service Data Distribution System is a means of transmitting digital data and EWIR message traffic to operational locations. Normally, data and messages are available on the Multi-Service Data Distribution System almost simultaneously with their transmission over SIPRNet. The Multi-Service Data Distribution System uses secure communications equipment to transmit digital data, via commercial or Defense Switch Network voice lines, or SIPRNet, from reprogramming centers directly to operational locations

which possess like equipment and appropriate communications software. Since the Multi-Service Data Distribution System is a "pull" system, units must be notified by message or telephone that new mission data software has been loaded on the Multi-Service Data Distribution System. **(T-3)**. The Multi-Service Data Distribution System provides a backup for the transmission of reprogramming data and EWIR message traffic.

National SIGINT Requirements Process—An integrated system of policies, priorities, procedures and technology used by the intelligence community to manage requests for national level SIGINT products and services. SIGINT collectors satisfy tactical through national level consumer information needs based on national SIGINT requirements process guidance. Information need statements are used in the national SIGINT requirements process to relay collection requirements to SIGINT collectors.

Operational Change Request—A formal request to the appropriate major command and support command facilities that identifies the inability of an electromagnetic warfare system to meet operational requirements. In emergencies, an operational change request identifies the inability to discriminate or respond to a threat and then requests mission data or operational flight program changes to correct the problem.

Operational Flight Program—The executable program resident in computer-controlled electromagnetic warfare systems that contains the algorithms that receive, identify, process, and do jamming tasks. This program does not contain any threat-specific data, and operational commands cannot change the program. The reprogramming centers send a software change message to Air Force Materiel Command to get an operational flight program modified.

Operational Reconnaissance (OPS RECCE)—A tactic to deliberately leverage sensor capabilities on primarily strike aircraft to increase battlespace awareness and lethality beyond those for which the sensors were originally intended. Source: Annex 2-0, Global Integrated Intelligence, Surveillance & Reconnaissance Operations, Appendix C Multi-Role Aircraft with an ISR Mission, 29 Jan 2015.

Operational Reprogramming Centers:	EW Systems
53EWG	Bomber, fighter, reconnaissance and foreign military sales systems
Det 1 492 SOW	Air Mobility and Air Force Special Operations Forces
AMC/OL-A	Airlift and tanker systems
Support RCs	EW Systems:
AFLCMC/WNY	All US systems
AFLCMC/WNYI	Foreign military sales systems

PACER WARE—The term for actual electromagnetic warfare system changes issued during peacetime, contingencies, or wartime operations. PACER WARE actions can be at the routine, urgent, or emergency level as required.

PACER WARE Database—53 EWG, working with Det 1 492 SOW Reprogramming Center, developed a secure unclassified website to manage and distribute AF PACER WARE information. This common access card-enabled database acts as a focal point for all AF EWIR unit account information and message release data. Accessible 24/7 by users worldwide, the PACER WARE Database provides a backup to other EWIR communication channels. This system ensures units receive critical updates when SIPRNet channels are unavailable. The database may be accessed at: [Error! Hyperlink reference not valid.](#)

PACER WARE Messages—PACER WARE messages templates and procedures (operational change request, system impact message, reprogramming impact message, maintenance instruction message, time compliance technical order, implementation message, system change message, and unit loading message) are located on the classified Multi-Service Data Distribution System (EWIR_OPS_PW_MSG_Templates library) and unclassified PACER WARE database at [Error! Hyperlink reference not valid.](#)

Parametric Data—Directly measurable factors, such as frequency, pulse width, or polarization that help to define a system or waveform and determine its behavior. They are data elements that describe specific properties and timing. Some parametric data are expressed as a mean value, or range of values.

Rapid Reprogramming—The term used to describe the method to reprogram EW systems in a time sensitive manner.

RED— Term used to describe the platforms, systems or the electromagnetic characteristics of systems associated with hostile (non-US) users (see **Attachment 3** for complete description).

Reprogramming—Changes made to EW system software, such as mission data file or operational flight program changes which alter programmed look-up tables, threat libraries, or signal-sorting routines; hardware, such as long-term system modifications; or tactics, such as procedures, equipment settings, or EW mission planning data changes. These changes are made to enable an operational commander to respond to changes in enemy threat systems, tailor equipment to meet unique theater requirements, and to adjust to changing mission requirements.

Reprogramming Center—A term used to refer to centers which plan, design, test, and field updates to mission data and operational flight programs. Operational reprogramming centers are responsible for mission data while Support reprogramming centers are responsible for operational flight programs.

Security Assistance Program—A program designed to provide assistance, such as training, weapons, or hardware to a foreign government for furthering the US national security strategy.

SERENE BYTE—The nomenclature for exercising Air Force electromagnetic warfare system changes.

Service Production Center—Organizations responsible for updating and maintaining assigned emitters in EWIRDB. Emitter assignments are based primarily on areas of expertise. Service production centers provide system-specific technical information to theater intelligence centers and reprogramming centers. The following are the service production centers: National Ground Intelligence Center; Office of Naval Intelligence; Marine Corps Intelligence Activity; National Air and Space Intelligence Center; and 57th Intelligence Squadron.

Signature—A distinctive characteristic or set of characteristics that consistently recurs and identifies a piece of equipment, material, activity, individual, or event, such as a radio frequency or acoustic characteristics.

Software Validation—Integration, testing, and evaluation performed at the system or subsystem level to ensure the final program satisfies system specifications and user or supporting command requirements.

Specific Emitter Identification—A method to unambiguously identify a particular emitter or class of emitters by exploiting unintentional or unique features of the emitter signal.

Threat Change Messaging Portal—A SIPRNet-based software portal used for the purpose of facilitating the threat change validation process. This portal permits threat change validation request submittal from reprogramming centers of all military services and threat change validation message replies from participating service production centers, scientific and technical intelligence centers, information warfare centers, service components, and observed signal centers. When operational, the portal is the preferred messaging system for threat change validation request or other message traffic. When non-operational, legacy threat change validation request or other message traffic system and methods apply. The EWIRDB Program Management Office at DIA MSIC maintains this portal. The threat change messaging portal is located at <http://www.msic.dia.smil.mil/tcmp>.

Threat Change Validation—An EWIR intelligence community process for providing validation assessments on suspected EW threat changes to the reprogramming centers so that a valid reprogramming decision can be made.

Verification—Process of comparing two levels of an information system specification for proper correspondence, such as a security policy model with top-secret specification, a top-level specification with source code, or source code with object code.

WHITE— Term used to describe the platforms, systems or the electromagnetic characteristics of systems associated with non-military, non-hostile users (see Attachment 3 for complete description).

Attachment 2

EWIR COMMITTEE MEMBERSHIP MATRIX

Table A2.1. EWIR Oversight Committee and Subcommittee Membership Matrix.

Organization	Oversight	Communication Requirements Subcommittee
AF/A5L	C	I
AF/A2OCS	X	
AF/A2DP	X	
NASIC/ADE	X	
EWIRDB Technical Manager	X	
AF/A26/6CD	I	X
SAF/IAPD	X	X
SAF/IAPW	X	X
ACC		
ACC/A3/2/6KL	X	X
16 AF	I	
57 IS	X	X
53 EWG	X	X
68 EWS	X	C
16 EWS	X	X
36 EWS	X	X
53 CSS	X	X
453 EWS	X	X
513 EWS	X	X
AFGSC		
AFGSC/A3T	X	X
AFMC		
AFLCMC/WNY (EWAISF)	X	X
AFLCMC/WNYI (Int'l Programs Branch)	X	X
AFSOC		
Det 1 492 SOW	X	X
A3T	X	
A4M	I	
A6T		X
AMC		
A3TW	X	
A4M	X	
DIA/MSIC (EWIRDB PMO)	I	
NSA ADD/TSE	I	

Note 1:

C = Chairperson

I = Invitee, non-voting

X = Member, voting

Note 2: In accordance with the Charter for the EWIR Communications Requirements Subcommittee, the Subcommittee's purpose is to ensure new and existing reprogramming support equipment will support EWIR. The Subcommittee ensures communications capabilities will adequately support current and future connectivity to common users, base-level, and long-haul systems. Additionally, the Subcommittee focuses on requirements to drive recommended technical solutions for communications connectivity among reprogramming centers, 453 EWS, 57 IS, intelligence support agencies, MAJCOMs, joint or combined forces air component commanders, air operations centers, EW cells and the wings or groups.

Attachment 3

EWIR DATA TYPES

A3.1. Data Types. An effective EWIR process requires accurate signal and system information, not all of which can be actively collected or processed by a single organization. Over many years US laws, policies, and DoD, joint and service guidance have created divisions of authority and responsibility, leading to the development of several data types, or colors (RED, GRAY, BLUE, WHITE), with different communities (operations, acquisition, intelligence) responsible for different colors. To ensure that the DAF EWIR process obtains and disseminates all required information, **Table A3.1** defines the different data colors. **NOTE:** The type and color terms are for planning, development and resource allocation purposes only--what is WHITE today may become RED if hostile forces employ a commercially available system. Systems may have more than one color. For example, if a currently fielded BLUE military system is sold to a GRAY country but then political circumstances change and that country employs that system in a hostile manner, that system is now both BLUE and RED. Differences in configuration will likely still exist between the BLUE and RED version even though they are the same basic system. Also, the US military may use the same commercial (WHITE) system a hostile user (RED) employs. If the US military is a user, those systems are BLUE, the hostile used systems are RED and if there are commercial users those systems are WHITE.

Table A3.1. EWIR Color Codes.

TERM	DEFINITION
Color Code User Code	Indicates the general user category of a related set of entities or objects. Can apply to a set of platoons, a set of platforms, or a set of sensor systems. The current codes are RED, BLUE, GRAY, and WHITE.
RED	Associated with hostile (non-US) users.
BLUE	Associated with US military users.
GRAY	<p>Associated with non-US, non-hostile military users. Examples: Countries or coalitions traditionally identified as US allies (UK, CAN, AUS, NATO, etc.).</p> <p>Countries or coalitions identified as “neutral” or “unknown” in their alliance with US.</p> <p>US systems sold to other countries through foreign military sales or similar processes.</p> <p>Literally, a “gray” area, where rules, responsibilities, and collection authorities require significant attention to law and policy detail.</p> <p>Different organizations may be assigned different parts of GRAY to comply with existing laws and DoD, joint or service policies.</p>
WHITE	Associated with non-military, non-hostile users.
<p>Note: US Government systems that do not fall under the US Military, such as Drug Enforcement Agency systems are considered as WHITE.</p> <p>Note: Can be divided into US-WHITE and NON-US-WHITE if needed.</p>	

Table A3.2. EWIR User Codes.

TERM (User Code)	DEFINITION
US Military	US Army, US Navy, US Air Force, US Space Force, US Marine Corps, and US Coast Guard.
Non-US Military	Any military service that is not organized under the US Government.
Hostile Users	Non-US users treated as threatening to US sovereignty or US people. Note: No US users are treated as hostile.
Non-hostile Users	US or Non-US users treated as non-threatening to US sovereignty or people.

Table A3.3. EWIR Data Types and Colors.

User Characteristics	US	NON-US	
	NON-HOSTILE		HOSTILE
MILITARY	BLUE	GRAY	RED
NON-MILITARY	WHITE		

A3.2. Data Color Example. Assume the XYZ system is used by US and Country X military forces. Country X is non-US + non-hostile. Overall, the XYZ system can be described as BLUE+GRAY. That is, there are BLUE XYZ systems and GRAY XYZ systems, which may not be identical. The EWIR organization(s) responsible for BLUE data would be responsible for the BLUE version of XYZ; the EWIR organization(s) responsible for GRAY data would be responsible for the GRAY version of XYZ. To the maximum extent possible, the BLUE and GRAY organizations would collaborate to share or compare data across the versions of the XYZ system. Each organization would ensure that each data set is updated over time as the system(s) are changed or upgraded.

A3.3. Data Color Designation and Assignment. Much of the information required for the DAF EWIR process is based on the work of the intelligence community, which has established lanes in the road for assigning (primarily RED) systems to various production centers. For other systems not explicitly assigned within the intelligence community (primarily BLUE, GRAY or WHITE), AF/A5L will coordinate with AF/A2/6, NSA, DIA, 57 IS, NASIC, and other organizations to ensure all required systems are assigned a data OPR consistent with current guidance and organization missions. In general:

A3.3.1. RED systems are assigned to appropriate production centers for collection and analysis, with refinement or validation of data made by other supporting EWIR organizations.

A3.3.2. BLUE system, aircraft signature and antenna pattern data are generated and updated by operations, program offices (in association with the system vendors), and the 57 IS for addition to US Electromagnetic Systems and Blue Airborne Target Signatures databases, as applicable. BLUE data can then be merged into EWIRDB.

A3.3.3. GRAY systems and data issues must be handled on a case-by-case basis. **(T-3)**. Options include:

A3.3.3.1. Countries or coalitions traditionally identified as US allies may voluntarily provide information to support the EWIR process. Information can then be added directly into EWIRDB, or merged from other EWIR-related databases.

A3.3.3.2. Countries or coalitions identified as “neutral” or “unknown” in their alliance with the US may be assigned to appropriate production centers for collection and analysis, with refinement or validation of data made by other supporting EWIR organizations.

A3.3.3.3. GRAY data for US systems being sold to other countries (through foreign military sales or similar processes) are generated by the program office (in association with the system vendor) and provided to 57 IS before the system leaves US control. Once the foreign military sales system is outside of US control, system data and update responsibilities may be transferred to a production center, as applicable.

A3.3.4. WHITE data must also be evaluated on a case-by-case basis. **(T-3)**. Information may be provided by or purchased from the commercial vendor(s), or system may be assigned to appropriate production centers for collection and analysis, with refinement or validation of data made by other supporting EWIR organizations in accordance with intelligence oversight guidance. Information can then be added directly into EWIRDB, or merged from other EWIR-related databases.

Attachment 4 (Added-51FW)

EWIR PHONE LIST

Figure A4.1. (Added-51FW) EWIR Phone List.

AGENCY	CONTACT	OFFICE SYMBOL	PHONE
51 Operations Group Commander	Same	51 OG/CC WOC DSN WOC VOSIP	784-1467 784-3276 305-784-5280
Mission Director	Same	WOC DSN WOC VOSIP	784-9802 305-784-5280
51 FW Command Post	Shift Supervisor	51 FW/CP VOIP VOSIP	784-7000 784-7910 305-784-5031
Maintenance Operations Center	MOC Senior Coordinator	51 MXG/MXOC	784-4105 784-5095 (STE)
51 FW Electronic Combat Pilot (ECP)	Same	51 OSS/OSK VOSIP	784-9810 305-784-5290
35 Fighter Squadron ECP	Same	35 FS/DOW	784-5020
35 FGS Specialist Section	Any Avionics NCO	35 FGS/MXAQS	784-2594 784-0580
36 Fighter Squadron ECP	Same	36 FS/DOW VOSIP	784-9672 305-784-5191
36 FGS Specialist Section	Any Avionics NCO	36 FGS/MXAQS	783-3682
Electronic Warfare Systems Section (ECM Back shop)	Shift Supervisor	51 MXS/MXMVP	784-2283 784-4881 784-6648
MXG EW Program Manager	Wing Avionics Manager (WAM)	51 MXG/QA	784-6359 487-4215
Contact 51 FW ECP with any phone number changes.			