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OF THE AIR FORCE**

**DEPARTMENT OF THE AIR FORCE
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Operations

**ELECTROMAGNETIC PULSE
SURVIVABILITY PROGRAM**

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This Department of the Air Force (DAF) Instruction (DAFI) implements Air Force Policy Directive (AFPD) 10-26, *Countering Weapons of Mass Destruction*. It is consistent with AFPD 10-24, *Mission Assurance*, AFPD 13-5, *Air Force Nuclear Mission*; Air Force Instruction (AFI) 10-2607, *Air Force Chemical, Biological, Radiological, and Nuclear (CBRN) Survivability*; AFI 13-500, *Air Force Nuclear Mission Responsibilities*; and AFI 63-101/20-101, *Integrated Life Cycle Management*. This instruction establishes the DAF Electromagnetic Pulse (EMP) Program and the roles and responsibilities to ensure it is integrated into the planning, programming, budgeting, and execution process. This publication applies to members of the United States Space Force (USSF), Regular Air Force, the Air Force Reserve, and the Air National Guard, specifically personnel who develop, manage or operate CBRN mission-critical systems and/or infrastructure requiring EMP survivability in order to operate in and through, or quickly recover from an EMP event. Ensure all records generated as a result of processes prescribed in this publication adhere to AFI 33-322, *Records Management and Information Governance Program*, and are disposed in accordance with the Air Force Records Disposition Schedule, which is located in the Air Force Records Information Management System. Refer recommended changes and questions about this publication to the Office of Primary Responsibility using Air Force Form 847, *Recommendation for Change of Publication*; route Air Force Forms 847 from the field through the appropriate functional chain of command. The authorities to waive wing/unit-level requirements will be identified by Tier Number (“T-0, T-1, T-2, T-3”) following the compliance statement. See DAFI 33-360, *Publications and Forms Management*., for a description of the authorities associated with

the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the requestor's commander for non-tiered compliance items. This publication may be supplemented, further implemented, or extended. Compliance with [attachment 1](#) in this publication is mandatory.

Chapter 1—INTRODUCTION	4
1.1. Background.....	4
1.2. Implementation.....	4
1.3. Objectives.....	5
Chapter 2—ROLES AND RESPONSIBILITIES	6
2.1. Secretary of the Air Force (SecAF).....	6
2.2. Chief of Staff of the Air Force (CSAF).....	7
2.3. Chief of Space Operations (CSO).....	10
2.4. Director, Air National Guard (ANG/CC) will.....	11
2.5. Commanders of MAJCOMs, FLDCOMs, Direct Reporting Units, and Field Operating Agencies.....	11
Chapter 3—GOVERNANCE	17
3.1. Overview.....	17
3.2. Air Force Governance Process.....	17
3.3. DAF Senior EMP Working Group (SEWG).....	17
3.4. Reporting.....	18
3.5. Mission Assurance Working Group (MAWG) and Mission Assurance Coordination Board (MACB).....	18
Chapter 4—REQUIREMENTS	19
4.1. Overview.....	19
4.2. Weapon Systems and Aircraft.....	19
4.3. Facilities and Infrastructure.....	20
4.4. Types of Tests.....	22
Chapter 5—RISK DECISION	23
5.1. Waiver Process.....	23
5.2. Waiver Cancellation Process.....	23
5.3. A temporary waiver is granted to.....	23
Attachment 1—GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION	24

Chapter 1

INTRODUCTION

1.1. Background.

1.1.1. An electromagnetic pulse (EMP) has the capability to significantly disrupt, degrade, and damage electronic technology, critical measurement, and critical infrastructure systems. Human-made or naturally occurring (i.e., solar-induced space weather) EMPs can affect large geographic areas, disrupting elements critical to the Nation's security and economic prosperity, and could adversely affect global commerce and stability.

1.1.2. The effects of an EMP range from temporary disruption of electronics technology and its functionality, to damaging specific electronic components, to disruption of the national electric power grid, to degradation of position, navigation, and timing. It has the capability to produce significant damage to critical platforms and infrastructure, as well as the ability of the United States to project influence and military power. Protecting against these effects is a critical requirement each mission owner must consider and plan for as they evaluate their ability to perform required operations during and after EMP events.

1.2. Implementation.

1.2.1. To implement AFD 10-26 and mitigate the effects of an EMP event, human-made or natural, this program provides the framework for EMP testing hardness maintenance and hardness surveillance (HM/HS) to ensure systems and facilities are acquired, developed, constructed, and sustained in accordance with established EMP survivability Military Standards (MIL-STD). The DAF will:

1.2.1.1. Design, test, and certify new mission-, safety-, and flight-critical systems, equipment, critical facilities, and infrastructure, in accordance with AFI 10-2607 and AFI 99-103, *Capabilities-Based Test and Evaluation*, for EMP survivability during the acquisition or design/construction process.

1.2.1.2. Once constructed, sustain and periodically test the EMP survivability of the systems and infrastructure, in accordance with AFI 10-2607 and AFD 10-24.

1.2.1.3. Assess legacy and existing mission-, safety-, and flight-critical systems, equipment, critical facilities, and infrastructure; and ensure the most feasible approach for EMP survivability, including but not limited to retrofit, hardening hangars and storage facilities, or rapid replacement of affected components and platforms.

1.2.1.4. Train personnel at all levels to understand the unique requirements placed upon mission-critical systems and infrastructure.

1.2.1.5. Comply with EMP hardness technical requirements for both systems and infrastructure, as defined by MIL-STDs (See [Attachment 1](#)).

1.2.2. For purposes of this instruction, a mission-critical system is defined as a system whose operational effectiveness and operational capacity are essential to successful mission completion or to aggregate residual combat capability. If this system fails, the mission likely cannot be completed. Such a system can be an auxiliary or supporting system, as well as a primary mission system.

1.2.3. The ultimate goal of the EMP Program is to provide a realistic assessment of operational survivability and endurance through an EMP event. This includes self-assessments, assessment and certification through the Integrated CBRN Survivability and Endurability Certification and Assessment Program for applicable units, and ultimately, certainty of endurance for critical infrastructure.

1.3. Objectives.

1.3.1. Identify roles and responsibilities for EMP Program to include:

1.3.1.1. Verification, and implementation of shortfall mitigation;

1.3.1.2. Establishing a methodology for EMP test prioritization;

1.3.1.3. Establishing EMP HM/HS programs for DAF capabilities to include systems and facilities; and

1.3.1.4. EMP survivability planning, programming, and budgeting

1.3.2. Define a governance process to:

1.3.2.1. Report and characterize specific mission risks associated with not complying with EMP testing and analysis.

1.3.2.2. Identify EMP survivability shortfalls associated with all systems and facilities requiring EMP survivability.

1.3.3. Identify education and training requirements for human-made and naturally occurring EMP effects, vulnerabilities, and mitigation measures.

1.3.4. Establish/clarify EMP protection standards and critical prioritizations for mission design series aerospace vehicles, support equipment, facilities, and nuclear command, control, and communications (NC3).

Chapter 2

ROLES AND RESPONSIBILITIES

2.1. Secretary of the Air Force (SecAF).

2.1.1. Assistant Secretary of Air Force for Acquisition, Technology, and Logistics (SAF/AQ) and Assistant Secretary of the Air Force for Space Acquisition and Integration (SAF/SQ) will:

2.1.1.1. Ensure Program Executive Offices (PEOs) comply with established EMP survivability requirements as identified by the Lead Command (e.g., Joint Capabilities Integration and Development System (JCIDS)). Report EMP survivability shortfalls or risk acceptance to the Lead Command and Air Force Global Strike Command (AFGSC).

2.1.1.2. Ensure Program Managers develop, program for, and execute activities required to comply with EMP requirements.

2.1.1.3. Ensure Program Managers report requirement compliance status through the Lead Command to AFGSC, Air Force Materiel Command (AFMC), and Space Systems Command (SSC) in accordance with procedures established by the Senior EMP Working Group (SEWG). See [Chapter 3](#).

2.1.1.4. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.1.2. Assistant Secretary of the Air Force for Financial Management and Comptroller (SAF/FM) will serve as the appropriations, programming, and financial management representative to participate in the SEWG.

2.1.3. Deputy Under Secretary of the Air Force for International Affairs (SAF/IA) will:

2.1.3.1. Manage international interests regarding EMP requirements in Foreign Military Sales and other Security Cooperation activities.

2.1.3.2. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.1.4. Assistant Secretary of the Air Force for Installations, Environment and Energy (SAF/IE) will:

2.1.4.1. Serve as the Installation, Environment, and Energy representative for the EMP Program and serve as the office of primary responsibility (OPR) for programs and activities under their purview.

2.1.4.2. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.1.5. The Air Force Inspector General (SAF/IG) will:

2.1.5.1. Ensure the Air Force Inspection System supports unit, United States Air Force (USAF) Major command (MAJCOM), and USSF Field command (FLDCOM) independent, risk-based inspection and assessment of critical combat missions and weapon systems linked to the EMP Program.

2.1.5.2. Ensure the Air Force Inspection System supports independent, risk-based DAF-, MAJCOM-, and FLDCOM-level management inspection and assessment of the overall effectiveness and efficiency of the EMP Program.

2.1.5.3. Advise the SEWG on DAF inspection policy in accordance with AFPD 90-2, *Inspector General-The Inspection System*, and, as necessary, provide easy access to inspection feedback on unit EMP survivability, unit capability assessments, and overall effectiveness of the DAF EMP Program.

2.1.5.4. The Inspector General, Office of Special Investigations, shall provide proactive and comprehensive counterintelligence support.

2.2. Chief of Staff of the Air Force (CSAF).

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

2.2.1.1. Provide policy, guidance, and oversight for operations, training, and sourcing of USAF intelligence, surveillance, reconnaissance, and cyber effects capabilities and personnel to counter EMP operations.

2.2.1.2. Provide comprehensive and timely reporting of potential foreign threat incidents, events and trends to the SEWG.

2.2.1.3. Plan, program, and budget for resources to support DAF countering EMP activities.

2.2.1.4. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.2.2. Deputy Chief of Staff for Operations (AF/A3) will:

2.2.2.1. Manage and maintain overall responsibility for implementing Mission Assurance and the Mission Assurance Construct, including managing risk to the USAF Defense Critical Infrastructure (DCI) list, in accordance with AFPD 10-24 and DoD Manual (DoDM) 3020.45-V1, *Defense Critical Infrastructure Program (DCIP) Management*. (T-0)

2.2.2.2. Advocate for Continuity of operations (COOP) program planning in accordance with AFI 10-208, *Continuity of operations (COOP) Program*.

2.2.2.3. Ensure Mission essential tasks are developed to facilitate deficiency reporting in Defense Readiness Reporting System (DRRS), in accordance with AFI 10-201, *Force Readiness Reporting*.

2.2.2.4. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.2.3. Deputy Chief of Staff for Logistics, Engineering, and Force Protection (AF/A4) will:

2.2.3.1. Integrate established EMP HM/HS requirements for mission critical facilities and infrastructure in the appropriate maintenance and logistics guidance.

2.2.3.2. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.2.4. Deputy Chief of Staff for Strategy, Integration, and Requirements (AF/A5/7) will:

2.2.4.1. Advise the SEWG on strategic requirements and provide recommendations on the integration of countering EMP operational requirements in accordance with AFI 10-601, *Operational Capability Requirements Development and Validation*.

2.2.4.2. Represent the USAF to the joint community on countering EMP operational requirements through the JCIDS and the Joint Requirements Oversight Council (JROC) in accordance with AFI 10-601.

2.2.4.3. Integrate considerations for EMP effects into support for Strategic Analysis products (e.g., scenarios, concepts of operation, and multi-service force deployments), in accordance with DoDD 8260.05, *Support for Strategic Analysis (SSA)*. (T-0)

2.2.4.4. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.2.5. Deputy Chief of Staff for Plans and Programs (AF/A8) will:

2.2.5.1. Support USAF planning, programming and allocation of associated resources for the EMP Program.

2.2.5.2. Advise the SEWG in the programming, planning, budgeting, and execution process for EMP related efforts.

2.2.5.3. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.2.6. Director for Studies, Analyses and Assessments (AF/A9) will:

2.2.6.1. Provide analytic insights to support the countering EMP program through application of analytical techniques such as campaign modeling analysis and risk assessment.

2.2.6.2. In coordination with AF/A5/7, USSF Chief Strategy and Resources Officer (SF/CSRO), and USSF Chief Technology Innovation Officer (SF/CTIO), integrate relevant USAF and USSF input for countering EMP into Support for Strategic Analysis products (e.g., scenarios, concepts of operation, and multi-service force deployments), in accordance with DoDD 8260.05. (T-0)

2.2.7. Deputy Chief of Staff for Strategic Deterrence and Nuclear Integration (AF/A10) will:

2.2.7.1. Serve as the Headquarters Air Force (HAF) Accountable Officer responsible for the Nuclear Enterprise and to provide direction, guidance, integration, and advocacy regarding the nuclear deterrence mission of the USAF.

2.2.7.2. Ensure significant EMP issues are brought to the attention of the SecAF, CSAF and Chief of Space Operations (CSO), and coordinate resolution through appropriate governance bodies.

2.2.7.3. Support MAJCOM or /FLDCOM submission for required resources to execute the DAF EMP Testing Program.

2.2.7.4. Serve as SEWG co-chair with AFGSC A3/6.

2.2.7.5. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.2.7.6. Ensure survivability requirements are incorporated into applicable requirements, resourcing, and acquisition policy through coordination with DAF Requirements and Acquisition Communities.

2.2.7.7. Provide Department of the Air Force Corporate Structure information to support adequate resourcing of EMP survivability requirements.

2.2.7.8. Be responsible for establishing and publishing all DAF EMP policies to include interface with all Chemical, Biological, Radiological, and Nuclear Survivability requirements.

2.2.7.9. Be responsible for facilitating EMP Test Plan execution across the DAF.

2.2.7.10. Facilitate and integrate EMP Program issues through Nuclear Working Group to other governance bodies, as required.

2.2.7.11. Facilitate and integrate EMP Program issues across the Services, joint community, and Interagency partners.

2.2.7.12. Develop an EMP prioritization model of critical facilities and infrastructure in coordination with AF/A3, AF/A4, AF/A5, AF/A9, USSF Chief Space Operations Officer (SF/COO), SF/CSRO, SAF/AQ, SAF/SQ, and US Strategic Command (USSTRATCOM), along with respective mission owners and Air Force Installation and Mission Support Center (AFIMSC). This model will be based on continuity of operations, the mission assurance construct, or revised existing models for all critical facilities and infrastructure, either in whole or part critical to the mission success as a part of their mission assurance. Each mission owner's prioritization list will be included as part of the EMP annual report.

2.2.7.13. Lead coordination with other mission areas (AF/A2/6, AF/A3, AF/A4, etc.) to implement the continuity of operations.

2.2.7.14. Advocate for real property requirements for NC3 and Command, Control, Communications, Computers, and Intelligence (C4I) facilities to mitigate against EMP protection, sustainment, and maintenance shortfalls.

2.2.7.15. In coordination with AF/A3, ensure deficiencies effecting NC3 systems are reported in DRRS.

2.2.8. Operations and International Law Domain (AF/JAO) will advise the EMP Enterprise in the development and review of strategy, plans, policies, procedures, training and operations relating to countering EMP, including counter-proliferation interdiction and Proliferation Security Initiative activities, to ensure consistency with U.S. domestic law and the obligations of the United States under international law, including the Law of War and relevant treaties, international agreements and host-nation laws.

2.2.9. Chief of Air Force Reserve (AF/RE) will:

2.2.9.1. Be the lead for EMP Reserve actions and activities as required.

2.2.9.2. Identify and develop a prioritized list of all Air Force Reserve equipment, facilities, and infrastructure critical to the Air Force Reserve Command (AFRC) program that would be affected by an EMP event.

2.2.9.3. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.2.10. Air Force Chief of Safety (AF/SE) will:

2.2.10.1. Be the lead for the EMP Safety program by defining, establishing, and executing the program.

2.2.10.2. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.2.11. Air Force Surgeon General (AF/SG) will provide policy, guidance, and oversight for operations, training, readiness, and sourcing of DAF medical capabilities and personnel to support countering EMP operations.

2.2.11.1. Director of Test and Evaluation (AF/TE) will:

2.2.11.2. Establish test and evaluation policy, advocate for test and evaluation resources required to support EMP survivability development and sustainment, and resolving test and evaluation issues and disputes.

2.2.11.3. Collaborate with requirements sponsors and system developers to improve the development, testing, and fielding of DAF systems or subsystems subjected to EMP survivability testing.

2.2.11.4. Fulfill any other responsibilities covered in AFI 99-103 applicable to EMP survivability testing.

2.2.11.5. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.3. Chief of Space Operations (CSO).

2.3.1. Chief Operations Officer (SF/COO) (SF/S2/3/4/6/10) will:

2.3.1.1. Be the lead for the EMP Space program by defining, establishing, and executing the program.

2.3.1.2. Provide policy, guidance, and oversight for operations, training, and sourcing of USSF intelligence, surveillance, and reconnaissance capabilities and personnel to enable countering EMP operations.

2.3.1.3. Identify current EMP detection and characterization capabilities and ensure future space-based EMP systems fulfill requirements outlined in this DAFI.

2.3.1.4. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.3.2. Chief Strategy and Resourcing Officer (SF/CSRO) (SF/S5/8) will:

2.3.2.1. Advise the SEWG and provide recommendations on the integration of countering EMP operational requirements into space operations.

2.3.2.2. Represent the USSF to the Joint community on countering EMP operational requirements through the JCIDS and the JROC.

2.3.2.3. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.3.3. USSF Director of Test and Evaluation (USSF/TE) will:

2.3.3.1. Establish test and evaluation policy, advocate for test and evaluation resources required to support EMP survivability development and sustainment, and resolving test and evaluation issues and disputes applicable to the Space Force.

2.3.3.2. Collaborate with requirements sponsors and system developers to improve the development, testing, and fielding of Space Force systems or subsystems subjected to EMP survivability testing.

2.3.3.3. Fulfill any other responsibilities covered in AFI 99-103 applicable to Space Force EMP survivability testing.

2.3.3.4. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.3.3.5. Chief Technology and Innovation Officer (SF/CTIO) will:

2.3.3.5.1. Advise the EMP Senior Working Group and provide recommendations on the integration of EMP survivability requirements in development of future USSF capabilities.

2.3.3.5.2. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.4. Director, Air National Guard (ANG/CC) will.

2.4.1. Be the lead for EMP ANG actions and activities as required.

2.4.2. Identify and develop a prioritized list of all ANG-related equipment, facilities, and infrastructure critical to the ANG program that would be affected by an EMP event.

2.4.3. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.5. Commanders of MAJCOMs, FLDCOMs, Direct Reporting Units, and Field Operating Agencies.

2.5.1. Will monitor EMP survivability compliance of assigned systems and owned facilities through command channels, System Program Offices (SPOs), AFIMSC, PEOs, and Air Force Nuclear Weapon Center (AFNWC), as required by AF/A10. (T-1)

2.5.2. Will assess mission impact of reported EMP survivability shortfalls and/or not complying with tests and analysis, resource or assume risk in a prioritized and informed manner, and inform AFGSC and AFNWC of risk decisions made, as required by AF/A10. (T-1)

2.5.3. Will provide AFGSC and AFNWC a prioritized list of threat-level test requirements, as required by AFGSC. (T-1)

- 2.5.4. Will appoint an OPR to address EMP-related issues and participate in the EMP governance process through the SEWG. **(T-1)**
- 2.5.5. Will identify critical infrastructure assets that must survive an EMP event. **(T-1)**
- 2.5.6. Will provide prioritized list and report of critical infrastructure assets to SEWG. **(T-1)**
- 2.5.7. Will program for EMP assessments. **(T-1)**
 - 2.5.7.1. Ensure EMP-related threats and hazards are integrated into installation All Hazard Threat Assessment, and provide risk response mitigation measures to vulnerabilities found during assessments. **(T-1)**
 - 2.5.7.2. Ensure EMP equities are included in the planning phase of exercises and scheduled mission assurance related assessments. **(T-1)**
- 2.5.8. Commanders of Lead Commands will:
 - 2.5.8.1. Appoint an OPR to address EMP-related issues. **(T-1)**
 - 2.5.8.2. Provide representation to each level of the governance process. **(T-1)**
 - 2.5.8.3. Identify critical systems and support equipment that must survive an EMP event. **(T-1)**
 - 2.5.8.4. Provide a prioritized list of assigned weapons system to AFGSC through AFNWC. **(T-1)**
 - 2.5.8.5. Program for less-than-threat-level EMP assessments, HM/HS, and mitigations, as applicable. **(T-1)**
- 2.5.9. Commander, Air Force Global Strike Command (AFGSC) will:
 - 2.5.9.1. Serve as the DAF EMP Testing Oversight Coordinator.
 - 2.5.9.2. Advocates for resources to conduct modeling, analysis, and Low Level Continuous Wave (LLCW) testing in support of the Lead Command.
 - 2.5.9.3. Track and provide oversight of lower than threat system-level (e.g., LLCW for aircraft) testing in support of supporting the asset-owner Lead Command.
 - 2.5.9.4. Submit planning and programming options on funding and manpower for all Air Force threat-level EMP testing for existing systems, and new systems, once fielded, in accordance with the Air Force EMP Test Plan and EMP Test Priority List (ETPL).
 - 2.5.9.5. Establish, and along with AF/A10, co-chair the DAF SEWG through AFGSC/A3/6. See [paragraph 3.3](#) Through the SEWG:
 - 2.5.9.5.1. Collect from each MAJCOM and /FLDCOM annual reports on the status of compliance of critical systems and facilities to EMP requirements, risk-acceptance decisions and associated mitigation actions, EMP testing activities, and resourcing resource concerns.
 - 2.5.9.5.2. Provide to AF/A10, SF/COO, MAJCOMs, FLDCOMs, AFNWC, and other organizations, the annual priority lists on EMP testing and mitigation actions, to inform and guide potential resourcing actions.

- 2.5.9.5.3. The AFGSC/A3/6 provides the authority to proceed with Threat Level testing of existing systems and risk-acceptance decisions.
- 2.5.9.5.4. Annual DAF-level EMP reports are the responsibility of the SEWG in support of the DAF, or other governance bodies, as required.
- 2.5.10. Commander, Air Force Materiel Command (AFMC) will:
- 2.5.10.1. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#) AFIMSC, AFNWC, Air Force Research Laboratory (AFRL), and Air Force Life Cycle Management Center (AFLCMC) will serve as advisors to Headquarters (HQ) AFMC, but do not have voting privileges in the SEWG.
- 2.5.10.2. Establish the USAF EMP Effects Project Management Office (EPPMO). AFMC will develop a plan and advocate to resource a PMO office to manage the EMP program (implementation completion not to exceed 10 years). Initially, upon the completion of the standup, the EPPMO will be responsible for advocacy, oversight of mission requirements prioritization, policy and guidance, and resourcing processes and procedures. Final scope of the program oversight will be developed with support from AFGSC, AF/A10 and subordinate centers where applicable.
- 2.5.10.3. Identify resource shortfalls for threat-level EMP test requirements annually to AFGSC. Report program-level EMP requirements and capabilities to AFGSC to inform EMP requirements, development, verification and sustainment.
- 2.5.10.4. Through AFNWC:
- 2.5.10.4.1. Develop the DAF-wide EMP Test Plan and ETPL through coordination with USSF, AFGSC, Lead Commands, PEOs, and program offices, as applicable. **(T-1)**
- 2.5.10.4.2. Execute the DAF EMP Test Plan, including organic USAF test capability development, asset and test facility availability coordination, data review and analysis, problem identification, and risk analysis, and participates in mitigation strategy development. **(T-1)**
- 2.5.10.4.3. Partner with mission owners for EMP survivability sustainment and testing of critical facilities and infrastructure to ensure EMP survivability requirements are met. **(T-1)** Additionally:
- 2.5.10.4.3.1. Ensure new or emerging EMP survivability requirements on existing critical facilities and infrastructure are met. **(T-1)**
- 2.5.10.4.3.2. Document test results in appropriate mission assurance (MA) repositories. **(T-1)**
- 2.5.10.4.3.3. Identify resource requirements, shortfalls, and associated prioritization to the owning MAJCOM or FLDCOM for budget, programming, or resource action. **(T-1)**
- 2.5.10.5. Through AFIMSC:

- 2.5.10.5.1. Develop and execute facilities and infrastructure threat-level EMP testing and analysis in accordance with a test priority plan coordinated with all applicable MAJCOMs and FLDCOMs. **(T-1)**
- 2.5.10.5.2. Upon request, provide the relevant expertise to the SEWG on system and facility EMP survivability requirements to assist MAJCOMs and FLDCOMs in priority assessment of shortfall mitigation. **(T-1)**
- 2.5.10.5.3. Partner with mission owners for EMP survivability sustainment and testing of critical facilities and infrastructure to ensure EMP survivability requirements are met. **(T-1)** Identify resource shortfalls and associated prioritization to the owning MAJCOM, owning FLDCOM, or AFGSC for resource requirements exceeding programmatic funding. **(T-1)**
- 2.5.10.5.4. Provide a standardized approach to EMP survivability and testing compliance in accordance with MIL-STDs (See [Attachment 1](#)) for all applicable USAF facilities. **(T-0)**
- 2.5.10.5.5. In coordination with AFGSC, review and coordinate on EMP hardening and protective measures for all infrastructure and facility infrastructure assets. **(T-1)**
- 2.5.10.5.6. Advocate and execute real property requirements for NC3 facilities to mitigate against EMP protection, sustainment, and maintenance shortfalls. **(T-0)**
- 2.5.10.5.7. Implement an EMP prioritization model developed by AF/A10, based on COOP, in coordination with AF/A10, AF/A5, and respective mission owners. **(T-1)** AFIMSC will incorporate the AF/A10 models critical to the mission success for all facility and infrastructure either in whole or part as a part of their mission assurance. **(T-1)**
- 2.5.10.5.8. Assist AFMC in the establishment and shaping of the EEPMO. **(T-1)**
- 2.5.10.6. Through AFLCMC:
- 2.5.10.6.1. Resource Program Offices to execute the program's EMP Test Plan, including asset and test facility availability coordination, data review and analysis, problem identification, and risk analysis, and participates in mitigation strategy development. **(T-1)**
- 2.5.10.6.2. Provide weapons system expertise to the EMPWG on system and facility EMP survivability requirements to assist MAJCOMs and FLDCOMs in priority assessment of shortfall mitigation. **(T-1)**
- 2.5.10.6.3. Partner with mission owners for EMP survivability sustainment and testing of critical facilities and infrastructure to ensure EMP survivability requirements are met. **(T-1)** Identify resource shortfalls and associated prioritization to the owning MAJCOM, owning FLDCOM, or AFGSC for resource requirements exceeding programmatic funding. **(T-1)**

- 2.5.10.6.4. Coordinate with Lead Commands as applicable to fuse operational mission impact and warfighting characterizations resulting from EMP test and assessment results on existing systems to create a priority list of required mitigation or corrective actions. **(T-1)** Provide inputs to the SEWG's annual plan to AF/A10, SF/COO, MAJCOMs, and FLDCOMs for potential resourcing action. **(T-1)**
- 2.5.10.6.5. Identify resource shortfalls for threat-level EMP test requirements annually to AFGSC. **(T-1)**
- 2.5.11. Commander, Air Education and Training Command (AETC) will:
- 2.5.11.1. Ensure a continuum of learning regarding EMP survivability requirements, methods, testing and evaluation, research, and acquisition throughout all levels of nuclear training and Professional Military Education (PME). EMP training and education should be multidisciplinary and sustained in order to establish a strong culture of EMP maintenance procedure compliance.
- 2.5.11.2. Integrate education on EMP survivability and maintenance measures into applicable nuclear training courses, Electromagnetic Spectrum Operations training, initial skills courses, and PME, as required to create a force knowledgeable of EMP effects on mission readiness and continuation of operations following a human-made or naturally occurring EMP event.
- 2.5.11.3. Establish on-time, on-demand training and education resources to raise awareness of EMP effects and mitigation techniques, and maintain skills and knowledge necessary to survive an EMP event.
- 2.5.11.4. Develop and advocate for EMP events into USAF war games, exercises, and training scenarios.
- 2.5.12. Commander, Space Operations Command (SpOC) will:
- 2.5.12.1. Maintain oversight of all Integrated Tactical Warning/Attack Assessment (ITW/AA) and NC3 assets within the USSF portfolio.
- 2.5.12.2. Provide oversight and management of the ITW/AA and NC3 Survivable/Endurable (S/E) Program. The S/E Program provides management, guidance, policy, assessment, operations priorities, advocacy, and instruction for ITW/AA and NC3 assets within its portfolio. Program oversight will be developed with support from AFGSC, AF/A10, SF/S10, and subordinate centers where applicable.
- 2.5.12.3. Coordinate with AF/A10, SF/S10N, FLDCOM, and Lead Commands as applicable to fuse operational mission impact and warfighting characterizations resulting from EMP test and assessment results on existing systems to create a priority list of required mitigation or corrective actions. Provide an annual report from USSTRATCOM Integrated Nuclear Survivable/Endurable Report, Defense Threat Reduction Agency Balanced Survivability Report (BSA), and other S/E assessments through SF/S10 for action. Assess mission impact of reported EMP survivability shortfalls and/or test non-compliance. Resource or assume risk in a prioritized and informed manner.
- 2.5.12.4. Ensure EMP-related threats and hazards are integrated into installation all hazard threat assessment, and provide risk response mitigation measures to vulnerabilities found during assessments.

2.5.12.5. Provide prioritized list and report of critical infrastructure assets to SF/S10 and SEWG.

2.5.12.6. Ensure EMP equities are included in the planning phase of exercises and scheduled mission assurance related assessments.

2.5.12.7. Advocate for EMP events into Space Force war games, exercises, and training scenarios.

2.5.12.8. Address EMP-related issues and participate in the EMP governance process through the SEWG. Provide a senior leader (O-6/GS-15) and action officer to participate in the SEWG. See [paragraph 3.3](#).

2.5.13. Commander, Space Systems Command (SSC) will:

2.5.13.1. Provide an action officer and senior leader (O-6/GS-15) to participate in the SEWG.

2.5.13.2. Establish the USSF EMP Effects Project Management Office (EEPMO). Space Systems Command will develop a plan and advocate to resource a PMO office to manage the EMP projects, contracts for sustainment, and upgrades (implementation completion not to exceed 10 years). Initially, upon the completion of the standup, the EEPMO will be responsible for advocacy and sustainment resourcing processes and procedures. Final scope of the program oversight will be developed with support from AF/A10, AFGSC, SF/S10N, DCG-O/S10N, and subordinate centers where applicable.

2.5.13.3. Coordinate with AFGSC, SF/S10N, DCG-O/S10N, and Lead Commands as applicable to fuse operational mission impact and warfighting characterizations resulting from EMP test and assessment results on existing systems to create a priority list of required mitigation or corrective actions established by DCG-O/S10N. Provide an annual report through the SEWG to AF/A10, SF/COO, DCG-O/S10N, and MAJCOMs/FLDCOMs for potential resourcing action.

2.5.14. Commander, Space Training and Readiness Command (STARCOM) will:

2.5.14.1. Ensure a continuum of learning regarding EMP survivability requirements, methods, testing and evaluation, research, and acquisition throughout all levels of nuclear training and PME. EMP training and education should be multidisciplinary and sustained in order to establish a strong culture of EMP maintenance procedure compliance.

2.5.14.2. Integrate education on EMP survivability and maintenance measures into applicable nuclear training courses, initial skills courses, and PME, as required to create a force knowledgeable of EMP effects on mission readiness and continuation of operations following an EMP event.

2.5.14.3. Establish on-time, on-demand training and education resources to raise awareness of EMP effects and mitigation techniques, and maintain skills and knowledge necessary to survive an EMP event.

2.5.14.4. Develop and advocate for EMP events into USSF war games, exercises, and training scenarios.

2.5.14.5. Advocate and execute real property requirements for space-related C4I facilities to mitigate against EMP protection, sustainment, and maintenance shortfalls.

Chapter 3

GOVERNANCE

3.1. Overview. The DAF EMP Program governance process is designed to inform MAJCOM/FLDCOM and DAF senior leaders of the health and status of EMP survivability and test compliance of DAF systems, equipment, facilities, and infrastructure. Key to this governance process is the transparency of current status and risk acceptance at the appropriate decision-making level.

3.2. Air Force Governance Process. Unless otherwise outlined in this DAFI, the approval process will adhere to the DAF Governance Process.

3.2.1. All issues requiring higher level authorities will be brought before the Strategic Integration Forum (SIF) comprised of two- and three-star members. (T-1)

3.2.2. The SIF will determine if the issue should be brought before the Executive Leadership Team, chaired by the Under Secretary of the Air Force and the Vice Chief of Staff of the Air Force, for further discussion and or approval.

3.3. DAF Senior EMP Working Group (SEWG). The purpose of the SEWG is to be the DAF-wide governing body on EMP survivability and testing. Established by a charter, the SEWG will conduct recurring meetings to share information, resolve issues, and track status and health of EMP survivability and test compliance of DAF systems and facilities.

3.3.1. The SEWG is comprised of an O-6/GS-15 from each member organization and will meet as needed to review, endorse, or approve charters, EMP policy and guidance, and other products created by the EWG.

3.3.1.1. AFGSC/A3/6 Deputy Director and AF/A10 will co-chair the SEWG. AFGSC/A3/6 EMP Division Chief will serve as the SEWG Secretariat.

3.3.1.2. Member organizations include, but are not limited to, HAF offices, MAJCOMs, and FLDCOMs.

3.3.2. To support the SEWG, AFGSC/A3/6 will designate a representative to chair the EWG. The EWG will be an AO-level forum to assist Lead MAJCOMs or FLDCOMs (systems) or owning MAJCOMs/FLDCOMs (facilities) in determining the impact and mitigation measures for identified EMP survivability shortfalls.

3.3.3. The SEWG is ultimately answerable to the AFGSC/CC as the single accountable officer to the CSAF, CSO, and SecAF for all aspects of the DAF nuclear mission (specifically those forces in support of USSTRATCOM; however, DAF support to other combatant commands is also addressed by this body).

3.3.4. SEWG Members may request SEWG assistance in prioritizing EMP Survivability Program resource requirements and test priorities, to include establishing a standard methodology for each.

3.3.5. Issues may be forwarded or updates provided as requested by other nuclear enterprise activities such as the National Leadership Command Capability (NLCC)/NC3 Group. The NC3 System is part of the larger NLCC, which encompasses the three broad mission areas of: (1) Presidential and senior leader communications; (2) NC3; and (3) continuity of operations and continuity of government communications. (Sources: PPD-35 and DoDI S-3730.01, Nuclear Command, Control, and Communications (NC3) System, see sources for the full, classified definition)

3.3.6. The SEWG, supported by the AFGSC staff, is responsible for producing the annual DAF EMP Survivability and Surveillance Program Report identifying the health and status of EMP survivability for major systems and facilities, EMP test compliance, and a prioritization of shortfall mitigation requirements.

3.4. Reporting. Specific procedures will be developed in the SEWG Charter. Deficiencies found effecting NC3 will be reported in DRRS.

3.5. Mission Assurance Working Group (MAWG) and Mission Assurance Coordination Board (MACB). In addition to the SEWG, AFGSC can also utilize the MAWG and MACB forums. The MAWG is useful to integrate and synchronize efforts across multiple Mission Assurance-Related Programs/Activities. The MACB process focuses on establishing DoD MA priorities, managing risk to Defense Critical Assets and Task Critical Assets, prioritized strategic missions, and addressing evolving threats.

Chapter 4

REQUIREMENTS

4.1. Overview.

4.1.1. EMP survivability is one of many hardness considerations for new systems and facilities. Requirements development processes must consider if protection is required for the individual system itself or if that system will have dependencies on other features to provide the protection required. When EMP protection is dependent on the environment, such as where a mission is housed (e.g., in a facility), that protection is intended to assure both protection from the pulse EMP and planning for recovery of commercial power and other support services.

4.1.2. Nuclear Command, Control, and Communication systems, and the facilities they are housed in, require EMP hardening to the limits required for mission recovery as established by USSTRATCOM. **(T-0)** USSTRATCOM tests NC3 facilities and supporting infrastructure on a recurring basis. Other C4I sites requiring EMP protection are addressed in CJCSI 3222.01C, *Chairman of the Joint Chiefs of Staff Requirements for Electromagnetic Pulse Protection of Critical Nodes and Systems*, and CJCSI 6810.01C, *Critical Nuclear Command, Control, and Communications Systems and Facilities*. **(T-0)** There is no clear, structured process to define EMP hardening requirements for other support elements.

4.1.3. Mission owners must clearly articulate what parts of their mission must be protected, and must articulate the speed of recovery after an event (e.g., when commercial power will be restored) so that an appropriate protection system can be configured and managed.

4.1.4. Fielded systems, equipment facilities, and infrastructure require resourced HM/HS activities to sustain originally designed EMP survivability capabilities. EMP survivability testing at the component, system, and threat levels provides feedback on mission assurance to operate in and through an EMP environment. Integrate the Resilience 5Rs (Robustness, Redundancy, Resourcefulness, Recovery and Responsiveness) as a vital part of EMP interface with Critical Mission Resilience.

4.1.5. The SPO will sustain and test required system EMP survivability capabilities, with assistance from Lead Commands, and provide necessary test assets (such as aircraft) for sustainment. **(T-0)**

4.1.6. Owning MAJCOMs, FLDCOMs, and Mission Owners will sustain EMP hardening of existing facilities and supporting infrastructure, and mission owners will sustain EMP hardening of mission systems and equipment when housed inside a facility. **(T-0)**

4.2. Weapon Systems and Aircraft. For the purposes of this DAFI, systems include weapon systems, communications and cyber systems, command and control systems, sensors, munitions, planning systems, and any other non-facility capability that requires EMP hardening for mission assurance. Additionally, Intercontinental Ballistic Missiles are a Weapon System of Interest and will not be addressed here.

4.2.1. New Systems. For the purposes of this DAFI, new systems are systems as defined above that have not reached Critical Design Review. The requirements definition process such as JCIDS establishes the need for EMP hardening for new systems.

4.2.2. Existing Systems. For the purposes of this DAFI, existing systems are systems as defined above that have reached Full Operating Capability.

4.2.3. Testing.

4.2.3.1. The SPO will direct development of a test and evaluation strategy to verify new system performance in accordance with system requirements documents and applicable MIL-STDs (See [Attachment 1](#)) as well as developing HM/HS requirements to ensure fielded system hardness is sustained. **(T-0)**

4.2.3.2. Test non-compliance (i.e., not testing) must be waived or a CSAF Plan of Actions and Milestones approved by the Lead MAJCOM or the organization establishing the EMP survivability requirement. **(T-0)**

4.2.3.3. The SPO, in coordination with AFGSC, plans and programs threat-level testing in accordance with the ETPL, coordinated and developed by AFNWC. **(T-1)**

4.2.3.4. The applicable system program will resource all other testing. **(T-1)**

4.2.3.5. The Lead Command is responsible for any new EMP hardening or EMP test requirements on existing systems. **(T-1)**

4.2.4. Unmitigated EMP Survivability Shortfalls.

4.2.4.1. The SPO will correct any unmitigated shortfall in meeting an established EMP survivability requirement or request a waiver from the Lead Command. **(T-2)**

4.2.4.2. The Lead Command will accept risk for any unmitigated shortfall, not the SPO.

4.2.5. The Lead Command will fund all EMP testing to include threat-level testing through the acquisition process. **(T-2)**

4.2.6. The SPO will coordinate threat-level testing requirements and results of testing and evaluation with AFGSC and AFNWC, as required for new systems (as defined in [paragraph 4.2](#)). **(T-2)** Once the system is designated as Critical Design Review, roles and responsibilities for existing systems in [paragraph 4.2](#) apply.

4.2.7. Lead Command will report waived EMP survivability compliance or EMP test compliance to AFGSC and AFNWC for inclusion in the annual DAF EMP Survivability Program Report. **(T-2)**

4.2.8. If requirements documents do not clearly articulate EMP survivability requirements for fielded systems/facilities, the Lead Command will identify the needed requirements to the SPO and will work to ensure necessary upgrades/modifications are made to existing systems/facilities unless waived or until replaced by newer capabilities incorporating the required hardness parameters. **(T-0)**

4.3. Facilities and Infrastructure.

4.3.1. For the purposes of this DAFI, EMP protection for mission-critical systems, where protection is provided by the environment they are housed in, will be provided by a layered system of protection based on the required speed of recovery after an event.

4.3.1.1. For those systems that must be up and running within a few minutes or up to 1 day after an event, it is the responsibility of the mission owner to assure those protections are in place (e.g., shielding, backup power, etc.). **(T-1)**

4.3.1.2. Recovery of commercial power and other support services that will take longer than a day to recover, as well as facility and infrastructure requirements that may be required beyond those required for recovery within 1 day, shall be incorporated into new facilities, including initial construction or an existing facility undergoing substantial refurbishment (military construction (MILCON) or Facilities Sustainment, Restoration, and Modernization level of effort). **(T-1)**

4.3.2. For the purposes of this DAFI, existing facilities are defined as those facilities with initial construction complete and the facility has been accepted by the installation. Minor facility refurbishment or renovation (below MILCON levels of effort) are accommodated within the existing facility definition; however, the owning MAJCOM or FLDCOM will resource any modifications or changes in EMP hardening features to their installation. **(T-1)**

4.3.3. The requirement for EMP hardening in support of the NC3 mission set is established by USSTRATCOM and the owning Combatant Command, MAJCOM, or /FLDCOM for all other mission sets. If the requirement impacts construction activities, those requirements must be established as early as possible during the design phase of construction. EMP hardening noncompliance must be waived by USSTRATCOM, the owning MAJCOM or owning FLDCOM, as applicable. **(T-0)**

4.3.4. Mission owners will integrate EMP survivability requirements into their mission set equipment requirements, and will determine enduring testing requirements to maintain certification. **(T-0)** Coordinate with AFNWC for technical expertise, as required.

4.3.5. AFIMSC, in partnership with the owning MAJCOM or FLDCOM, will integrate EMP survivability requirements in accordance with MIL-STDs into environment designs when required and determine enduring testing requirements to maintain certification for real property elements. **(T-0)** Coordinate with AFNWC for technical expertise, as required.

4.3.6. Coordinate with USSTRATCOM for real property listed facility and infrastructure testing and certification of NC3 facilities. For other real property listed facilities, AFIMSC, in partnership with the owning MAJCOM or FLDCOM execute necessary EMP survivability testing and certification. EMP test non-compliance must be waived by USSTRATCOM, the owning MAJCOM, or the owning/FLDCOM, as required. **(T-0)**

4.3.7. The owning MAJCOM or FLDCOM is responsible for resourcing critical facilities and infrastructure to meet EMP survivability and testing requirements.

4.3.8. The owning MAJCOM or FLDCOM will report waived EMP survivability compliance or EMP test compliance to AFGSC and AFNWC for inclusion in the annual DAF EMP survivability and Surveillance Program report. **(T-0)**

4.3.9. An existing facility being repurposed as a NC3 facility will comply with USSTRATCOM hardening requirements and will be subjected to USSTRATCOM testing. **(T-0)** Otherwise, the owning MAJCOM or FLDCOM is the authority for defining EMP survivability requirements. EMP hardening noncompliance must be waived by USSTRATCOM, the owning MAJCOM, or owning FLDCOM, as applicable. **(T-0)**

4.3.10. Owing MAJCOM and /FLDCOMs are responsible for:

4.3.10.1. Sustaining existing EMP survivability requirements for real property listed components and ensuring necessary periodic testing is accomplished. **(T-1)**

4.3.10.2. Resourcing the mitigation of shortfalls caused by new MIL-STDs (See [Attachment 1](#)) or new EMP hardening requirements. **(T-1)**

4.3.11. The owning MAJCOM or FLDCOM is responsible for resourcing all desired facility modifications that impact EMP survivability and testing requirements, and for resourcing the mitigation of any EMP survivability shortfalls caused by facility modifications. **(T-1)**

4.3.11.1. The Base Civil Engineer organization must be notified of planned facility modifications to determine potential impact to complete and usable functionality of real property and partner with owning MAJCOM or FLDCOM responsible for EMP survivability and testing. **(T-1)**

4.3.11.2. The owning MAJCOM or FLDCOM collaborates with the Program office on facility requirements. **(T-1)**

4.3.12. The owning MAJCOM or FLDCOM is responsible for coordinating third party interaction with AFIMSC such as non-DAF tenants and host nations. For non-DAF owned facilities, the using MAJCOM or FLDCOM is responsible for coordinating third-party facility owner interaction with AFIMSC.

4.4. Types of Tests.

4.4.1. Injection Test -direct drive. This is the preferred approach for fixed ground based facilities and is used most extensively for tests of hardened C3 facilities, missile silos, etc. This simulates the effects of the currents and/or voltages induced by high-altitude EMP (HEMP) on cables by artificially injecting current pulses onto/into equipment cables and wires. Injection tests are particularly well suited to the evaluation of interior equipment that is not directly exposed to HEMP and amenable to in situ testing.

4.4.2. Free-Field Test: Also known as threat-level field illumination is the preferred approach for mobile systems unattached to long line networks (e.g., aircraft, ships, and transportable C3I vans). This is used to expose equipment, such as missiles, aircraft, vehicles, and radar antenna, to HEMP. Most free-field HEMP testing is performed with either a broadcast simulator or a bounded wave EMP simulator.

Chapter 5

RISK DECISION

5.1. Waiver Process.

5.1.1. A SPO seeking either an EMP requirement or testing waiver will submit a memorandum to the EWG thirty (30) days prior to submitting the waiver to the Lead MAJCOM/FLDCOM that includes justification for the waiver and the SEWG risk assessment. **(T-1)**

5.1.2. Lead Command will either approve or deny the waiver request and then send AFGSC a memorandum, courtesy copy to the SEWG and requesting SPO, stating the risk that is being accepted by waiving the requirement. **(T-1)**

5.1.3. Lead Command will annually review waivers granted for longer than one (1) year and validate whether or not they are still required. If the waiver is extended, the Lead Command will send a memorandum to AFGSC, courtesy copy the SEWG and the requesting SPO, stating the risk that is being accepted if it is extended. **(T-1)**

5.2. Waiver Cancellation Process. The SPO will submit a memorandum to the SEWG stating which waiver/waivers it intends to cancel along with documentation showing that the waived requirement(s) are now being met. **(T-1)**

5.3. A temporary waiver is granted to. AFMC until the EEPMO and resourcing are executed NTE 10 years or upon completion of the EEPMO establishment and resourcing whichever is sooner. **(T-1)**

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

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DoDD 8260.05, *Support for Strategic Analysis (SSA)*, 7 July 2011

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MIL-STD-188-125-2, *High-Altitude Electromagnetic Pulse (HEMP) Protection for Ground-Based C4I Facilities Performing Critical, Time-Urgent Missions: Part 2 - Transportable Facilities*, 7 April 2005

MIL-STD-461G, *Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment*, 11 December 2015

MIL-STD-464D, *Electromagnetic Environmental Effects Requirements for Systems*, 24 December 2020

MIL-STD-1916, *DOD Preferred Methods for Acceptance of Product*, 5 June 2014

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MIL-HDBK-516C, *Airworthiness Certification Criteria*, 7 October 2019

MIL-HDBK-2069, *Aircraft Survivability*, 30 August 2019

CJCSI 3222.01C, *Chairman of the Joint Chiefs of Staff Requirements for Electromagnetic Pulse Protection of Critical Nodes and Systems*, 8 August 2019

CJCSI 6810.01C, *Critical Nuclear Command, Control, and Communications Systems and Facilities*, 29 August 2019

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AFPD 10-9, *Lead Command/Lead Agent Designation and Responsibilities for United States Air Force Weapon Systems, Non-Weapon Systems, and Activities*, 25 May 2021

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AFPD 10-26, *Countering Weapons of Mass Destruction*, 20 August 2019

AFPD 13-5, *Air Force Nuclear Mission*, 17 July 2018

AFPD 90-2, *Inspector General-The Inspection System*, 13 July 2018

AFI 10-201, *Force Readiness Reporting*, 22 December 2020

AFI 10-208, *Continuity of Operations (COOP) Program*, 10 October 2018

AFI 10-601, *Operational Capability Requirements Development and Validation*, 27 April 2021

AFI 10-2607, *Air Force Chemical, Biological, Radiological, and Nuclear Survivability*, 9 August 2018

AFI 13-500, *Air Force Nuclear Mission Responsibilities*, 14 November 2018

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

AFI 63-101_20-101, *Integrated Lifecycle Management*, 30 June 2020

AFI 99-103, *Capabilities-Based Test and Evaluation*, 18 November 2019

Prescribed Forms

None

Adopted Forms

Air Force Form 847,

Abbreviations and Acronyms

AETC—Air Education and Training Command

AF/A2/6—Deputy Chief of Staff for Intelligence, Surveillance, Reconnaissance, and Cyber Effects Operations

AF/A3—Deputy Chief of Staff for Operations

AF/A4—Deputy Chief of Staff for Logistics, Engineering, and Force Protection

AF/A5/7—Deputy Chief of Staff for Strategy, Integration, and Requirements

AF/A8—Deputy Chief of Staff for Plans and Programs

AF/A9—Director of Studies and Assessments

AF/A10—Deputy Chief of Staff for Strategic Deterrence and Nuclear Integration

AFGSC—Air Force Global Strike Command

AFI—Air Force Instruction

AFIMSC—Air Force Installation and Mission Support Center

AFLCMC—Air Force Life Cycle Management Center

AFMC—Air Force Materiel Command

AFNWC—Air Force Nuclear Weapons Center
AFPD—Air Force Policy Directive
AF/RE—Chief of Air Force Reserve
AFRC—Air Force Reserve Command
AFRL—Air Force Research Laboratory
AF/SE—Air Force Chief of Safety
AF/SG—Air Force Surgeon General
AF/TE—United States Air Force Director of Test and Evaluation
ANG—Air National Guard
BSA—Defense Threat Reduction Agency Balanced Survivability Report
CBRN—Chemical Biological Radiological Nuclear
C4I—Command, Control, Communications, Computers, and Intelligence
CJCSI—Chairman of the Joint Chiefs of Staff Instruction
COO—Chief Operations Officer (also SF/S2/3/4/6/7/10)
COOP—Continuity of Operations
CSAF—Chief of Staff of the Air Force
CSO—Chief of Space Operations
CSRO—Chief Strategy and Resourcing Officer (also SF/S5/8)
CTIO—Chief Technology and Innovation Officer
DAF—Department of the Air Force
DAFI—Department of the Air Force Instruction
DCI—Defense Critical Infrastructure
DCIP—Defense Critical Infrastructure Program
DoD—Department of Defense
DoDD—Department of Defense Directive
DoDI—Department of Defense Instruction
DRRS—Defense Readiness Reporting System
EEPMO—Electromagnetic Pulse Effects Program Management Office
EMP—Electromagnetic Pulse
ETPL—Electromagnetic Pulse Test Priority List
EWG—Electromagnetic Pulse Working Group
FLDCOM—Field command

HAF—Headquarters Air Force
HEMP—High Altitude Electromagnetic Pulse
HM/HS—Hardness Maintenance & Hardness Surveillance
ITW/AA—Integrated Tactical Warning/Attack Assessment
JCIDS—Joint Capabilities Integration and Development System
LLCW—Low Level Continuous Wave
MAJCOM—Major command
MACB—Mission Assurance Coordination Board
MAWG—Mission Assurance Working Group
MILCON—Military Construction
MIL-STD—Military Standard
NC3—Nuclear Command, Control, & Communications
NLCC—National Leadership Command Capabilities
OPR—Office of Primary Responsibility
PEO—Program Executive Office
PME—Professional Military Education
PMO—Program Management Office
SAF/AQ—Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics
SAF/FM—Assistant Secretary of the Air Force for Financial Management and Comptroller
SAF/IA—Deputy Under Secretary of the Air Force for International Affairs
SAF/IE—Assistant Secretary of the Air Force for Installations, Environment, and Energy
SAF/IG—The Air Force Inspector General
SAF/SQ—Assistant Secretary of the Air Force for Space Acquisition and Integration
S/E—Survivable/Endurable
SecAF—Secretary of the Air Force
SEWG—Senior Electromagnetic Pulse Working Group
SIF—Strategic Integration Forum
SPO—System Program Office
SpOC—Space Operations Command
SSC—Space Systems Command
STARCOM—Space Training and Readiness Command
USAF—United States Air Force

USSF—United States Space Force

USSF/TE—United States Space Force Director of Test and Evaluation

USSTRATCOM—United States Strategic Command

Terms

Countering Electromagnetic Pulse—Actions to mitigate the effects of an electromagnetic pulse on mission critical systems and infrastructure in compliance with EMP survivability requirements, either through hardening those systems and infrastructure or rapid reconstitution of affected equipment.

Electromagnetic Pulse—A strong burst of electromagnetic radiation caused by a nuclear explosion, energy weapon, or by natural phenomenon (i.e., solar-induced space weather), that may couple with electrical or electronic systems to produce damaging current and voltage surges. Also called EMP.

Electromagnetic Pulse Hardness—The extent that a system or facility is protected, tested, and certified to operate in or through a HEMP event in accordance with applicable Military Standards (MIL-STD). Many concepts of EMP survivability may be achieved through other requirements, such as the MIL-STD-461G, Electromagnetic Compatibility, among others.

Electromagnetic Pulse Hardness Requirement—The identification of specific systems or facilities requiring EMP survivability. USSTRATCOM identifies NC3 facilities in accordance with CJCSI 3221.01. JCIDS identifies EMP survivability requirements for new systems. Owing MAJCOM or FLDCOM, in conjunction with AFIMSC, identifies non-NC3 facility EMP survivability requirements. Lead MAJCOM or FLDCOM, in conjunction with the supporting system program office (SPO), identifies EMP survivability requirements for existing systems. (T-0)

Facilities and Infrastructure EMP Requirement—For the purposes of this DAFI, the identification process for mission-critical systems will be accomplished in accordance with AFI 10-2607.

Hardness Maintenance/Hardness Surveillance (HM/HS)—With respect to EMP survivability, HM/HS is the collected activities to sustain designed EMP survivability protection through sustainment, and to verify EMP survivability performance through periodic assessment.

Hardness Maintenance—The collected activities by the using command and depot-level repair facilities to maintain and preserve the hardness of fielded weapon systems throughout operational life, especially with respect to spares procurement and repair actions as well as activities such as corrosion prevention, EMP shielding maintenance, and configuration control in accordance with Technical Orders (TO) and associated maintenance guidance.

Hardness Surveillance—Periodic hardness tests conducted at the component, sub-system, system, and threat-level environments with the purpose of identifying on a timely manner any degradations that reduce the EMP survivability of fielded systems and facilities. Such degradations may be due to aging, environmental effects, continuous operation, maintenance actions, or system modifications.

Lead Command—The command that serves as the using command’s interface with the Program Manager for a system as prescribed by AFPD 10-9, *Lead Command/Lead Agent Designation and Responsibilities for United States Air Force Weapon Systems, Non-Weapon Systems, and Activities*. Lead Command designation is not exclusive to MAJCOMs and FLDCOMs; Field Operating Agencies and Direct Reporting Units may also be designated.

Mission Owner—The DoD Component having responsibility for the execution of all or part of a mission assigned by statute or the Secretary of Defense. (DoDD 3020.40)

Mission Critical System—A system whose operational effectiveness and operational suitability are essential to successful mission completion or to aggregate residual combat capability. If this system fails, the mission likely cannot be completed. Such a system can be an auxiliary or supporting system, as well as a primary mission system. (DoDI 3150.09)

Risk Acceptance—The informed decision by the Lead MAJCOM/FLDCOM for assigned systems, or owning MAJCOM/FLDCOM for facilities, to intentionally forego EMP HM/HS on new or existing capabilities.

System EMP Requirement—For the purposes of this DAFI, a system includes weapon systems, communications and cyber systems, command and control systems, sensors, munitions, planning systems, and any other non-facility capability that requires EMP hardening in accordance with MIL-STDs for mission assurance.

Testing—For the purposes of this DAFI, testing includes pre- and post-testing and analysis processes.