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Maintenance

**MAINTENANCE MANAGEMENT OF SPACE
SYSTEMS**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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SUMMARY OF REVISIONS

This is the initial publication of AFI 21-108.

Section A—Introduction

1. Purpose. The overall objective of space systems maintenance management is to achieve the most reliable and efficient space systems support possible by making the best use of maintenance capabilities, and by using standard, automated DoD logistics systems to meet operational requirements.

1.1. A lead MAJCOM integrates space systems operational requirements into an Operational Requirements Document (ORD). A System Program Director (SPD) acquires the system, and under Integrated Weapon System Management, ensures sustainability throughout the system's life cycle. The operational MAJCOM manages daily operations and organizational level maintenance of the system. Maintenance management helps ensure that the system is ready to meet and sustain operational requirements.

1.2. This AFI does not apply to on orbit assets which are Research, Development, Test and Evaluation (RDT&E) vehicles, or to operational assets awaiting end of life disposition.

Section B—Responsibilities

2. HQ USAF/LG develops space systems maintenance management policy and standards based on Air Force space and logistics policies.

3. Lead MAJCOM:

3.1. Compiles all of the operational MAJCOMs' and other users' maintenance requirements into the system ORD.

3.2. Develops a system maintenance concept consistent with Air Force space and logistics policies.

3.3. Includes Air Force logistics support requirements in planning, programming, and budgeting.

3.4. Monitors and analyzes space systems effectiveness.

3.5. Determines the causes of deficiencies in equipment, hardware, reliability, and maintainability and provides the information to the SPD.

3.6. Implements DoD standard and automated information and data collection systems within maintenance organizations and operations squadrons that perform maintenance.

3.7. Responds quickly to maintenance failures and limitations of all space systems.

3.8. Develops and standardizes the organizational structure, responsibilities, policies, and procedures for:

- Maintenance management.
- Maintenance status and inventory reporting.
- Maintenance training.
- Maintenance on prime mission equipment (PME), real property (RP), real property installed equipment (RPIE), and support equipment (SE).

3.9. Ensures that maintenance management procedures meet these requirements:

- Resource protection.
- Physical security.
- Information security.
- Industrial security.
- Environmental.

4. Numbered Air Forces:

4.1. Develop and implement wartime space systems logistics support plans and annexes.

4.2. Implement space systems maintenance requirements of war fighting plans as necessary.

4.3. Monitor the impact of unit maintenance on war fighting capability and assist MAJCOMS if needed.

5. Wings:

- 5.1. Identify system deficiencies and prioritize and implement system improvements and modernizations in accordance with Air Force modification procedures.
- 5.2. Participate in Product Improvement Working Groups.
- 5.3. Perform required maintenance production, engineering, and management activities.
- 5.4. Maintain configuration control of assigned space systems in accordance with configuration management procedures that Air Force Material Command (AFMC) and the lead MAJCOM jointly determine.
- 5.5. Manage an effective environmental program as it relates to maintenance management.

6. AFMC:

- 6.1. Gives MAJCOMs adequate logistics, engineering, and RDT&E support.
- 6.2. Maintains configuration management of assigned space systems through the SPD.
- 6.3. Manages assigned depot-level maintenance.
- 6.4. Helps the lead MAJCOM with maintenance management.

Section C—Maintenance Management

7. Space System Segments. Effective maintenance management integrates these four segments:

- Launch.
- Control.
- Space.
- User.

7.1. The launch segment includes:

- The launch vehicle.
- SE.
- RPIE.
- Facilities on the launch base.
- Sites supporting the launch base, such as launch range assets.

7.2. The control segment includes these types of equipment that perform the telemetry, tracking, and commanding of orbiting space vehicles:

- PME.
- SE.
- RPIE.

7.3. The space segment includes:

- Spacecraft.
- Other equipment that remains in space.

7.4. The user segment includes these types of equipment, other than space-based, that provide navigation data, surveillance data, communication links, and other products to the user:

- PME.
- SE.
- RPIE.

7.4.1. User equipment may be:

- Fixed.
- Mobile.
- Embedded in other systems (for example, global positioning system receivers or military satellite communication terminals in aircraft).

8. Maintenance Management. Traditionally, maintenance management consists of the following functions:

- Maintenance control.
- Maintenance support.
- Maintenance training.
- Maintenance Quality Assurance.

While it may not be practical for some units to organize maintenance using such a framework, they should strive to at least incorporate the functions and concepts listed in this section.

8.1. Maintenance Control Personnel:

- Direct maintenance production.
- Oversee use of resources to support the space system's mission.
- Manage the depot assistance program for the wing.

8.1.1. Scheduling Control Personnel:

- Do short-range planning.
- Prepare daily schedules.

8.1.2. Job Control Personnel:

- Oversee daily scheduled and unscheduled maintenance.
- Prepare and modify job schedules depending on mission priorities.

8.1.3. Material Control Personnel:

- Coordinate space system maintenance and base supply personnel.
- Order parts and supplies.
- Track priority part orders.

8.2. Maintenance support personnel provide launch systems with:

- Data and analysis personnel.
- Technical engineering support personnel.

- Program personnel.

8.2.1. Data and Analysis Personnel:

- Manage DoD standardized and automated data systems.
- Document maintenance management.
- Do maintenance analysis.

8.2.2. Technical engineering support personnel help maintenance technicians when conditions exceed the scope of available technical data.

8.2.3. Program personnel do long-range planning in these areas:

- Manpower.
- Facilities.
- Financial management.

8.3. Maintenance Training Personnel:

- Conducts training for space systems technicians in maintaining equipment and collecting maintenance data.
- Manages a maintenance technician certification program.

8.4. Quality assurance personnel ensure the quality of Air Force and contractor maintenance.

9. Maintenance Data Collection (MDC) and Maintenance Data Analysis (MDA). Effective MDC gives maintenance managers timely, complete, and accurate data for all segments of space systems so that managers can better plan, control, and analyze. Effective MDA lets users and the SPD analyze the collected data to identify reliability and maintenance trends.

9.1. The standard USAF systems for MDC and MDA are:

- The Core Automated Maintenance System (CAMS).
- The Reliability Maintainability Information System (REMIS).

9.2. Some segments of space systems currently lack standard documentation aids (such as work unit codes and standard reporting designators) that CAMS and REMIS require. Until conversion to CAMS and REMIS is accomplished, MDC and MDA may be accomplished using contractor formats.

9.2.1. The contracting agency reviews maintenance data collection and analysis contract provisions upon each contract extension, modification, or reissue to decide whether an element can convert to CAMS and REMIS.

9.2.2. The contracting agency sends detailed reasons for deciding against conversion to the lead MAJCOM/LG and AF/LGM for these agencies to review and approve.

9.3. MDC and MDA on control-segment and user-segment equipment, and applicable portions of the launch segment, begin when a system begins operation.

9.3.1. MDC and MDA on launch vehicles and satellites begin when equipment arrives at the launch base.

9.4. Ground elements of space systems using communications and electronics components follow AFI 21-116 *Communications-Electronics Maintenance Management*.

9.4.1. Elements using communications and electronics components embedded in aircraft follow AFI 21-101 *Maintenance Management of Aircraft*

10. Modification Management. Space systems needing modification depend on MDC and MDA for greater reliability, maintainability, availability, supportability, and operational capability. The lead MAJ-COM and the SPD identify the need for system modification through one of these documents:

- A mission need statement and ORD.
- AF Form 1067, **Modification Proposal**, according to DoDD 5000.2M, *Defense Acquisition Management Documentation and Reports*, AF supplement 1.

10.1. The wing civil engineer reviews or approves modifications or maintenance on RP or RPIE before work may begin, regardless of the user.

11. Assessing Sustainability. Space system sustainability assessments provide senior Air Force leadership with the current and projected capability of space systems to meet both peacetime and wartime needs. These assessments include:

- The Weapon System Program Assessment Review (WSPAR).
- The USAF Long Term Readiness Assessment (ULTRA).
- The Sustainment Executive Management Report (SEMR).

11.1. The SPD, with help from the lead and operational commands:

- Provides these assessments to the Air Staff when required.
- Bases the assessments on validated operational requirements and war mobilization plan assignments.
- Includes the status of actions that personnel have taken to restore or maintain the required capability.
- Uses MDC and MDA information to make assessments and to help determine and justify specific corrective actions.

John M. Nowak, , Lt General, USAF
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Attachment 1

GLOSSARY OF ACRONYMS

Abbreviations and Acronyms

AFI—Air Force instruction
AFPD—Air Force policy directive
AFMC—Air Force Materiel Command
AFSPC—Air Force Space Command
CAMS—Core Automated Maintenance System
DoD—Department of Defense
HQ—Headquarters
MAJCOM—Major command
MDA—Maintenance data analysis
MDC—Maintenance data collection
ORD—Operational requirement document
PME—Prime mission equipment
RDT&E—Research, development, test and evaluation
REMIS—Reliability maintainability information system
RP—Real property
RPIE—Real property-installed equipment
SE—Support equipment
SEMR—Sustainment executive management report
SPD—System program director
ULTRA—USAF long-term readiness assessment
WSPAR—Weapon system program assessment review