TECHNICAL MANUAL

ORGANIZATIONAL MAINTENANCE

MANUAL:

OVERALL SYSTEM

MAINTENANCE

GUIDED MISSILE AIR DEFENSE SYSTEM AN/TSQ-73

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ORGANIZATIONAL MAINTENANCE MANUAL: OVERALL SYSTEM MAINTENANCE GUIDED MISSILE AIR DEFENSE SYSTEM AN/TSQ-73

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CHAPTER 1
INTRODUCTION

1-1. Scope. This manual contains overall system maintenance information for the AN/TSQ-73 Guided Missile Air Defense System (fig 1-1). This manual is for use by personnel responsible for maintaining the system. Chapter 1 provides a description of physical and technical characteristics. Chapter 2 provides theory of operation. Chapter 3 describes emergency operation. Chapter 4 provides fault isolation and troubleshooting information. Chapter 5 describes checks and adjustments. Chapter 6 provides maintenance data, including removal and replacement procedures. Chapter 7 includes system cabling data and diagrams Refer to List of Applicable Publications TM 9-1425-655-L for related publications and reference documents.

1-2. Forms, Records, and Reports. Refer to DA PAM 738-750 for the use and completion of all forms required for operation and maintaining the equipment.

1-3. Destruction of Army Materiel to Prevent Enemy Use. If capture of this equipment appears imminent, or if the equipment must be abandoned, it should be destroyed to prevent enemy use. Destruction procedures should be carried out only on orders from the cognizant authority. Refer to TM 43-0002-21 for procedures required for destruction of the equipment and related materiel. Recorded tape transport cartridges and classified manuals are priority items requiring destruction..

1-4. Reporting Equipment Publications Improvements. Reporting of errors and omissions and recommendations by the individual user for improving this publication is encouraged. Reports should be submitted on DA Form 2028, Recommended Changes to Publications, and forwarded to Commander, U S Army Missile Command, ATTN: AMSMI-MMC-LS-LP, Redstone Arsenal, AL 35898-5238. You may also send in your comments electronically to our e-mail address ls-lp@redstone-emh2 army mil or by fax 205-842-6546/ DSN 788-6546.

1-5. Abbreviations. Refer to appendix A for a list of abbreviations used in this manual and related AN/TSQ-73 operation and maintenance manuals.

1-6. AN/TSQ-73 Expendable Supplies and Materials List. The list of expendable supplies and materials is included as appendix B.

1-7. Official Nomenclature. AN/TSQ-73 system nomenclature associated with the equipment described is listed in table 1-1. For further identification, a cross-reference is provided for the common name used in this technical manual.

Table 1-1. AN/TSQ-73 Official Nomenclature

Official nomenclature	Common name
Air Defense System, Guided Missile AN/TSQ-73	AN/TSQ-73 system (battalion configuration) AN/TSQ-73 system (brigade configuration)
Shelter, Electrical Equipment S-529/TSQ-73	System shelter (battalion configuration) System shelter (brigade configuration)
Console, Assault Fire Command, Guided Missile OJ-299/TSQ-73	Display console
Data Display Group OD-96/TSQ-73	Data Display Group (DDG)
Recorder-Reproducer, Guided Missile System, RD-449/TSQ-73	Magnetic Tape Unit (MTU)
Test Set, Electronic Circuit Plug-In Unit TS-3317/TSQ-73	Module Test Set (MTS)

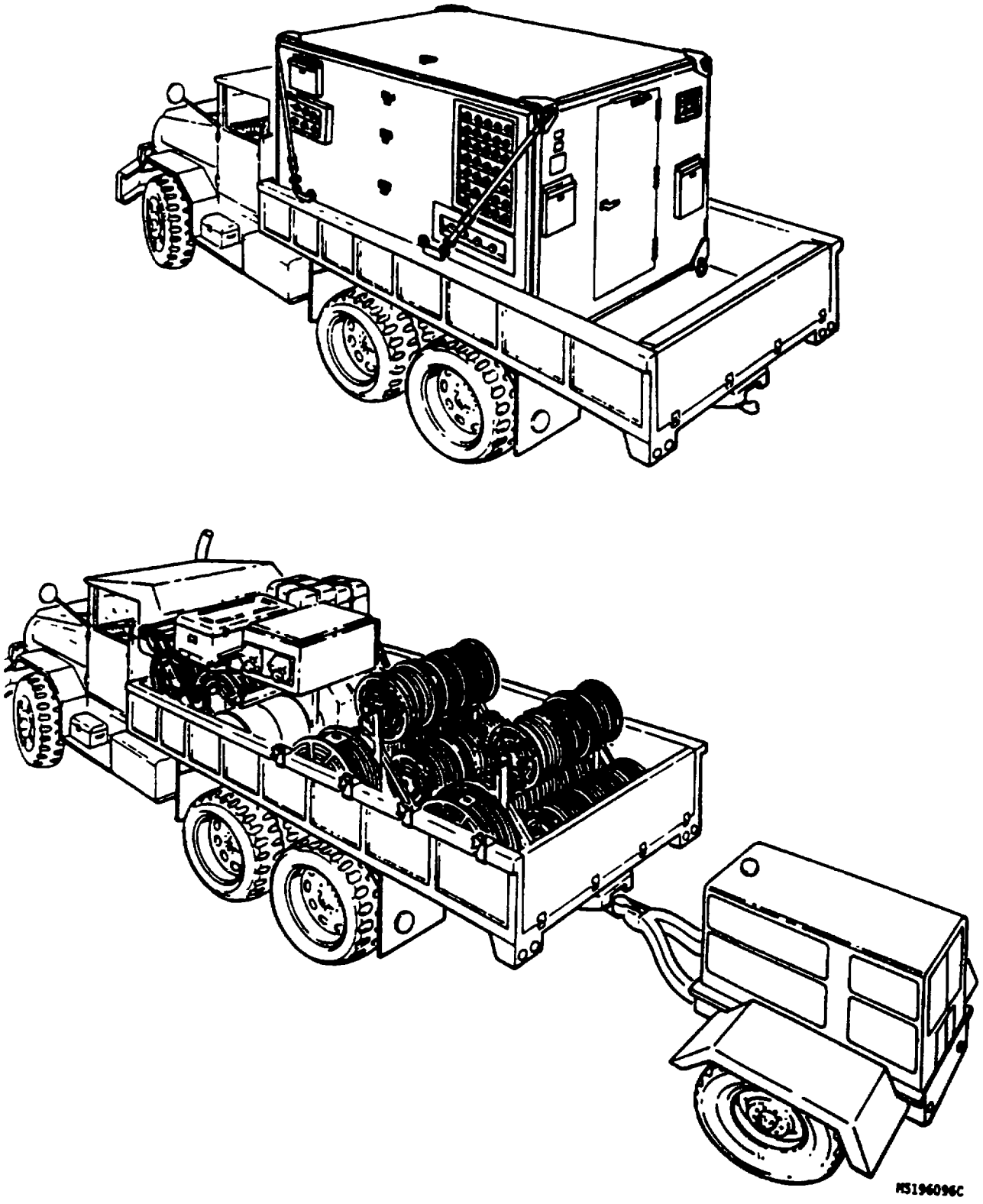

Figure 1-1. Guided Missile Air Defense System ANITSQ-73

Section II. DESCRIPTION AND DATA

1-8. General. System-level equipment covered in this manual includes the following major units: shelter (unit 1), motor generator (unit 4), diesel engine generator (unit 5), transport equipment, and the nonequipment level units contained in the shelter. When supplied, Modular Collective Protection Equipment (MCPE) is used with the system in a Chemical, Biological, Radiological (CBR) warfare environment.

1-9. Description. A brief functional description of the AN/TSQ-73 system is provided in chapter 2 of this manual. Refer to TM 9-1425-650-12, Overall System Description Manual for a complete physical description of the equipment, including a brief description of related AN/TSQ-73 operation and equipment maintenance technical manuals.

Section III. MAINTENANCE CONCEPT

1-10 General. Maintenance is based on a repair-by replacement concept, using computer-controlled fault detection and isolation (maintenance and diagnostic) programs aided by unit Built-In Test Equipment (BITE), a Module Test Set (MTS), and manual fault isolation flow charts. To facilitate repair, most assemblies are replaceable. Some minor repairs can be made, depending on the availability of tools and spare parts . Specialized repairs, however, such as backplane wire wraps, cannot be made. Repairs should be made to the lowest level of replaceable part, assembly, or unit, as applicable. The failed assembly or unit is sent to a General Support Card repair facility or to a CONUS depot for repair Support equipment such as trucks, generator, air conditioners, etc., will utilize the standard five-level maintenance concepts established by the appropriate technical manuals.

1-11. Maintenance and Diagnostic (M&D) Programs. The Maintenance and Diagnostic (M&D) programs, which comprise computer software used to support system maintenance, include the system status function, fault detection programs, and fault isolation programs.

a. System Status Function. The system status function of the M&D program provides central monitoring of errors detected by the various. Fault Detection (FD) functions, including the Central Processor Unit (CPU), 32K memory unit, Radar Interface Equipment (RIE), display consoles, Video Simulator Unit (VSU), data communications, Keyboard Printer Unit (KPU), Magnetic Tape Unit (MTU), and Data Display Group (DDG). The system status function is activated periodically by the Battalion Operations Computer Program (BOCP) executive function to analyze FD reports, to activate 32K memory unit and CPU FD, and to evaluate loop test results. All FD error messages (TMON, ERROR, OVERLOAD, and RIE LOOP TEST) are output on the KPU and their codes displayed on the Automatic Data Processor (ADP) DIAGNOSE CODE Light-Emitting Diode (LED) display by the system status function. The system status function Initiates the CPU FD function at least once every 10 seconds and determines if error reports Indicate equipment failures. When the FD functions detect an error in the system, the system status function is activated to process the error.

b. *Fault Detection (FD) Programs.* The FD functions localize system hardware failures to major units. These functions, with the exception of the 32K memory unit and CPU FD functions that are activated by the system status function, are part of the operational input/output processing function and do not require operator interface. Each major subsystem requires its own FD program When an error is detected in operation, it is reported to the system status function for processing.

c. Fault Isolation (FI) Programs. The Fault Isolation (FI) functions isolate hardware faults to a small group of modules in the malfunctioning unit. These functions, with the exception of the ADP FI functions, are loaded and called by the executive function of the operational program in response to test switch inputs from the ADP status and control panel or from KPU entries. Each major subassembly requires its own FI program In addition, the RIE and 32K memory unit have special unit FI programs to locate unusual or intermittent faults when the standard FI program indicates fault-free The results of FI tests are reported to the system status function for processing. All FI programs are run on single units and, with the exception of the KPU, their procedures are contained in the respective equipment manuals.

d. Subsystem Loop Test Function. The subsystem loop test function is part of the on-line FD program Every 10 seconds a loop test is performed on the KPU, MTU, DDG, Display Output Unit (DOU), and display console. The loop test function for Radar Interface Equipment-Video Simulation Unit (RIE-VSU) equipment is performed each radar scan. The results are reported to the system status function, which initiates a test monitor (TMON) message if an error exists, or, in the case of the RIE-VSU, if loop test error messages are indicated.

1-12. System Fault Correction. Major functional units of the system are continuously monitored by the FD functions under control of the system status function . When an error condition exists, the system status function notifies the operator either through the KPU or on the DDG. The operator can then choose to operate the system in a degraded mode, if possible, or proceed with repair If the FD function does not indicate a particular unit, troubleshooting procedures contained in chapter 4 of this manual should be performed.

1-13. System Repair. System repair is restricted to replacement of a defective assembly, minor wiring repairs (not including wire-wrap), and cable replacement . The repair concept assumes that most failures occur in a replaceable module, which includes printed circuit cards, power supplies, memory, and Cathode Ray Tubes (CRT). Also replaceable are front panel and chassis-mounted components such as lamps and switches, and panel-mounted discrete components and readouts.

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