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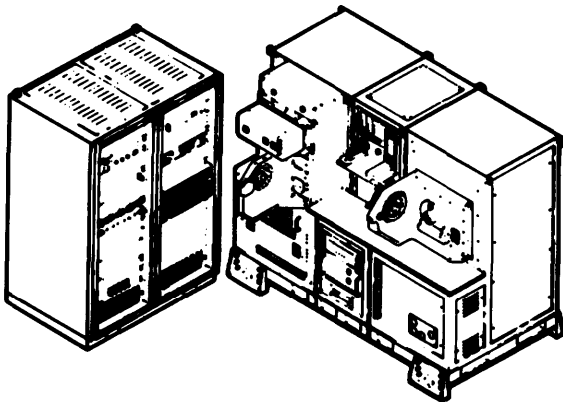
TECHNICAL MANUAL

**ORGANIZATIONAL AND DIRECT SUPPORT
MAINTENANCE MANUAL
FOR**

**ELECTRONIC EQUIPMENT TEST FACILITY
TADS/PNVS AUGMENTATION EQUIPMENT**

13082808-39, 13231600, 13231650 AND 13231800

TROUBLESHOOTING AND ALINEMENT



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**HEADQUARTERS,
DEPARTMENT OF THE ARMY
1 JULY 1988**

ORGANIZATIONAL AND DIRECT SUPPORT
 MAINTENANCE MANUAL
 FOR
 ELECTRONIC EQUIPMENT TEST FACILITY
 TADS/PNVS AUGMENTATION EQUIPMENT

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in the back of this manual direct to: Commander, U.S. Army Aviation and Troop Command, ATTN: AMSAT-I-MP, 4300 Goodfellow Blvd, St. Louis, MO 63120-1798. A reply will be furnished to you.

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CHAPTER 7
TROUBLESHOOTING

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OVERVIEW

This chapter provides instructions for organizational level troubleshooting of the Electronic Equipment Test Facility (EETF) TADS/PNVS Augmentation Equipment. Section I contains an introduction and troubleshooting methodology. Sections II thru VI contain troubleshooting information.

Section I. INTRODUCTION

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7-1. INTRODUCTION

7-1

a. SCOPE

This section provides an introduction of material contained in this chapter and a description of methodology used to troubleshoot (isolate) faults within the TADS/PNVS augmentation equipment.

b. CHAPTER LAYOUT

Chapter 7 consists of 6 sections. Section I contains introductory information. Sections II thru VI contain troubleshooting information for the Electronic Station, Dayside Test Bench, Test Console Test Bench, Nightside Test Bench and Common Modules, respectively. Each section contains peculiar data for the equipment it supports. All sections contain troubleshooting procedures. Each troubleshooting procedure or paragraph contains the following information:

- Description - describes the self-test module (program) and what is being tested.
- Replacement Procedure Reference - provides a cross-reference from reference designation and part number to procedural paragraph number for removal and installation.
- Segments or Faults - duplicates fault message information which is used to identify each fault segment. This display is also shown on the Video Display Terminal (VDT).
- Corrective Action - provides sequential steps to isolate malfunctions by removal and installation of assemblies, manually troubleshoot cables, and provides additional tests which can be performed. If a fault cannot be isolated, the problem is deferred to higher level maintenance.

7-2. TROUBLESHOOTING METHODOLOGY

7-2

a. GENERAL

Troubleshooting is the process by which a problem is detected (identify that a problem exists), isolated (eliminate from a suspect group the cause of the problem), and repaired (restore system to proper operation). Troubleshooting methodology is the method or how a problem is detected, isolated, and repaired.

TADS/PNVS augmentation equipment uses a combination of built-in-test equipment (BITE) and operator interface/interaction to detect, isolate, and repair system in the shortest time possible. TADS/PNVS augmentation equipment fall into the following categories:

- Electronics
- Cabinets, Slides, Base
- Blowers, Lamps, Etc.
- Cables, Harnesses
- Glass, Mechanical

These categories are discussed in later paragraphs.

(1) Detection.

Faults can be detected by visual inspection, symptoms, functional inference, and automatic diagnostic testing using BITE and software programs. Troubleshooting of TADS/PNVS augmentation equipment is done in this manner.

Testing and troubleshooting of various electronic, electrical, electro-mechanical, and optical assemblies are done using BITE and a self-test program. This program contains 37 stand-alone self-test modules. Each module tests a particular function or system operation (refer to chapter 2 for an explanation of self-test program and procedures). If no faults are detected, a pass message is displayed on the VDT. If a fault is detected, a failure message is displayed on the VDT.

(2) Isolation.

Each self-test module will isolate a fault to a single function operation. This operation is dependent on a group of parts performing properly. To isolate the parts, each part is replaced beginning with the part most likely to fail. This continues until the part least likely to have failed is replaced. This will eliminate each member of that group until the failed part is found. Replacement order is displayed on VDT screen.

(3) Repair.

When a malfunctioning part is identified, it is repaired and restored to its proper operation. Often, isolation and repair happen at the same time. During isolation, a part is replaced and self-test performed to verify system performance. If system does not function properly, then the next item is replaced. If system does function properly, then last item replaced is bad. This item is either repaired, sent to depot for repair, or discarded as applicable.

7-2. TROUBLESHOOTING METHODOLOGY (cont)

7-2

b. ELECTRONICS TROUBLESHOOTING

Self-test module VSGST is used as an example to describe electronics troubleshooting methodology. VSGST is the input code for Video Signal Generator (VSG) assembly 2A2A7A1 self-test (ST).

To locate the paragraph containing troubleshooting information for this module, you would:

(1) By reference designation the VSG (2A2A7A1) is physically located in Test Console Test Bench 2A2, electronics drawer A7.

(2) Refer to Chapter 7 table of contents and determine the section number containing troubleshooting information for the Test Console Test Bench 2A2. You will find that this information is located in Section IV.

(3) Refer to Section IV table of contents and determine the paragraph number for Video Signal Generator (VSG) Case Assembly 2A2A7A1 Input Code: VSGST.

(4) This paragraph will contain a description, replacement procedure reference, repair messages (fault segments), and corrective actions.

A flow chart showing the troubleshooting process, and a description of each block is provided in this paragraph. Description of the flow chart is keyed by numbers in the "symbol" column. These numbers correspond to the circled numbers located near the blocks on the flow chart.