TECHNICAL MANUAL

**OPERATOR'S AND UNIT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST FOR**

**AVIATION MISSION PLANNING SYSTEM (AMPS)
P/N 1004008
NSN 7010-01-503-4461 (EIC
N/A)**

**HEADQUARTERS, DEPARTMENT OF THE ARMY
20 MARCH 2006**

.WARNING SUMMARY

This warning summary includes general safety precautions and instructions that must be understood and applied during the operation and maintenance of this system/equipment to protect personnel against injury, death, or long-term health hazards. A summary of safety and hazardous material warnings that should be heeded in conduct of operation and maintenance is provided below.

EXPLANATION OF SAFETY WARNING ICONS

ELECTRICAL – electrical wire to arm with electricity symbol running through human body shows that shock hazard is present.

EXPLANATION OF HAZARDOUS MATERIAL WARNINGS ICON

VAPOR – human figure in a cloud shows that material vapors present a danger to life or health.

EYE PROTECTION – person with goggles shows that the material will injure the eyes.

FIRE – flame shows that a material may ignite and cause burns.

CHEMICAL – drops of liquid on hand shows that the material will cause burns or irritation to human skin or tissue.

SAFETY WARNING DESCRIPTION

<u>WARNING</u>

A Ground Fault Circuit Interrupter (GDCI) should be connected in-line between the AC/DC converter/charger and the generator during outdoor operation. A GFCI is not supplied as part of the AMPS equipment.

When using the European power adapter, it is imperative to ensure that the ground pin of the AC cord connects directly to the ground pin of the European power adapter.

When using the Litton External Power Module at 400HZ operation, special grounding is required.

Do not allow any liquid inside the computer and peripheral equipment. Introducing liquids into an electronic environment can cause electrical shock or fire.

HAZARDOUS MATERIALS DESCRIPTION

<u>WARNING</u>

ISOPROPYL ALCOHOL, 90%, GRADE A

FLAMMABLE SOLVENTS are used in the maintenance of this equipment. Adequate ventilation should be provided while using isopropyl alcohol. Prolonged breathing of the vapor should be avoided. The solvent is not to be used near heat, sparks, or open flames; it is highly flammable. Since isopropyl alcohol dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use solvent-resistant gloves. If the solvent is taken internally, consult a physician immediately.

5 SAFETY STEPS TO FOLLOW IF SOMEONE IS THE VICTIM OF ELECTRICAL SHOCK

1 DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2 IF POSSIBLE, TURN OFF THE ELECTRICAL POWER

3 IF YOU CANNOT TURN OFF THE ELECTRICAL POWER, PULL, PUSH, OR LIFT THE PERSON TO SAFETY USING A DRY WOODEN POLE OR A DRY ROPE OR SOME OTHER INSULATING MATERIAL.

4 SEND FOR HELP AS SOON AS POSSIBLE.

5 AFTER THE INJURED PERSON IS FREE OF CONTACT WITH THE SOURCE OF ELECTRICAL SHOCK, MOVE THE PERSON A SHORT DISTANCE AWAY AND IMMEDIATELY START ARTIFICIAL RESUSCITATION.

INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

LIST OF EFFECTIVE PAGES

NOTE

ON A CHANGED PAGES, THE PORTION OF THE TEXT AFFECTED BY THE LATEST CHANGE IS INDICATED BY A VERTICAL LINE OR OTHER CHANGE SYMBOL IN THE OUTER MARGIN OF THE PAGE.

Date of issue for original and changed pages are:
                    Original   0   20 March 2006

Total number of pages for front and rear matter is 19 and total number of work packages is 23 consisting of the following:

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WP 0002 00 (4 pgs)	0
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 * Zero in this column indicates an original page.

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WASHINGTON, D.C., 20 MARCH 2006

TECHNICAL MANUAL

OPERATOR'S AND UNIT MAINTENANCE MANUAL INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST FOR

AVIATION MISSION PLANNING SYSTEM (AMPS)

P/N 1004008

NSN 7010-01-503-4461 (EIC N/A)

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 or DA Form 2028 (Recommended Changes to Publications and Blank Forms), located in the back of this manual direct to: Commander, U.S. Army Aviation and Missile Command, ATTN: AMSAM-MMC-MA-NP, Redstone Arsenal, AL 35898-5000. A reply will be furnished to you. You may also provide DA Form 2028 information to AMCOM via e-mail, fax, or the World Wide Web. Our fax number is : DSN 788-6546 or Commercial 256-842-6546. Our e-mail address is: 2028@redstone.army.mil. Instructions for sending an electronic 2028 may be found at the back of this manual immediately preceding the hard copy 2028. For the World Wide Web use: https://amcom2028.redstone.army.mil.

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*SUPERSEDES TM 11-7010-301-23&P DATED 01 FEBRUARY 2000

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

HOW TO USE THIS MANUAL

This manual contains information you will need to set up, operate and maintain the Aviation Mission Planning System (AMPS). To locate information in this manual, use the Table of Contents in the front of the manual.

Chapter 1 of the AMPS manual begins with general information you will need, such as a description of the forms and records you must have and equipment characteristics and physical description.

Read the Description and Theory of Operation, Chapter 1, thoroughly. It will help you to better understand the equipment and will make operation and maintenance easier.

Chapter 2, Operator Instructions, provides those tasks necessary to successfully place the AMPS in operation to include connecting optional equipment such as the rugged printer and data transfer modules. When performing an operational task, always read the complete procedure before starting the task.

In the troubleshooting section, Chapter 3, are troubleshooting tables which provide corrective actions to isolate malfunctions where necessary.

You are responsible for performing the operator maintenance required to maintain the equipment. These procedures are provided in Chapter 4 and include upon receipt service requirements, preventive maintenance, and organizational replace and repair procedures.

Supporting information for the AMPS is included in Chapter 5. This information is important as it details who is authorized to perform maintenance (Maintenance Allocation Chart), what replacement parts are available and what tools are required (Repair Parts and Special Tools List).

Become familiar with this manual. A complete understanding of the manual as well as the equipment will make your job easier.

CHAPTER 1

GENERAL

INFORMATION,

DESCRIPTION AND THEORY OF OPERATION

SCOPE

This technical manual provides operational information and operator's maintenance instructions for the Aviation Mission Planning System (AMPS).

Figure 1. Aviation Mission Planning System

MAINTENANCE FORMS, RECORDS, AND REPORTS

Department of the Army forms and procedures used for equipment maintenance will be those prescribed by (as applicable) DA PAM 750-8, The Army Maintenance Management System (TAMMS) Users Manual; DA PAM 738-751, Functional Users Manual for the Army Maintenance Management System – Aviation (TAMMS-A); or AR 700-138, Army Logistics Readiness and Sustainability.

REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

If your AMPS needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design or performance. Put it on SF 368, Product Quality Deficiency Report. Mail it to the address specified in DA PAM 750-8, DA PAM 738-751, or as specified by the acquiring activity. We will send you a reply.

CORROSION PREVENTION AND CONTROL (CPC)

Corrosion Prevention and Control (CPC) of Army materiel is a continuing concern. It is important that any corrosion problems with this item be reported so that the problem can be corrected and improvements can be made to prevent the problem in future items.

While corrosion is typically associated with rusting of metals, it can also include deterioration of other materials, such as rubber and plastic. Unusual cracking, softening, swelling or breaking of these materials may be a corrosion problem.

If a corrosion problem is identified, it can be reported using SF 368. Use of key words such as "corrosion", "rust", "deterioration", or "cracking" will ensure that the information is identified as a CPC problem. The form should be submitted to the address specified in DA PAM 750-8 or DA PAM 738-751.

OZONE DEPLETING SUBSTANCES (ODS)

This document has been reviewed for the presence of Class 1 Ozone Depleting Chemicals. All references to Class 1 Ozone Depleting Chemicals have been removed from this document by substitution with chemicals that do not cause atmospheric ozone depletion.

DESTRUCTION OF ARMY MATERIEL TO PREVENT ENEMY USE

For procedures to destroy this equipment to prevent its use by the enemy, refer to TM 750-244-1-5.

PREPARATION FOR STORAGE OR SHIPMENT

Components for shipment should be packaged in accordance with MIL-STD-2073 1P or ASTM D3951. Refer to MIL-STD-129D for marking procedures after packaging.

WARRANTY INFORMATION

The AMPS/AMPS Field-Ready components are warranted for five (5) years; PCMCIA for two (2) years based on date of manufacture. The warranty shall provide repair/replacement of equipment at no additional charge to the Government. The contractor shall be responsible for processing all warranty actions to the appropriate warrantor. If an AMPS fails, System Support Representative (SSR) and AMPS Hotline contact information can be obtained at https://www.amps.army.mil. These representatives will verify warranty information and assist users with repair actions. If not warranted, the prime contractor will provide the user with repair and shipping quotes to be paid for with user funds. Report all defects to your supervisor, who will take the appropriate action.

LIST OF ABBREVIATIONS/ACRONYMS

Abbreviations/Acronym	Name
AC	Alternate Current
AH	Attack Helicopter
AMPS	Aviation Mission Planning System
AR	Army Regulation
AVIM	Aviation Intermediate Maintenance
BATT	Battery
BII	Basis of Issue Item
CD	Compact Disc
CH	Cargo Helicopter
COEI	Component of End Item
CPC	Corrosion Prevention and Control
D	Depth
DA	Department of the Army
DA PAM	Department of the Army Pamphlet
DC	Direct Current
DoD	Department of Defense
DTM	Data Transfer Module
DTR	Data Transfer Receptacle
DVD	Digital Video Disc
EIR	Equipment Improvement Report
GB	Gigabyte
GFCI	Ground Fault Circuit Interceptor
H	Height
HDD	Hard Disc Drive
IDM	Improved Data Modem
IEEE	Institute of Electrical and Electronics Engineers
IrDA	Infrared Data Association
K	Kilobyte
Lbs	Pounds
LNO	Liaison Officer
MAC	Maintenance Allocation Chart
MB	Megabyte
MIL STD	Military Standard
NATO	North American Treaty Organization
NiMH	Nickel Metal Hydride
No	Number
ODS	Ozone Depleting Substance
OH	Observation Helicopter
Oz	Ounce
PC	Portable Computer
PCMCIA	Personal Computer Memory Card Interface Association
PCU	Portable Computer Unit
RAM	Random Access Memory
R/C DTR	Rockwell Collins Data Transfer Receptacle
ROM	Read Only Memory
RPSTL	Repair Parts and Special Tools List
SCSI	Small Computer System Interface
SDTMR	Smith Industries Data Transfer Module Receptacle
SF	Standard Form

LIST OF ABBREVIATIONS/ACRONYMS (CONTINUED)

Abbreviations/Acronym   **Name**

SINCGARS   Single Channel Ground/Air Radio System
SVGA   Super Video Graphics Array
TM   Technical Manual
UH   Utility Helicopter
USB   Universal Serial Bus
VAC   Volt Alternate Current
VDC   Volt Direct Current
W   Width
WP   Work Package

EQUIPMENT DESCRIPTION AND DATA   0002 00

EQUIPMENT CHARACTERISTICS, CAPABILITIES, AND FEATURES

The Aviation Mission Planning System (AMPS) is a mission planning/battle synchronization tool that automates aviation mission planning tasks, and generates mission data for use in either hard copy or electronic formats. The AMPS is comprised of a Portable Computer Unit (PCU) with the following optional equipment: the MU-1005/A and MU-1114/A Data Transfer Receptacles, the Portable Computer – Improved Data Modem (PC-IDM), and the Ruggedized Printer Assembly. Each AMPS component also includes necessary cables, connectors, fuses, batteries, and other ancillary equipment.

LOCATION AND DESCRIPTION OF MAJOR COMPONENTS

Portable Computer Unit (PCU)

The AMPS PCU is a versatile and compact ruggedized laptop computer providing the central interface between AMPS components. The AMPS PCU provides standard laptop QWERTY keyboard and a Hula Point Mouse. The direct-sunlight-readable display is designed to remain readable in low or very bright light. Data storage is provided through a 40 GB removable hard drive plus DVD/CD read/write drive, a flash memory card, and a 1.44 floppy disk drive. A variety of interfaces are available to include RS-232/485 serial ports (2), Universal Serial Busses 2.0 (2), a parallel port, 10/100 Base T Ethernet, 56.6K Modem, external Video, Infrared Data Association (IrDA), audio in-out, headphone, and microphone. The AMPS PCU can operate for eight hours on a single battery charge and is issued with two internal hot swappable DR-36 batteries for continuous usage. Additionally, the AMPS PCU includes a NATO Power Cable for operation directly from a vehicle power source and an external rugged power adapter/battery charger for operation from other external power sources. The AMPS PCU is also issued with a AMPS software recovery CD-ROM, a Quick Start guide, and a ruggedized carry case.

MU-1005/A Data Transfer Receptacle (Rockwell Collins Data Transfer Receptacle [R/C DTR])

The MU-1005/A Data Transfer Receptacle, also known as the Rockwell Collins Data Transfer Receptacle (R/C DTR), is optional equipment providing a physical interface between the AMPS PCU and the Rockwell Collins data transfer cartridge. The R/C DTR must be placed within the reach of connecting power and data cables. The R/C DTR contains a microprocessor with Erasable – Programmable Read-Only Memory (EPROM), MIL-STD 1553B bus interface, RS-232 serial bus interface, and an internal power supply. The R/C DTR provides a read/write interface with the Data Transfer Cartridge which is used to upload and download mission data at the aircraft. Power is supplied to the R/C DTR through the AC/DC Converter/Charger and the R/C Power Cable. Refer to TM 11-7025-337-23 for more detailed information on the R/C DTR.

MU-1114/A Data Transfer Receptacle (Smith Industries Data Transfer Module Receptacle [SDTMR])

The MU-1114/A Data Transfer Receptacle, also known as the Smith Industries Data Transfer Module Receptacle (SDTMR), is optional equipment providing a physical interface between the AMPS PCU and the Data Transfer Module Cartridge. The SDTMR must be placed within the reach of connecting power and data cables. The SDTMR housing unit provides a Small Computer System Interface (SCSI) 50 pin ribbon cable connector and a standard 4 pin power connector. The SDTMR provides a read/write interface with the Data Transfer Module Cartridge which is used to upload and download mission data at the aircraft. Power is supplied to the SDTMR through the AC/DC Converter/Charger and the SDTMR Power Cable. Refer to TM 11-7025-337-23 for more detailed information on the SDTMR.

Portable Computer – Improved Data Modem (PC-IDM)

The Portable Computer – Improved Data Modem (PC-IDM) is optional equipment providing a physical interface with the SINCGARS tactical suite of radios. The PC-IDM is a 2 channel tactical modem/router manufactured as a PC-Card and is installed into the Type II PCMCIA port of the AMPS PCU. The PC-IDM provides 2 data cables for connecting with a SINCGARS radio. An optional 20 foot SINCGARS cable can also be used to increase the distance between the SINCGARS radio and the AMPS PCU.

Ruggedized Printer Assembly

The Ruggedized Printer Assembly is a commercially available Hewlett Packard HP-990C/980C/960C series Printer with a Ruggedized housing. The Ruggedized Printer Assembly comes with power cord, black printer cartridge, tri-color printer cartridge, printer software with operating system drivers, quick start poster, and quick reference guide.

EQUIPMENT DATA

Table 1 provides information pertaining to the physical and electrical characteristics of the AMPS and AMPS optional equipment.

Table 1. Equipment Data

ITEM	DESCRIPTION
Portable Computer Unit (PCU)	
Dimensions	12"W x 4"H x 11"D
Weight	11.5 lbs
Power	18-32 VDC direct connect via DC or NATO power cable, 115-230 VAC, 47-440 HZ, single ruggedized power adapter/charger, Two (2) DR-36 form factor LiIon or NiMH batteries.
Processor	Intel® Centrino™ Mobile Technology suite includes Intel® Pentium® M Processor (1.3 GHz upgradeable to 1.6 GHz), Intel® 855PM chipset, and accommodation for Intel® Pro Wireless 2100
Operating System	Windows 2000; optional Windows NT, 98, XP, or Linux
RAM	512 MB RAM expandable to 1 GB 64 MB DDR Video RAM ATI MOBILITY™ RADEON™ 9000 chipset
Storage	40 GB Internally/Externally Shock Isolated Rugged Removable High Capacity Hard Disk Drive, Internal DVD/CD-RW, Internal 1.44 MB Floppy Dick Drive
Display System	13.3" MILBRITE ELG Sunlight Readable Display (1024x768 resolution)
Keyboard/Pointing Device	Environmentally sealed and backlit full QWERTY keyboard and Hula Point Mouse
Interfaces	RS-232/485 (2), UBS 2.0 (2), IEEE-1284 Parallel, IrDA, SVGA, 56K Modem, 10/100T Base Ethernet, audio in-out, headphone, and microphone; Type II PCMCIA card slots with Clamp-Tite strain relief
MU-1005/A Data Transfer Receptacle (Rockwell Collins Data Transfer Receptacle (R/C DTR))	
Dimensions	5.75"W x 2.5"H x 8.664"D
Weight	3.6 lbs (w/o cartridge)
Power	+16 VDC to +32 VDC at 5 Watts maximum
Interfaces	RS-232 Maintenance Interface, Two (2) MIL-STD 1553B Bus Interfaces
Connectors	Male 29 pin, CPN 372-2308-050 (mates with data cartridge)
	Male 55 pin MIL-SPEC circular connector, P/N MS27508E16B35A
	Female 3 lug twin axial connector, CPN 357-0622-010
	Female 4 lug twin axial connector, CPN 357-0622-020
MU-1114/A Data Transfer Receptacle (Smith Industries Data Transfer Module Receptacle (SDTMR))	
Dimensions	5.83"W x 1.65"H x 8.0"D
Weight	3 lbs
Power	+5 VDC to +12 VDC
Interfaces	Two (2) SCSI Interfaces
Connectors	(2) Female SCSI connectors; Male 3 pin power connector
PC IDM Kit	
Dimensions	2.13"W x .39"H x 5.31"D
Weight	5 oz (with pigtail)
Power	Est. +5 VDC, 0.4 A, 2 W
Ruggedized Printer Assembly	
Dimensions	17.5"W x 8.75"H x 17.5"D
Weight	28 lbs
Power	+25.2 to +36 VDC
Connectors	Female 25 pin Parallel connector; Male 3 pin power connector

SYSTEM OPERATION

The Aviation Mission Planning System (AMPS) is a combination of hardware and software designed for Army Aviation mission planning and battle synchronization which automates mission planning tasks such as route generation, performance planning, terrain analysis, data transfer, and mission rehearsal and debriefing. The following illustrates AMPS system functionality.

CHAPTER 2

OPERATOR

INSTRUCTIONS

<u>**CONTROLS AND INDICATORS**</u>   **0004 00**
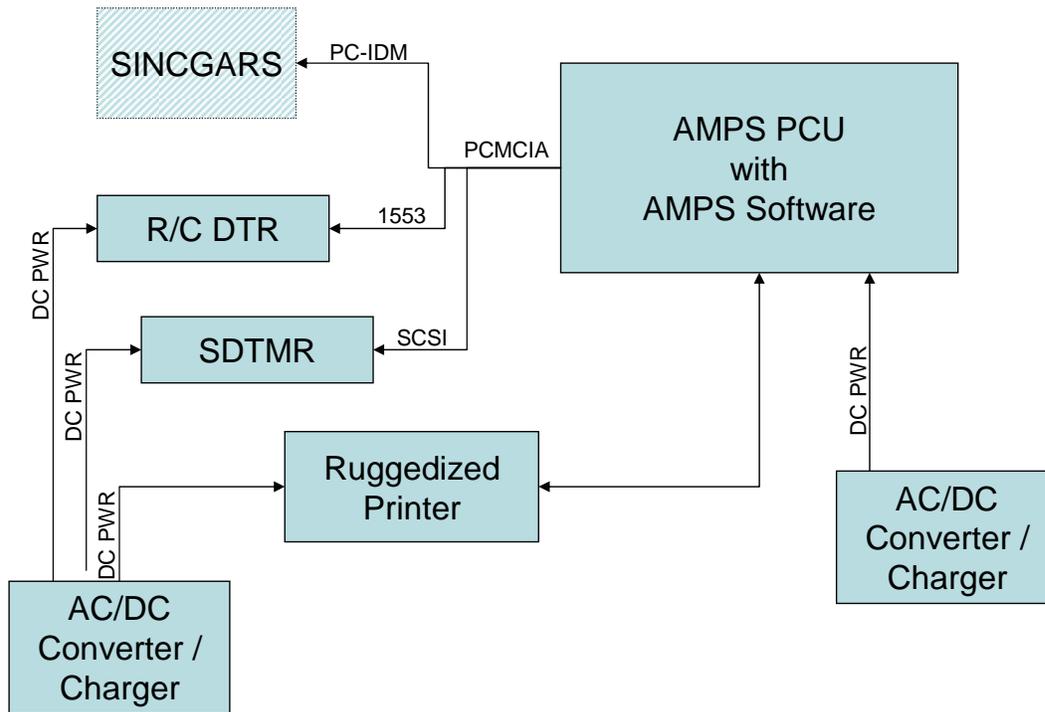
INTRODUCTION AND SCOPE

Before attempting to operate the Aviation Mission Planning System (AMPS), be sure to familiarize yourself with the controls, indicators, and connectors described in this work package. This manual does not attempt to describe the features and operation of the AMPS software or of the Microsoft Windows operating system. For more information and instructions on software, please review the electronic help available within these packages. See the Mission Planning Pocket Guide, SED-AMPS-MMPG-001, for detailed use of the Aviation Mission Planning System.

PORTABLE COMPUTER UNIT (PCU)

Figure 1 illustrates the controls and indicators located on the front of the Portable Computer Unit (PCU) with a brief description of each of their functions.
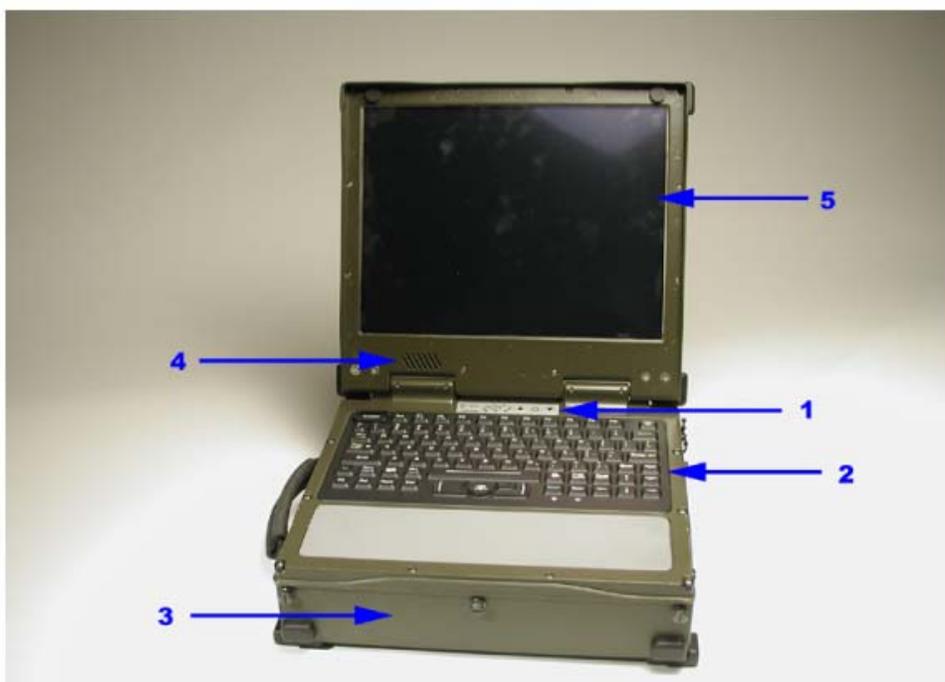
Figure 1. PCU Front View Controls and Indicators

Item No.	Item Name	Description and Use
1	Power Panel	Provides operator with PCU power status. Refer to Figure 6 for Power Panel details.
2	Keyboard	Allows operator to enter data and commands. Refer to Figure 7 for details.
3	Peripheral Bays	Bays contain the DVD/CD, Hard Disk Drive, Batteries, and 1.44 MB Floppy Disk Drive. Refer to Figure 8 for details on each component contained in the peripheral bays.
4	Speaker	Provides audio information to the operator
5	Display Screen	Provides visual information to the operator.

Figure 2 illustrates the controls and connectors located on the right side of the PCU with a brief description of each of their functions.
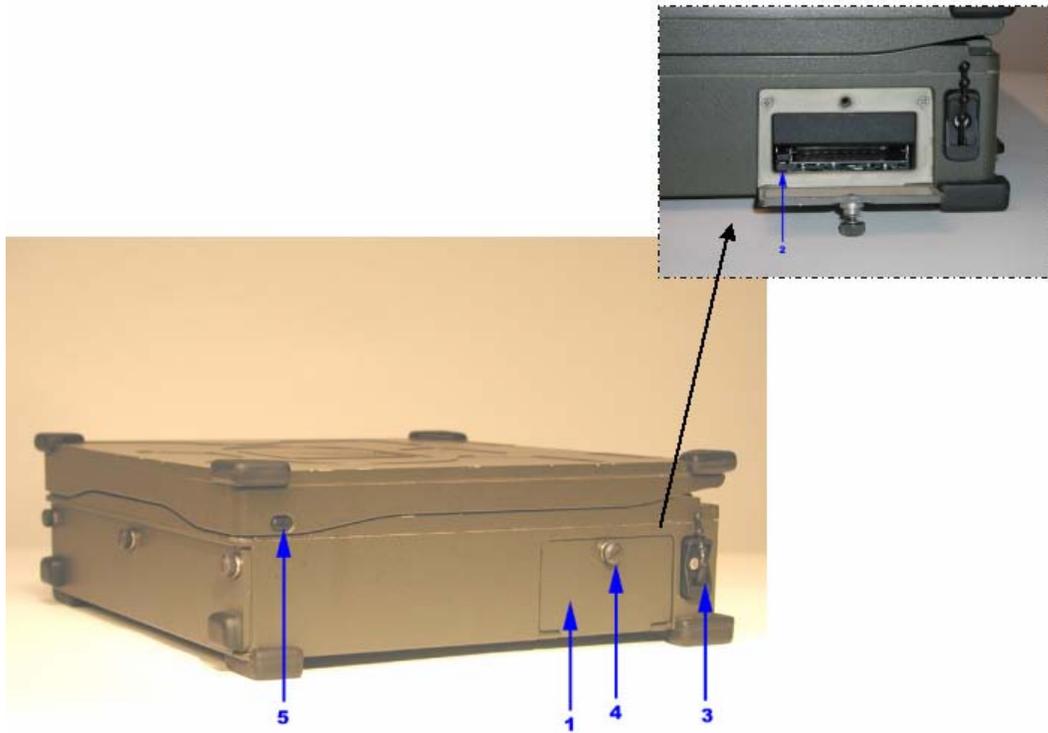
Figure 2. PCU Right Side View Controls and Connectors

Item No.	Item Name	Description and Use
1	PCMCIA Card Bay	Bay contains slots for insertion of PC Cards.
2	PCMCIA Card Eject Buttons	Buttons are pressed to eject PC Card from adjacent PC Card slot.
3	PCMCIA Card Cable Clamp	Used to provide strain relief for PC Card external cabling.
4	PCMCIA Card Access Door Fastener	Rotated counterclockwise to unlatch the access door. Rotated clockwise to ensure the access door is in the closed position.
5	Display Latch Buttons	Used to secure the display assembly in the closed position for transportation. Press to release the display.

CONTROLS AND INDICATORS 0004 00

Figure 3 illustrates the connectors located on the back of the PCU with a brief description of each of their functions.
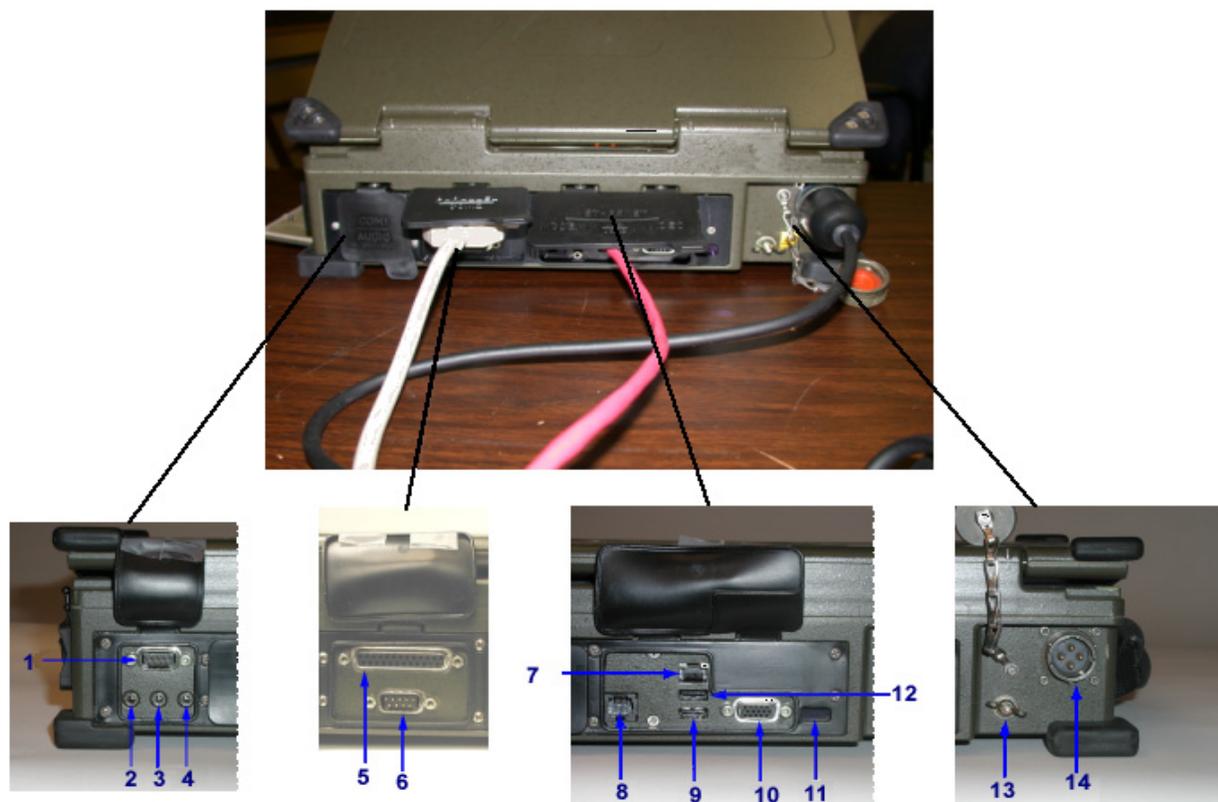
Figure 3. PCU Back Connectors

Item No.	Item Name	Description and Use
1	Serial Port, Com 1	Both serial ports are configured for RS-232 operation, but can be configured for RS-485 operation.
2	Line In Connection	The connector uses a 1/8 inch min-stereo jack.
3	Amplified Audio Out	The connector uses a 1/8 inch min-stereo jack.
4	Microphone In	The connector uses a 1/8 inch min-stereo jack.
5	Parallel Port	The 25 pin connector is provided for printer connection or other parallel devices.
6	Serial Port Com 2	Both serial ports are configured for RS-232 operation, but can be configured for RS-485 operation.
7	10/100 Base-T Ethernet Port	The Ethernet port is IEEE-802.3 compliant and is used to connect to a Local Area Network (LAN).
8	Modem Port	56.6K
9	USB 2 Port	The port is USB 2.0 compliant.
10	External Video Monitor Connector	This connection is for an external video monitor with resolution of up to 1280 pixels X 1024 pixels. 16.7 million colors are supported.
11	Infrared Transmitter/Receiver	A two-way wireless infrared Data Association (IrDA) 1.1/1.0 is provided for use with remote pointing devices and/or remote keyboard.
12	USB 1 Port	The port is USB 2.0 compliant
13	Ground Stud	The ground stud is provided to allow other electronic items to have a common ground with the PCU.
14	Input Power Connector	Provides connection to a 18-32 VDC, 110 W maximum power source.

PCU Batteries

Figure 4 illustrates the controls and indicators located on the PCU batteries with a brief description of each of their functions.

Figure 4. Battery Controls and Indicators

Item No.	Item Name	Description and Use
1	Battery Charge Indicator	Each battery comes equipped with an indicator which shows the level of charge of the battery.
2	Pull Tab or Strap	Each battery comes with either a pull tab or strap for assistance in removing the battery.
3	Red Button	Activates charge indicator.

Power Converter/Battery Charger

Figure 5 illustrates the controls, indicators, and connectors located on the Power Converter/Battery Charger with a brief description of each of their functions.
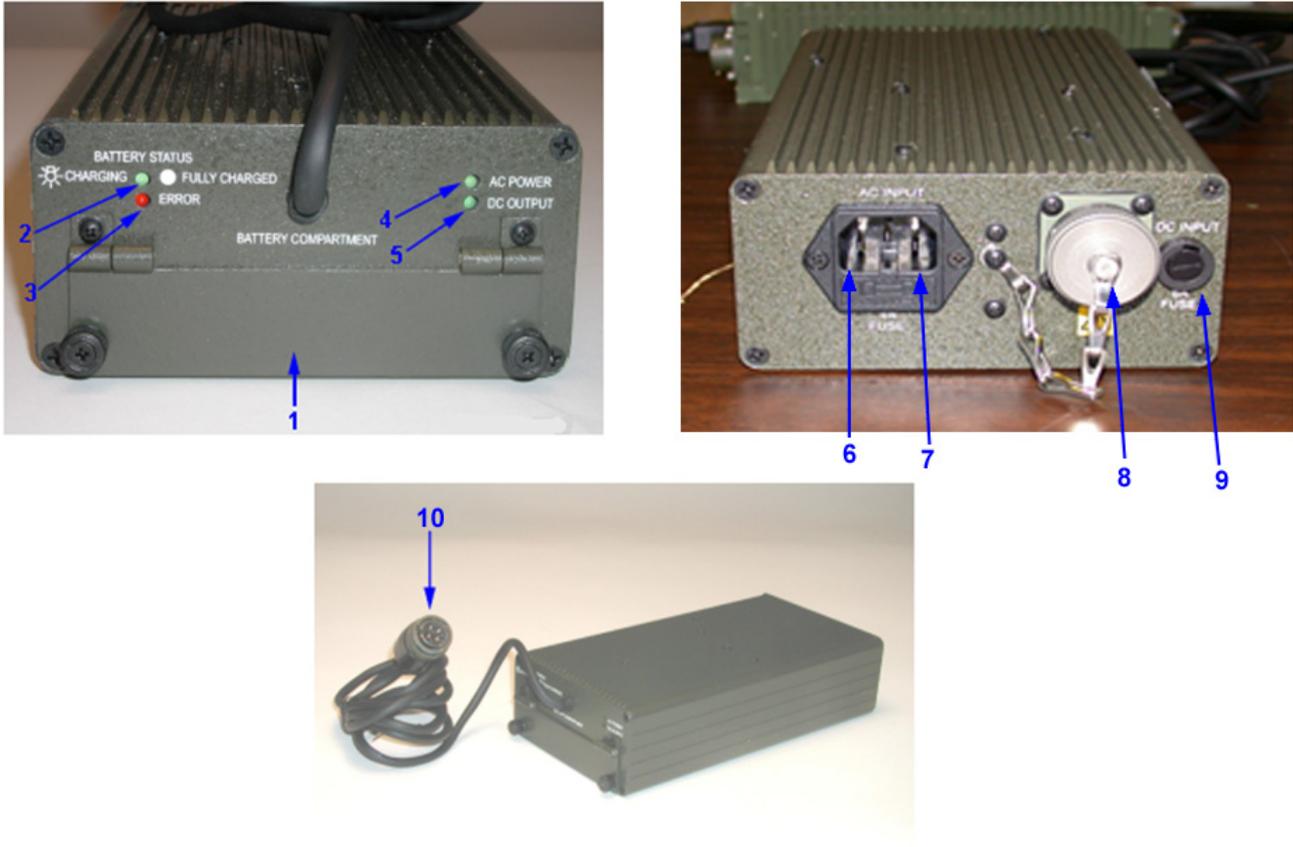
Figure 5. Power Converter/Battery Charger Controls and Indicators

Item No.	Item Name	Description and Use
1	Battery Compartment	Provides a slot to insert the battery into charger to be charged.
2	Charge Indicator	Flashes to indicate the battery is being charged. Lit steadily to indicate the battery is fully charged.
3	ERROR Indicator	Lit to indicate the battery is not within temperature or voltage specification and cannot be charged.
4	AC POWER Indicator	Lit to indicate that AC power is applied.
5	DC POWER Indicator	Lit to indicate that DC output is functioning properly.
6	AC Input Connector	Provides interface to accept 110-220 VAC at 47-440 Hz from commercial power source.
7	AC Fuse	AC Fuse and spare AC fuse located here.
8	DC Input Connector	Provides interface to accept 18-32 VDC from military vehicle.
9	DC Fuse	DC fuse located here.
10	DC Output Cable	Provides 24 VDC from the Power Converter/Battery Charger to the PCU.

PCU Power Panel

Figure 6 illustrates the controls and indicators of the Power Panel located on the top portion of the keyboard with a brief description of each of their functions.
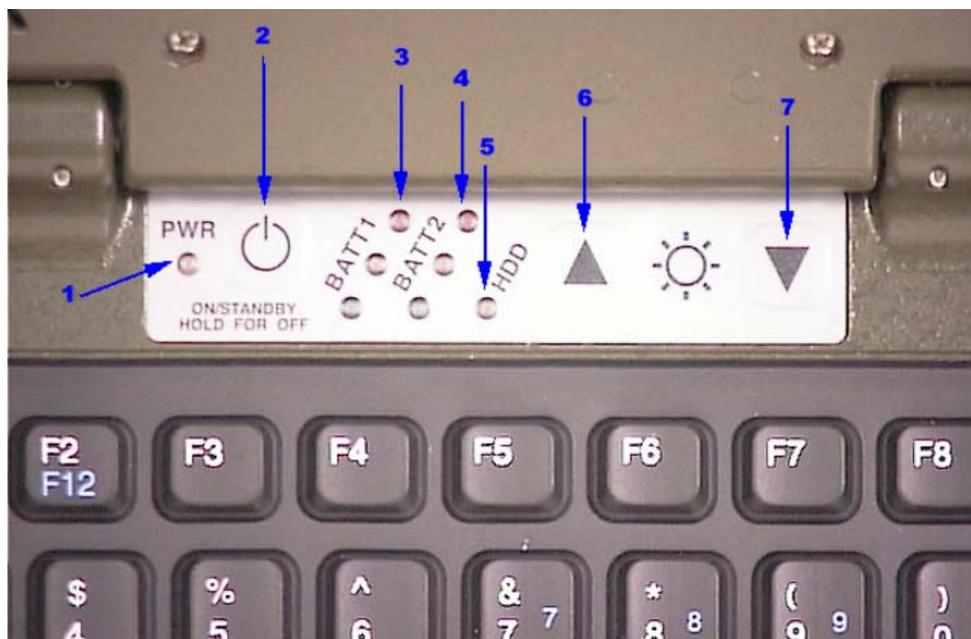
Figure 6. Power Panel Controls and Indicators

Item No.	Item Name	Description and Use
1	Power Indicator	Lit green indicates the computer is powered up. Lit yellow indicates the computer is in the standby mode.
2	ON/STANDBY Pushbutton	Pushbutton switch used to power up the computer, place the computer in the standby mode, and power down the computer.
3	BATT 1 Status Indicator	Three LEDs indicate the charge level of battery number 1. Refer to Table 1 for details.
4	BATT 2 Status Indicator	Three LEDs indicate the charge level of battery number 2. Refer to Table 1 for details.
5	HDD Indicator	When lit or blinking, indicates the Hard Disk Drive is being accessed.
6	Brightness Increase Pushbutton	Pressed to increase the brightness of the display.
7	Brightness Decrease Pushbutton	Pressed to decrease the brightness of the display.

Table 1. Battery Status Indicators

Indication	Description
Green Only Lit	76% to 100% charge.
Green and Yellow Lit	51% to 75% charge.
Yellow Only Lit	26% to 50% charge.
Yellow and Red Lit	10% to 25% charge.
Red Only Lit	Less than 10% charge.
Red Only Flashing	2% or less charge.
No Indicators Lit	Battery not installed or fully discharged.
All Indicators Flashing Sequentially	Battery is defective.

PCU Keyboard

Figure 7 illustrates the keyboard controls and indicators with a brief description of their function.
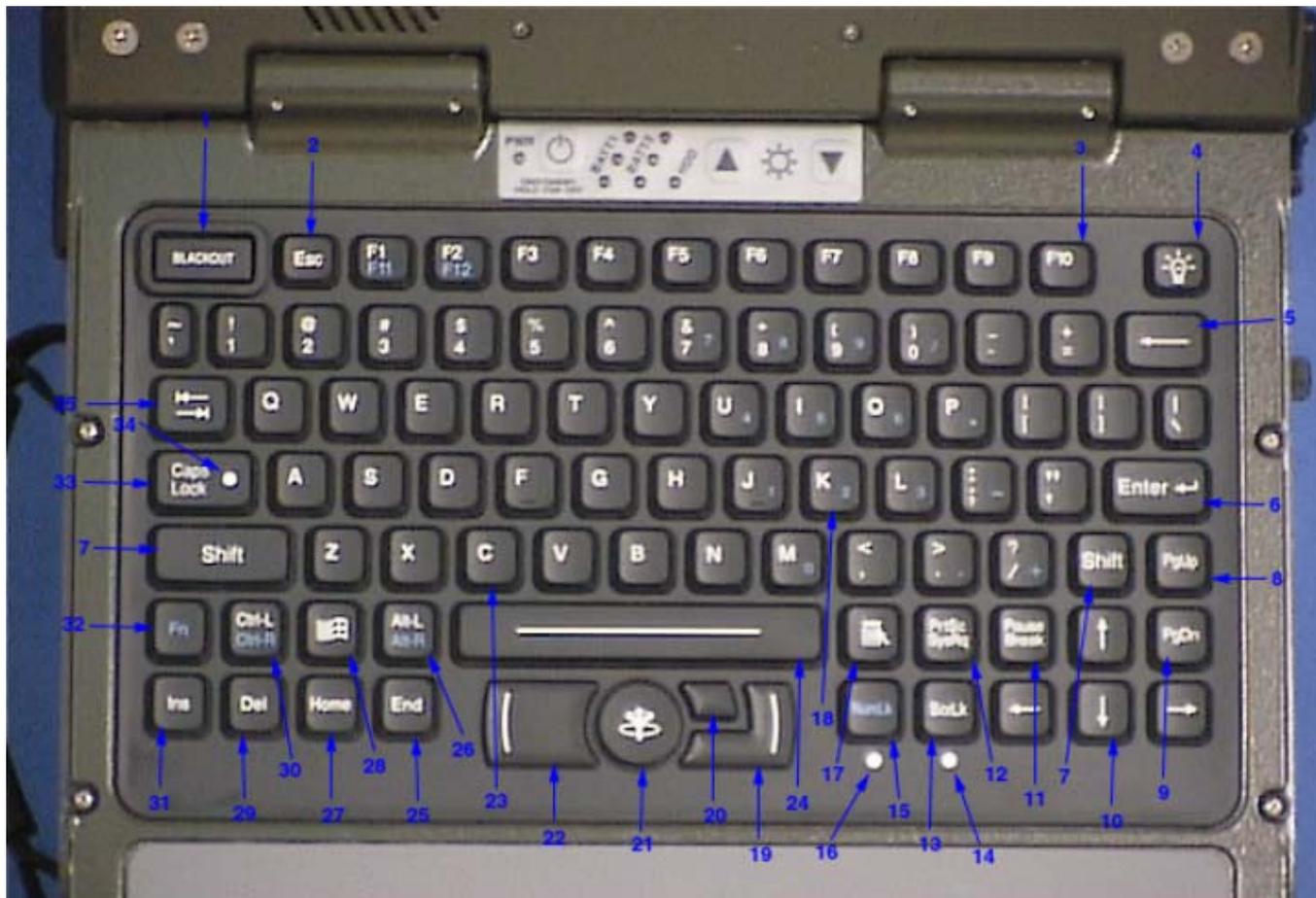
Figure 7. PCU Keyboard Controls and Indicators

Item No.	Item Name	Description and Use
1	Blackout Key	Pressed to extinguish display and keyboard backlighting. Pressed again to return to normal operation.
2	ESC Key	Pressed to cancel a program function (Escape function).
3	Functions Keys	The functions of each key are defined by the application software in use. The F1/F11 key is pressed alone to execute the F1 function. When pressed simultaneously with the Fn key, the F11 function is executed. The F2/F12 key is pressed alone to execute the F2 function. When pressed simultaneously with the Fn key, the F12 function is executed.
4	Backlight Key	Pressed to toggle the keyboard backlight on and off.
5	Backspace Key	Pressed to delete the character to the left of the cursor indicator of the display.
6	Enter Key	Pressed to perform the Enter function.
7	Shift Keys	Pressed simultaneously with the alphanumeric or symbol keys to enter uppercase letters or the symbols marked on the upper portion of the key. They are also used with certain function keys to select the function performed by that key.
8	Pg Up Key	Pressed to position the cursor at the same relative position on the previous displayed page/frame.
9	Pg Down Key	Pressed to position the cursor at the same relative position on the next displayed page/frame.
Item No.	**Item Name**	**Description and Use**

TM 1-7010-386-12&P

CONTROLS AND INDICATORS   0004 00

10	Cursor Control Keys	Pressed to move the cursor one space in the direction of the arrow marked on the key.
11	Pause/Break Key	Pressed alone to stop data scrolling up screen. Pressing any key will cause data to resume scrolling. Pressed with the Ctrl key to perform the Break function. The Break function interrupts the operation in progress.
12	Prt SC/Sys Rq Key	Pressed alone to copy the display screen image to the software clipboard. The Systems Request function of this key is not used.
13	Scroll Lock Key	The behavior of the Scroll Lock key depends on the particular software application in use. In many applications, the Scroll Lock key has no assigned function. When active within a software application, the Scroll Lock key modifies the behavior of the arrow keys. When the scroll lock mode is on, the arrow keys would scroll the contents of displayed data.
14	Scroll Lock Indicator	When lit, indicates that the Scroll Lock feature is active. Data will scroll up or down the screen when the cursor is at the bottom or top screen boundary, respectively.
15	Num Lock Key	Pressed to alternately activate and deactivate the Number Lock feature.
16	Num Lock Indicator	When lit, indicates that keys of numeric keypad section (item 18) will function as a calculator keypad (pressing key enters number or performs function shown on right side of the key top). When not lit, indicates that numeric keypad section functions as part of the alphanumeric key pad, entering the character marked on the key.
17	Application Key	Pressed to activate the application-specific Context menu (same as clicking the right mouse button).
18	Numeric Keypad Section	When the Num Lock mode is active, the keys perform as a calculator key pad, entering the number value or performing the function marked on the right side of the key top. When the Num Lock mode is not active, these keys a part of the alphanumeric keypad (item 23) entering the character marked on the key.
19	Right Mouse Button	Pressed to activate the right mouse button function as defined by the application software.
20	Middle Mouse Button	Pressed to activate the middle mouse button function as defined by the application software.
21	Pointing Device	Used to position the cursor on the display screen. Pressing the button to the left, right, up, or down moves the cursor accordingly.
22	Left Mouse Button	Pressed to activate the left mouse button function as defined by the application software.
23	Alphanumeric Keys	Standard typewriter keyboard. Pressing each alphabetical key alone enters the lower case letter marked on the key. Pressing the alphabetical key simultaneously with the Shift key enters the upper case letter marked on the key. Pressing a number or symbol key simultaneously with the Shift key enters the character marked on the upper portion of the key.
24	Space Bar	Pressed to enter a space.
25	End Key	Pressed to position the cursor at the last position of the current line.
26	Alt-L/Alt-R Key	The Alternate key is used with another key to perform a command or function. Pressed alone to perform the left alternate function. Pressed simultaneously with the Fn key to perform the right alternate key function. The command or function is defined by the application software in use.
27	Home Key	Pressed to position the cursor at the first position of the current line.
28	Windows Key	Pressed to activate the Start Menu.
29	Del Key	The Delete key function is defined by the application software in use.
30	Ctrl-L/Ctrl-R Key	The Control key is used with another key to perform a command or function. It is pressed alone to perform the left control function. It is pressed simultaneously with the Fn key to perform the right control key function. The command or function performed is defined by the application software in use.
31	Ins Key	The Insert key function is defined by the application software is use.
32	Fn Key	Used with a dual function key to execute the alternate function of the key.,
33	Caps Lock Key	Alternate action key that activates and deactivates the CAPS Lock mode.
34	Caps Lock Indicator	When lit, indicates the alphabetical keys are locked in the upper case (Caps) mode (pressing the key enters an upper case letter)
35	Tab Key	Pressed alone to position the cursor at the next tab position to the right. Pressed simultaneously with the Shift key to position the cursor to the next tab position to the left.

PCU Drive/Battery Slots

Figure 8 illustrates the controls, indicators, and connectors on the Drive/Battery Slots with a brief description of their function.
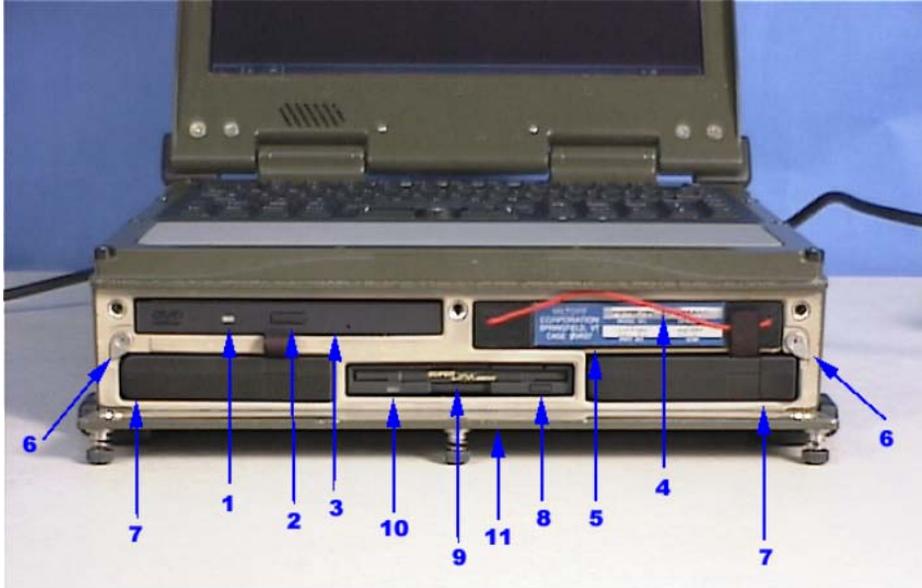
Figure 8. Drive/Battery Slots Controls, Indicators, and Connectors

Item No.	Item Name	Description and Use
1	DVD/CD Busy Indicator	When the indicator is lit or blinking, it indicates the disk is being accessed.
2	DVD/CD Eject Button	Pressed to unload and eject a disk from the drive.
3	DVD/CD Tray	Holds the disk.
4	Hard Disk Drive Cord	Used to remove the Hard Disk Drive.
5	Hard Disk Drive Slot	Holds the Hard Disk Drive.
6	Battery Retainers	Used to secure the batteries in position.
7	Battery Slots	Used to house the batteries.
8	Floppy Disk Eject Button	Press to unload and eject the floppy disk.
9	Floppy Disk Access Slot	Opening for insertion and removal of a floppy disk.
10	Floppy Drive Busy Indicator	When the indicator is blinking, indicates the floppy disk is being accessed.
11	Peripheral Bay Access Door	Provides access to the drive slots.

NOTE

Located next to Item No. 3 is a small hole. Inserting an extended
paperclip or similar object into the hole will open the DVD/CD
tray without power required.

DATA TRANSFER DEVICES

MU-1005/A ROCKWELL COLLINS DATA TRANSFER RECEPTACLE (R/C DTR)

Figure 9 illustrates the controls, indicators, and connectors on the MU-1005/A Rockwell Collins Data Transfer Receptacle (R/C DTR) with a brief description of its function. See TM 11-7025-337-23 for a more detailed explanation of the characteristics and maintenance of this equipment.

NOTE

The MU-1005/A R/C DTR is used on the AH64A, AH64D and OH58D CDS2 aircraft only.
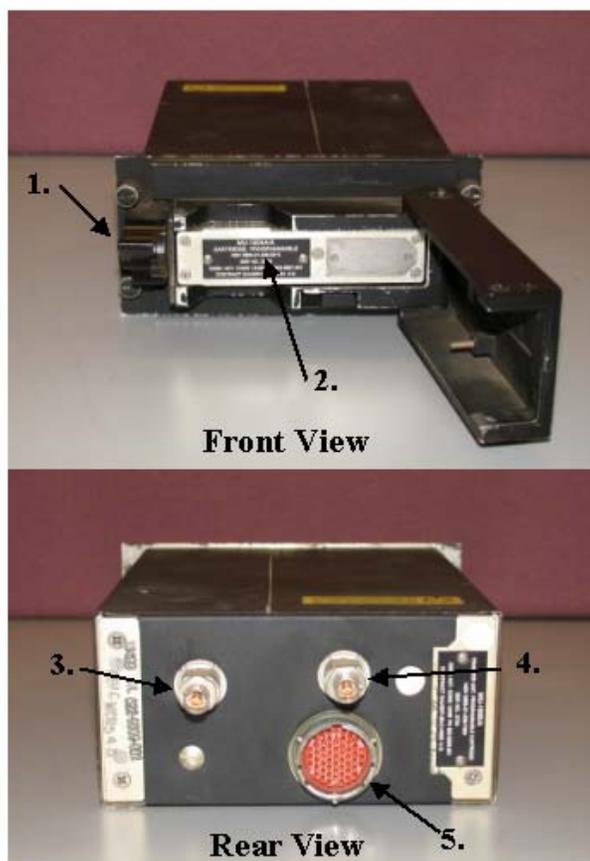
Figure 9. MU-1005/A R/C DTR Controls, Indicators, and Connectors

Item No.	Item Name	Description and Use
1	Door Latch	Secures the data transfer receptacle door in the closed position.
2	Data Cartridge	Provides data storage and transfer between aircraft and AMPS.
3	Connector J3	4-lug female twin axial connector. Interfaces with MIL-STD 1553 interface cable B.
4	Connector J2	3-lug female twin axial connector. Interfaces with MIL-STD 1553 interface cable A.
5	Connector J1	Male 55-pin circular connector. Interfaces with the power cable providing DC power to the R/C DTR.

MU-1114/A Smith Industries Data Transfer Module Receptacle (SDTMR)

Figure 10 illustrates the controls, indicators, and connectors on the MU-1114/A Smith Industries Data transfer Module Receptacle (SDTMR) with a brief description of its function. See TM 11-7025-337-23 for a more detailed explanation of the characteristics and maintenance of this equipment.

NOTE

The SDTMR is used on CH47, UH60, and OH58D CDS4 and above aircraft only.

Figure 10. MU-1114/s Smith Industries Data Transfer Module Receptacle (SDTMR) Controls, Indicators, and Connectors

Item No.	Item Name	Description and Use
1	Power Toggle Switch	Enables power to the data transfer module receptacle and data cartridge when the data transfer receptacle door is closed.
2	SCSI Connector J2	Female SCSI connector providing interface with the PC through the Slim SCSI 1480B PCMCIA Card.
3	Power Connector J1	Male 3-pin circular connector. Interfaces with the power cable providing DC power to the SDTMR.
4	Ground Stud	The ground stud is provided to allow other electronic items to have a common ground with the SDTMR.
5	SCSI Connector J1	Female SCSI connector providing alternate interface through a SCSI cable.
6	Door Latch	Secures the data transfer receptacle door in the closed position.
7	Low Temp Indicator Light	Provides visual warning of low temperature conditions which may hinder data cartridge performance.
8	Cond Indicator Light	Provides visual warning of condensation present within the SDTMR.
9	PWR Indicator Light	Lights to indicate power is applied to the SDTMR.

10	SCSI Address Selector	Selects appropriate SCSI address 0 through 7.
11	Low Temp Indicator Light	Provides visual warning of low temperature conditions which may hinder data cartridge performance.
12	Condensation Indicator Light	Provides visual warning of condensation present within the SDTMR.
13	Power Indicator Light	Lights to indicate power is applied to the SDTMR.

RUGGEDIZED PRINTER ASSEMBLY

Figure 11 illustrates the controls, indicators, and connectors on the Ruggedized Printer Assembly with a brief description of its function.

Top/Front View   Back View
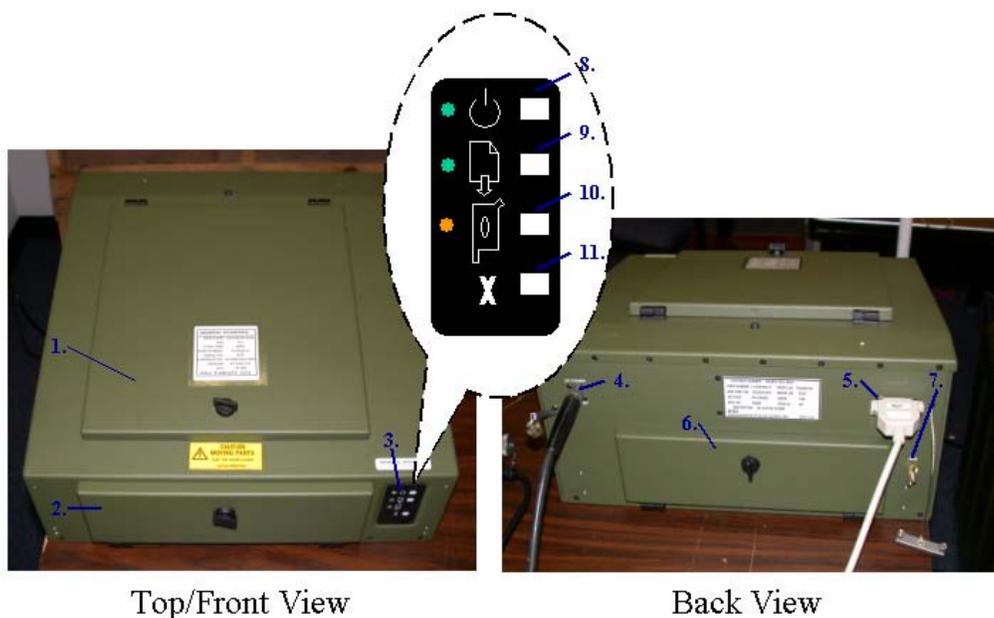
Figure 11. Ruggedized Printer Assembly Controls, Indicators, and Connectors

Item No.	Item Name	Description and Use
1	Top Access Cover	Used to access the Print Cartridges and Print Cartridge Cradle.
2	Front Access Cover	Used to access the Paper Trays.
3	Control Panel	Provides status lights and control buttons.
4	DC Power Connector	3 pin male, 25.2 – 36 VDC Connector.
5	Parallel Connector	The 25 pin connector is provided for connection with the PCU.
6	Rear Access Cover	Provides access to the rear of printer mechanisms.
7	Ground Stud	The ground stud is provided to allow other electronic items to have a common ground with the Printer.
8	Power Light and Button	Power Button turns the printer on and off. The green light above the Power Button flashes when printing is in progress.
9	Resume Light and Button	Light flashes when action is required such as loading paper or clearing a paper jam. When the problem is fixed, press the Resume button to continue printing.
10	Print Cartridge Light and Status	Light flashes when the status of print cartridges needs to be checked or when print cartridge ink level is low.
11	Cancel Button	Cancels current print job.

EUROPEAN POWER ADAPTER

Figure 12 illustrates the European Power Adapter and its description.
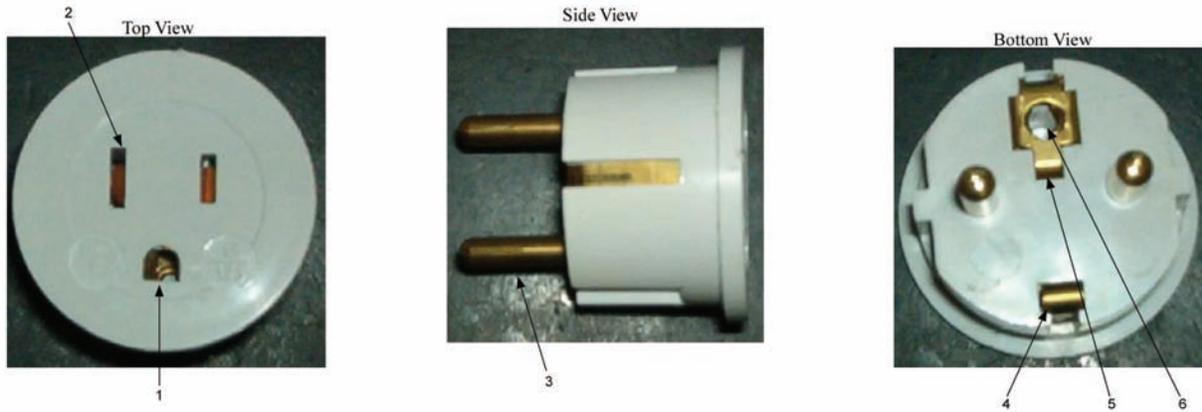
Figure 12. European Power Adapter

Item No.	Item Name	Description and Use
1	Ground Contact	Prevents electrical hazard
2	Plug end	Accepts standard US 115-Volt Plug
3	Schuko Male	Fits most international 230-Volt power outlets
4	Ground Pin	
5	Fuse Holder	Holds Adapter Fuse
6	Fuse	13 Amp, 250 Volt, quick acting (type F) fuse

OPERATION UNDER USUAL CONDITIONS   **0005 00**

PREPARATION FOR USE

UNPACKING INSTRUCTIONS

Remove and open each individual box, exercise care when removing the item so as not to damage the equipment or destroy the packaging materials. Retain the packaging material for use in repackaging and shipping.

To unpack the AMPS proceed as follows:

1. Open each transit case by twisting all the latches counterclockwise.
2. Remove the computer and accessory items from the transit case.
3. Locate all items listed on the packing list
4. Inspect the equipment for any damage incurred during shipment.
5. Check for dents, breaks, water damage, or any evidence of mishandling. Report damage in accordance with procedures in WP 0007 00.

ASSEMBLY

Installing the Aviation Mission Planning System (AMPS) consists of preparing the Portable Computer Unit (PCU) for use and connecting optional equipment (MU-1005/A Rockwell Collins Data Transfer Receptacle (R/C DTR), MU-1114/A Smith Industries Data Transfer Module Receptacle (SDTMR), and Rugged Printer Assembly. For a detailed description of the controls, indicators and connectors used in assembly of the AMPS components, refer to the WP 0004, Description and Use of Operator Controls and Indicators.

CAUTION

Insure computer is off before removing the hard drive.
If it is not, the hard drive will be destroyed

Connecting Portable Computer Unit to Power Source

Power Requirements

The PCU can be powered by two (2) removable, rechargeable batteries, or can be operated from an external 18 to 32-volt, 110 Watt DC power source. The amount of time for stand alone battery operation (without using the external power source) is approximately eight (8) hours. This time assumes both batteries are installed and fully charged. Battery operational time will also vary according to how the PCU is being used and the weather conditions. When possible the PCU should be connected to the Power Converter/Battery Charger or military vehicle for operation. Using one of these sources to power the PCU will apply a trickle charge to the batteries keeping them fully charged.

Internal Power Source

The PCU accommodates two rechargeable batteries. When the PCU is connected to an external power source, the batteries are automatically charged. The battery (BATT) status indicators show the charge status of each battery.

Batteries can be removed and installed with the power on (hot-swapped) to allow for continuous operation under battery power. At least one battery, AC source or DC source, must be in the PCU at all times for continuous operation.

Batteries are not installed in the PCU during shipment.

NOTE

The batteries can be removed and installed with the power on, even when the PCU is not connected to an external power source. To maintain continuous operation, at least one battery with adequate charge must be installed at all times when the computer is not connected to the external power source.

To install batteries, proceed as follows:

1. Open the peripheral bay access door.

2. Rotate the battery retainer to open the battery slot door.

3. Insert a battery into the BATTERY slot 1 or slot 2 until it is fully seated.

4. Ensure the battery pull-out tab is not extended.

5. Rotate the battery retainer to secure the battery in position.

6. Close and latch the peripheral bay access door.

To remove batteries from the PCU, proceed as follows:

1. Open the peripheral bay access door.

2. Rotate the battery retainer to release the battery you wish to remove.

3. Extend the battery pull-out tab or strap.

4. Grasp the battery pull-out tab or strap and gently pull the battery straight out of the computer.

5. Close and latch the peripheral bay access door.

External Power Source

NOTE

When the computer is operated from an external power source, a suitable facility ground should be connected to the rear panel ground stud.

NOTE

AC and DC power source shall not be connected to the charger/converter at the same time.

When connecting to a 110-220 external power source (commercial), follow the instructions below:

1. Connect the female end of the AC Line Cable to the AC Input on the Power Converter/Battery Charger.

2. Connect the male end of the AC Line Cable to a 110-220 external power source. A European Power Converter is provided for use with commercial European power sources.

When connecting to a DC power source, follow the instructions below:

1. Connect the NATO Power Cable from the vehicle DC power source to the (4) pin jack on the back of the PCU.

<div align="center">DC INPUT Connector Pin Assignments</div>

Pin*	Signal
A & B	18 – 32 VDC positive
C & D	DC Return

<div align="center">*Use MS3476W14-4S for mating connector.</div>

2. Connect the larger connector on NATO Power Cable to the vehicle. Refer to the vehicle operator's manual for location of this connector.

The European Power Converter and instructions for its use:

The universal power converter adapts equipment's input power cable for use with most facility power outlets around the world. The universal power adapter can be used with any unit that automatically adjusts to accept either 115 or 230 volts AC and is equipped with a standard US 115-volt input power cable. The adapter is equipped with a fuse limiting input current to 13 amps.

<div align="center">

WARNING

</div>

Incorrect orientation of the two sections of the universal power adapter
will cause the phase (hot) and neutral lines to be reversed. Reversal of
the hot and neutral lines can cause a shock hazard that can result in death
or serious injury when the universal power adapter is used with non-Miltope
equipment. Orient the two sections as described below and shown in Figure 1.

Figure 1 shows the components that comprise the universal power adapter and the use of each item. When connecting the two sections of the universal power adapter together, the US ground contact should not be aligned with the UK ground pin. (If the US ground contact is on the bottom, the UK ground pin should be on the top.)

<div align="center">Figure 1. Universal Power Adapter</div>
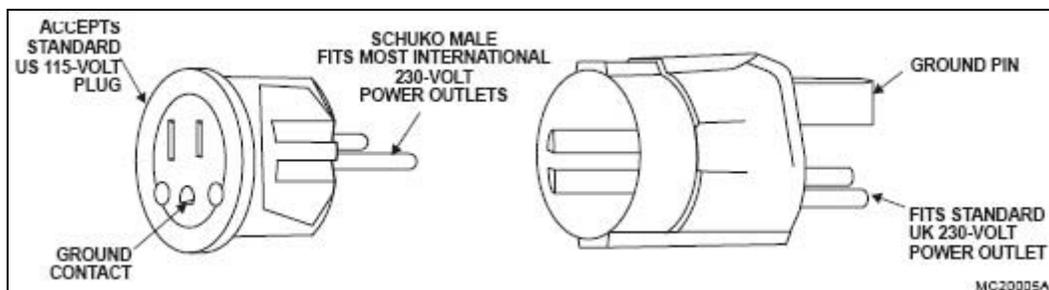
Connecting MU-1005/A Rockwell Collins Data Transfer Receptacle (R/C DTR)

NOTE

The MU-1005/A R/C DTR is used on the AH64A, AH64D and OH58D CDS2 aircraft only

WARNING

Potential shock hazard when using the external power module at 400HZ
operation, special grounding is required (see label on rear of module).
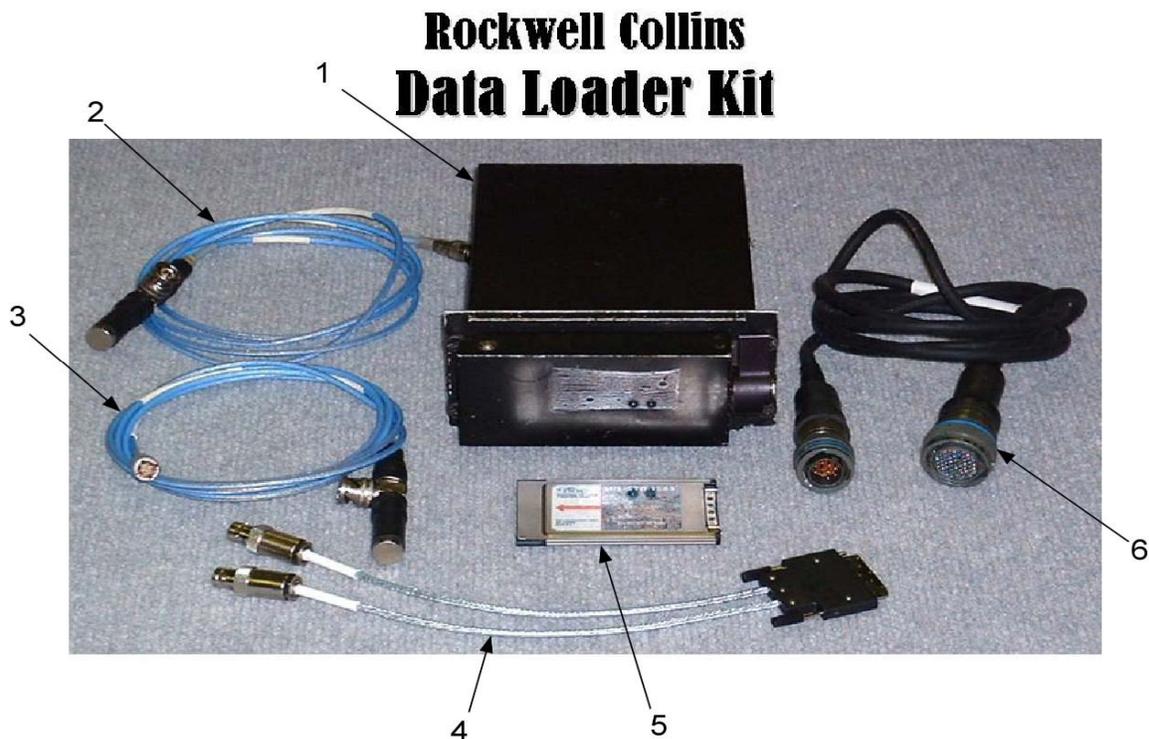
The parts required to connect the R/C DTR are: (1) Transfer unit (2) Cable Assembly, 1553B BUS B (3) Cable, Assembly, 1553B BUS A (4) 1553B Data BUS PCMCIA Cable (5) 1553B Data BUS PCMCIA Card (6) Cable Assembly, Power Electrical

1. Insert a programmable cartridge (not pictured) into the access door of the Transfer Unit (1).
2. Connect 1553 BUS B cable, male end (2), to J3, 4-lug female twin axial connector, of the Transfer Unit Note that the connector will only fit on one of the Transfer Unit jacks.
3. Connect 1553 BUS A cable assembly, male end (3), to J2, 3-lug female twin axial connector, of the Transfer Unit (1). Note that the connector will only fit on one of the Transfer Unit jacks.
4. Connect DC power cable assembly 55 female connector (6) to the male 55-pin circular connector of the Transfer Unit (1).

5. Connect the other end of the 1553 BUS B cable assembly, female end (2) to the male end of the 1553B Data BUS PCMCIA Cable (4), which will be labeled B.
6. Connect the other end of the 1553 BUS A cable assembly, female end (3) to the male end of the 1553B Data BUS PCMCIA cable (4), which will be labeled A.
7. Connect the other end of the 1553B Data BUS PCMCIA cable (4) to the 1553 PCMCIA card (5).
8. Connect the female end of the Power Cable (6) to the External Power Unit (LRU shown below), J3.
9. To install the MIL-STD 1553 PCMCIA Card follow the procedures "Using the PCMCIA Cards", WP 0005 00-11.

Completed R/C DTR connection

Connecting MU-1114/A Smith Industries Data Transfer Module Receptacle (SDTMR)

NOTE

The SDTMR is used on CH47, UH60, and OH58D CDS4 and above aircraft only.

WARNING

Potential shock hazard when using the external power module at 400HZ operation, special grounding is required (see label on rear of module).
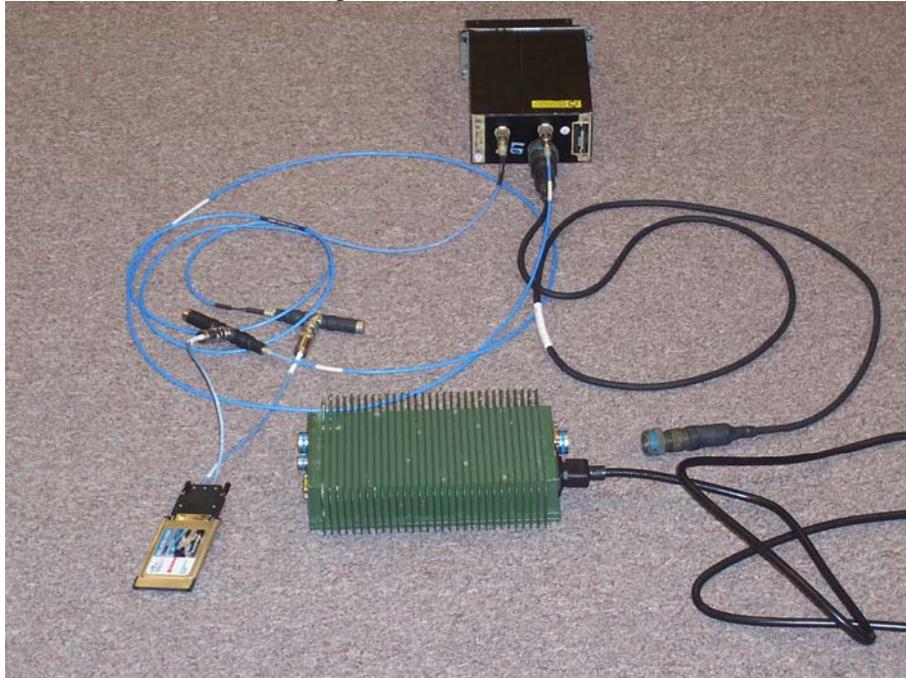
The parts required to connect the SDTMR are: (1) Transfer Unit (2) Cable Assembly, Power (3) Dummy Load Terminator (4) Cable Assembly, SCSI PCMCIA Card (5) SCSI PCMCIA Card

1. Unlock the access bay door of the Transfer Unit (1) and insert the data transfer module (not pictured) into the slot. (To remove the data transfer module, push the REL button.)

2. Connect the female end of the Power Cable (2) to J3 on the Transfer Module (1).

NOTE

The data transfer module (DTM) must be installed before cables are connected to AMPS.

NOTE

The system will not recognize the SDTMR if you plug and unplug the SCSI cable with power on. Power must be removed from everything, insert the DTM, and then boot up the computer. The computer will then be able to recognize the SDTMR and DTMs can be hot swapped.

3. Connect the male end of the Power Cable (2) to J4 of the External Power Unit.

4. Connect the Dummy Load Terminator (3) to J1 of the Transfer Unit (1).

NOTE

The terminator has to be installed/connected in order for the SDTMR to be operational.

5.   Connect the (large) male end of the SCSI PCMCIA cable (4) to J2 of the Transfer Unit (1).

6.   Connect the (small) male end to the SCS1 PCMCIA cable (4) to the slot on the back of the Slim SCSI 1480B PCMCIA card (5).

7.   Rotate the PCMCIA access door fasteners clockwise to unlatch the door of the AMPS PCU. Insert the CardBus side of the Slim SCSI 1480B PCMCIA Card (5) into the AMPS PCU following the installation procedures "Using the PCMCIA Cards", WP 0005 00-11.

Completed SDTMR connection

Connecting Rugged Printer Assembly

Connect the external power source for the Rugged Printer Assembly by connecting the Printer Power Cable from connector J4 of the External Power Module to the 3-pin power connector on the back of the printer assembly. Data transfer between the PCU and the Rugged Printer Assembly is through a 25 pin parallel cable. Connect the parallel cable from the Parallel Port on the back of the PCU to the parallel connector on the back of the printer.

Connecting Single Channel Ground/Airborne Radio System (SINCGARS)

Data transfer between the PCU and a Single Channel Ground/Airborne Radio System (SINCGARS) occurs through the Portable Computer – Improved Data Modem (PC-IDM) Card. The PC-IDM Card uses the PCMCIA bay on the side of the PCU.

AMPS and Radio Configuration for Messaging

1. AMPS PCIDM Configuration (first time only)

- Insert PCIDM card in top PCMCIA slot.
- Right-click My Network Neighborhood and select Properties
- Right-click Local Area Connection 2 (PCMCIA\Innovative) and select Properties

- Click Internet Protocol (TCP/IP)
- Click Properties
- Verify (or set) IP address – 10.10.10.2, Subnet Mask =255.255.255.0, Default gateway – 10.10.10.1.
- Click OK to close TCP/IP Properties.
- Close Network Properties
- Double-click PCIDM Control Panel
- Click on the square IDM icon in the task tray
- Verify (or set) IP Address = 10.10.10.1.
- Both B and P lights should show green

2. Ground SINCGARS Setup for AMPS Messaging

- Turn on radio and set to LD
- Select FREQ button
- Select Menu/CLR button
- Enter in Freq (single frequency or hop freq) (ex: 30000)
- Select store
- Select data button on key pad
- Select CHG key. Scroll through until or 4800 (other rates can be used but 4800 chosen based on field settings) displays
- Select Menu/CLR button. Continue to cycle through the options paying attention to COMSEC. If using CINSEC ensure the window reads CT
- Select Time button on the key pad. VERIFY Julian date and time. For Freq Hop, the radio and aircraft must be on the same date and time.
- Place Radio select knob back to ON position.

NOTE

If using two radios, ensure that both radios are set to the same frequency (FH or SC),
Same Baud rate, same TOD and the same COMSEC fills.

3. AMPS PCIDM Activation

- Insert the PCIDM card in the top PCMCIA slot.
- Double-click PCIDM Control Panel icon on desktop. A square IDM icon should appear in the task tray. The icon should turn green.
- Connect the cable from the SINCGARS radio Aud/Data port to the CH1 pigtail on the CCIDM card.

Aviation Mission Planning System (AMPS) Operation

This section provides instructions for operating your Aviation Mission Planning System (AMPS). For a detailed description of the Controls, Indicators and Connectors refer to the WP 0004, Description and Use of Operator Controls and Indicators.

Opening the Portable Computer Unit (PCU)

The PCU is equipped with display latch buttons located on both sides of the computer. To open your PCU for use, press both display latch buttons simultaneously and raise the display to the desired position.

NOTE

For initial setup and for the most current ghosting procedures, insert the latest version of the PFPS Bootable Ghost DVD and open the SOP Build Disk From Ghost.DOC file to obtain the standard operating procedure (SOP).

Power Up the PCU

Press the ON/STANDBY push button on the Power Panel of the PCU. Note that the power (PWR) indicator will be light green. The Windows operating system will start its boot up sequence.

Adjusting PCU Lighting

Display Brightness Adjustment

To adjust the PCU display brightness, press the up arrow key pushbutton to increase the brightness. Press the down arrow key to decrease the brightness.

Keyboard Backlighting

The PCU keyboard comes equipped with a backlight. Press the Backlight key to turn the keyboard backlighting on or off. The keyboard backlighting will extinguish when the computer goes into the Standby Mode. Momentarily press the On/Standby button to reactivate the backlighting.

PCU Modes

Blackout Mode

The PCU comes equipped with a Blackout Mode capability. Press the Blackout Key to extinguish the display and keyboard backlighting. With the Blackout Mode active, press the Blackout Key to deactivate the Blackout Mode and return to normal operations.

Standby Mode

The Standby Mode is used to conserve power by shutting down the display, keyboard backlighting, hard disk operation, and placing the processor in the reduced activity mode. To configure the PCU to activate the Standby Mode after a specific period of time, refer to Windows operating system help on the PCU. The default setting is 30 minutes. After 30 minutes of no activity on the PCU, Standby Mode will be automatically activated.

To place the PCU in the Standby Mode manually and immediately, momentarily press the ON/STANDBY button.

When the PCU is in the Standby Mode, the power (PWR) indicator will be lit yellow. To resume normal operation, momentarily press the ON/STANDBY button.

Using the Hard Disk Drive

CAUTION

Insure computer is off before removing the hard drive.
If it is not, the hard drive will be destroyed

The PCU is equipped with a removable hard disk drive. The hard disk drive (HDD) is labeled as Drive C. When the HDD drive is being accessed by the computer, the HDD indicator will light or blink.

To install the HDD into the PCU, proceed as follows:

1. Ensure that the computer is powered down.

2. Rotate the peripheral bay access door fasteners counterclockwise and open the door.

3. Insert the HDD in the slot until the drive is fully seated.

4. Close and latch the peripheral bay access door.

To remove the HDD from the PCU, proceed as follows:

CAUTION

Save all data and properly exit the application program prior to powering down the AMPS equipment. Failure to observe this caution may result in loss of data or damage to equipment.

1. Power down the computer.

2. Rotate the peripheral bay access door fasteners counterclockwise and open the door.

3. Grasp the HDD cord and pull the HDD straight out of the computer.

4. Close and latch the peripheral bay access door.

Using the DVD/CD Drive

The DVD/CD Drive is located behind the peripheral bay access door.

To install a DVD or CD into the DCD/CD Drive, proceed as follows:

1. Ensure that the PCU is on.

2. Rotate the peripheral access door fasteners counterclockwise to unlatch the door.

3. Lower the access door to the open position.

4. Press the eject button. The DVD/CD tray will slide out.

5. Gently pull the disk tray out to the fully extended position.

6. Place the disk on the disk tray with the label side facing up.

CAUTION

When inserting a DVD or CD into the DVD/CD Drive, insure
the disk is seated properly. If it is not fully inserted, the drive
door will hang up when you attempt to close it.

7. Carefully push the disk tray into the drive until the tray latches in the closed position.

8. Close and latch the peripheral bay access door.

To remove a DVD or CD from the DVD/CD Drive with PCU turned on, proceed as follows:

1. Rotate the peripheral access door fasteners counterclockwise to unlatch the door.

2. Lower the access door to the open position

3. Press the eject button. The DVD/CD tray will slide out.

4. Gently pull the disk tray out to the fully extended position.

5. Carefully lift the disk from the tray.

6. Carefully push the disk tray into the drive until the tray latches in the closed position.

7. Close and latch the peripheral bay access door.

NOTE

When the PCU is not powered up, the DVD/CD disk can be
removed by inserting a paperclip or similar object into a small
hole located to the right of the eject button on the DVD/CD
Drive door.

Using the PCMCIA Cards

When using the Windows operating system, the PCMCIA Cards can be installed and removed with the
power on (hot-swapped). To install a PCMCIA Card, proceed as follows:

1. Connect SCSI cable, small end, to the slim SCSI.

2. Rotate the PCMCIA card access door fasteners counterclockwise to unlatch the door.

3. Open the access door.

4. Insert the PCMCIA card into the applicable slot as desired until the card is fully seated and the eject
    button pops.

5. If the PCMCIA card does not have an external cable, close and latch the access door.

6. If the PCMCIA card has an external cable, place the cable inside the upper or lower loop and press the
    loop to lock the cable tight.

When using the Windows operating system, the PCMCIA Cards can be removed or installed with the PCU
powered-on. To remove a PCMCIA card from the PCU, proceed as follows.

1. If connected to external equipment, carefully remove the cables from the external equipment. Do not
    remove the cable from the PCMCIA card at this point.

2. Place the cursor on the PCMCIA card status icon located on the system tray located on the lower right section of the Windows desktop.

3. With the cursor on the icon, click the LEFT mouse button once.

4. A window will appear asking if you want to stop the PCMCIA card operation. Click on the name of the card you want to remove.

5. A second box will appear which says: "you may safely remove this device". Select "OK"

6. If the PCMCIA card has external cables that are being held in place by the cable strap, press the loop and remove the cable.

7. Press the eject button next to the card to be removed.

8. Pull the PCMCIA card straight out of the PCU.

9. Close and latch the PCMCIA card access door.

Power down the PCU

CAUTION

Save all data and properly exit the application program prior to powering down the AMPS equipment. Failure to observe this caution may result in loss of data or damage to equipment. Power down all attached optional peripherals after powering down the computer assembly. Failure to observe this caution may result in loss of data or damage to equipment.

Close all files and applications programs before powering down the PCU. Refer to the application software operator's manuals for instructions on exiting specific programs. To shut down Windows, select the START button located on the lower left corner of the display. A dialog box appears. Select SHUT DOWN from the dialog box. A second dialog box appears, select SHUT DOWN again and click OK. Wait until the screen turns dark, and the power light goes out. On occasion the computer may not shut off by itself. If the hard drive shows no activity for several minutes, press and hold the ON/STANDBY key for 3 seconds to perform a manual shut down.

Closing the PCU

To close the PCU for storage or transportation, gently lower the display until the display latch buttons engage the holes in the side of the display.

END OF WORK PACKAGE

CHAPTER 3

TROUBLESHOOTING
PROCEDURES

ORGANIZATIONAL
TROUBLESHOOTING   0006 00

INTRODUCTION

This work package contains a general guideline for troubleshooting the Aviation Mission Planning System (AMPS). Operator level repair is limited. If a fault cannot be corrected using the procedures provided in this section, contact the AMPS Helpdesk through the AMPS Website at https://www.amps.army.mil for assistance. You will need to request access to the AMPS Website upon your first visit.

Problems associated with the PCU and AMPS accessories may often be easily solved with standard PC troubleshooting procedures. The Troubleshooting Tables in the this work package do not attempt to include an exhaustive list of possible corrective actions you can take.

Table 1 lists the most common problems encountered during operation on the PCU and Table 2 lists the most common problems experienced on the ruggedized printer. For troubleshooting the MU-1005/A Rockwell Collins Data Transfer Receptacle (R/C DTR) and the MU-1114/A Smith Industries Data Transfer Module receptacle (SDTMR), see TM 11-7025-337-23.

General Troubleshooting Guidelines

1. Ensure all electrical harnesses are fully engaged and tightened.

2. Check electrical connectors and connections. Ensure there is no dirt or moisture in the connector. Check for general condition of the connector to include bent or broken pins.

Table 1. PCU Troubleshooting Procedures

Symptom	Check/Correct
Display screen freezes. Cursor won't move. PCU has locked-up	1. Restart PCU. Press the Ctrl, Alt and Del key in sequence. Follow the on-screen instructions until you have turned the PCU off. Then turn the PCU on. 2. If this fails to restart the PCU, turn the PCU off, wait approximately 30 seconds then turn the PCU on.
PCU doesn't boot up when ON key is pressed.	1. No battery installed or battery is discharged. 2. Power Supply/Charger not properly connected. 3. Faulty NATO Power cable or connector. 4. Check fuses.
Power Supply/Charger doesn't charge batteries.	1. Check cable connection. Make sure it is secure and there are no bent or broken pins. 2. Make sure the battery is properly seated in its connector. 3. Replace battery. 4. Check fuse.
Optional PCMCIA card(s) installed in the PCU does not function properly.	1. Make sure the card(s) is properly seated. 2. Replace defective card(s).
PCU will not read DVD/CD ROM disk.	1. Install another disk and attempt to read disk. 2. Make sure disk is properly installed.

Table 2. Ruggedized Printer Assembly Troubleshooting Procedures

Symptom	Check/Correct
Printer does not turn on.	1. Disconnect the power source from the printer. 2. Wait approximately 10 seconds. 3. Reconnect the power source to the printer. 4. Press the Power Button to turn on the printer.
Screen-displayed error messages.	1. Ensure proper connections between printer and PCU 2. Reboot the PCU. 3. Reinstall the Printer Driver.
Power Light is flashing.	1. The printer is receiving data and is preparing to print. The light will stop flashing when the printer has finished receiving data.
Resume Light flashing.	1. Printer is out of paper. Place paper in the In Tray and press the Resume Button. 2. Paper Jam has occurred. See Paper Jam. 3. Manually printing the first side of a two-sided document. Follow the onscreen instructions for inserting the paper to print the second side and press the Resume Button.
Print Cartridge Light is flashing.	1. Check and/or replace print cartridges.
All lights are flashing.	1. Press the Power Button to turn off the printer. 2. Press the Power Button to turn on the printer. 3. If lights continue to flash, press the Power button to turn off the printer. 4. Disconnect printer from power source. 5. Reconnect Pinter to power source. 6. Press the Power Button to turn on the printer.
Printer is not printing. Paper does not come out of the printer.	1. Verify the following: 2. The printer is connected to the power source. 3. The cable connections are secure. 4. The printer is turned on. 5. The paper is correctly placed in the In Tray. 6. The rear Access Door is attached. 7. If the Power Light is blinking, the printer is in the process of printing. If the Resume Light is blinking, press the Resume Button.
Paper Jams.	1. Remove the paper from the In and Out Trays. 2. Press the Resume Button on the front of the printer. 3. Print the document if the paper jam is cleared. 4. Open the Rear Access Cover by turning the knob counter-clockwise. 5. Open the Rear Access Door by turning the knob counter-clockwise and removing the door. 6. Remove the paper jam, then replace the Rear Access Door. 7. Close the Rear Access Cover. 8. Continue to print.
Blank pages are printing.	1. Remove and replace Print Cartridges. 2. Remove the protective vinyl tape from new Print Cartridges.
Document is printed off-center or at an angle.	1. Verify the paper is correctly placed in the In Tray. 2. Verify the paper guides fit snugly against the paper.

END OF WORK PACKAGE

CHAPTER 4

MAINTENANCE

INSTRUCTIONS

INSPECTION

The Aviation Mission Planning System (AMPS) is shipped in two transit cases, the computer is in one (1) case and the printer is in another case. Each transit case comes with a packing slip. Check the equipment against the packing slip to insure shipment is complete. Report all discrepancies in accordance with applicable instructions (e.g., for Army instructions, see DA PAM 750-8).

Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage on SF 361, Transportation Discrepancy Report.

Check to see whether the equipment has been modified.

PRELIMINARY CHECKS AND ADJUSTMENTS OF EQUIPMENT

Perform the preparation for use and assembly procedures and checking unpacked equipment for the Aviation Mission Planning System contained WP 0005 00.

END OF WORK PACKAGE

PREVENTIVE MAINTENACE
CHECKS AND SERVICES (PMCS) 0008 00

GENERAL

Preventive Maintenance Checks and Services (PMCS) will ensure that the Aviation Mission Planning System (AMPS) equipment will be ready for operation at all times. Preventive maintenance checks consist of performing a systematic inspection to discover defects before they result in operational failure of the equipment. Defects or malfunctions discovered by the crew during use of the AMPS equipment, or as a result of performing maintenance checks and services, will be reported using the proper maintenance reporting procedures IAW DA PAM 738-751, Functional Users Guide for the Army Maintenance Management System – Aviation (TAMMS-A).

The operator/crew and organizational preventive maintenance checks and services are listed on Table 1. An explanation of that table is listed below.

EXPLANATION OF COLUMNS ON THE PMCS CHART

Column (1), Item Number, gives you the number of each procedure to be performed.

Column (3), Item to be inspected, gives the common name of the item to be serviced or checked.

Column (3), Intervals, designates the interval when each check is to be performed. The following interval symbols apply to the AMPS:

B	Before Operation
M	Monthly

Column (4), Procedures, information required to accomplish each check or service, including lubrication, appropriate tolerances, adjustment limits, and instrument gauge readings.

Table 1. Operator/Crew and Organizational Preventive Maintenance Checks and Services

(1) ITEM NO.	(2) ITEM TO BE INSPECTED	(3) INTERVAL		(4) PROCEDURES
		B	M	
1.	PCU	X		1. Inspect the PCU for signs of visible damage. 2. Check all connector covers and latches for security. 3. Check that the latches function properly and will secure the covers in place.
2.	Display Screen	X		1. Open the PCU cover and inspect the screen for excessive dust or dirt. **WARNING** ISOPROPYL ALCOHOL vapors are toxic. Avoid prolonged or repeated breathing of vapors or contact with skin. Use only with adequate ventilation. Solvent is flammable and should not be used near open flame. Fire extinguishers should be readily available when isopropyl alcohol is used. 2. As needed, dampen a soft lint free cloth with isopropyl alcohol and gently wipe the screen. Turn the cloth frequently to avoid scratching the screen. **CAUTION** To avoid damaging the surface of the display screen, dampen a cloth with isopropyl alcohol; do not apply isopropyl alcohol directly to the screen. Do not wipe the display screen with a dry cloth.
3.	Peripheral Bays	X		1. Open the peripheral bay access door. 2. Inspect the drives, batteries and connectors for any sign of damage. 3. Clean the drive bays as needed with a soft bristle brush.
4.	Keyboard	X		1. Inspect the keyboard for visible damage. 2. Use a dampened cloth or soft bristle brush to wipe the keyboard clean. 3. Ensure all keys are pressed and rebound when they are released.
5.	Batteries	X		1. Remove the batteries from the bays and inspect for damage. 2. Check the battery state of charge. Ensure both batteries are fully charged.
6.	Power Supply / Charger	X		1. Inspect the AC power cord and the DC output cable for visible damage. 2. If fuses are missing or blown, replace them.
7.	NATO Power Cable	X		1. Check cable and connectors for signs of visible damage.
8.	Transit Case	X		1. Inspect the transit case for visible damage and missing components. 2. Check that the latches will securely close the case.
9.	European Power Connector Adapter	X		1. Inspect for completeness and damage. 2. Check for presence of fuse. 3. If fuse is missing or blown, replace it.
10.	PCMCIA Cards	X		1. Ensure the mission required PCMCIA Cards are installed. 2. If no cables are attached to the installed PCMCIA Cards, close the access door before putting the PCU into operation. 3. Visually inspect PCMCIA Cards for damage.
11.	MU-1005/A Data Transfer Receptacle	X		1. Inspect the exterior of the data transfer receptacle for corrosion, dents, holes, and obvious damage.

**PREVENTIVE MAINTENANCE
CHECKS AND SERVICES (PMCS)**   **0008 00**

Table 1. Operator/Crew and Organizational Preventive Maintenance Checks and Services (continued)

12.	MU-1005/A Door	X		1. Inspect the data transfer receptacle door for ease of movement, security, and overall fit when closed.
13.	MU-1005/A Connectors	X		1. Visually inspect all data transfer receptacle connectors for corrosion, dirt, bent, broken, or missing pins, or other damage.
14.	MU-1005/A Door Latch	X		1. Inspect the data transfer receptacle door latch for ease of operation and serviceability.
15.	MU-1005/A Dzus Fastener	X		1. Inspect the four data transfer receptacle dzus fasteners for corrosion and serviceability.
16.	MU-1005/A Data Cartridge Retaining Spring	X		1. Inspect the data transfer receptacle data cartridge retaining spring for security and serviceability.
17.	MU-1114/A Data Transfer Module Receptacle	X		1. Inspect the exterior of the data transfer module receptacle for corrosion, dents, holes, and obvious damage.
18.	MU-1114/A Door	X		1. Inspect the data transfer module receptacle door for ease of movement, security, and overall fit when closed. 2. Inspect door latch for proper operation.
19.	MU-1114/A Connectors	X		1. Visually inspect all data transfer module receptacle connectors for corrosion, dirt, bent, broken, or missing pins, or other damage.
20.	MU-1114/A Power Switch	X		1. Inspect the data transfer module receptacle power switch for corrosion, dirt, or other damage. 2. Ensure proper operation of the switch.
21.	PCMCIA slots and other PCU cavities		X	1. Power down the computer and ensure power is removed from the computer. 2. Remove all PCMCIA cards, batteries, & removable hard drive from your computer before cleaning. Place the removed items on a clean, stable, flat surface. 3. If available, use a commercially available computer compressed air cleaning kit to blow dust and dirt off cavities of the computer. 4. Do not use an air compressor as it may damage the electronic components inside the computer. 5. Do not open the main chassis as the warranty will be voided. 6. If the PCMCIA slots or other cavities need cleaning from exposure to dust or finger oils, lightly wipe inside connectors with a cotton swab moistened with isopropyl alcohol, and allow them to dry. 7. Re-install the removed items.
22.	Floppy Disk Drive		X	1. To clean the floppy disk drive, use a commercially available cleaning kit and follow the instructions provided in the kit
23.	DVD drive		X	1. To clean the DVD drive, use a commercially available cleaning kit and follow the instructions provided in the kit.

**PREVENTIVE MAINTENANCE
CHECKS AND SERVICES (PMCS)**   **0008 00**

Table 1. Operator/Crew and Organizational Preventive Maintenance Checks and Services (continued)

24.	Ruggedized Printer Assembly Case		X	1. Turn the power off the printer and disconnect the power cable. 2. Inspect the exterior of the Ruggedized Printer Assembly for corrosion, dents, holes, and obvious damage. 3. Use a soft damp cloth to remove dust, smudges, stains, and spilled ink from the printer case exterior. **CAUTION** Do not clean the printer's interior. Keep all liquids away from the interior. **CAUTION** Do not lubricate the rod on which the printer cartridge cradle moves.
25.	Print Cartridges		X	1. Open the top cover and remove print cartridges from the print cartridge cradle. 2. Clean the face and edges (2) of the installed print cartridges with a clean, moistened cotton swab. Do not wipe the nozzle plate (1). 3. Inspect the face and edges (2) of the print cartridge for fibers and repeat cleaning if present. 4. Insert print cartridges into print cartridge cradle once cleaned.
26.	Print Cartridge Cradle		X	1. Wipe the underside of the print cartridge cradle (1) walls using a clean, moistened cotton swab. 2. Repeat this process until no ink residue is visible on the cleaning swab. 3. Insert the cleaned print cartridges and close the top cover. 4. Reconnect the power cord and turn the printer on. 5. Print a test page from the HP Deskjet Utility on the PCU. 6. Repeat the cleaning process if smeared ink still appears on the printouts.
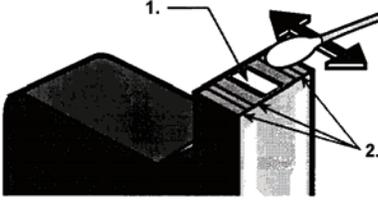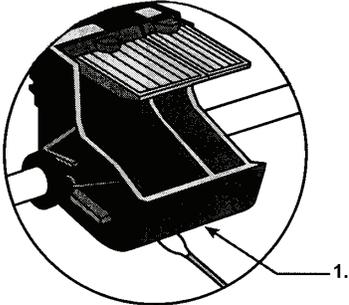
END OF WORK PACKAGE

PORTABLE COMPUTER UNIT (PCU) MAINTENANCE PROCEDURES

NOTE

For trouble shooting and warranty validation only.

WARNING

This operation will ERASE ALL current contents of the hard
drive. All files or data on the hard drive will be lost.

The System Recovery Disk is used to restore the PCU hard drive with the original system software. The
Recovery Disk instructions are located on the back of the disk case, or you may refer to the RECOVERY DISK
INSTRUCTIONS to perform the hard drive recovery procedures.

Recovery Disk and Ghosting Instructions

1. Insert the latest **PFPS Ghost DVD** in to the DVD drive of a computer that has a DVD drive and
   Microsoft Word loaded on it.

2. From the root menu, open the **SOP Build Disk from Gost.DOC** file and printout these instructions.

3. Remove **PFPS Ghost DVD** from DVD drive and insert into AMPS PCU DVD drive.

4. Follow the **SPO Build Disk** from Gost.DOC instruction for disk recovery and ghosting.

Defragment the Hard Disk Drive (HDD)

When unneeded files are deleted and others are created on the hard drive, the level of the fragmentation increases.
The WINDOWS DISK DEFRAGMENTER utility can improve hard drive performance by relocating scattered
file clusters and consolidating unused space for more efficient use of the hard drive. To defragment the PCU
Hard Disk Drive (HDD), select the WINDOWS START icon at the bottom left corner of the screen. Select the
CONTROL PANEL icon, then select the PERFORMANCE AND MAINTENANCE icon. Under the
maintenance tasks provided, select FREE UP SPACE ON THE HARD DRIVE option and follow the directions
provided..

MU-1005/A ROCKWELL COLLINS DATA TRANSFER RECEPTACLE (R/C DTR)

Refer to TM 11-7025-337-23 for maintenance instructions on the MU-1005/A Rockwell Collins Data Transfer
Receptacle (R/C DTR).

MU-1114/A SMITH INDUSTRIES DATA TRANSFER MODULE RECEPTACLE (SDTMR)

Refer to TM 11-7025-337-23 for maintenance instructions on the MU-1114/A Smith Industries Data Transfer
Module Receptacle (SDTMR).

RUGGEDIZED PRINTER ASSEMBLY

Replacing Printer Cartridges

When ordering replacement print cartridges, verify the correct part number with the documentation provided with the printer. When a print cartridge is empty, leave the empty print cartridge in the print cartridge cradle until it is replaced. The printer requires both print cartridges. To replace a print cartridge:

1. Verify that the out tray is down.

2. Press the Power Button to turn on the printer.

3. Open the Top Cover.

4. Raise the cradle latch.

5. Lift the print cartridge out of the cradle and discard.

6. Remove the replacement print cartridge from its packaging and carefully remove the protective vinyl tape.

CAUTION

Do not touch the print cartridge ink nozzles or copper contacts.
Touching these parts will result in clogs, ink failure, and bad
electrical connections. Do not remove copper strips. They are
required for electrical contacts.

7. Insert the print cartridge firmly into the cradle.

8. Secure the cradle latch. You should hear a click when the latch is fully secured.

9. Close the Top Cover. A calibration page should print to test print quality each time a print cartridge is installed.

EUROPEAN POWER ADAPTER

Fuse Replacement

The European power adapter is equipped with a 13-amp, 250 volt fuse on the AC input. To replace the fuse, refer to Figure 1 and proceed as follows:

Figure 1. Fuse Replacement
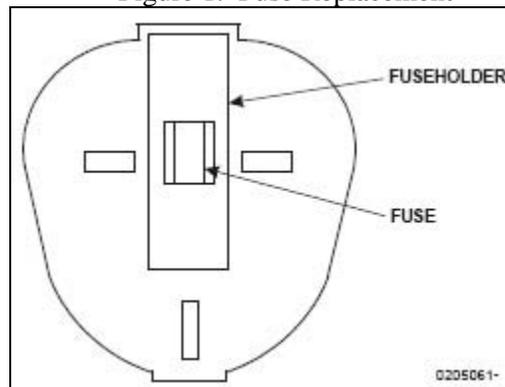
1. Remove the European l power adapter from the power outlet.

2. Use a flat blade screw driver to disengage the fuse holder from the European power adapter.

3. Pull the fuse holder straight out of the European power adapter.

4. Remove the fuse from the fuse holder.

5. Insert a new 13-amp, 250-volt, quick acting (type F) fuse in the fuse holder.

6. Slide the fuse holder into the European power adapter until it snaps into position.

POWER CONVERTER/BATTERY CHARGER

Fuse Replacement

WARNING

To avoid the risk of electric shock, disconnect both the AC input and DC
input power cables from the rugged AC/DC adapter/charger before replacing
either fuse.

CAUTION

The AC input fuse (4-amp, 250-volt, time-lag) is a glass (transparent) fuse
while the DC input fuse (8-amp, 250-volt, quick acting) is a ceramic (opaque)
fuse. Be sure to use the correct fuse. Using the wrong fuse can result in
inadequate protection and/or unreliable operation.

Figure 2. Fuse Replacement

MAINTENANCE 0009 00
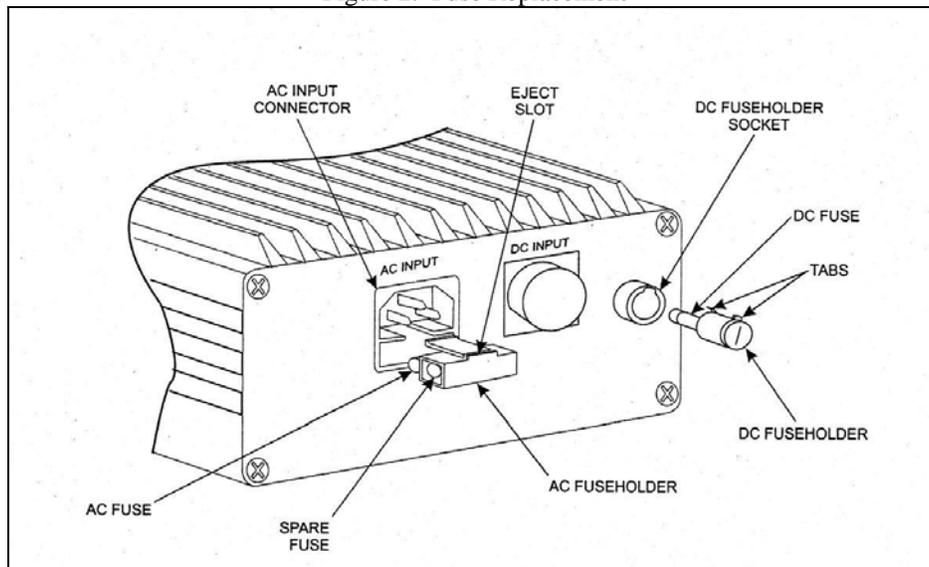
AC input fuse

The rugged AC/DC adapter/charger is equipped with a 4-amp, 250-volt fuse on the AC input. To replace the fuse, refer to Figure 2 and proceed as follows:

1. Disconnect input power from the unit and disconnect the AC input and DC input power cables from the unit.

2. Use a flat-blade screwdriver inserted in the AC fuse holder eject slot to disengage the fuse holder from the AC INPUT connector

3. Pull the fuse holder straight out of the unit.

4. Remove the fuse from the fuse holder.

NOTE

As shown in Figure 2, the rugged AC/DC adapter/charger is supplied with a spare AC fuse.

5. Install a new 4-amp, 250-volt, time-lag (type T) fuse in the fuse holder.

6. Align the fuse holder as shown in Figure 2 and slide the fuse holder into the unit until it snaps in position.

DC Input Fuse

The rugged AC/DC adapter/charger is equipped with an 8-amp, 250-volt fuse on the DC input. To replace the fuse, refer to Figure 2 and proceed as follows:

1. Disconnect input power from the unit and disconnect the AC input and DC input power cables from the unit.

2. Using a flat-blade screwdriver, rotate the DC fuse holder ¼ turn counterclockwise to disengage fuse holder.

3. Pull the DC fuse holder straight out of the fuse holder socket.

4. Remove the fuse from the fuse holder.

5. Install a new 8-amp, 250-volt, quick action (type F) fuse in the fuse holder.

6. Align the fuse holder tabs with the slot in the fuse holder socket and slide the fuse holder into the fuse holder socket.

7. Rotate the fuse holder ¼ turn clockwise to lock fuse holder in position.

PCU BATTERIES

To check the level of charge of the battery, the Battery Charge Indicator must be activated.   To activate the indicator, press the red circle button next to the indicator bar.

CHARGING A SPARE BATTERY

The rugged AC/DC adapter/charger has provisions for charging a spare battery while powering a computer. The following provides instructions for inserting a battery to be charged and for removing a battery. A battery can be inserted or removed while power is applied to the unit.

WARNING

Battery may explode if wrong battery is used. The rugged AC/DC Adapter/charger is designed to charge only Miltope part number M207-11 or 711731, or equivalent batteries.

NOTE

Some batteries are equipped with a pull-out tab while others have a strap.

Figure 3.   Inserting and removing a Battery
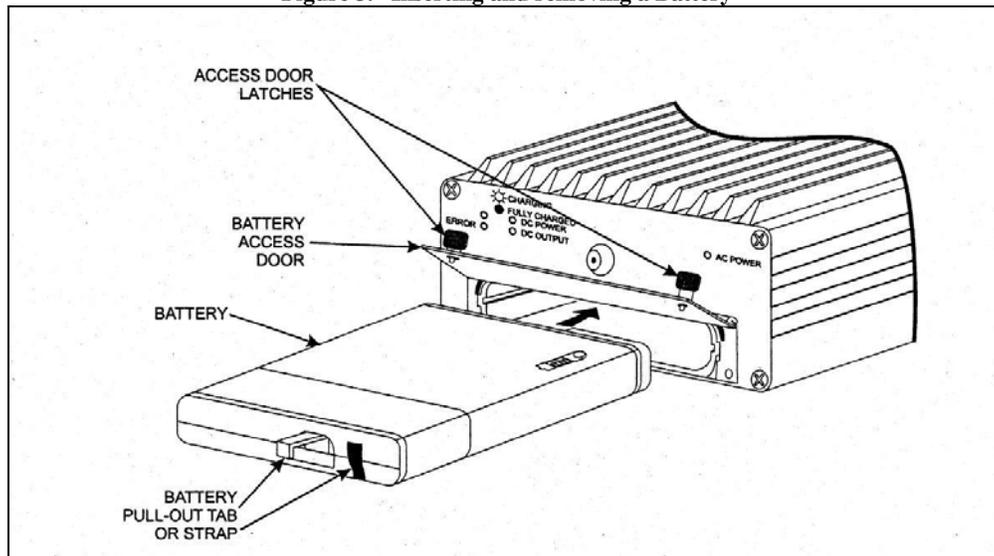
Inserting a Battery

To insert a battery, refer to Figure 3 and proceed as follows:

1.   Rotate battery access door latches counterclockwise and open door.

2.   Orient battery as shown in Figure 3 and slide into unit until battery is fully seated.

3.   As applicable, ensure that battery pull-out tab is not extended and close and latch battery access door.

Removing the Battery

To remove the battery, refer to Figure 3 and proceed as follows:

1.   Rotate battery access door latches counterclockwise and open door.

2. As applicable, extend battery pull-out tab.

3. Grasp battery pull out tab or strap and pull battery straight out of unit.

4. Close and latch battery access door.

END OF WORK PACKAGE

CHAPTER 5

SUPPORTING

INFORMATION

PUBLICATION INDEXES AND GENERAL REFERENCES

This work package lists all field manuals, forms, technical manuals and miscellaneous publications referenced in this manual. Indexes should be consulted frequently for latest changes, revisions, or references given in this work package and for new publications relating to material covered in this publication.

ARMY REGULATIONS

AR 700-138	Army Logistics Readiness and Sustainability
AR 735-11-2	Reporting of Supply Discrepancies

FORMS

DA Form 2028	Recommended Changes to Publications and Blank Forms
DA Form 2062	Hand Receipt / Annex Number
SF 361	Transportation Discrepancy Report
SF 364	Report of Discrepancy
SF 368	Product Quality Deficiency Report

PAMPHLETS

DA Pam 750-8	The Army Maintenance Management System (TAMMS) Users Manual
DA Pam 738-751	Functional Users Manual for the Army Maintenance Management System – Aviation (TAMMS-A)
SED-AMPS-MPPG-001	Mission Planning Pocket Guide

STANDARDS AND SPECIFICATIONS

MIL-STD 129	Standard Practice for Military Marking
MIL-STD 2073-1D	Standard Practice for Military Packaging

TECHNICAL MANUALS

TM 11-7025-337-23	Aviation Unit / Intermediate Maintenance Manual, MU-1005/A Data Transfer Receptacle and MU-114/A Data Transfer Module Receptacle
TM 9-6625-2301-12&P	Operator and Organizational Maintenance Manual Including Repair Part and Special Tools List for Test Set, Electronic Systems, AN/PSM-95 and Test Set, Electronic Systems, AN/PSM-95B
TM 750-244-1-5	Procedures for the Destruction of Aircraft and Associated Equipment to Prevent Enemy Use
TM 1-1500-323-24-1	Installation and Repair Practices Aircraft Electric and Electronic Wiring

INTRODUCTION

The Army Maintenance System MAC

This introduction provides a general explanation of all maintenance and repair function authorized at the two maintenance levels under the Two-Level Maintenance System concept.

This MAC (immediately following the introduction) designates overall authority and responsibility for the performance of maintenance functions on the identified end item or component. The application of the maintenance functions to the end item or component levels, which are shown on the MAC in column (4) as:

> Field – includes two columns, Unit maintenance and Direct Support maintenance. The Unit maintenance column is divided again into two more subcolumns, C for Operator or Crew and O for Unit maintenance. Sustainment – includes two subcolumns, general support (H) and depot (D).

The tools and test equipment requirements (immediately following the MAC) list the tools and test equipment (both special tools and common tool sets) required for each maintenance function as referenced from the MAC.

The remarks (immediately following the tools and test equipment requirements) contain supplemental instructions and explanatory notes for a particular maintenance function.

Maintenance Functions

Maintenance functions are limited to and defined as follows:

1. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination (e.g. by sight, sound, or feel). This includes scheduled inspection and gagings and evaluation of cannon tubes.

2. Test. To verify serviceability by measuring the mechanical, pneumatic, hydraulic, or electrical characteristics of an item and comparing those characteristics with prescribed standards on a scheduled basis, i.e., load testing of lift devices and hydrostatic testing of pressure hoses.

3. Service. Operations required periodically to keep an item in proper operating condition; e.g., to clean (includes decontaminate, when required), to preserve, to drain, to paint, or to replenish fuel, lubricants, chemical fluids, or gases. This includes scheduled exercising and purging of recoil mechanisms. The following are examples of service functions:

   a. Unpack. To remove from packing box for service or when required for the performance of maintenance operations.
   b. Repack. To return item to packing box after service and other maintenance operations.
   c. Clean. To rid the item of contamination.
   d. Touch up. To spot paint scratched or blistered surfaces.
   e. Mark. To restore obliterated identification.

4. Adjust. To maintain or regulate, within prescribed limits, by bringing into proper position, or by setting the operating characteristics to specified parameters.

5. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

6. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments of

test, measuring, and diagnostic equipment used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

7. Remove/install. To remove and install the same item when required to perform service or other maintenance functions. Install may be the act of emplacing, seating, or fixing into position a spare, repair part, or module (component or assembly) in a manner to allow the proper functioning of an equipment or system.

8. Paint. To prepare and spray color coats of paint so that the ammunition can be identified and protected. The color indicating primary use is applied, preferably, to the entire exterior surface as the background color of the item. Other markings are to be repainted as original so as to retain proper ammunition identification.

9. Replace. To remove an unserviceable item and install a serviceable counterpart in its place "Repair" is authorized by the MAC and assigned maintenance level is shown as the third position code of the Source, Maintenance and Recoverability (SMR) code.

10. Repair. The application of maintenance services, including fault location/troubleshooting, removal/installation, disassembly/assembly procedures and maintenance actions to identify troubles and restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item or system.

NOTE

The following definitions are applicable to the "repair" maintenance function:

Services. inspect, test, service, adjust, align, calibrate, and/or replace.
Fault location/troubleshooting. The process of investigating and detecting the case of equipment malfunctioning; the act of isolating a fault within a system or Unit Under Test (UUT).
Disassembly/assembly. The step-by-step breakdown (taking apart) of a spare/functional group coded item to the level of its least component, that is assigned an SMR code for the level of maintenance under consideration (i.e., identified as maintenance significant).
Actions. Welding, grinding, riveting, straightening, facing, machining, and/or resurfacing.

11. Overhaul. That maintenance effort (service/action) prescribed to restore an item to a completely serviceable/operational condition as required by maintenance standards in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

12. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (e.g., hours/miles) considered in classifying Army equipment/components.

Explanation of Columns in the MAC

Column (1) Group Number, Column (1) lists FGC numbers, the purpose of which is to identify maintenance significant components, assemblies, subassemblies, and modules with the Next Higher Assembly (NHA).

Column (2) Component/Assembly. Column (2) contains the item names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

Column (3) Maintenance Function. Column (3) lists the functions to be performed on the item listed in column (2). (For a detailed explanation of these functions, refer to "Maintenance Functions" outlined above).

Column (4) Maintenance Level. Column (4) specifies each level of maintenance authorized to perform each function listed in column (3), by indicating work time required (expressed as manhours in whole hours or decimals) in the appropriate subcolumn. The work time figure represents the active time required to perform that maintenance function at the indicated level of maintenance. If the number or complexity of the tasks within the listed maintenance function varies at different maintenance levels, appropriate work time figures are to be shown for each level. The work time figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time (including any necessary disassembly/assembly time), troubleshooting/fault location time, and quality assurance time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the MAC. The symbol designations for the various maintenance levels are as follows:

    <u>Field</u>:
      C Operator or Crew maintenance
      O Unit maintenance
      F Direct Support maintenance

    <u>Sustainment:</u>
      L Specialized Repair Activity
      H General Support maintenance
      D Depot maintenance

<u>NOTE</u>

    The "L" maintenance level is not included in column (4) of the MAC. Functions
    to this level of maintenance are identified by work time figure in the "H" column
    of column (4), and an associated reference code is used in the REMARKS column (6).
    This code is keyed to the remarks and the SRA complete repair application is explained
    there.

Column (5) Tools and Equipment Reference Code. Column (5) specifies, by code, those common tool sets (not individual tools), common Test, Measurement and Diagnostic Equipment (TMDE), and special tools, special TMDE and special support equipment required to perform the designated function. Codes are keyed to the entries in the tools and test equipment table.

Column (6) Remarks Code. When applicable, this column contains a letter code, in alphabetical order, which is keyed to the remarks table entries.

Table 1. MAC for AMPS

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE LEVEL					(5) TOOLS AND EQUIPMENT	(6) REMARKS
			FIELD			SUSTAINMENT			
			UNIT		DS	GS	DEPOT		
			C	O	F	H	D		
00	AVIATION MISSION PLANNING SYSTEM AN/TYQ-77	INSPECT TEST REPLACE REPAIR		0.5 0.3 0.2 0.1				1	A,B,C,D, F
01	PORTABLE COMPUTER UNIT - Basic	INSPECT TEST REPLACE REPAIR		0.1 0.2 0.3			*		A,B,C,D,E
0101	COMPUTER	INSPECT TEST REPLACE		0.1 0.2 0.2					A,B,E
0102	POWER SUPPLY/ CHARGER	INSPECT TEST REPLACE Repair		0.1 0.2 0.1 0.1			*		A,B,H
0103	NATO POWER CABLE ASSEMBLY	INSPECT TEST REPLACE REPAIR		0.1 0.2 0.1 0.5					A,B,H
02	EXTERNAL POWER UNIT	INSPECT TEST REPLACE		0.1 0.2 0.3					A,B,E,F
03	PROGRAMMABLE, TRANSFER UNIT ASSEMBLY	INSPECT TEST REPLACE		0.2 0.3 0.2					A,B,E
04	PRINTER	INSPECT TEST REPLACE REPAIR		0.1 0.2 0.3 0.2					A,B,C,F
05	PC-IDM ASSEMBLY	INSPECT TEST REPLACE		0.1 0.2 0.2			*		A,B,E
06	DISK DRIVE UNIT (Removable Hard Disk Drive)	INSPECT TEST REPLACE		0.1 0.3 0.1			*		E

*Depot Support is Lifecycle Contractor Support (LCSS) under provisions of equipment warranty.

Table 2. Tools and Test Equipment for AMPS

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE LEVEL	NOMENCLATURE	NATIONAL STOCK NUMBER	TOOL NUMBER
		NONE		

Table 3. Remarks for AMPS

REMARKS CODE	REMARKS
A	Inspect equipment for evidence of damage, missing parts, or corrosion that would cause equipment to be non-mission capable. Service by cleaning surfaces with a soft cloth, cotton swab and isopropyl alcohol.
B	Perform Preventive Maintenance Checks and Services (PMCS) and run equipment self test as described in operation under usual conditions to determine if system is functional.
C	Replace faulty modules to correct malfunction.
D	Repair in the field is accomplished by operator replacing faulty Line Replaceable Units (LRUs).
E	THIS ITEM IS UNDER WARRANTY. FOR INSTRUCTIONS CALL 1-800-773-7739, EMAIL mpssfa@hill.af.mil or amps@peoavn.redstone.army.mil.
F	Repair is by replacement (for the printer, this includes paper ink cartridges, etc).
G	Repair using standard cable repair procedures in TM 55-1500-323-24-1, Installation Practices Aircraft Electric and Electronic Wiring.
H	Repair by replacement of fuses.

REPAIR PARTS AND SPECIAL TOOLS LIST	
(RPSTL) INTRODUCTION	**0012 00**

SCOPE

This RPSTL lists and authorizes spares and repair parts; special tools; special test, measurement, and diagnostic equipment (TMDE); and other special support equipment required for performance of Operator, Organizational, Direct Support and General Support maintenance of the Electro Optics Test Facility (EOTF). It authorizes the requisitioning, issue and disposition of spares, repair parts, and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

GENERAL

In addition to the Introduction work package, this RPSTL is divided into the following work packages.

1. Repair Parts List Work Packages. Work packages containing lists of spares and repair parts authorized by this RPSTL for use in the performance of maintenance. These work packages also include parts which must be removed for replacement of the authorized parts. Parts lists are composed of functional groups in ascending alphanumeric sequence, with the parts in each group listed in ascending figure and item number sequence. Sending units, brackets, filters, and bolts are listed with the component they mount on. Bulk materials are listed by item name in FIG. BULK at the end of the work packages. Repair parts kits are listed separately in their own functional group and work package. Repair parts for reparable special tools are also listed in a separate work package. Items listed are shown on the associated illustrations.

2. Special Tools List Work Packages. Work packages containing lists of special tools, special TMDE, and special support equipment authorized by this RPSTL (as indicated by Basis of Issue (BOI) information in the DESCRIPTION AND USABLE ON CODE (UOC) column). Tools that are components of common tool sets and/or class VII are not listed.

3. Cross Reference Indexes Work Packages. There are two cross reference index work packages in the RPSTL: the National Stock Number (NSN) Index Work Package and the Part Number (P/N) Index Work Package. The National Stock Number Index Work Package refers you to the figure and item number. The Part Number Index Work Package refers you to the figure number and item number.

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES

ITEM NO. (Column (1)). Indicates the number used to identify items called out in the illustration.

SMR CODE (Column (2)). The SMR code containing supply/requisitioning information, maintenance level authorization criteria, and disposition instructions, as shown in the following breakout:

Source Code	Maintenance Code		Recoverability Code
xx	xx		xx
First two Positions: How to get an item.	Third position: Who can install, replace, or use the item.	Fourth position: Who can complete repair* on the item	Fifth position: Who determines disposal action on unservice- able item

**REPAIR PARTS AND SPECIAL TOOLS LIST
(RPSTL) INTRODUCTION** 0012 00

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES (Continued)

*Complete repair: Maintenance capacity, capability, and authority to perform all corrective maintenance tasks of the "Repair" functions in a use/user environment in order to restore serviceability to a failed item.

Source Code.

The source code tells you how to get an item needed for maintenance, repair, or overhaul of an end item/equipment. Explanations of source codes follow:

Source Code	Application/Explanation
PA	Stock items; use the applicable NSN
PB	to requisition/request items with these
PC	source codes. They are authorized to
PD	the level indicated by the code entered
PE	in the third position of the SMR Code.
PF	
PG	

NOTE

Items coded PC are subject to deterioration.

KD	Items with these codes are not to be
KF	requested/requisitioned individually.
KB	They are part of a kit which is authorized
	to the maintenance level indicated in the
	third position of the SMR code. The complete
	kit must be requisitioned and applied.

MO-Made at unit/ AVUM level	Items with these codes are not to be requisitioned/
MF-Made at DS/ AVIM level	requested individually. They must be made from bulk material which is identified by the P/N in the
MH-Made at GS Level	DESCRIPTION AND USABLE ON CODE (UOC) column and listed in the bulk material group work
ML-Made at SRA	package of the RPSTL. If the item is authorized to you by the third position code of the SMR code, but
MD-Made at depot	the source code indicates it is made at higher level, order the item from the higher level maintenance.

AO-Assembled by Unit/AVUM level	Items with these codes are not to be requested/ requisitioned individually. The parts that make up
AF-Assembled by DS/AVIM level	the assembled item must be requisitioned or fabricated and assembled at the level of
AH-Assembled by GS level	maintenance indicated by the source code. If the third position of the SMR code authorizes you to
AL-Assembled by SRA	replace the item, but the source code indicates the item is assembled at a higher level, order the item
AD-Assembled by Depot	from the higher level of maintenance.

REPAIR PARTS AND SPECIAL TOOLS LIST
(RPSTL) INTRODUCTION   **0012 00**

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES (Continued)

Source Code   **Application/Explanation**

XA   Do not requisition an "XA" coded item. Order the next higher assembly. (Refer
        To NOTE below.)

XB   If an item is not available from salvage, order it using the CAGEC and P/N.

XC   Installation drawings, diagrams, instruction sheets, field service drawings;
        Identified by manufacturer's P/N.

XD   Item is not stocked. Order an XD-coded item through normal supply channels
        Using the CAGEC and P/N given, if no NSN is available.

NOTE

Cannibalization or controlled exchange, when authorized, may be
used as a source of supply for items with the above source codes
except for those items source coded "XA" or those aircraft support
items source restricted by requirements of AR 750-1.

Maintenance Code.

Maintenance codes tell you the level(s) of maintenance authorized to use and repair support items.
The maintenance codes are entered in the third and fourth position of the SMR code as follows:

Third Position.

The maintenance code entered in the third position tells you the lowest maintenance level authorized
to remove, replace, and use an item. The maintenance code entered in the third position will indicate
authorization to the following levels of maintenance:

**Maintenance
Code**   **Application/Explanation**

C   Crew or operator maintenance done within unit/AVUM
                                Maintenance.

O   Unit level/AVUM maintenance can remove, replace, and
                                use the item.

F   Direct support/AVUM maintenance can remove, replace,
                                and use the item.

H   General support maintenance can remove, replace, and
                                use the item.

L   Specialized repair activity can remove, replace, and use
                                the item.

D   Depot can remove, replace and use the item.

**REPAIR PARTS AND SPECIAL TOOLS LIST
(RPSTL) INTRODUCTION** 0012 00

EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS LIST WORK PACKAGES (Continued)

Fourth Position.

The maintenance code entered in the fourth position tells you whether or not the item is to be repaired and identifies the lowest maintenance level with the capability to do complete repair (perform all authorized repair functions).

NOTE

Some limited repair may be done on the item at a lower level of maintenance, if authorized by the Maintenance Allocation Chart (MAC) and SMR codes.

Maintenance Code	Application/Explanation
O	Unit/AVUM is the lowest level that can do complete repair of the item.
F	Direct support/AVUM is the lowest level that can do complete repair of the item.
H	General support is the lowest level that can do complete repair of the item.
L	Specialized repair activity (*enter specialized repair activity designator*) is the lowest level that can do complete repair of the item.
D	Depot is the lowest level that can do complete repair of the item.
Z	Non-reparable. No repair is authorized.
B	No repair is authorized. No parts or special tools are authorized for maintenance of "B" coded item. However, the item may be reconditioned by adjusting, lubricating, etc., at the user level.

Recoverability Code.

Recoverability codes are assigned to items to indicate the disposition action on unserviceable items. The recoverability code is shown in the fifth position of the SMR code as follows:

Recoverability Code	Application/Explanation
Z	Non-reparable item. When unserviceable, condemn and dispose of the item at the level of maintenance shown in

the third position of the SMR code.
EXPLANATION OF COLUMNS IN THE REPAIR PARTS LIST AND SPECIAL TOOLS
LIST WORK PACKAGES (Continued)

Recoverability Code	Application/Explanation
O	Reparable item. When uneconomically reparable, condemn and dispose of the item at the unit level.
F	Reparable item. When uneconomically reparable, condemn and dispose of the item at the direct support level.
H	Reparable item. When uneconomically reparable, condemn and dispose of the item at the general support level.
D	Reparable item. When beyond lower level repair capability, return to depot. Condemnation and disposal of item are not authorized below depot level.
L	Reparable item. Condemnation and disposal not authorized below Specialized Repair Activity (SRA).
A	Item requires special handling or condemnation procedures because of specific reasons (such as precious metal content, high dollar value, critical material, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

NSN (Column (3)). The NSN for the item is listed in this column.

CAGEC (Column (4)). The Commercial and Government Entity Code (CAGEC) is a five-digit code which is used to identify the manufacturer, distributor, or Government agency/activity that supplies the item.

PART NUMBER (Column (5)). Indicates the primary number used by the manufacturer (individual, company, firm, corporation, or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items.

NOTE

When you use an NSN to requisition an item,
the item you receive may have a different
P/N from the number listed.

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). This column includes the following information:

1. The federal item name, and when required, a minimum description to identify the item.

REPAIR PARTS AND SPECIAL TOOLS LIST
(RPSTL) INTRODUCTION   0012 00

DESCRIPTION AND USABLE ON CODE (UOC) (Column (6)). (Continued)

2. P/Ns of bulk materials are referenced in this column in the line entry to be
    manufactured or fabricated.

3. Hardness Critical Item (HCI). A support item that provides the equipment with
    special protection from electromagnetic pulse (EMP) damage during a nuclear
    attack.

4. The statement END OF FIGURE appears just below the last item description in
    column (6) for a given figure in both the repair parts list and special tools list work
    packages.

QTY (Column (&)). The QTY (quantity per figure) column indicates the quantity of the item used in
the breakout shown on the illustration/figure, which is prepared for a functional group, sub-functional
group, or an assembly. A "V" appearing in this column instead of a quantity indicates the quantity is
variable and quantity may change from application to application.

**EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGES FORMAT AND
COLUMNS**

1. National Stock Number (NSN) Index Work Package.

STOCK NUMBER Column. This column lists the NSN in National item identification number (NIIN)
sequence. The NIIN consists of the last nine digits of the NSN.

NSN (e.g., 5385-<u>01-574-1476</u>) NIIN	When using this column to locate an item, ignore the first four digits of the NSN. However, the complete NSN Should be used when ordering items by stock number.

FIG. Column. This column lists the number of the figure where the item is identified/ located. The
figures are in numerical order in the repair parts list and special tools list work packages.

ITEM Column. The item number identifies the item associated with the figure list in the adjacent FIG.
column. This item is also identified by the NSN listed on the same line.

2. Part Number (P/N) Index Work Package. P/Ns in this index are listed in ascending alphanumeric
sequence (vertical arrangement of letter and number combinations which places the first letter or digit
of each group in order A through Z, followed by the numbers 0 through 9 and each following letter or
digit in like order).

PART NUMBER Column. Indicates the P/N assigned to the item.

FIG. Column. This column lists the number of the figure where the item is identified/ located in the
repair parts list and special tools list work packages.

Item Column. The item number is the number assigned to the item as it appears in the figure
referenced in the adjacent figure number column.

REPAIR PARTS AND SPECIAL TOOLS LIST
(RPSTL) INTRODUCTION   0012 00

EXPLANATION OF CROSS-REFERENCE INDEXES WORK PACKAGES FORMAT AND COLUMNS (Continued)

3. Reference Designator Index Work Package. Reference designators in this index are listed in ascending alphanumeric sequence (vertical arrangement of letter and number combination which places the first letter or digit of each group in order "A through Z", followed by the numbers "0 through 9" and each following letter or digit in like order.)

REFERENCE DESIGNATOR Column. Indicates the reference designator assigned to the item.

FIG Column. This column lists the number of the figure where the item is identified/ located in the reports

ITEM Column. The item number is the number assigned to the item as it appears in the figure referenced in the adjacent figure number column.

SPECIAL INFORMATION

UOC. The UOC appears in the lower left corner of the Description Column heading. Usable on codes are shown as "UOC:…" in the Description Column (justified left) on the first line under the applicable item/nomenclature. Uncoded items are applicable to all models. There are no UOCs in this RPSTL.

FABRICATION INSTRUCTIONS. Bulk materials required to manufacture items are listed in the bulk material functional group of this RPSTL. Part numbers for bulk material are also referenced in the Description Column of the line item entry for the item to be manufactured/fabricated. Detailed fabrication instructions for items source coded to be manufactured or fabricated are found in appropriate appendices of this manual.

INDEX NUMBERS. Items which have the word BULK in the figure column will have an index number shown in the item number column. This index number is a cross-reference between the NSN/ P/N index work packages and the bulk material list in the repair parts list work package.

HOW TO LOCATE REPAIR PARTS

1. When NSNs or P/Ns Are Not Known.

First. Using the table of contents, determine the assembly group to which the item belongs. This is necessary since figures are prepared for assembly groups and subassembly groups, and lists are divided into the same groups.

Second. Find the figure covering the functional group or the sub-functional group to which the item belongs.

Third. Identify the item on the figure and note the number(s).

Fourth. Look in the repair parts list work packages for the figure and item numbers. The NSNs and part numbers are on the same line as the associated item numbers.

2. When NSN Is Known.

First. If you have the NSN, look in the STOCK NUMBER column of the NSN index work package. The NSN is arranged in NIIN sequence. Note the figure and item number next to the NSN.

**REPAIR PARTS AND SPECIAL TOOLS LIST
(RPSTL) INTRODUCTION** 0012 00

HOW TO LOCATE REPAIR PARTS (Continued)

Second. Turn to the figure and locate the item. Verify that the item is the one you are looking for.

3. When P/N Is Known.

First. If you have the P/N and not the NSN, look in the PART NUMBER column of the P/N index work package. Identify the figure and item number.

Second. Look up the item on the figure in the applicable repair parts list work package.

4. When Reference Designator Is Known.

First. If you know the reference designator, look in the REFERENCE DESIGNATOR column of the reference designator index work package. Note the figure and item number.

Second. Turn to the figure and locate the item number. Verify that the item is the one you are looking for.

ABBREVIATIONS

No uncommon abbreviations are used in the RPSTL.

END OF WORK PACKAGE

FIGURE 1 – AVIATION MISSION PLANNING SYSTEM (AMPS)
1004008

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY INC IN UNIT
						GROUP 00 **AVIATION MISSION PLANNING SYSTEM (AMPS)** **1004008 (81996) PEODD**	
1	1	PAODD	7025-01-529-6742	81996	1004006	TRANSFER UNIT,PROGR (FOR PARTS SEE . . . . FG 06)	1
1	2	PAODD	7025-01-529-6741	81996	1004007	INTERFACE UNIT,DATA (FOR PARTS SEE . . . . FG 03)	1
1	3	PAOOO		81996	1004005	PRINTER,AUTOMATIC D (FPR PARTS SEE . . . . FG 04)	1
1	4	XBOOO		81996	1012250	PCIDM ASSEMBLY (FOR PARTS SEE FG . . . . 05)	1
1	5	PAOOO	1430-01-521-2972	81996	1005484	COMPUTER UNIT,RUGGE (FOR PARTS SEE . . . . FG 01) **END OF FIGURE**	1
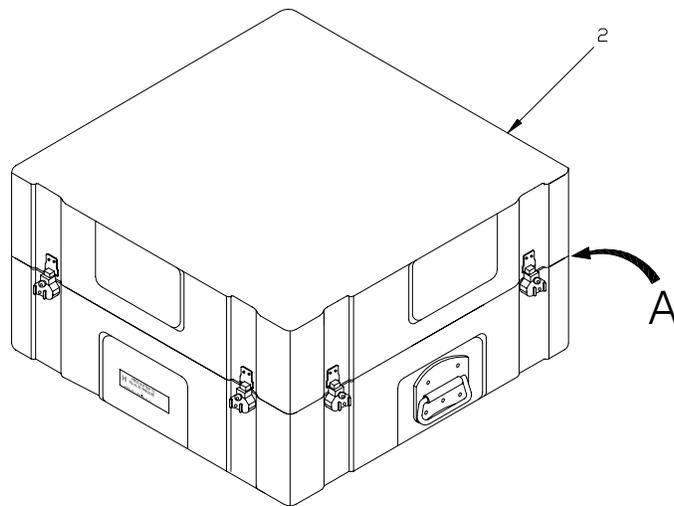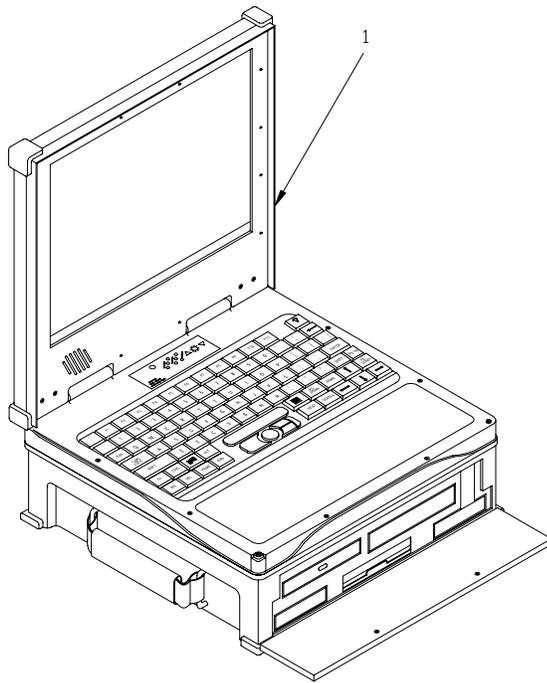
MS082474

FIGURE 2 – COMPUTER UNIT, RUGGEDIZED PORTABLE
1005484 (SHEET 1 OF 2)

FIGURE 2 – COMPUTER UNIT, RUGGEDIZED PORTABLE
1005484 (SHEET 2 OF 2)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY INC IN UNIT
						GROUP 01 **COMPUTER UNIT, RUGGERDIZED PORTABLE** **1005484 (81996) PAOOO**	
2	1	PAOOO		81996	1005487-2	COMPUTER,DIGITAL	1
2	2	XBOZZ		18876	13608613	CASE,TRANSIT	1
2	3	PAOOO	6625-01-503-3648	54418	712990	TEST SET,POWER SUPP	1
2	4	PAOZZ	8145-01-503-6308	54418	712398	SHIPPING AND STORAG	1
2	5	PAOZZ	6135-01-504-6383	18876	13608622	BATTERY,LITHIUM	2
2	6	PAOOO	5975-01-452-1275	54418	M72-2387	ADAPTER,ELECTRICAL	1
2	7	PAOZZ	7025-01-504-6382	18876	13608626	MEMORY CARD,PERSONA	1
2	8	PAOZZ		0JR59	1941800000	FUSE,CARTRIDGE	2
2	9	PAOZZ	5920-01-285-9879	75915	218004	FUSE,CARTRIDGE	1
2	10	PAOZZ		62484	72413	FUSE,CARTRIDGE	2
2	11	PAOZZ	6150-01-504-9806	18876	13580865-2	CABLE ASSEMBLY,POWE	1
2	12	PAOZZ	6150-01-503-3124	54418	M222-25	CABLE ASSEMBLY,SPEC	1
2	13	PAOZZ	6145-01-503-3649	62676	279337	CABLE,TELEPHONE	1
2	14	PAOZZ	6145-01-503-3125	54418	M243-123	CABLE,TELEPHONE	1
2	15	XBOZZ		54418	501785-1	HARDDRIVE,REMOVABLE	2
						END OF FIGURE	
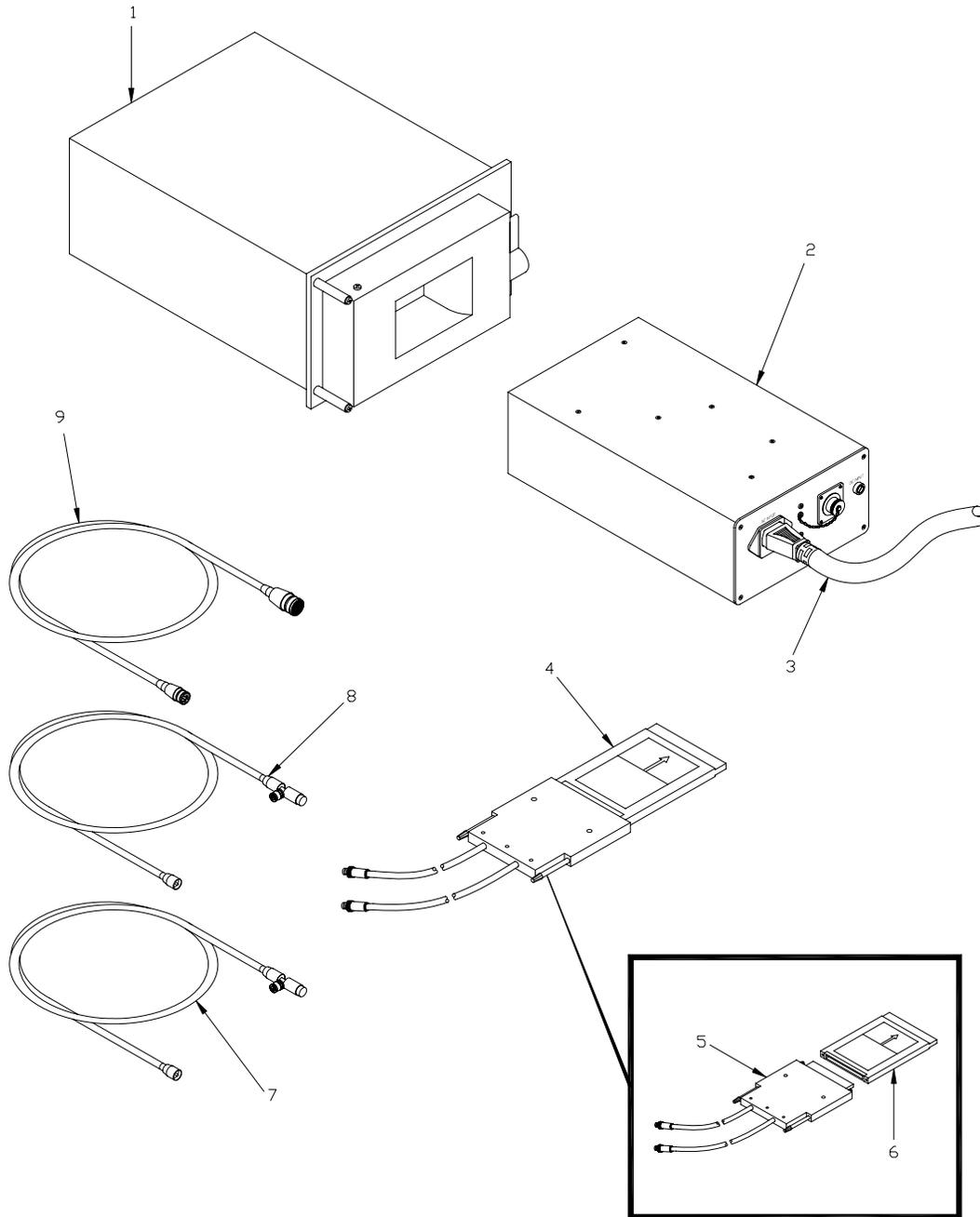
MS082476

FIGURE 3 – TRANSFER UNIT ASSEMBLY
1004007

(1) ILLUSTRATION		(2) SMR CODE	(3) NATIONAL STOCK NUMBER	(4) CAGEC	(5) PART NUMBER	(6) DESCRIPTION AND USABLE ON CODES (UDC)	(7) QTY INC IN UNIT
(a) FIG NO.	(b) ITEM NO.						
						GROUP 03 **TRANSFER UNIT ASSEMBLY** **1004007 (81996) PAODD**	
3	1	PAODD	7025-01-338-7064	13499	622-9309-001	TRANSFER UNIT, PROGR.	1
3	2	PAODD	6130-01-359-5734	08YX1	50761	POWER SUPPLY	1
3	3	PAOZZ	5995-01-438-8156	08YX1	52071	CABLE ASSEMBLY	1
3	4	PAO00	5998-01-529-7193	81996	1012254	CIRCUIT CARD ASSEMBLY	1
3	5	PAOZZ		81996	1012253	PCMCIA CABLE	1
3	6	PAOZZ		81996	1012252	PCMCIA CARD	1
3	7	PAOZZ	5995-01-446-1467	9V178	AMP-E001-000-4	CABLE ASSEMBLY, SPEC	1
3	8	PAOZZ	5995-01-446-2572	1TQE9	DC26258-00	CABLE ASSEMBLY, SPEC	1
3	9	PAOZZ	5995-01-461-6741	9V178	AMP-E002-000	CABLE ASSEMBLY, POWE.	1
						END OF FIGURE	

1

A
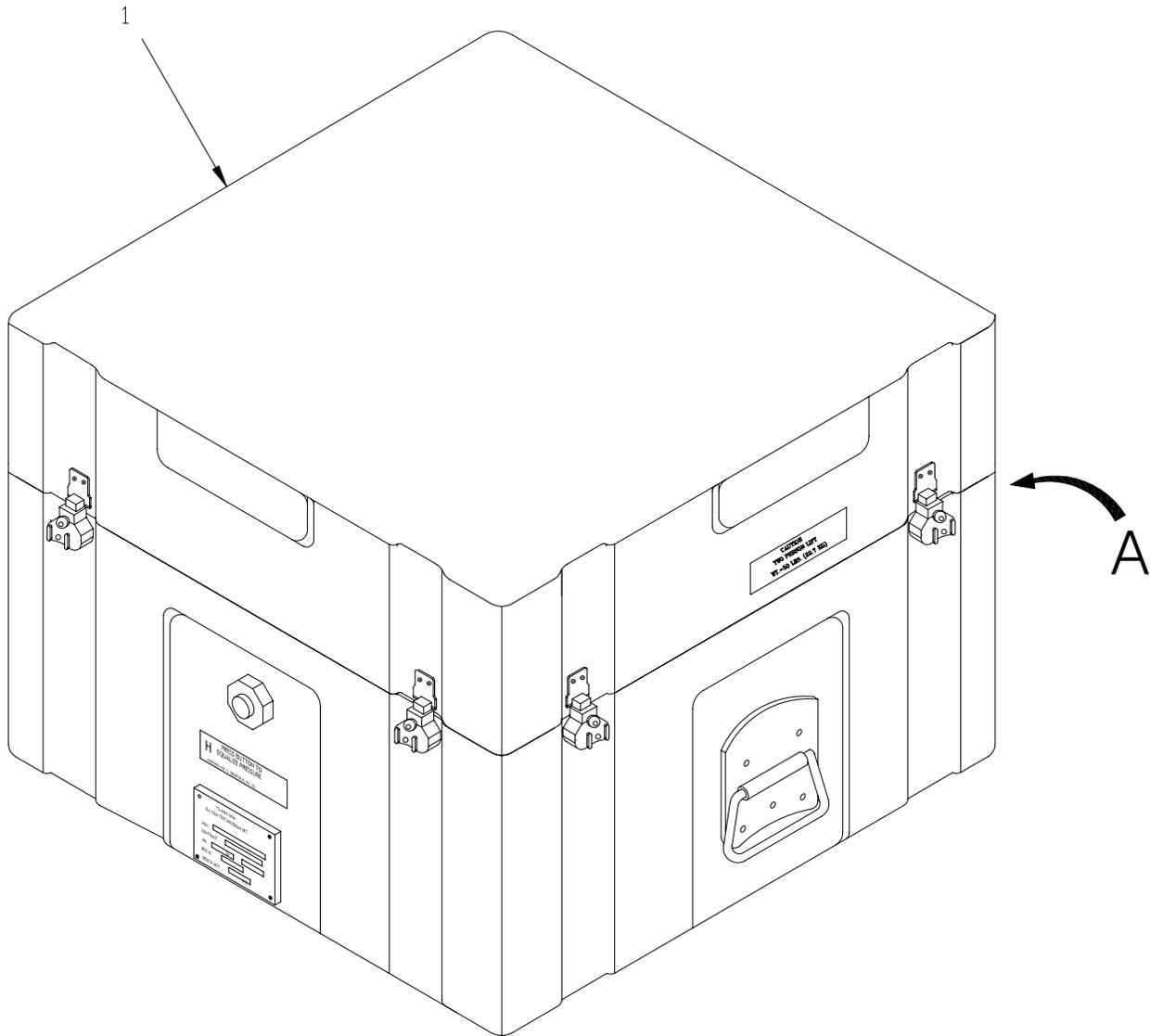
MS082477

FIGURE 4 – PRINTER ASSEMBLY
1004005 (SHEET 1 OF 2)
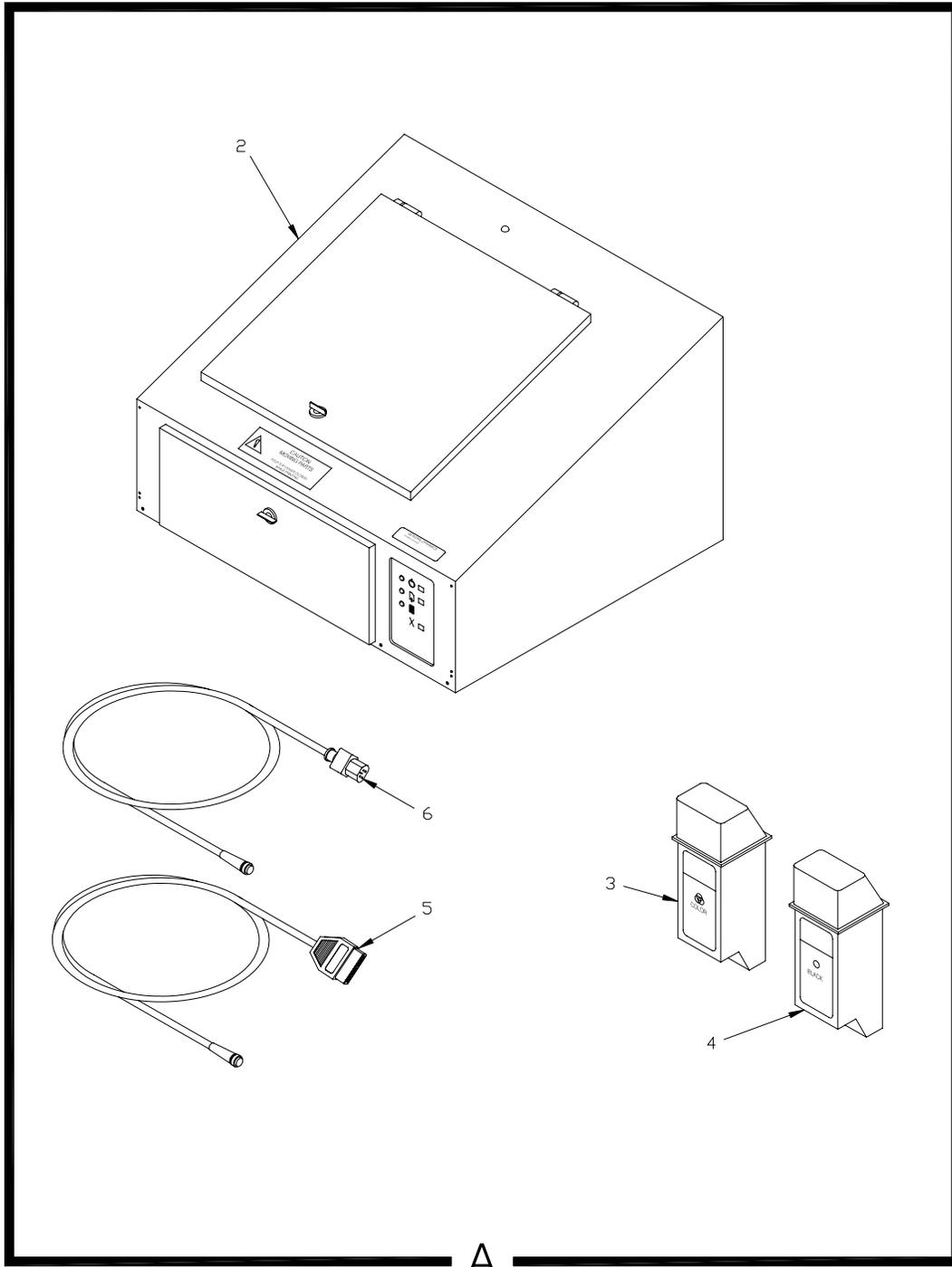
MS082478

FIGURE 4 – PRINTER ASSEMBLY
1004005 (SHEET 2 OF 2)

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY INC IN UNIT
						GROUP 04 **PRINTER ASSEMBLY** **1004005 (81996) PAOOO**	
4	1	PAOZA	5895-01-490-0752	67032	99-2757054-107	CASE,ELECTRONIC COM	1
4	2	PAOZA	7025-01-490-4315	67032	11-2781451-2	PRINTER,AUTOMATIC D	1
4	3	PAOZZ	7510-01-452-6538	28480	HP51645A	INK,CARTRIDGE	1
4	4	PAOZZ	7510-01-483-7786	0VXP9	291-951	INK,CARTRIDGE	1
4	5	PAOZZ	5995-01-477-4623	66167	F3D111-06	CABLE ASSEMBLY,SPEC	1
4	6	PAOZZ	5995-01-359-7304	08YX1	50347	CABLE ASSEMBLY,POWE	1
						END OF FIGURE	
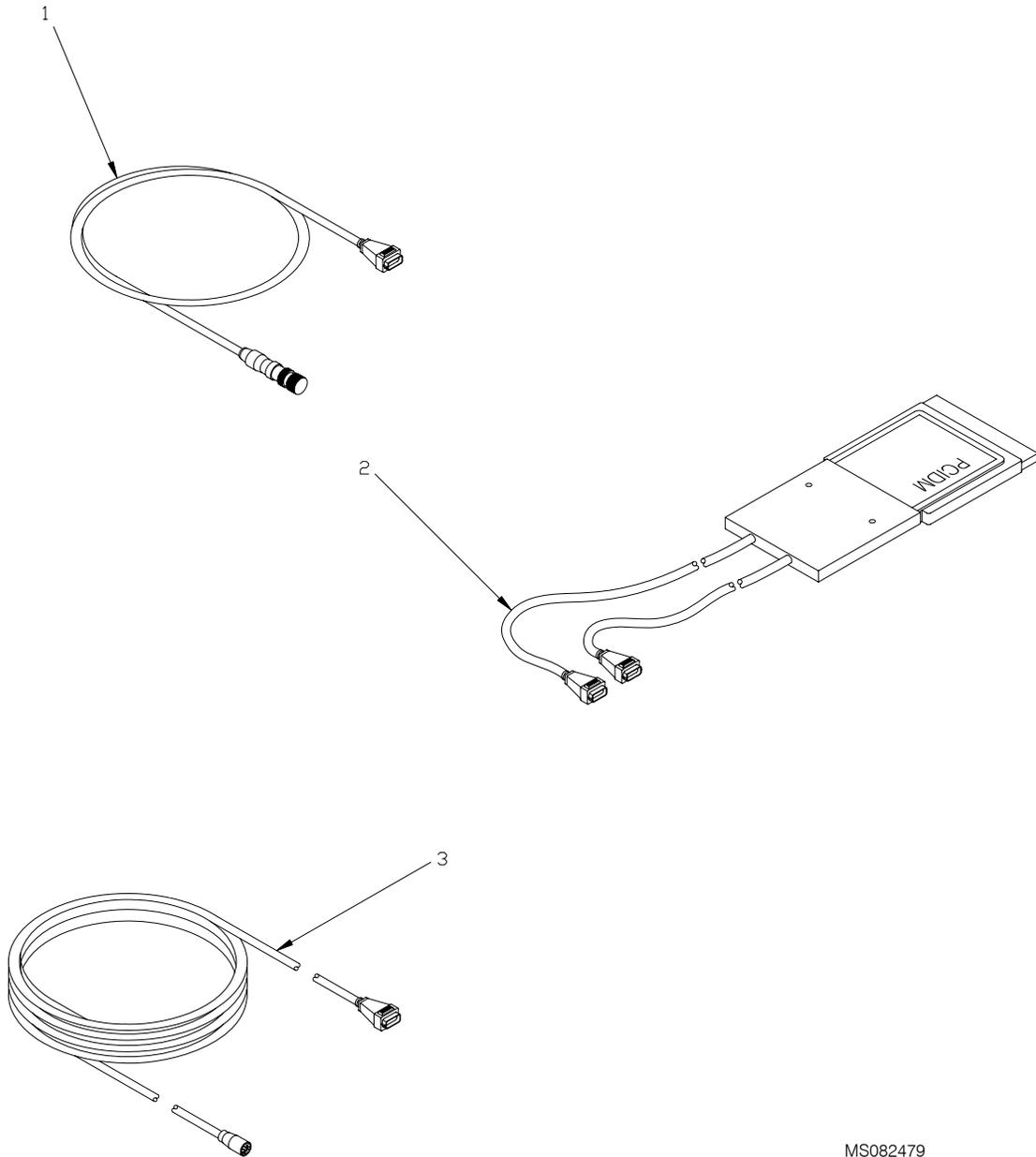
MS082479

FIGURE 5 – PCIDM ASSEMBLY
1012250

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY INC IN UNIT
						GROUP 05 **PCIDM ASSEMBLY** **1012250 (81966) XBOOO**	
5	1	PAOZZ		81996	1005485	CABLE ASSEMBLY,SPEC	1
5	2	PAOZZ	5895-01-505-1044	81996	1012255	MODEM,COMMUNICATION	1
5	3	PAOZZ		81996	1012251	CABLE ASSEMBLY,SPEC	1
						END OF FIGURE	

FIGURE 6 – TRANSFER UNIT ASSEMBLY, PROGRAMMABLE
1004006

MS082480

(1) ILLUSTRATION		(2)	(3)	(4)	(5)	(6)	(7)
(a) FIG NO.	(b) ITEM NO.	SMR CODE	NATIONAL STOCK NUMBER	CAGEC	PART NUMBER	DESCRIPTION AND USABLE ON CODES (UOC)	QTY INC IN UNIT
						GROUP 06 **TRANSFER UNIT ASSEMBLY, PROGRAMMABLE** **1004006 (81996) PAODD**	
6	1	PAOZD	7025-01-434-0918	35351	LT6194-07-01	TRANSFER UNIT,PROGR	1
6	2	XAOZZ		08YX1	50246	HOUSING,ELECTRONIC	1
6	3	PAOZD	6130-01-359-5734	08YX1	50761	POWER SUPPLY	1
6	4	PAOZZ	7025-01-505-7077	54418	713133-1	MEMORY CARD,PERSONA	1
6	5	PAOZZ	6150-01-483-5048	12255	ACK-SS26-50LD	CABLE ASSEMBLY,SPEC	1
6	6	PAOZZ	5995-01-438-8156	08YX1	52071	CABLE ASSEMBLY,POWE	1
6	7	PAOZZ	5985-01-359-7377	08YX1	52408	DUMMY LOAD,ELECTRIC	1
						END OF FIGURE	

CROSS-REFERENCE INDEXES

NATIONAL STOCK NUMBER INDEX

STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM	STOCK NUMBER	FIG.	ITEM
6130-01-359-5734	3	2						
	6	3						
5995-01-359-7304	4	6						
5985-01-359-7377	6	7						
7025-01-434-0918	6	1						
5995-01-438-8156	3	3						
	6	6						
5995-01-446-1467	3	6						
5975-01-452-1275	2	6						
7510-01-452-6538	4	3						
5995-01-477-4623	4	5						
6150-01-483-5048	6	5						
6150-01-503-3124	2	12						
6145-01-503-3125	2	14						
6625-01-503-3648	2	3						
6145-01-503-3649	2	13						
8145-01-503-6308	2	4						
7025-01-504-6382	2	7						
6135-01-504-6383	2	5						
6150-01-504-9806	2	11						
7025-01-505-7077	6	4						
1430-01-521-2972	1	5						
7025-01-529-6741	1	2						
7025-01-529-6742	1	1						
5998-01-529-7193	3							

CROSS-REFERENCE INDEXES
PART NUMBER INDEX

PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM	PART NUMBER	FIG.	ITEM
ACK-SS26-50LD	6	5						
AMP-E001-000-4	3	6						
AMP-E002-000	3	8						
DC26258-00	3	7						
F3D111-06	4	5						
HP51645A	4	3						
LT6194-07-01	6	1						
M222-25	2	12						
M243-123	2	14						
M72-2387	2	6						
1004005	1	3						
1004006	1	1						
1004007	1	2						
1005484	1	5						
1005485	5	1						
1005487-2	2	1						
1012250	1	4						
1012251	5	3						
1012252	3	4						
1012254	3	5						
1012255	5	2						
11-2781451-2	4	2						
13580865-2	2	11						
13608613	2	2						
13608622	2	5						
13608626	2	7						
1941800000	2	8						
218004	2	9						
279337	2	13						
291-951	4	4						
501785-1	2	15						
50246	6	2						
50347	4	6						
50761	3	2						
	6	3						
52071	3	3						
	6	6						
52408	6	7						
622-9309-001	3	1						
712398	2	4						
712990	2	3						
713133-1	6	4						
72413	2	10						
99-2757054-107	4	1						

INTRODUCTION

Scope

This work package lists Components of End Item (COEI) for the Aviation Mission Planning System (AMPS) to help you inventory items for safe and efficient operation of the equipment.

General

Components of End Item (COEI). This list is for information purposes only and is not authority to requisition replacements. These items are part of the AMPS. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Items of COEI are removed and separately packaged for transportation or shipment only when necessary. Illustrations are furnished to help you find and identify the items.

Explanation of columns in the COEI LIST

Column (1), Illus Number, gives you the number of the item illustrated.

Column (2), National Stock Number, identifies the stock number of the item to be used for requisitioning purposes.

Column (3), Description, Commercial and Government Entity Code (CAGEC), and Part Number, identifies the Federal item name (in all capital letters) followed by a minimum description when needed. The stowage location of COEI is also included in this column. The last line below the description is the CAGEC (in parentheses) and the part number.

Column (4), Usable on Code, gives you a code if the item you need is not the same for different models of equipment

Column (5), Unit of Measure (U/M), indicates how the item is issued for the National Stock Number shown in column (2).

Column (6), Qty Required, indicates the quantity required.
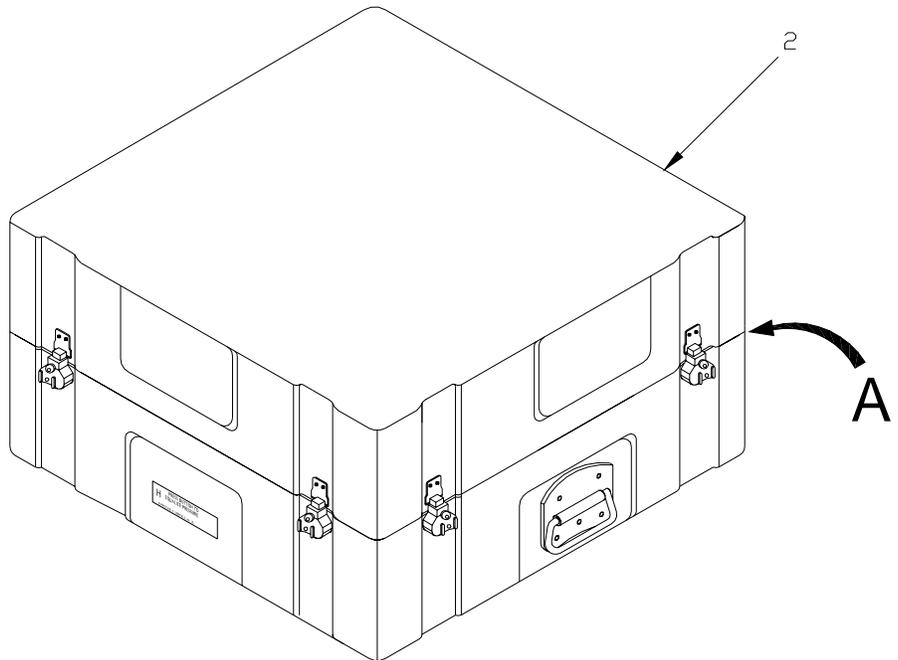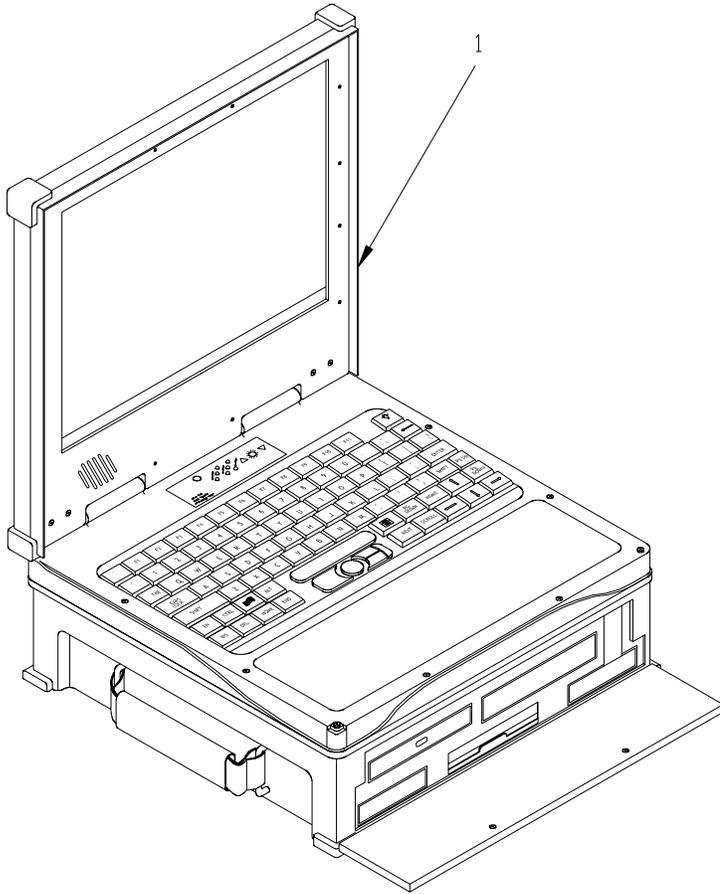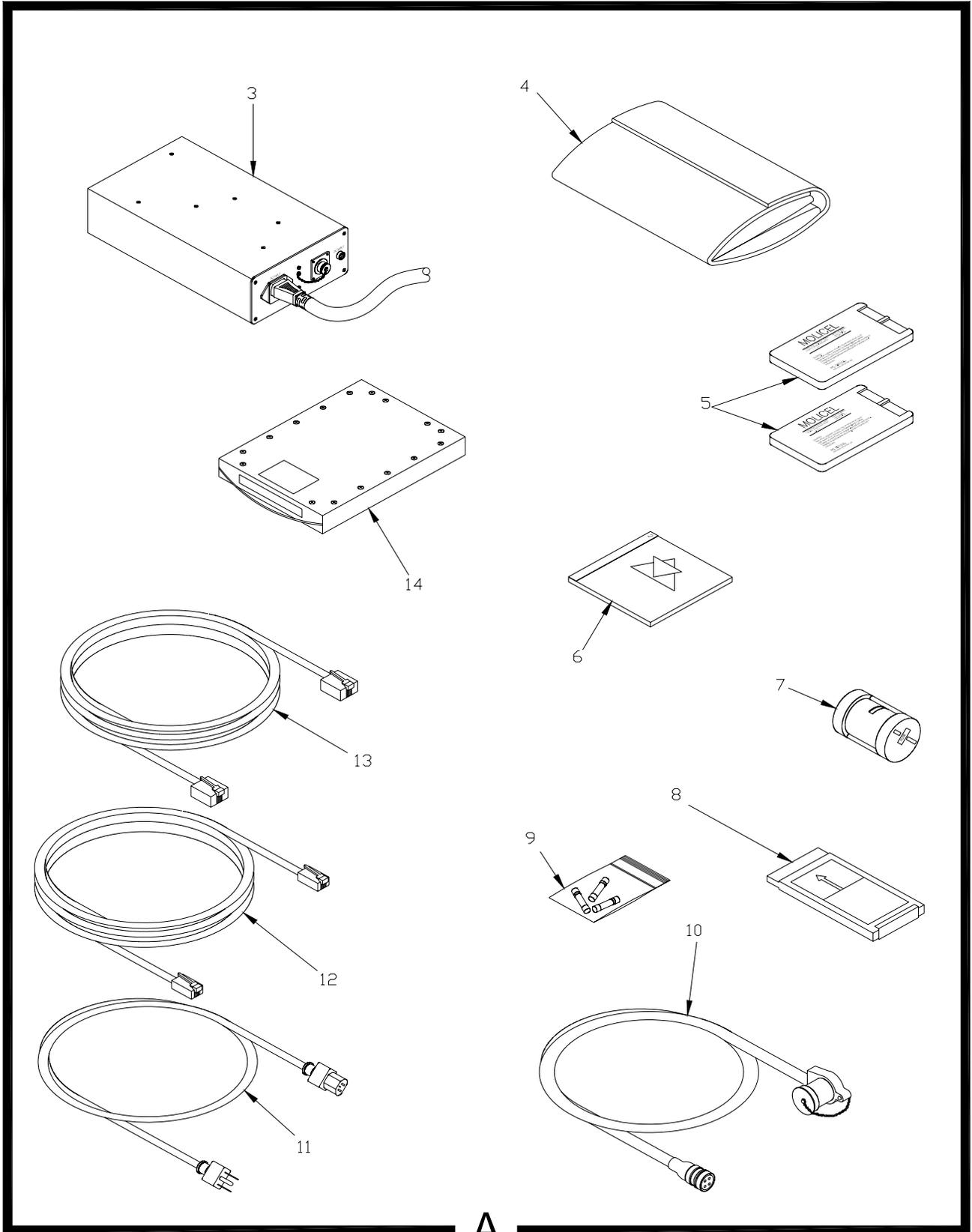
A

Table 1. Components of End Item List.

(1) ILLUS NUMBER	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION, CAGEC, AND PART NUMBER	(4) USABLE ON CODE	(5) U/M	(6) QTY RQR
1		COMPUTER (81996) 1005487-2		EA	1
2		CASE, TRANSIT (54418) 713012		EA	1
3	6625-01-503-3648	TEST SET, POWER SUPPLY (18876) 13608615		EA	1
4	8145-01-503-6308	SHIPPING AND STORAGE CONTAINER, TEST SET (18876) 13608616		EA	1
5	6135-01-504-6383	BATTERY, LITHIUM (18876) 13608622		EA	2
6		SYSTEM RECOVERY DISK (54418) 713577-3		EA	1
7	5975-01-452-1275	ADAPTER, ELECTRICAL (54418) M72-2387		EA	1
8	7025-01-504-6382	MEMORY CARD, PERSONAL COMPUTER (18876) 13608626		EA	1
9		FUSE, DC 8 AMP, 250V (0JR59) F8H250V		EA	2
9		FUSE, 13 AMP, 250V (62484) 72413		EA	2
9	5920-01-285-9879	FUSE, AC (75915) 218004		EA	1
10	6150-01-504-9806	ADAPTER, ELECTRICAL (18876) 13580865-2		EA	1
11	6150-01-503-3124	CABLE ASSEMBLY, SPECIAL PURPOSE (18876) 13608618		EA	1
12	6145-01-503-3649	CABLE, TELEPHONE (18876) 13608619		EA	1
13	6145-01-503-3125	CABLE, TELEPHONE (18876) 13608620		EA	1
14		REMOVABLE HARD DRIVE 40GB (54418) 501938-1		EA	2

Scope

This work package lists expendable and durable items that you will need to operate and maintain the AMPS. This list is for information only and is not authority to requisition the listed items. These items are authorized to you by CTA 50-970, Expendable/Durable Items (except Medical, Class V Repair Parts, and Heraldic Items), or CTA 8-100, Army Medical Department Expendable/Durable Items.

Explanations of Columns in the Expendable/Durable Items List

Column (1) – Item Number. This number is assigned to the entry in the list and is referenced in the narrative instructions to identify the item (e.g., "Use lubricating oil (Item 25, WP 5230 00).").

Column (2) – Level. This column includes the lowest level of maintenance that requires the listed item (O=Unit, F=Direct Support, H=General Support, D=Depot).

Column (3) – National Stock Number (NSN). This is the NSN assigned to the item which you can use to requisition it.

Column (4) – Item Name, Description, Commercial and Government Entity Code (CAGEC) and Part Number (P/N). This column provides the other information you need to identify the item.

Column (5) – Unit of Measure (U/M). This code shows the physical measurement or count of an item, such as gallon, dozen, gross, etc.

Table 1. Expendable Supplies and Durable Items List

(1) ITEM NUMBER	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) ITEM NAME, DESCRIPTION CAGEC,PART NUMBER	(5) U/M
1	O	8305-00-267-3015	Cheese Cloth, Cotton, Type II, Class2 (81348) CCC-C-440	YD
2	O	6810-00-753-4993	Alcohol, Isopropyl, 90% Grade A (81349) MIL-A-10428	OZ
3	O	6515-01-017-2177	Swab, Cotton, Lint-Free (89875) 96-0143	EA
4	O	7930-00-282-9699	Detergent, General Purpose (81349) MIL-D-16791	OZ
5	O	7920-00-356-4694	Brush, Bristle (80572) 1A145	EA

CONFIGURATION TABLES

The following additional items are identified based on airframe type and unit echelon per the AMPS:

Aviation Units with AH-64A (MOD), AH-64D (SW 6), and OH-58D (CDS-2) airframes require the Rockwell Collins Data Transfer Receptacle, MU-1005/A to include the following items:

NSN	NOMEN	PART NUMBER	QTY
7025013387064	Transfer Unit, Programmable	622-9309-001	1
6130013595734	Power Supply	50761	1
5995014388156	Cable Assembly, Power	52071	1
5998015297193	Circuit Card Assembly	1012254	1
	PCMCIA Card	1012252	1
	PCMCIA Cable	1012253	1
5995014461467	Cable Assembly, Special	AMP-E001-000-4	1
5995014462572	Cable Assembly, Special	DC26258-00	1
5995014616741	Cable Assembly, Power	AMP-E002-000	1

Aviation Units with CH-47D, UH-60A/L, and OH-58D (CDS4 & higher) airframes require the Smith Industries Data Transfer Module Receptacle, MU-1114/A, to include the following items:

NSN	NOMEN	PART NUMBER	QTY
6130014340918	Transfer Unit, Programmable	LT6194-07-01	1
6130013595734	Power Supply	50761	1
7025015057077	Memory Card, Personal	713133-1	1
6150014835048	Cable Assembly, Special	ACK-SS26-50LD	1
5995014388156	Cable Assembly, Power	52071	1
5985013597377	Dummy Load Terminator	52408	1

NOTE

AVIM Units receive the respective Data Transfer Receptacle sets based on the types of aircraft that they support.

NOTE

Airframes equipped with Doppler Global Positioning System Navigation System (DGNS) AN/ASN-128D do not require the MU-1005/A or the MU-1114/A.

CONFIGURATION REQUIREMENTS   **WP 0023 00**

The color printer items are issued one (1) per AVN HQ (S3), one (1) per AVN CO/Troop (with aircraft), one (1) per CH-47 PLT, and four (4) per MEDEVAC CO (AA). These items include:

NSN	NOMEN	PART NUMBER	QTY
5895014900752	Case, Elec Com	99-2757054-107	1
7025014904315	Printer, Automatic	11-2781451-2	1
7510014526538	Ink, Cartridge	HP51645A	1
7510014837786	Ink, Cartridge	291-951	1
5995014774623	Cable Assembly, Special	F3D111-06	1
5995013597304	Cable Assembly, Power	50347	1

The Personal Computer-Improved Data Modem (PC IDM) is issued two (2) per AVN HQ (S3), one (1) per AVN CO/Troop (with aircraft), one (1) per CH-47 PLT, one per LNO Element/Team, and four (4) per MEDEVAC CO (AA). These items include:

NSN	NOMEN	PART NUMBER	QTY
	Cable Assembly, Special	1005485	1
5895015051044	Modem, Commo	1013350	1
	Cable Assembly, Special	1012251	1

By Order of the Secretary of the Army:

PETER J. SCHOOMAKER
General, United States Army
Chief of Staff

Official:

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army
0533211

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To be distributed is accordance with the initial distribution number (IDN) 314181, requirements for TM 1-7010-386-12&P.

These are the instructions for sending an electronic 2028

The following format must be used if submitting an electronic 2028. The subject line must be exactly the same and all fields must be included; however only the following fields are mandatory: 1, 3, 4, 5, 6, 7, 8, 9, 10, 13, 15, 16, 17, and 27.

From: "Whomever" <whomever@wherever.army.mil>
To: 2028@redstone.army.mil

Subject: DA Form 2028

1. *From:* Joe Smith
2. *Unit:* home
3. *Address:* 4300 Park
4. *City:* Hometown
5. *St:* MO
6. *Zip:* 77777
7. *Date Sent:* 19–OCT–93
8. *Pub no:* 55–2840–229–23
9. *Pub Title:* TM
10. *Publication Date:* 04–JUL–85
11. *Change Number:* 7
12. *Submitter Rank:* MSG
13. *Submitter FName:* Joe
14. *Submitter MName:* T
15. *Submitter LName:* Smith
16. *Submitter Phone:* 123–123–1234
17. *Problem:* 1
18. *Page:* 2
19. *Paragraph:* 3
20. *Line:* 4
21. *NSN:* 5
22. *Reference:* 6
23. *Figure:* 7
24. *Table:* 8
25. *Item:* 9
26. *Total:* 123
27. *Text:*
This is the text for the problem below line 27.

		RECOMMENDED CHANGES TO PUBLICATIONS AND			Use Part II (*reverse*) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE
		BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.				8/30/02

TO: (*Forward to proponent of publication or form)(Include ZIP Code)*	FROM: (*Activity and location)(Include ZIP Code)*
Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM–MMC–MA–NP Redstone Arsenal, 35898	MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565

PART 1 – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER			DATE		TITLE Organizational, Direct Support, And General
TM 9–1005–433–24			16 Sep 2002		Support Maintenance Manual for Machine Gun, .50 Caliber M3P and M3P Machine Gun Electrical Test Set Used On Avenger Air Defense Weapon System

ITEM NO.	PAGE NO.	PARA– GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON
1	WP0005 PG 3		2			Test or Corrective Action column should identify a different WP number.

* *Reference to line numbers within the paragraph or subparagraph.*

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTEN- SION	SIGNATURE
MSG, Jane Q. Doe, SFC	788–1234	

DA FORM 2028, FEB 74   REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED.   USAPA V3.01

TO: (*Forward direct to addressee listed in publication*)	FROM: (*Activity and location*) (*Include ZIP Code*)	DATE
Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM−MMC−MA−NP Redstone Arsenal, 35898	MSG, Jane Q. Doe 1234 Any Street Nowhere Town, AL 34565	8/30/02

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER				DATE			TITLE		
PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION	

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.*)

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE
MSG, Jane Q. Doe, SFC	788−1234	

USAPA V3.01

RECOMMENDED CHANGES TO PUBLICATIONS AND BLANK FORMS For use of this form, see AR 25–30; the proponent agency is ODISC4.	Use Part II (*reverse*) for Repair Parts and Special Tool Lists (RPSTL) and Supply Catalogs/ Supply Manuals (SC/SM)	DATE
TO: (*Forward to proponent of publication or form)(Include ZIP Code)* Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	FROM: (*Activity and location)(Include ZIP Code)*	

PART 1 – ALL PUBLICATIONS (EXCEPT RPSTL AND SC/SM) AND BLANK FORMS

PUBLICATION/FORM NUMBER				DATE		TITLE	
ITEM NO.	PAGE NO.	PARA– GRAPH	LINE NO. *	FIGURE NO.	TABLE NO.	RECOMMENDED CHANGES AND REASON	

* Reference to line numbers within the paragraph or subparagraph.

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/ AUTOVON, PLUS EXTEN-SION	SIGNATURE

DA FORM 2028, FEB 74   REPLACES DA FORM 2028, 1 DEC 68, WHICH WILL BE USED.   USAPA V3.01

TO: (*Forward direct to addressee listed in publication*) Commander, U.S. Army Aviation and Missile Command ATTN: AMSAM-MMC-MA-NP Redstone Arsenal, AL 35898	FROM: (*Activity and location*) (*Include ZIP Code*)	DATE

PART II – REPAIR PARTS AND SPECIAL TOOL LISTS AND SUPPLY CATALOGS/SUPPLY MANUALS

PUBLICATION NUMBER				DATE			TITLE	

PAGE NO.	COLM NO.	LINE NO.	NATIONAL STOCK NUMBER	REFERENCE NO.	FIGURE NO.	ITEM NO.	TOTAL NO. OF MAJOR ITEMS SUPPORTED	RECOMMENDED ACTION

PART III – REMARKS (*Any general remarks or recommendations, or suggestions for improvement of publications and blank forms. Additional blank sheets may be used if more space is needed.*)

TYPED NAME, GRADE OR TITLE	TELEPHONE EXCHANGE/AUTOVON, PLUS EXTENSION	SIGNATURE

USAPA V3.01